## Chapter 4 Development of Infrastructures other than Ports

## 4.1 Road Network

## 4.1.1 Outline

Road network is one of the major national infrastructures supporting the socioeconomic development of the country. In 2001, the total length of road network reached 202,083 kilometers.

The development of the road network in the Philippines is being undertaken by two entities: about 30,000 km of national road including expressways are under the Department of Public Works and Highways (DPWH), while the remaining 172,000km is under the jurisdiction of the local government units (LGUs). The ratio of paved road length in the total road length has increased every year and reached 21 % in 2001.

### 4.1.2 Master Plan on Strategic Road Network Development Project

DPWH has formulated the following master plans on road networks.

- Master Plan Study on Luzon Island Strategic Road Network Development Project (LISR), July 1993
- Master Plan Study on Visayas Mindanao Islands Strategic Road Network Development Project, March 1999
- 3) Updating of Master Plan Study on Luzon Island Strategic Road Network Development Project (LISR), June 2001

The road network is shown in Figure 4.1.1 referring to the available road map and the future plans described in these master plans under the assumption that the  $2^{nd}$  and  $3^{rd}$  program will be completed by 2009 and 2024, respectively.

### 4.1.3 Road network development in Metro Manila and its surrounding area

Traffic congestion in Metro Manila is getting severe and it is anticipated that further restrictions on large vehicles will be introduced. According to the demand forecast, consumer goods will increase in line with population growth. However, main cargoes are and will continue to be generated in the industrial area in the south of Metro Manila.

## (1) Metro Manila area

It has been decided that all highway construction projects in Metro Manila except one route will be executed through BOT. However the projects have not yet moved forward. The government recognizes the importance of carrying out these projects as soon as possible. Allowing the private companies to return their rights and to reconsider the projects from the first step is an idea that should be examined.

DPWH carries out construction of roads other than highways based on its development plan. However, the number of newly planned roads is inadequate to meet the increase in traffic.

Therefore it is not expected that road conditions in Metro Manila will improve dramatically in the coming 20 years, moreover, it is believed that the expansion of Manila port would further aggravate the traffic congestion. The only possible site for a new port might be the offshore area in Manila bay on the extended line of Edsa Street.

## (2) South area of Metro Manila

Large industrial areas have been developed in the south of Metro Manila including Cavite and Laguna. Many factories in Laguna are located along the expressway at the west side of Laguna bay. The condition of Cavite road, however, is very poor.

At present the CAVITE BUSWAY, which runs through CAVITE from north to south and has five lanes on either is being planned.

Road development from Manila to Batangas has not been completed yet. NEDA would like to see this development carried out as soon as possible since there is a strong demand from factories in the southern industrial area.

# (3) North area of Metro Manila

The road between Subic and Clark will be completed by 2007 using a JBIC loan.

# 4.2 Rail Transportation

## 4.2.1 Outline

(1) Philippine National Railroad (PNR)

Philippine National Railroads (PNR) was established in 1964 and operates the long-distance railroad. Its Main Line North is no longer operational, while the Main Line South to Bicol province runs only four or five trips daily servicing.

(2) Metro Manila Railway (MMR)

There are two light rail systems operating in Metro Manila Railway: the Light Rail Transit (LRT) Line-1 and the Metro Rail Transit (MRT) Line-3.

(3) Passenger and Cargo Traffic of Railway Sector

Although the passenger traffic transported by PNR reached 1,650,000 people in 1981, the volume decreased by 319,000 in 2001.

Passenger traffic of 6 million people was recorded by MMR in 1981. However, due to increased competition with road transport the volume of passengers spiraled downward, eventually dropping as low as about 2 million people in 1989. Passenger traffic has since recovered somewhat due to a reduction in fares, recording 4,787,000 persons in 2001.

Although the cargo volume by railway was 134,000 tons in 1981, the volume gradually declined. Eventually, cargo transported by PNR was discontinued in 1996.

# 4.2.2 Major Development Plan

- (1) The Light Rail Transit Line-1 Capacity Expansion Project
- (2) The Light Rail Transit Line-1 Extension/LRT6 project
- (3) Metro Rail Transit (MRT) Line-3 Expansion
- (4) The MRT Line-4 Project
- (5) The Light Rail Transit Line-2 project
- (6) Manila-Calabarzon Express (MCX) Commuter Rail Project
- (7) Rehabilitation Projects and New Line Construction Project

# 4.3 Air Transportation

# 4.3.1 Outline

The airport sector is managed, operated, and regulated by the Air Transportation Office, which is under the direct supervision of the Department of Transportation and Communications. There are eighty-five (87) public airports in the Philippines in year 2000. Four (4) airports are designated as international airports (Ninoy Aquino Inter-national Airport, Subic, Clark, and Cebu) four (4) others are designated as alternate international airports (Zamboanga, Davao, General Santos/Tambler, and Laoag). An additional twelve (12) airports are designated as trunk-link airports, thirty-six (36) as secondary airports and thirty-one (31) as feeder airports.

In these public airports, domestic passenger and cargo traffic of 12 million persons and 245,000 tons were handled in 2000

# 4.3.2 Major Development Plan

The Philippines civil aviation master plan was drawn up with the assistance of the International Civil Aviation Organization (ICAO) and United Nations Development Programme (UNDP) in 1992. The plan was re-examined in 1996. According to this master plan, the goal is to improve international airports in each region in which DOTC has jurisdiction from the viewpoint of local equilibrium development.

Major development projects are as follows:

1) NINA Development

- 2) Laoag International Airport Development Project
- 3) Legazpi Airport Development Project
- 4) Selected Airports Development Project (Tacloban and Bacolod (Silay))
- 5) New Iloilo Airport Development Project
- 6) Mactan (Cebu) International Airport Project
- 7) Third Airport Development Project
- 8) Laguindingan Airport Development Project
- 9) Davao International Airport Development Project
- 10) Zamboanga International Airport

# 4.4 Traffic by Transportation Modes

There are three modes of transportation, namely, Land Transportation, Sea Transportation and Air Transportation. In addition, Land Transportation is divided into Road Transportation and Railroad Transportation.

In ports and airports, cargo traffic is measured by handling volume such as inbound and outbound, while in railroad transportation, transported cargo volume and passenger are recorded as traffic volume. For this reason, in order to compare under the same conditions, cargo volume transported by railroad is doubled.

# 4.4.1 Passenger Traffic

Railroad passenger traffic has remained rather stable while that of long-distance bus (\*), domestic shipping and domestic air traffic has been increasing at an annual rate of 5 - 7%. Short distance road passenger such as those transported by city bus, jeepney and taxi is not included in road passenger traffic.

Table 4.4.1 Tassenger frame by fransportation woode						
Traffic Mode	1991	2001	Increase	Annual Increase		
Rail wav	10.326.800	10.211.400	98.88%	-0.11%		
Long Distance Bus	762.727	1.513.590	198.44%	7.09%		
Sea Traffic	31.715.783	55.797.795	175.93%	5.81%		
AirTraffic	7.687.468	12.017.417	156.32%	5.09%		
Total	50492.778	79.540.202	157.53%	4.65%		

As to the share by transport mode, sea transportation occupies 70 - 75% of the total.

 Table 4.4.1
 Passenger Traffic by Transportation Mode

### 4.4.2 Cargo Traffic

Cargo traffic of railroad decreased while that of domestic shipping and domestic air traffic has been increasing at an annual rate of 4 -5.5%. Average annual rate of increase is shown in Table 4.4.3. Sea transport is by far the dominant mode.

Traffic Mode	1991	2001	Increase	Annual Increase
Rail way	43,800	3,400	7.76%	-22.55%
Sea Traffic	58,630,134	87,544,738	149.32%	4.09%
Air Traffic	151,098	246,289	163.00%	5.58%
Total	58,825,032	87,794,427	149.25%	4.09%

 Table 4.4.2
 Cargo Traffic by Transportation Mode

\* Bus which connects cities between Luzon island and other islands

### Chapter 5 Present and Future Traffic of Cargo and Passenger

#### 5.1 Cargo Volume by Regions and PAs (PMOs) / Public Port Development Bodies

Port Management Offices (PMOs) of PPA, CPA and many public port development bodies such as SMBA, PIA, BCDA, CEZA, ARMM and LGUs are found in seventeen (17) regions of the Philippines. These organizations manage their ports. In addition two port authorities (PAs) also monitor other private ports in their areas. Although each management body prepares data on port activities individually, there is no organization that consolidates all data. The study team collected these data and arranged them in Table 5.1.1. The Table 5.1.1 shows the total cargo-handling volume of Philippines ports in 2001 is around 163 million tons.

Region	Region	Port Management Body	Import	Export	Inbound	Outbound	Total Cargo
		North Harbor (Mnl)	1,540,943	0	7,726,750	8,589,744	17,857,437
NCR	National Capital Region	South Harbor (Mnl)	6,348,106	474,980	6,203,211	64,487	13,090,784
		M.I.C.T.	6,914,717	3,989,829	3,750	6,090	10,914,386
CAR	Cordillera Autonomous Region						
1	llocos	San Fernando, BCDA	3,483,174	31,729	303,670	13,920	3,832,493
2	Cagayan Valley	San Fernando, CEZA	5	55,500	408	0	55,913
3	Central Luzon	SBMA					1,384,325
		Limay	9,812,702	794,990	394,043	5,794,105	16,795,840
4A	Southern Tagalog	Batangas	15,037,310	644,009	3,019,643	5,248,072	23,949,034
4B	Southern Tagalog	Calapan	0	0	368,371	328,719	697,090
4B		P. Princesa	8,349	483,402	478,346	210,302	1,180,399
5	Bicol	Legazpi	216,315	135,784	1,849,468	1,151,849	3,353,416
6	Western Visayas	lloilo	385,577	176	2,379,118	890,839	3,655,710
		Pulupandan	201,936	148,539	2,112,468	1,331,007	3,793,950
		Dumaguete	32,698	472,357	700,175	388,256	1,593,486
7	Central Visayas	Cebu	1,811,998	1,599,130	5,250,167	6,143,334	14,804,629
		Tagbilaran	40,648	387,999	827,309	903,973	2,159,929
8	Eastern Visayas	Tacloban	1,909,948	827,665	2,345,464	2,928,709	8,011,786
9	Western Mindanao	Zamboanga	177,977	249,158	1,241,149	659,151	2,327,435
10	Northern Mindanao	Cag. De Oro	4,982,114	5,308,801	2,632,046	2,417,630	15,340,591
		Ozamiz	35,758	165,423	1,363,754	1,082,785	2,647,720
11	Southern Mindanao	Davao	1,168,845	2,836,733	2,192,399	1,210,780	7,408,757
		Gen. Santos	251,303	443,110	878,092	876,893	2,449,398
12	Central Mindanao	Iligan	436,349	488,750	1,250,807	1,298,185	3,474,091
		Cotabato	0	0	38,917	69,968	108,885
13	Caraga	Surigao	64,491	990,092	405,754	650,292	2,110,629
		Nasipit	93,876	415	561,389	442,073	1,097,753
ARMM	Autonomous Region	Polloc*	0	0	0	0	757,948*
	Muslim Mindanao	Jolo*	0	0	0	0	240,362*
	Total		54,955,139	20,528,571	44,526,668	42,701,163	163,582,990

Table 5.1.1Sea Born Cargo Volume in 2001

Unit : ton

Sauce: Statistical Yearbook 2001, PPA Annual Statistical Report, CPA, SBMA, ARMM and arranged by the Study Team. Remarks: Cargo volume of Polloc\* and Jolo\* were recorded in1998 and the Total is not include these figures.

## 5.2 Present Cargo Situations

#### 5.2.1 Total Cargo Volumes

Total sea borne cargo volume in the Philippines increased from 106 million tons in 1991 to 163 million tons in 2001 at an average annual growth rate of 4.43%. Foreign bulk cargo, comprised mainly of crude petroleum, refined petroleum and mineral fuel (coal, coke) is the major cargo type. For foreign cargo, the biggest growth rate is seen in container cargo while for domestic cargo, container cargo and Ro/Ro cargo show large growth rates. The growth of foreign break bulk cargo and domestic break bulk cargo is stable.



Figure 5.2.1 Cargo Volume by Regions



Figure 5.2.2 Cargo Volume by Cargo Types

# 5.2.2 Present Cargo Traffic by Cargo Type and by Regions

## (1) Foreign Container Cargo

Foreign container cargo volume increased from 5.9 million tons in 1991 to 15.0 million tons in 2001. This large increase is partly due to the fact that some break bulk cargo is shifting to container cargo. Foreign container cargo is handled mainly at Manila, Cebu, Cagayan de Oro and Davao but the vast majority is handled at Manila. About 20% of foreign container cargo handled in Manila is transferred as domestic container cargo to/from other regions. Import container cargo volume is about 1.8 times larger than export container cargo volume and the former is growing at a faster rate than the latter. Large growth rates are seen in Central Visayas and Southern Mindanao.

## (2) Foreign Break Bulk Cargo by Regions

Foreign break bulk cargo volume increased from 6.5 million tons in 1991 to 8.5 million tons in 2001. Foreign break bulk cargo has not greatly increased in the past 10-year period. One of the causes of this is that some break bulk cargo is shifting to container cargo. NCR and Southern Mindanao regions have large shares of break bulk cargo. Major commodities of import break bulk cargo are Iron & Steel and Cement at NCR and those for export are fruits & vegetable in the Southern Mindanao region. Annual growth rate for import break bulk cargo is 3.27% and that for export is 1.23%.

# (3) Foreign Bulk Cargo

Foreign bulk cargo volume increased from 35 million tons in 1991 to 52 million tons in 2001. Import bulk cargo volume is three times larger than the export cargo volume. Major commodities of import bulk cargo are crude petroleum and mineral fuel mainly imported at Region 3 and Region 4A. Major commodities of export bulk cargo are metalliferous exported at Northern Mindanao region followed by coconut oil.

### (4) Domestic Container Cargo

Domestic container cargo volume increased from 14.3 million tons in 1991 to 26.9 million tons in 2001. Domestic container cargo has continued to increase at a high growth rate. All the incoming and outgoing container cargo was primarily from the NCR region followed by Central Visayas, Southern Mindanao, Northern Mindanao and Western Visayas. Domestic container cargo is mainly adopted for long distance transport and transported by RO/RO ferry vessels and conventional cargo vessels.

### (5) Domestic Break Bulk Cargo

Domestic break bulk cargo volume has increased from 25.5 million tons in 1991 to 31.5 million tons in 2001. Statistical domestic break bulk cargo can be classified into two categories, one is RO/RO cargo and the other is actual break bulk cargo.

# 1) Domestic RO/RO Cargo (Transport Equipment)

Domestic RO/RO cargo is mainly transported by short distance RO/RO vessels. Domestic RO/RO cargo has increased very rapidly from 2.7 million tons in 1991 to 9.2 million tons in 2001, especially in Bicol region and Eastern Visayas region. (It should be noted that the RO/RO cargo volume includes only the weight of the vehicles being carried, and excludes the weight of any cargo that vehicle may be carrying.)

# 2) Actual Break Bulk Cargo by Regions

Actual break bulk cargo is cargo that cannot be containerized such as long Iron & Steel, some types of heavy cargo and small-lot consignment and that is not carried on a vehicle in a vessel. Actual domestic break bulk cargo was 22.8 million tons in 1991 and 22.3 million tons in 2001. Actual domestic break bulk shows stable trend.

# (6) Domestic Bulk Cargo by Regions

Domestic bulk cargo has increased very rapidly from 19.2 million tons in 1991 to 28.8 million tons in 2001. Domestic bulk cargo has showed a strong increase. The major commodity of domestic bulk cargo is refined petroleum. Crude petroleum is imported at Central Luzon and Southern Tagalog and refined there. Major origins of domestic bulk cargo are Central Luzon and Southern Tagalog (4A) and destinations are NCR, Central Luzon, Central Visayas and other regions. Almost all domestic bulk cargo is handled at private ports.

# 5.3 Present Sea Passenger Traffic

# 5.3.1 Total Sea Passenger Traffic

Domestic sea passenger traffic by region is shown in Figure 5.3.1 (also see Table5.3.1). Sea passenger traffic increased from 31 million passengers in 1991 to 55 million passengers in 2001. Sea passengers are classified into long distance passenger and short distance passenger.



Figure 5.3.1 Present Sea Passenger Traffic by Regions

### 5.3.2 Long Distance Passenger and Short Distance Passenger by Traffic Modes

There are three (3) modes for long distance passengers in Philippines: sea transportation, air transportation and land transportation. Land transportation is divided into road and railroad.

Long Distance		1991	2002	Increase
	By Sea	7,469,648	8,999,251	120.48%
	By Air	7,687,468	12,017,417	156.32%
	By Land	762,727	1,696,554	222.43%
	Total	15,919,843	22,713,222	142.67%

Table 5.3.1 Long Distance Passengers

Short Distance		1991	2002	Increase
	By Sea	24,246,135	48,000,749	197.97%

Source: PPA, CPA, Air transportation Office and survey by the Study Team

#### 5.4 Procedure for Estimation of Cargo and Passenger

#### 5.4.1 Flow of Estimations

The initial stage of the procedure is to collect statistical data on traffic activities, especially port-related data, and arrange them in a time series. Data is also arranged by regions according to the port management bodies. The data is complemented by data obtained through an OD survey conducted by the Study Team at the ports located on the Pan-Philippine Highway and through interviews at major ports in Philippines. The data is then analyzed to identify characteristics, trends and growth of cargo and passenger traffic. Further, the correlations between this data and socio-economic data are analyzed.

Next, future cargo volume and passenger will be estimated according to the formulated socio-economic framework.



**Procedure for Cargo & Passenger Estimations** 

Figure 5.4.1 Flow of Estimations

# 5.4.2 Conditions for Estimations

The followings conditions are adopted and considered for forecasting the passenger and cargo volumes.

## (1) Natural Conditions

The Philippines is an archipelagic country consisting of more than 7,100 islands.

## (2) Socio-Economic Conditions

- 1) Population projection as given in chapter 2.1 is taken into account.
- 2) Three (3) GDP growth rate scenarios (3.5% in the low growth case, 4.5% in the medium growth case and 5.73% in the high growth case) are adopted for macro estimations.
- 3) The medium growth case of GRDP (Gross Regional Domestic Product) projection as described in chapter 2.2.1 is adopted for regional cargo estimations.
- 4) Potential growth areas as identified in Figure 2.2.12 are considered.
- 5) NCR, Region-3 and Region-4A are treated as the same region group where the same economic trend and activities will be seen in a broad perspective. Greater Capital Region (GCR) covers these 3 regions.
- (3) Present Situations and Trend of Transportation
- 1) Break bulk cargo is shifting to containerized cargo.
- 2) Domestic break bulk cargo is classified into RO/RO cargo and break bulk cargo.
- 3) Passenger traffic is classified into long distance passenger and short distance passenger.
- 4) Future maximum containerized ratio is assumed as 90% for foreign and 80% for domestic.
- 5) Shortening of whole transportation time
- 6) Reducing the whole transportation cost
- 7) Reducing the cargo damage during transport
- 8) More efficient transport (Mass transportation without delays and multiple handling)
- 9) Reducing port development cost
- (4) Future Development Plans
- 1) Port Development Plans which are prepared mainly by PPA and other port development bodies
- 2) Road Development Plans which are prepared by DPWH.

# 5.5 Future Cargo Traffic

### 5.5.1 Projected Total Cargo Volume

Based on socio-economic frameworks and analysis of cargo statistics, total sea borne cargo volume is estimated for each of the economic growth scenarios. Economic growth rate is projected at 5.73% in the high case, 4.5% in the medium case and 3.5% in the low case.

In 2024, total cargo volume will reach 711 million tons (an increase of 4.36 times over 2001 at an annual growth rate of 6.62%) in the high case, 535 million tons (3.28 times and 5.31%) in the medium case and 426 million tons (2.61 times and 4.27%) in the low case. Average annual growth rate of cargo volume from 1980 to 1991 is 3.52% and that from 1991 to 2001 is 4.36%.

In 2024, foreign bulk cargo shows largest cargo volume, followed by domestic container cargo, domestic bulk cargo, foreign container cargo, domestic RO/RO cargo, domestic break bulk cargo and foreign break bulk cargo. Total cargo volume by regions is estimated according to the regional economic growth (GRDP) scenarios based on the medium economic growth (GDP) case. Projected regional cargo volumes are shown in Figure 5.5.2. GCR (NCR, Region 3 and Region 4A) will handle largest amount of cargo, followed by Central Visayas, Northern Mindanao and Southern Mindanao.



Figure 5.5.1 Macro estimation for Total Cargo Volume by Economic Growth Scenario

							Unit: ton	
GDP Growth Scenario		1980	1991	2001	2004	2009	2024	Growth Rate
Low Case	3.50%	72,628,086	106,228,301	163,582,990	195,184,679	238,719,412	424,770,922	4.24%
Medium Case	4.50%	72,628,086	106,228,301	163,582,990	199,688,550	257,900,395	533,500,523	5.27%
High Case	5.73%	72,628,086	106,228,301	163,582,990	176,240,964	274,616,392	709,485,729	6.59%

 Table 5.5.1
 Total Cargo Volume by Economic Growth Scenario

				Unit : ton
Cargo Type	1991	2001	2009	2024
Foreign Container	5,896,078	15,102,165	31,353,955	81,621,403
Foreign Break Bulk	6,488,833	8,379,221	11,318,304	15,957,630
Foreign Bulk	34,824,576	52,002,324	78,003,926	158,969,886
Domestic Container	14,001,675	26,498,367	47,193,215	115,089,556
Domestic Break Bulk	23,094,102	23,396,007	23,662,946	29,490,124
Domestic Ro/Ro	2,700,177	9,289,090	18,623,696	34,267,795
Domestic Bulk	19,222,860	28,915,818	47,744,354	98,104,129
Foreign Cargo Total	47,209,487	75,483,710	120,676,184	256,548,919
Domestic Cargo Total	59,018,814	88,099,281	137,224,211	276,951,604
Total	106,228,301	163,582,991	257,900,395	533,500,523

Table 5.5.2Cargo Volumes by Cargo Types



Figure 5.5.2 Total Cargo Volume by Regions

# 5.5 2 Projected Cargo Volume by Cargo Type and by Region

(1) Projected Foreign Container Cargo Volume by Region

Projected foreign cargo volume will increase rapidly from 15 million tons in 2001 to 31 million tons

in 2009 and 81 million tons in 2024. Foreign container cargo will be handled in mainly 4 regions (GCR, Central Visayas Northern Mindanao and Southern Mindanao). If the present situation continues until 2024, almost all foreign container cargo will be handled in GCR and about 20% of foreign container cargo handled in GCR will be transferred as domestic container cargo to/from other regions. When international container terminals are opened at Visayas and Mindanao, percentage of foreign container cargo of GCR in total will decrease from 90% to 70%. Foreign container cargo in GCR will be 57.5 million tons in 2024.

# (2) Projected Foreign Beak Bulk Cargo by Region

Foreign break bulk cargo will increase from 8.5million tons in 2001 to 13.5 million tons in 2009 and 26 million tons in 2024. Foreign break bulk cargo will be handled in many regions but GCR will handle the largest share of import and Southern Mindanao will handle the largest share of export.

## (3) Projected Foreign Bulk Cargo by Regions

Projected foreign bulk cargo will increase from 52 million tons in 2001 to 74 million tons in 2009 and 146 million tons in 2024. Foreign bulk cargo will occupy the largest share of the total cargo volume. Foreign bulk cargo is greatly imbalanced with the volume of import bulk cargo about 5 times larger than that of export bulk cargo. NCR, Region 3 and Region 4A will treat large shares of foreign bulk cargo. Major commodities of import bulk cargo are crude petroleum and mineral fuel.

# (4) Projected Domestic Container Cargo by Region

Projected domestic container cargo will increase from 27 million tons in 2001 to 47 million tons in 2009 and 111 million tons in 2024. Domestic container cargo will be handled mainly at GCR, Western Visayas, Central Visayas, Northern Mindanao and Southern Mindanao. GCR will be the center of domestic container cargo and other four (4) regions will have a hub function for neighboring areas. GCR will handle the largest share of domestic container cargo followed by Central Visayas. Containers are commonly used for long distance transport of domestic cargo. Bicol region and Eastern Visayas region are located on the Pan-Philippine Highway and some part of the estimated container cargo of these regions may shift RO/RO cargo or land transportation cargo.

### (5) Projected Domestic Break Bulk Cargo by Regions

Projected domestic break bulk cargo will increase from 22 million tons in 2001 reaching 24 million tons in 2009 and 32 million tons in 2024. Central Visayas will handle the largest cargo volume. GCR, Eastern Visayas and Western Visayas will also handle large cargo volumes.

In Central Visayas and Western Visayas, some portion of break bulk cargo will be transported to /from these regions by container cargo and distributed (collected) to/from neighboring area by break

bulk cargo. Therefore these areas will have a function as distribution centers for neighboring area.

(6) Projected Domestic RO/RO Cargo by Regions

Projected domestic RO/RO cargo will increase from 9 million tons in 2001 to18 million tons in 2009 and 36 million tons in 2024. Bicol and Eastern Visayas, located on the Pan-Philippine Highway, have large shares. Central Visayas, Northern Mindanao and Central Mindanao, located around Visayas Sea, will also handle a large amount of cargo.

(7) Projected Domestic Bulk Cargo by Regions

Projected domestic bulk cargo will increase from 29 million tons in 2001 reaching 49 million tons in 2009 and 102 million tons in 2024. The major commodity of domestic bulk cargo will be refined petroleum. Major origins of domestic bulk cargo will be Central Luzon and Southern Tagalog (4A) and destinations will be NCR, Central Luzon, Central Visayas and other regions. Almost all bulk cargo will be handled at private ports.

# 5.5.3 Future Domestic Cargo Transportation Mode

Typical domestic cargo transportation modes among regions are projected as Table 5.5.3

	Destination	CAR	Central Luzon		4B Southern Tagalog	Northern Mindanao	Western Mindanao
		llocos	NCR	Eastern Visayas	Western Visayas	Southern Mindanao	Central Mindanao
		Cagayan Valley	4A Southern Tagalog		Central Visayas	Caraga	ARMM
	Origin		Bicol				
CAR	CAR				Road + Container		
1	llocos	Road	Road	Road + Ro/Ro	Road + Ro/Ro	Road + Container	Road + Container
2	Cagayan Valley						
3	Central Luzon				Container		
NCR	NCR	Road	Road	Road + Ro/Ro	Road + Ro/Ro	Container	Container
4A	Southern Tagalog						
5	Bicol						
8	Eastern Visayas	Ro/Ro + Road	Ro/Ro + Road	Road + (Ro/Ro)	Road + Ro/Ro	Road + Ro/Ro	Ro/Ro + (Road)
4B	Southern Tagalog	Ro/Ro + Road	Ro/Ro + Road			Ro/Ro + Road	Ro/Ro + (Road)
6	Western Visayas	Container + Road	Container	Ro/Ro + Road	Road + Ro/Ro	Container	Container
7	Central Visayas						
10	Northern Mindanao		Container		Ro/Ro + Road		
11	Southern Mindanao	Container + Road	Container + Road	Ro/Ro + Road	Container	Road	Road + (Ro/Ro)
13	Caraga						
9	Western Mindanao		Container		Ro/Ro + Road		
12	Central Mindanao	Container + Road	Container + Road	Ro/Ro + Road	Container	Road + (Ro/Ro)	Road
ARMM	ARMM						

 Table 5.5.3
 Projected Typical Domestic Transportation Modes

# 5.6 Projected Sea Passenger Traffic

# 5.6.1 Long Distance Sea Passenger by Region

Projected long distance sea passenger by region is shown in Figure 5.6.1. Long distance sea passenger will increase gradually from 7 million in 2001 to 10 million in 2009 and 14 million in 2024.



Figure 5.6.1 Projected Long Distance Sea Passenger by Regions

# 5.6.2 Short Distance Sea Passenger by Region

Central Visayas will be the hub of short distance sea passengers of Visayas Sea.



Figure 5.6.2 Projected Short Distance Sea Passenger by Region

#### 5.7 Domestic Container Cargo Volume at Major Ports

At present, some foreign container cargo handled in Manila is transferred as domestic container cargo to/from other regions. When the international container terminals in other regions start operation, this domestic cargo will be imported/exported directly at the regional ports. The domestic container volume for each major port is estimated in Table 5.7.1 based on present conditions and considering this trend.

								Unit : TEUs
	Name of Port	Prot Mgt. Body	Kind of Port	2001	2009	2014	2019	2024
1	Batangas	PPA	Base Port	3,475	61,729	89,081	114,251	145,532
2	Cagayan de Oro	PPA/PIA	Base Port	149,348	151,811	190,708	232,970	280,559
3	Cebu	CPA	Base Port	313,369	359,424	408,402	659,032	955,297
4	Davao	PPA	Base Port	90,368	77,579	95,847	119,247	144,069
5	Dumaguete	PPA	Base Port	20,311	31,829	43,261	56,879	73,430
6	General Santos	PPA	Base Port	113,847	153,133	169,949	216,681	274,471
7	Iligan	PPA	Base Port	15,762	20,846	20,767	23,216	28,012
8	lloilo	PPA	Base Port	98,471	146,645	217,046	300,381	399,480
9	Manila North Harbor	PPA	Base Port	770,069	804,465	886,246	1,122,067	1,426,235
10	Manila South Harbor	PPA	Base Port	0	110,000	110,000	110,000	110,000
11	Nasipit	PPA	Base Port	22,851	37,439	50,104	66,494	87,889
12	Ozamiz	PPA	Base Port	23,613	5,017	1,789	621	204
13	Pto. Princesa	PPA	Base Port	17,172	40,627	63,113	92,392	130,614
14	Surigao	PPA	Base Port	5,669	7,279	10,523	14,907	20,783
15	Tacloban	PPA	Base Port	23,745	56,229	81,359	112,502	150,733
16	Tagbilaran	PPA	Base Port	14,430	14,747	18,006	22,226	27,734
17	Zamboanga	PPA	Base Port	56,389	111,308	156,804	213,190	282,604
18	Bredoco	Private	Private Port	24,816	122,560	182,949	260,715	363,508
19	Culasi	lloilo	Terminal Port	13,156	18,033	22,996	29,074	36,617
20	Masao	Nasipit	Terminal port	659	856	1,428	2,620	4,595
21	Masbate	Legazpi	Terminal Port	2,486	4,422	5,358	6,333	8,168
22	Ormoc	Tacloban	Terminal Port	5,055	9,352	13,049	17,800	23,706
23	Palompon	Tacloban	Terminal Port	1,592	4,609	6,263	8,026	9,887
24	Pulauan Dapitan	Ozamiz	Terminal Port	6,720	13,280	19,357	26,778	36,077
25	San Jose	Calapan	Terminal port	461	23,916	31,659	41,268	53,242
26	Harbor Center	Private		3,454	36,720	60,812	87,738	121,270
27	Tefasco	Private		34,885	68,023	78,870	99,087	127,727
	Total			1.832.173	2.491.876	3.035.747	4.056.496	5.322.444

 Table 5.7.1
 Forecast of Domestic Container Volume at Major Ports

# 5.8 Total Cargo Volume for Major Ports

Table 5.8.1 shows summary of projected total cargo volume for major ports. Details of each port can be found in Appendix-5.

	Name of Port	Prot Mgt. Body	Kind of Port	1991	2001	2009	2014	2019	2024
1	Batangas	PPA	Base Port	999,602	1,044,563	8,658,629	12,040,272	20,471,881	25,977,951
2	Cagayan de Oro	PPA	Base Port	1,420,489	2,717,290	4,264,192	5,440,696	6,911,589	8,768,677
3	Calapan	PPA	Base Port	702,559	391,294	555,653	660,973	792,221	955,781
4	Cebu	CPA	Base Port	4,649,162	9,159,243	12,759,913	17,079,877	22,495,010	29,243,250
5	Cotabato	PPA	Base Port	71,390	51,590	76,723	100,888	131,003	168,531
6	Davao	PPA	Base Port	1,427,776	2,492,689	4,159,973	5,521,604	7,228,536	9,356,415
7	Dumaguete	PPA	Base Port	337,119	496,301	655,661	817,287	1,018,703	1,269,703
8	General Santos	PPA	Base Port	850,326	1,575,894	2,693,275	3,588,434	4,703,964	6,094,118
9	Iligan	PPA	Base Port	403,659	247,638	319,948	335,453	354,775	378,854
10	lloilo	PPA	Base Port	1,981,971	2,586,033	3,898,094	4,625,343	5,531,627	6,661,022
11	Legazpi	PPA	Base Port	220,904	365,535	457,320	572,532	716,108	895,030
12	Limay	PPA	Base Port	0	196,105	280,928	426,165	607,157	832,707
13	Manila North Harbor	PPA	Base Port	10,499,320	15,701,316	16,491,916	17,367,741	20,333,499	24,037,634
14	Manila South Harbor	PPA	Base Port	4,943,801	6,823,086	11,029,052	12,557,018	13,292,861	15,681,468
15	MICT	PPA	Base Port	3,943,580	10,914,386	10,761,640	13,287,405	14,158,683	17,916,284
16	Nasipit	PPA	Base Port	597,495	734,675	1,033,674	1,229,622	1,473,809	1,778,110
17	Ozamiz	PPA	Base Port	419,418	1,731,438	2,883,883	3,790,205	4,919,648	6,327,140
18	Pto. Princesa	PPA	Base Port	181,147	434,656	797,474	1,118,350	1,518,220	2,016,530
19	Pulupandan	PPA	Base Port	358,843	78,027	93,569	92,145	90,436	100,737
20	Surigao	PPA	Base Port	127,172	209,153	371,016	495,857	651,432	845,306
21	Tacloban	PPA	Base Port	407,943	614,632	1,015,921	1,308,475	1,673,049	2,127,376
22	Tagbilaran	PPA	Base Port	361,745	644,819	768,309	891,982	1,046,101	1,238,161
23	Zamboanga	PPA	Base Port	621.056	1.253.679	2.256.592	3.030.219	3.994.300	5.195.721
24	San Fernando	BCDA	Other Govt. Port	773.099	0	1.524.448	1.651.582	1.810.014	2.008.233
25	Subic	SBMA	Other Govt. Port	5,300	997,000	4,034,480	5,273,301	6,836,229	9,522,238
26	Harbaor Center	R-II	Private Port	0	2,156,121	1,854,399	2,611,577	3,555,157	4,731,031
27	Bredoco	Bredoco	Private Port	0	1,495,052	3,117,156	4,555,201	6,347,267	8,580,508
28	Bauan	Batangas	Terminal Port	84,394	212,395	164,390	174,666	187,472	203,431
29	Catagbacan	Tagbilaran	Terminal Port	4,591	131,123	352,485	508,818	703,639	946,420
30	Catbalogan	Tacloban	Terminal Port	92,760	81,948	102,066	120,814	144,177	173,291
31	Culasi	lloilo	Terminal Port	130,291	231,321	366,970	473,583	606,442	772,008
32	Currimao	San Fernando	Terminal port	107,628	110,643	124,937	172,720	232,266	306,472
33	Estancia	lloilo	Terminal port	0	154,681	46,639	57,676	71,431	88,571
34	Liloan ferry	Tacloban	Terminal Port	72,637	313,776	617,025	879,041	1,205,561	1,612,464
35	Lipata	Surigao	Terminal Port	75,578	352,710	694,170	971,046	1,316,084	1,746,063
36	Maasin	Tacloban	Terminal port	33,210	91,080	180,768	248,868	333,734	439,492
37	Masao	Nasipit	Terminal port	96,041	128,574	151,816	148,983	145,453	169,197
38	Masbate	Legazpi	Terminal Port	173,241	272,034	462,010	651,698	888,084	1,182,664
39	Matnog	Legazpi	Terminal Port	619,422	1,357,222	2,387,567	3,254,871	4,335,690	5,682,587
40	Naval	Tacloban	Terminal Port	2	78,577	102,601	136,354	178,417	230,836
41	Ormoc	Tacloban	Terminal Port	116,450	229,015	335,478	379,845	435,135	504,037
42	Palompon	Tacloban	Terminal Port	26,217	199,415	270,170	399,483	560,629	761,447
43	Pasacao	Legazpi	Terminal port	18,909	84,228	169,416	224,887	294,013	380,157
44	Pulauan Dapitan	Ozamiz	Terminal Port	0	283,053	419,710	543,509	697,785	890,040
45	San Isidro	Tacloban	Terminal Port	272,228	109,690	76,932	22,220	31,922	44,013
46	San Jose	Calapan	Terminal port	210,159	248,391	414,766	511,158	631,280	780,974
47	Tabaco	Legazpi	Terminal port	126,233	354,815	539,128	765,323	1,047,203	1,398,477
48	Irene	CEZA	Other Govt. Port	64,848	55.913	58,911	91,344	131,761	182,128
49	Bay/River	M. South Harbor	Other Govt. Port	293,782	1,336,246	1,031,788	1,064,394	1,105,027	1,155,664
50	Balwharteco	Tacloban	Private Port	0	897,273	1,583,122	2,468,358	3,571,524	4,946,269
51	Tefasco	Davao	Private Port	452,733	1,617,453	2,036,902	2,404,720	2,863,088	3,434,298
	Total			39,376,230	74,043,791	109,503,603	137,144,585	174,381,096	220,739,517

Table 5.8.1 Summary of Total Cargo Volume at Major Ports

## **Chapter 6 Maritime Transport**

## 6.1 Maritime Transport in the World

It can be said that we have entered the era of mass transportation and high operations /efficiency due to the introduction of large scaled container carriers, dry bulk carriers, liquid bulk carriers and quicker transportation. It is expected that the current trend of vessel size enlargement will continue in the future.

## 6.1.1 Container Transport

The world container port market shows no signs of slowing down. Prospects for the coming decade continue to be buoyant. World container movement is expected to increase to 554 million TEUs, which is more than double of the present movement.

Shipping lines are making increasing use of transshipment containers to offer global service and increase service frequency. Transshipment refers to the movement of containers to main Hub ports or ports handling transshipment container and the subsequent transfer of the container to a feeder or direct call vessel.

The need for carriers to deploy increasingly larger vessels which makes a reduction in the number of port calls on a particular service possible, has led to a steep increase in the proportion of containers being transshipped via feeder service networks. Competition among mega container terminal operators has been getting severe.

The disadvantage of transshipment container is the cost and transit time. Shippers generally prefer to transport their cargo directly, especially where it is time sensitive. To offset the time loss, carriers have to minimize loading and discharging visits, thereby increasing throughput at the hubs that are called at.

The larger vessels that are used to maximize economies of scale represent very costly investment for container carriers. Revenue can be maximized and costs minimized by limiting the number of port calls and maximizing the total number of sailings per year.

The main factor for a container carrier when selecting a hub port with respect to the main axial East West trades and either hinterland or feeder service connections is location. For effective global operations it is essential that feeder / hinterland services on the North and South container route are integrated with the East and West trades. To ensure that this happens, most of the larger container carriers operate their own feeder services, have access to business partner's networks or establish long-term contracts with third party feeder service providers.

## 6.1.2 Bulk Cargo Transport

Major items of dry bulk cargo are iron ore, coal and grain, and minor bulk cargo includes steel products, forest products and agricultural products including rice, oilseeds, sugar, etc., while those of liquid bulk cargo are crude oil and oil products. It is expected that both dry and liquid bulk cargo volume will increase steadily.

## 6.2 Maritime Transport in the Philippines

## 6.2.1 Intra Asia Container Transport

The Asia financial crisis brought about a rationalization of service and fleets, but trade and capacity have both continued to increase strongly overall, albeit at a somewhat less dramatic pace. During this time, a number of regional operators have emerged, some of them subsequently entering the world trades too.

(1) Overview of Container Transport in the South East Asia

Container transportation in the South East Asia region is developing around the following International Mega container ports such as Singapore (Singapore), Hong Kong (China), Shanghai (China), Kaoshiung (Taiwan), Tanjung Pelepas (Malaysia) and Busan (Korea). These port development projects are carried out as national projects in order to respond to the era of mass transportation.

# (2) Demand of Container Transport in the South East Asia

In South East Asia, aggregate container port throughput is forecast to increase by 45.4%-66.7 % to 17.21 -23.83 million TEUs over 2000 - 2005. All markets are expected to partake in the rapid expansion.

Despite typically lower GDP and export growth than the other South East Asia nations, the Philippines is nevertheless expected to see container port throughput growth of 48.9%-66.6% over 2000-2005 to 5.30-5.93 million TEU. Its achievement will depend on the level of investment in port facilities, even if the country's ambitions for regional hub port development do not materialize.

## 6.2.2 Container Transport from/to Philippines

## (1) General

Among the containers for foreign trade to and from Philippines Port, approximately 40% are for trade within the Asian territory. It is estimated that trade within the Asian territory would become active and increase in the future if a free trade zone in the Asian territory is established.

It is estimated that about 526,600 TEUs moved in the Intra Asia Region from/to Philippines port. Top three trade partners of Philippines are; Japan, Taiwan and Hong Kong. The total trade container volume of the top three countries is 317,400 TEUs which represents about 60% of the Asian total.

				(110111 200	л ю 2024 бу	TEU)
	2001	2005	2009	2015	2020	2024
Singapore	32,694	77,428	119,243	160,979	212,485	297,486
Taiwan	67,668	164,386	253,161	341,771	451,122	631,585
Hong Kong	58,722	135,797	209,133	283,332	372,666	521,744
China	31,498	167,223	243,630	324,903	462,564	647,603
Indonesia	27,242	65,516	100,898	136,213	179,795	251,719
Malaysia	31,900	72,663	111,905	151,073	199,409	279,179
Thailand	29,482	63,134	97,229	131,260	173,257	242,565
Vietnam	11,160	22,633	34,856	47,055	62,111	86,957
Japan	191,042	328,316	519,523	750,363	897,340	1,256,302
Korea	38,292	79,810	122,912	165,932	219,023	306,639
Other Countries	6,916	14,294	22,014	29,719	39,228	54,920
Total Throughput	526,616	1,191,200	1,834,504	2,522,600	3,269,000	4,576,699

 Table 6.2.1 Future Demand Container in the Intra Asia Region from/to Philippines

 (From 2001 to 2024 by TEL)

Source: Basic Data IADA (Intra Asia Discussion Agreement) and JICA Study Team

#### (2) International Container Freight Rate

Pricing of international container freight rate is, in most cases, set based on not the distance of the transportation, but on the amount of cargoes for round trip. Current freight prices in the main ports in the Manila area are as follows;

1) International Container Freight rate in East / West Main Container Route The freight rates mentioned in Table 6.2.2 are all in other surcharges e.g. CAFs, BAFs, THC etc, plus inland haulage.

2) General container freight rate per container, from Manila to surrounding international container port on July 2003, is shown in Table 6.2.3.

8 9		
Main Service Route	2002 3 <sup>rd</sup> Quarter	2002 4 <sup>th</sup> Quarter
Asia – US East Bound	US \$ 1,490.00	US \$ 1,520.00
US – Asia West Bound	US \$ 764.00	US \$ 764.00
Europe – Asia East Bound	US \$ 710.00	US \$ 712.00
Asia – Europe West Bound	US \$ 1,250.00	US \$ 1,304.00

Table 6.2.2East and West Main Container Trade Route Standard OceanFreight Rate by TEU (2003 March)

CAF=Currency Adjustment Factor / BAF=Bunker Adjustment Factor

THC=Terminal Handling Charge

Source: Selected Ocean Container Carrier by Hearing and JICA Study Term

			(Unit. US \$	
Country	Dout of Destination	Export From Philippines Port		
Country	For or Destination	20' Dry Box	40' Dry Box	
Toiwon	Kaohsiung	60.00	120.00	
Taiwali	Keelung	Export From 20' Dry Box 60.00 80.00 350.00 200.00 200.00 250.00 80.00 150.00 300.00 550.00	160.00	
Chiras	Hong Kong	80.00	160.00	
China	Shanghai	350.00	550.00	
Korea	Busan	200.00	350.00	
Indonesia	Jakarta	200.00	350.00	
Malaysia	Port Kelang	250.00	350.00	
Singapore	Singapore	80.00	160.00	
Thailand	Bangkok	150.00	350.00	
Vietnam	Ho Chi Ming	300.00	600.00	
Japan	Base Port	550.00	800.00	

Table 6.2.3	General Container Freight Rate per Container from / to Philippines = Mar	nila
	(Unit: US	\$)

FAF = (Fuel Adjustment Factor) 20° x US\$ 25 / 40° x US\$50 per Box

Document Fee= US\$ 20 per Bill of Lading

Source: Conference Members shipping Agent by Hearing

## (3) Container Handling in the Philippines

International container accounted for 65.6 % of all container throughput at the port of Manila in 2002 and the port of Manila handled over 85 % of nationwide international container traffic, although other major domestic ports such as Cebu, Iloilo, Cagayan De Oro, Davao and General Santos ports are also served by feeder vessels. In the Philippines, the aggregate container port throughput increased by 32.4 % to 3.10 million TEUs in 1998 and over 3.80 million TEUs in 2002. All markets are expected to partake in this rapid expansion.

## 6.2.3 International Major Container Terminal in the South East Asia Region

## (1) International Hub Port

With respect to carrier operations the most favorable location for transshipment ports is close to trunk routes where deviation is kept to a minimum, allowing for as short a transit time as possible.

To be recognized as an international hub port upon east/west main service route, a port should be attractive for the over Panamax vessels whose capacity is more than 6,000 TEUs. South East and North East Asia region container liner service network are shown in Figure 6.2.1.

### (2) Possibility of Manila port as international hub port

Manila port is the largest port in the Philippines and it handles about 3 million TEUs per year. Is it possible for Manila port to be an international container hub port? The port of Manila has some problems such as shallow water depth and restriction of expansion area. However the largest problem is deviation from main container service routes. Almost one additional day is required for a container vessel going on a main service route to call at Manila port. This is a burden for shipping companies and thus it would be difficult for Manila port to be an international hub port.

### (3) International Container Gateway Ports in the Philippines

International container gateway ports are the main entrances for international container transport. In the Philippines, Manila port now plays this role. It is expected that not only Subic and Batangas but also Cebu, Cagayan de Oro and Davao will have the same role in the near future.

From the shipping company's point of view, fewer gateway ports are more desirable. But shippers want more gateway ports because it is more convenient for them. The number of international container gateway ports is decided based on the container volume, geographical distribution of ports, shipping company's intention, etc.

## 6.2.4 Port-related Costs in the Intra Asia

(1) Logistic Costs for Export and Import.

Logistic costs for export and import are composed of truck-age, customs clearance, THC or CHC and miscellaneous charges. Philippine logistic cost is moderate. It is cheaper than that of Kaohsiung, Hong Kong, Jakarta and Tokyo/Yokohama but is more expensive than Singapore, Bangkok and Haiphong.

## (2) Port Charges

Philippine port charges are relatively competitive and are cheaper than most Asian ports. Only Hong Kong port and South China ports is cheaper than Manila and Cebu ports.

# 6.2.5 Domestic Container Transport by Vessel Type

## (1) General

The volume of domestic containers in future will depend on whether international container gateway ports **in** Visayas and Mindanao will be established or not. The domestic container volume will be higher if these gateway ports are not established (without case) and lower if they are (with case). The reason for this is that foreign containers have to be imported to/exported from Manila port and transported to/from Visayas and Mindanao as domestic containers in the without case. The Study Team proposes that international container gateway ports be established in Visayas and Mindanao.

Domestic containers between major ports are transported by long distance RO/RO ferry vessels and conventional container vessels. "Long distance" stands for an over-12-hours voyage. The ratio of container volume carried by RO/RO vessels to that by LO/LO vessels is now about 6 to 4. It is forecast that this ratio will be almost equal (5:5) in 2024 in the with case. (However, in the without case the ratio will change drastically to 3 to 7.)

LO/LO container vessels in the Philippines usually use deck cranes because quay cranes such as gantry cranes and mobile cranes have not been installed at major ports. PPA has a plan to install quay cranes at major ports until 2005-06 in response to requests from shipping companies.

(2) Forecast of RO/RO Ferry Vessel Demand

1) Present Capacity of RO/RO Ferry Vessel

According to the calculations based on "Inter-island Shipping Schedule", total frequency of RO/RO ferry vessel is 31 services per week or 1,612 services per year. Annual container transport volume is 483,600 TEUs and the number of annual passenger embarkation is 6,609,200 persons.

2) Forecast of Passenger and Containers by RO/RO Ferry Vessel

It is forecast that the domestic passengers and containers in 2009 and 2024 would become about 1.9 times more and about 4.0 times more respectively compared to 2002. In the Study, it is assumed that long distance RO/RO ferry vessels will continue to increase until the upper limit of domestic passenger demand.

3) Demand of Long Distance RO/RO Ferry Vessel

It is expected that the number of future long distance RO/RO ferry vessels will increase 47 vessels in 2009 and 63 vessels in2024, compared with 28 vessels in 2002.

(3) Demand of future LO/LO Domestic Container Fleet

As to domestic container transport, LO/LO vessels will compete with RO/RO ferries. Transport volume by LO/LO vessels will increase owing to the growth of the future domestic container demand and introduction of fast LO/LO vessels and cargo handling equipment.

It is also expected that the required number of LO/LO vessels carrying container will increase to 60 container vessels in 2009 and 159 container vessels in 2024.



Figure 6.2.1 South East and Kour East 2Asia Container Movement (2001)

(4) Demand of future domestic conventional cargo fleet

It is expected that the required vessel type and number of conventional cargo vessels carrying break bulk cargo will be 520 GRT-500-type vessels (standard tonnage vessel) in 2009 and 533 GRT-700-type vessels in 2024.

#### 6.2.6 Domestic Freight and Passenger Rate

#### (1) Domestic Container Freight by Transport Mode

Surface freight rates for domestic containers are different depending on the operation methods. As to the operation cost and efficiency, LO/LO method is cheaper than RO/RO, although LO/LO method is less efficient than RO/RO method because LO/LO takes longer time for navigation and cargo handling. At present, RO/RO method occupies about 60% of the domestic container transportation.

Destination	Conven	tional Type C	ontainer Vessel	RO/RO Ferry Type Vessel		e Vessel			
Port	10'	20'	Remarks	10'	20'	Remarks			
Cebu	Ps 8,000	Ps 16,000		Ps 12,250	Ps 24,560	Trucking			
Cagayan De Oro	Ps 9.600	Ps 19,170	Trucking charge	Ps 14,730	Ps 29,464	charge			
Iloilo	Ps 7,300	Ps 14,600	includes inland	Ps 11,230	Ps 22,450	includes			
Dumaguete	Ps 8,660	Ps 17,320	transportation	Ps 12,300	Ps 24,610	inland			
Surigao	Ps 9,050	Ps 18,160	cost in the urban	Ps 13,960	Ps 27,910	transportation			
Davao	Ps 13,100	Ps 26,200	area of round	Ps 20,590	Ps 41,180	cost in the			
G, Santos	Ps 11,870	Ps 23,730	trip	Ps 18,460	Ps 36,910	urban area of			
Zamboanga	Ps 9,600	Ps 19,900		Ps 15,290	Ps 30,570	round trip			

Table 6.2.4Domestic Container Freight Rate on 2003 June

Note: a) Transit time is also dependent on routing of vessel.

b) Standard tariff depends on commodity class (C-Class for lowest and A-Class for highest). A 10 footer is half the rate of a 20 footer rate while a 40 footer is twice the rate of a 20 footer.

c) Pricing of container trucking charge is expressed in the accumulation of units cost per kilo meters.

d) Comparison of all water transport and land / RO/RO vessels compound container transport basic charge

Source: Domestic Shipping Company

#### (2) Comparison of All Water and Sea/Land Combined Transport Freight Rate

From the viewpoint of transport rate charged from origin to destination, both transport methods are nearly same and in competition. Customers choose either based on the distance, transit time or the kind of cargo.

(3) Domestic Container Fare carried by Truck

Fare of domestic container carried by truck is almost proportional to transport distance. In case that transport distance is within 100 km, unit cost per km is nearly 280 pesos. In case of longer distance over 500 km, it is cheaper than 80 peso/km, while, in case of shorter distance, it is higher.

## (4) Passenger Fare

In the Philippines, an archipelago country, long distance passengers are generally transported by long distance RO/RO ferry, long distance bus and ferry, and airplane. Comparison of fares among them shows that airplane is most expensive and that long distance RO/RO ferry follows. Long distance bus and ferry is the cheapest transport way.

However, bus passengers have to sit in a narrow seat for many hours. On the contrary, RO/RO ferry passenger can move freely or even lie on the floor and its fare includes meal cost. Therefore many passengers prefer long distance RO/RO ferry to long distance bus and ferry. In the future, as individual income will increase, passenger will select airplane more than now.

### 6.3 Transport Fleet

### 6.3.1 World Fleet

### (1) Container fleet

As larger container vessels go into service on trunk routes such as Far East - Europe and Far East - Trans-Pacific, the container vessels transferred from trunk routes are transferred to North / South routes and more regional routes. Feeder vessels will also be larger in the future. It is expected that the largest container vessel coming to Philippine ports will be 3,000 - 3,500 TEUs class vessel.

### (2) Passenger Fleet

Currently there is no international liner route by passenger vessel due to the rapid development of air routes. However, cruising vessels are being seasonally operated at tourist resorts all around the world.

Several passenger vessels call at domestic tourist resort ports in the Philippines every year on Visayas tourist (Cebu, Tagbilaran, and Bacolod) spots ports.

## 6.3.2 Domestic Fleet in the Philippines

## (1) Present Domestic Fleet

In general, Philippine vessels are old because a good many used vessels have been purchased from Japan. Vessels can generally operate economically for a twenty year period. In addition, it is advisable that passenger high-speed boats and ferry vessels be renewed within a certain period of time for safety reasons. In order to ensure that defective vessels are decommissioned, reinforcement of vessel inspection, obligatory procurement of safety equipment and preferential tax treatment in accordance with the usage period of a vessel should be considered.

Vessel size in the Philippines is very small. Vessels of less than 100 tons account for nearly 50% of the total.

## (2) Future Domestic Fleet

Small and obsolete old type vessels are presently operating as container and conventional cargo vessels. However, as the amount of transport cargo increases, adoption of large capacity vessels and modernization maritime transport business should be actively pursued.

For small vessel of less than 1,000 ton, the Philippines should take advantage of its technical partnership with Japan, its relatively cheap labor, and low-priced steel from China or Russia to build new vessels.

As for short distance passenger and cargo transport, ferry vessels will continue to play an important role in cargo transport and fast crafts will become the predominant means for passenger transport. People who enjoy a higher standard of living than at present will prefer a fast craft to a ferry vessel with low speed.

### (3) Standard Design of Domestic Fleet

Standard design of domestic fleet should be adopted to raise the efficiency of construction, management and operation of a port. This standardization will contribute to reduce the fleet investment costs and maintenance costs.

### (4) Future Procurement of Domestic Fleet

1) Necessity of Planned Shipbuilding by Shipping Companies

For sound development of the shipbuilding industry in the Philippines, the government must

examine the plan carefully. Based on fleet investment plans drawn up annually and submitted by shipping companies, the government formulates an integrated plan. In some cases, the government may change that vessel sizes be changed to make the fleet as uniform as possible. The government should also make it easier for shipping companies to obtain a low interest loan from DBP and private financial institutions.

## 2) Selection of the proper vessel type

Selecting the proper vessel type is another fundamental factor. After examining the distance and the navigation conditions of a transport route, the optimal vessel type can be identified. Through this procedure, expenses such as shipbuilding cost and operation cost, which are reflected in the overall transport cost, can be curtailed.

# Chapter 7 Navigation Safety

# 7.1 Present Situation

# 7.1.1 Maritime Accidents and Rescue Activity

# (1) Outline

According to the Maritime Incident Report 1995-2002 by Philippine Coast Guard, there were 1300 maritime accidents during the eight years from 1995 to 2002. And one thousand seven hundred and twenty two (1,722) people died or went missing.

# (2) Types of Maritime Accidents

According to another report compiled based on the official record of the PCG's Board of Marine Inquiry and Marine Protest, 16.6% of the total accidents that were recorded for the past thirty three years (1970-2003) involved sinking. It could also be noted that the lack of vessel traffic management and aids to navigation such as sea lanes, lighthouses and beacons contributed to the high rate of traffic related accidents namely collision (11.3%), ramming (10%), and allision (6.2%). In addition, harsh weather conditions and rough sea contributed to the high incidence of capsizing and grounding which comprise 19.1% and 13.8% of the total recorded accidents respectively.

(3) Maritime Accident by Ships Type

According to the same report, within the 33-year period from 1970 to 2003, Banca boat and cargo vessels were involved in the greatest number of accidents, comprising 24.9% and 19.3% of the total recorded accidents respectively.

(4) Cause of Maritime Accidents

It can be noted that natural causes such as typhoons, bad weather and rough sea conditions were the main causes of maritime accidents, comprising  $\mathfrak{F}.4\%$  of the total incidents recorded. Accidents caused by human error were also predominant, comprising  $\mathfrak{F}.5\%$  of all the recorded accidents. Purely accidental cases, where no one is at fault, likewise comprised a large part (15.7%) of the accidents.

Remodeled second-hand vessels are in service and take a lot of passengers on board. In the event of inclement weather (e.g. typhoons) or crew error, these vessels are prone to sink easily due to their aged hull and instability. Coupled with the inadequate rescue system, accidents involving these vessels may result in loss of life.

#### (5) Location of Marine Accidents

Maritime accidents were heavily concentrated in 9 areas and provinces namely Cebu Pier (22.3%), Zamboanga del Sur (10.4%), Batangas (10.2%), Mindoro Occidental (7.3%), Caticlan-Boracay (4.9%), Palawan (3.8%), Pasig River (2.6%), Manila North Harbor (2.6%), and Manila South Harbor (2.6%).

These areas are characterized as having high concentrations of vessel traffic.

There was also a heavy concentration of maritime accidents along the Manila Bay and Pasig River, particularly in the vicinities of Bataan, Cavite, Padancan and Delpan Bridge. Heavy traffic of vessels and the absence of navigational aids such as sea markers, buoys and sea lanes led to several traffic-related accidents such as collision, allision and ramming. Also, ignorance of existing navigation rules often leads to erroneous maneuvering and miscalculations.

(6) Search and Rescue Activities (SAR)

The PCG is responsible for search and rescue activities involving life and property at sea when maritime accident occurs. As of August 2003, the PCG has eleven (11) vessels. Ten (10) of them are in operation. As of July 2003, PCG has five (5) aircraft. Three (3) of them are operating. However, the actual search and rescue operations has been undertaken mainly by the Philippine Navy and PCG Auxiliary. Assisting the PCG in conducting maritime SAR is the Philippine Coast Guard Auxiliary (PCGA), which is a non-governmental organization composed of ship/SAR facilities owners, doctors, nurses and other professionals who volunteered to help the PCG in the promotion of safety of life and property at sea as well as in the protection of our marine environment. At times the PCG conducts SAR operations in cooperation with the Philippine Navy to optimize utilization of government assets for such operation. In addition, PCG collects information on and investigates the causes of maritime accidents.

### 7.1.2 Aids to Navigation

#### (1) Present Condition

Securing safety of marine traffic is one of the most important matters for the Philippine Government. Therefore the Government is promoting integrated countermeasures to ensure maritime safety. As one of the countermeasures, the Government is now implementing the **Maritime Safety Improvement Project** whose main aim is to set up navigation aids such as lighthouses and beacons.

As of 31 December 2003, the Philippine Coast Guard (PCG) operates and manages a total number of 564 ATON facilities and equipment including 516 lighthouses / light stations / beacons and 48 buoys. At present there are nearly 300 lighthouses that were constructed during Spanish and the USA

occupation periods. Although these old types of ATON were already upgraded or modernized to meet current standards and specifications, total number of ATON facilities is still insufficient as per standard set by IALA. Although the Philippine Government has several ongoing projects to address this insufficiency, GOP has to puts emphasis on the development of navigation aids by foreign loan for some time in the future.

## (2) Navigation Aids Development Project

The target of the Philippine Government is to install at least 900 new navigation aids in the near future. However it is not clear if the Government will be able to realize this or not because the Government has to rely on foreign loans for the most part.

As of 31 December 2003, the operational efficiency rate of all PCG ATON facilities has been recorded at 95.35%, however the operation rate of navigation aids is still lower than that recommended by the International Association Lighthouse Authority (IALA) and it should be raised. The following three items are indispensable for increasing the operation rate. (The lower limit of operation rate recommended by IALA is 99.99%.)

- 1) Periodical renewal of aged equipment
- 2) Appropriate operation and maintenance of equipment
- 3) Periodical change of consumable parts and supplement of spare parts

### (3) Navigation Map

NAMRIA-CGSD (Department of Environment & Natural Resources, National Mapping and Resource Information Authority, Coast and Geodetic Survey Department) is responsible for making navigation maps and has published 168 paper navigation maps as of February 2002. These maps cover almost all coastlines of the Philippines except a part of small islands, of which scale are one hundred thousandth (1/100,000) and two hundred thousandth (1/200,000). In addition, port and anchorage maps (scale: 1/10,000) are also published for major ports including Ports of Manila, Cebu, Davao and so on. But these maps have many problems in terms of accuracy. The problems are:

- The numerical values which were recorded in the original navigation maps made by the USA are used without conversion of the unit
- Black and white print
- No sounding has been carried out since 1996
- The data on navigation maps are quite old

The Government of the Philippines purchased two sounding vessels by loan from Spain and started

sounding works. However, it lacks the funds to purchase oils for vessels and thus the revision of navigation maps might be postponed.

Technology transfer from Japan for making electronic navigation maps is on going. The first electronic navigation map is to be pub

## 7.1.3 Organization

### (1) Philippine Coast Guard

The PCG remains tasked with the maintenance and upkeep of Philippine lighthouses and all aides to navigation. The PCG is also the implementing arm of the MARINA for the latter's (MARINA's) issued Memorandum Circular on all matters regarding the shipping industry. Its power to penalize and fine are administrative in nature and are limited to licensed Filipino seafarers and ship owners. Today, the central mission of PCG is to promote safety of life and property at sea, safeguard the marine environment and resources, enforce all applicable maritime laws and undertake other activities in support of the DOTC mission

The functions of PCG are as follows.

- Maritime Safety Administration (MARAD) includes the enforcement of vessel safety regulations, port state control, type approval of life saving appliances and firefighting equipment and accreditation of their manufacturers/suppliers/servicing stations, investigation, administration of the removal of sunken derelicts and other hazards to navigation and so on. (PCG's function of Maritime Safety Administration is a deputized function from MARINA)
- Maritime Search and Rescue (MARSAR) covers the establishment, operation and maintenance of search and rescue equipment and facilities, monitoring and guarding of distress frequencies, obtaining information on maritime safety and distress incidents and so forth.
- 3) Marine Environmental Protection (MAREP) includes the prevention, mitigation and control of marine pollution, scientific research and control operations and enhancement of PCG capability to respond to oil spills and other types of marine pollution.
- 4) Maritime Law Enforcement (MARLEN) refers to the enforcement of all applicable laws, rules and regulations pertinent to maritime shipping, immigration, quarantine, fisheries and such other areas of national interest upon request of appropriate authorities or as deputized by other government agencies to the PCG.
- 5) Maritime Operations (MAROPS) includes the conduct of maritime patrol and security operations of ports, harbors and coastal waters, control of shipping, maritime communications and important port facilities in times of emergency, limited sealift operations, and public affairs to include the administration of the CG Auxiliary and other volunteer groups.

Since 1994, MARINA had been the sole governmental entity responsible for vessel inspection in the

Philippines, however in 1998, in order to strengthening the safety of life and property at sea, PCG was deputized to undertake both function of vessels inspection and issuing seafarers license by D.O.98-1180. After that although MARINA has continuously been legally the sole government entity responsible for vessel inspection, PCG has been inspecting vessels in operation to improve safety at sea. In other words MARINA makes good use of PCG's staff and facilities for vessels inspection under the responsibility of MARINA.

As a civilian unit, with the foregoing functions, the PCG has been successful in increasing its assets and upgrading its facilities and equipment through foreign grants, aid and loans.

# (2) MARINA (Maritime Industry Authority)

MARINA is responsible for all aspects of safety for ships, especially for hull (hull structure). In case a vessel is newly built, purchased or remodeled, MARINA inspects the hull structure from the viewpoint of safety before the vessel goes into service. It is said that aged vessels purchased from Japan occupy nearly 80% of all vessels more than 500 gross tonnage, which are classified as large vessels in the Philippines. Moreover the vessels are remodeled for increasing passenger and cargo capacities in many cases. Therefore MARINA bears a heavy responsibility when it inspects such remodeled vessels.

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#### 7.2 Navigation Safety Measures

#### 7.2.1 Present Condition

At present PCG is deputized to undertake periodical inspections of the vessels in service. Under the system, PCG is obliged to inform the result of the periodical inspection to MARINA. But it has been said that, PCG does not always inform the result to MARINA. However, according to PCG, sometimes problems crop up in the course of implementing these deputized functions, but the PCG and MARINA maintain close coordination and cooperation to rectify them. At present, both agencies are continually evaluating the procedures and policies regarding the deputization in order to further improve the enforcement of maritime safety law in the Philippines.

Meanwhile, MARINA recommends that the strength of vessels more than 300 gross tonnage be certified according to strict inspection such as that by Lloyds register, but actually MARINA also allows vessels to be certified based on more lenient inspections. To safeguard lives and property at sea, MARINA should use its authority and introduce strict controls and systems.

In order to promote a sound shipping industry and reduce the number of maritime accidents and loss of lives and property at sea, strict regulations such as a restrictive ban on importation of overage ships or ship's conversion might be necessary.

#### 7.2.2 Analysis of Causes of Maritime Transport Accidents

Analyzing the causes of maritime accidents is quite important for improving maritime transport safety. Philippine statistics on maritime accidents indicate the type, cause, ship type, location and the number of accidents. However, records are incomplete because all accidents are not necessarily reported to PCG. PCG should make accurate and comprehensive reports on maritime accidents and have the branch offices submit them to the head office periodically.

Next, causes of the accidents should be studied carefully. Then countermeasures can be considered. In addition, the government has to impose a duty on people to report all types of maritime accident to PCG, even if they seem small or inconsequential.

#### 7.2.3 Navigation Safety Measures

The measures for increasing navigation safety are as follows.

(1) Development of Aids to Navigation

Due to budget constraint, only a small number of aids to navigation has been installed so far. Prioritized development of aids to navigation should be done taking into account of limited budget.

## (2) Publication of Navigation Map

Navigation maps in the Philippines are inaccurate and unsatisfactory. Making navigation maps over dangerous waters should be given high priority.

## (3) Weather Forecast

Reliable weather forecast information, which has nor been provided by the Philippine government so far, needs to be available in the Philippines.

(4) Establishment of Vessel Traffic Control Center

Thee are many congested sea areas and narrow passages/channels in the Philippine waters. Vessel Traffic Control Centers are indispensable for reducing the number of maritime accidents

## (5) Vessel Inspection

Although MARINA and PCG have already carried out vessel inspection in the Philippines, their coordination is not always sufficient. Unified/coordinated inspection should be studied.

(6) Enforcement of Rules and Regulations

Large number of maritime accidents in the Philippines results from violation of rules and regulations of maritime transportation. It is important for shipping operators to obey the rules and regulations of maritime transportation in order to decrease the number of maritime accidents and casualties in the Philippines.

## (7) Installation of Communication Devices

Communication devices are indispensable, in particular, at the initial stage of accidents. Shipping operator has to call in the responsible agency with information on the location of ships, type of accident, number of passengers/crew members and volume of cargoes.

#### Chapter 8 Technical Standards for Port Planning

#### 8.1 Present Situation

In the Philippines, many kinds of manuals, codes and standards are used for detailed design, civil/structural and architectural works and the construction of other facilities. Some of them were established in foreign countries.

There is a guide for port planning and a design manual for port facilities entitled "Guide to Port Planning, 1995 (PPA)" and "Design manual for Port Facilities in the Philippine Ports Authority (1995)".

However, there is no technical standard related to port planning with regulatory power in the Philippines. In order to secure the safety at ports and to invest more efficiently with proper maintenance of facilities, it is necessary to establish a technical standard with regulatory power.

#### 8.2 Main Items of the Technical Standards for Planning in the Philippines

The following items should be included in the technical standards for planning in the Philippines. It is proposed that the technical standards for planning should be issued as a low or a government order to promote safe and smooth activities at ports.

#### 8.2.1 General items

Port and harbor planning policies and the methods of determining port capacities and scale and layout of port and harbor facilities should be provided as general items.

#### (1) Policies of port and harbor planning

In order that the policies for the development, utilization, and preservation of ports and harbors as well as the preservation of areas adjacent to ports and harbors might be appropriate, policies relating to the matters given as follows shall be specified in uniform and comprehensive fashion, while the target year of the port plan shall also be specified.

- 1) The position and function of the port and harbor
- 2) The development and use of port and harbor facilities
- 3) The use of land in the port and harbor
- 4) The development and preservation of the port and harbor environment
- 5) Maintaining the safety of the port and harbor

6) Conservation of areas adjacent to the port and harbor

#### (2) Port capacities

In order that matters relating to the volume of cargo that can be handled and other capacities of the port and harbor might be appropriate in view of natural conditions, the economic and social conditions of the port and harbor and its surrounding areas, the functions of the port and harbor, etc., the volume of cargo to be handled, the number of passengers embarking and disembarking, and other capacities of the port and harbor in the target year of the port and harbor plan shall be specified.

(3) Scale and layout of port and harbor facilities

In order that matters relating to the scale and layout of the port and harbor facilities in accordance with the capacities of the port and harbor might be appropriate to the capacities of the port and harbor, the scale and layout of the port and harbor facilities shall be specified in a uniform and comprehensive fashion.

#### 8.2.2 Planning conditions

When making a port development plan, planning conditions such as socio-economic conditions, natural conditions, ship dimensions, present port facilities and cargo throughput need to be grasped properly.

(1) Socio-economic conditions

- 1) Socio-economic framework
- 2) Utilization of land and waters
- 3) Transportation
- 4) Marine activities
- 5) Environment
- 6) Related plan

(2) Natural conditions

- 1) Meteorological conditions
- 2) Hydrographic conditions
- 3) Inflow of rivers
- 4) Geographical conditions
- 5) Littoral drift
- 6) Geological conditions
- 7) Earthquake
- 8) Environment

- (3) Dimensions of target vessels
- (4) Present port facilities and cargo throughput

#### 8.2.3 Port and harbor facilities

#### (1) Water facilities

The scale and layout of water facilities shall be specified such that the functions of the port and harbor can be adequately maintained and moreover that vessels can use them safely and smoothly, in view of the types, forms and numbers of vessels making use of the water facilities, the conditions of use of mooring facilities, the level of calmness of the water areas, and so on.

- 1) Navigation channel
- 2) Basins

Specific provisions of each facility are referred in the Main Report.

#### (2) Protective facilities

The scale and layout of protective facilities shall be specified such that their functions can be adequately fulfilled in view of various conditions such as those of the use of water facilities and mooring facilities protected by the protective facilities. Breakwaters shall be appropriately located so that the calmness conditions of channels and basins will be satisfied.

#### (3) Mooring facilities

The scale and layout of mooring facilities shall be specified such that safe and effective operation can be made of the functions of the port and harbor, safe and smooth operation of mooring facilities and other proper management can be sufficiently maintained, in view of the types, forms, and numbers of the vessels using the mooring facilities, the types and volume of cargo handled, the cargo handling system, and the conditions of use of the water facilities.

Specific provisions of each facility are referred in the Main Report. Special attention should be paid to the crown height of the mooring facilities. The crown of mooring facilities shall be set at an appropriate height that is suitable for the main dimensions of the target vessel and the natural conditions of the surrounding. The tidal level that is used as the datum in the determination of the crown height shall be the mean monthly-highest water level.

(4) Passenger facilities, cargo handling facilities, and storage facilities

The scale and placement of sites for passenger facilities shall be such that passengers can use them safely and smoothly, in view of the numbers of passengers embarking and disembarking, and others. The scale and placement of cargo handling facilities and storage facilities shall be specified such that they can adequately fulfill their functions in view of the types and volumes of cargo handled, the conditions of use of mooring facilities and port transport facilities, and so on. Specific provisions of each facility are referred in the Main Report.

(5) Special Purpose Facilities

1) Container terminals (for LO/LO ships)

A container terminal shall be planned with due consideration for factors such as the trend of container transport, the economic activities of its hinterland, inter-modal transport conditions, and the amount of available land. To ensure the smooth and efficient container loading / unloading and storage of containers, a container terminal needs a sufficiently wide area in order for its various facilities to be properly arranged.

#### 2) Ferry (RO/RO) terminals

A ferry terminal shall be planned with particular attention paid to both structural stability and safety of users, because a ferry terminal is generally utilized simultaneously by both passengers and vehicles, day and night.

When the tidal range at a port is large and/or many kinds of RO/RO vessels are moored to a berth, installation of a slope or a movable ramp should be considered. A movable ramp is generally constructed at a place where bow-ramp-way of a RO/RO ferry touches. Dimensions of a movable ramp should be decided considering the width and inclination of vehicle ramp.

## 8.2.4 Facilities for small ships

The following items are applied to facilities for small ships of less than 50GRT.

(1) Water facilities

In the case many small ships like fishery boat leave or arrive in a port collectively in a short period of time, navigation channel width shall be determined appropriately. In general 5B to 8B is adopted. (B is width of a ship.)

Basin for small ships shall be determined appropriately considering mooring and ship turning methods.



Figure 8.2.1 Basin for Mooring (Lateral mooring)



Figure 8.2.2 Basin for Mooring (Longitudinal mooring)



Figure 8.2.3 Basin for Turning (Lateral mooring)



Figure 8.2.4 Basin for Turning (Longitudinal mooring)

The threshold wave height for cargo handling for basins in front of mooring facilities for small ships is basically 0.3m. However huge cost is needed to construct protective facility in order to control the threshold wave height under 0.3m.

Therefore priority should not be put on calmness in the Philippines for the time being. But port facility has to be durable enough against big waves.

## (2) Protective facilities

When selecting a port site for small ships, calm sea area where protective facilities are not needed such as sheltered cove should be sought out, because the high cost of protective facilities can be detrimental to the financial viability of a project. If calm sea area can not be found, it will be necessary to look for ways to reduce the construction cost. For example, mooring facilities could be constructed just behind a breakwater.

## (3) Mooring facilities

## 1) Crown height

The crown of mooring facilities shall be set at an appropriate height that is suitable for the main dimensions of the target vessel and the natural conditions of the surrounding area. The tidal level that is used as the datum in the determination of the crown height shall be the mean monthly-highest water level. Crown height of a mooring facility for small vessels is +0.5m to +1.0m.

#### 2) Structural types

The structural types of mooring facilities shall be determined by considering their characteristics and examining the following matters:

- \* Natural conditions
- \* Usage conditions
- \* Conditions of construction works
- \* Construction and maintenance cost
- \* Employment of different structural types in a port

In the Philippines, open-type wharf on vertical piles and gravity type wharf are widely used. Floating piers (pontoons) are sometimes adopted for high-speed boats. A slipway is also constructed in a port for small vessels.

a) Floating pier

Floating piers shall be so planned that they are stable and safe during the handling and loading / unloading of cargoes and the embarking / disembarking of passengers and vehicles and that they have sufficient durability.

Steel is economical for smaller floating piers, while reinforced concrete is economical for larger ones. Hybrid structures are usually adopted for middle size floating piers.

There are two kinds of mooring systems for floating piers; mooring chains and anchors, and piers and rollers. These days, piers and rollers mooring system is widely used. Non-slip coating should be placed on the upper surface of a floating body.

#### b) Slipway

A slipway is a facility used to take ships up to the shore and down to the sea for such purposes as repair, protection from storm waves and storm surges, and land storage of ships during winter.

Locations of slipways shall be determined in such a way that the following requirements are satisfied:

- \* The front water area is clam
- \* The front water area is free from siltation or scouring
- \* Navigation and anchorage of other ships are not hindered
- \* There is adequate space in the background for the work for ship lifting and

lowering as well as for ship storage

The reference depth of water in front of the slipway is the sum of the draft of the ship being considered and a margin of 0.5m.

- The gradient of slipway shall be determined appropriately in consideration of the shape of ships that are to use the slipway, the characteristics of foundation, and the tidal range, so that the lifting of ships can be performed smoothly.
- When the slope is to be utilized by small ships, it is desirable to design the slope as having a single gradient. A slope inclination of 1:6 to 1:12 may be used.

The basin in front of a slipway shall have an appropriate area that allows a smooth operation of ship lifting and /or lowering without damage to the ships, and a safe and smooth navigation of nearby ships.

(4) Other facilities

## 1) Safety facilities

The mooring facilities shall be provided with a skirt guard or other safety equipment to hold small ships from moving under piled piers. Safety equipment other than the skirt guard includes fences, ropes or similar equipment, and signs showing safety passage for pedestrians.

#### 2) Stairways and ladders

When constructing a port for small ships in a sea which has large tidal differences, stairway should be installed at certain intervals. The width of stairways shall be more than 75cm, the height 20cm and the depth 30cm. Surface of concrete shall be rough.

Ladders are used at emergency. However they are usually installed at the edge and / or the root of a mooring facility so that they do not hinder cargo handling and passenger embarkation / disembarkation.

The standard dimensions of ladders are 45cm in width and 30cm in space. It is advisable that the lower end of ladders go down under low water level and that the upper end go up to 30cm over the crown height of a mooring facility and enter into 45cm of the surface line of a mooring facility.

Ladders should be planned with a design load of 1 KN per meter of ladder length for both horizontal and vertical directions.

## 3) Curbing

The structure, shape, layout, and material of curbing shall be planned appropriately in such a way that the safety of users in vehicles will be ensured and cargo handling work will not hindered, in consideration of the use and structural characteristics of the mooring facility.

The standard interval between two curbings is 30cm.

#### Chapter 9 Current Port Facilities and Existing Development Studies/Plans

#### 9.1 Current Situation of Port Facilities and their Usage

The berths length is one of the basic information to know the scale of port. Generally speaking, a berth whose depth is less than 8m is mainly used for domestic transportation while a berth whose depth is more than 8m can be used for international transportation. 59% of existing berth length at major public ports in the Philippines have a depth of less than 8m depth while the shares of berth whose depth are 8-10m, 10-12m and 12-14m are 10%, 17% and 14% respectively.

The distribution of berths is, of course, not homogenous within the country. The total berth length in NCR is the longest followed by that in Region VII (See Figure 9.1.1).



\* Source: JICA Study Team

Figure 9.1.1 Berth Length of Public Ports by Region and Depth

With regard to ship calls, the number of calling at public ports in 2002 is more than double comparing to that at private ports. The average size of foreign vessels is more than ten thousand GRT while that of the domestic vessels is less than one thousand. (Table 9.1.1)

		N	o of ship call	s	GR	T/Ship		
		Total	Domestic	Foreign	Domestic	Foreign		
Public ports	Berth	200,857	195,893	4,964	710	11.277		
1		(98.8%)	(99.2%)	(84.1%)	/18	11,377		
	Anchorage	2,540	1,602	938	510	10 101		
	(1.2	(1.2%)	(0.8%)	(15.9%)	519	10,191		
	Total/Ave	(100%)	(100%)	(100%)	716	11,188		
Private ports	Berth	81,616	77,850	3,766	47.4	12.079		
-		(98.9%)	(98.9%)	(98.3%)	474	12,078		
	Anchorage	945	878	67	1 1 4 0	20.267		
	0	(1.1%)	(1.1%)	(1.7%)	1,148	20,367		
	Total/Ave	(100%)	(100%)	(100%)	482	12,223		
Grand total	•	285,958	276.223	9.735	649	11.596		

Table 9.1.1 Present Situation of Ship Call (2002)

\*Source: PPA statistics

## 9.2 Studies and Projects on Port Developments

#### 9.2.1 Overview

The studies and projects related to port development are listed below. Figure 9.2.1 categorizes them into three types, namely, policy studies on all transportation modes in the Philippines, port development studies and individual port development projects.

	Policy studies on all transportation mode	s in the Philippines
Year	Port development s	tudies
		Port development projects
1961 -1979		Port Project (1961, WB)
		Development of Port of Catabato (1973, WB)
		Port Project 2 (1973, WB, CDO Port, Gen. Santos
		Port)
	Manila Port (1979, ADF	3, Dev't of Int'l container berths, Studies on domestic
	container berths)	
1980 - 1989		Port Project 3 (1980, WB)
		Strengthening cargo handling facilities (1980, OECF)
	National Transport Planning Project (1982, WB)	
	Studies on the developm	ent of Port of Irene (1982, JICA)
	Studies on the developm	ent of Port of San Fernando (1983, JICA)
	Studies on the developm	ent of Port of Batangas (1984, JICA)
	Studies on the developm	ent of South Harbor at Manila Port (1986, JICA)
		Port Project 4 (1987, WB, 16 ports)
		Second Manila Port (1987, ADB)
		Strengthening cargo handling facilities 2 (1988, OECF)
	Studies on Feeder ports	(1988, ADB: 39 ports)
	Studies on Local Ports (	1988, USAID, 41 ports)
	Studies on Feeder ports	(KFW, 5 ports)
		Nationwide Feeder Ports Development Program
		(NFPDP, 1988, OECF: 27 ports)
1991		Batangas Port Development Project (1991, JBIC)
		Maritime safety project (1991, JBIC)
1992	Nationwide roll-on roll-	off transport system development study (1992, JICA)
1994	The greater capital regi	on integrated port development study in the republic of the
	Philippines (1994, JICA	)

		Studies on Subic Free trad	e port (1994, WB)
1995		The Philippine Ports Autho	prity 25 -year Development Plan (1995, PPA)
1996/7	Philippine Transport Strat	tegy Study (PTSS, 19%/7,	ADB)
			Social Reform Related Feeder Ports Development Project (SRRFPDP, OECF, 1997: 36 ports)
1998	The Philippine National Do government, so called ''Pla	evelopment Plan (Directio m 21'')	ns for the 21 <sup>st</sup> Century, 1998, Philippine
1998			Batangas Port Development Project II (1998, JBIC)
1999	Transport Infrastructure a	and Capacity Developmen	t (TICD, 1999, ADB)
1999		The Study on the Subic Bay	Port Master Plan (1999, JICA)
2000		Master plan forfeeder por Development Project(SRR	t development in Social Reform Related Feeder Ports FDP, 2000, JBIC)
2000		Implementation program fo Project for the Trans Visay	or the Roll-on/Roll-off Ferry Network Development as Intermodal Transport Network (2000/2002, DOTC)
1999&2001	Medium Term Philippine	Development Plan (MTPI	0P, 1999&2001, Philippine government)
2000			Subic Bay Port Development Project (2000, JBIC)
2000			Mindanao Container Terminal Development Project (2000, JBIC)
2001		Preliminary study for Roll- (2001, DOTC)	on Roll-off system development in the Philippines
2001		Bohol ferry link and termin	al feasibility study Phase I (2001, DOTC)
2002		The Cebu Integrated Port I	Development Plan (2002, JICA)

\* Source: JICA Study Team

Figure 9.2.1 Existing Studies and Projects related to Port Development

The necessities not only of implementation of the nationwidely coordinated port development but also of modification of the port administration were asserted repeatedly in policy studied / policies on nationwide transport development after 1990s (i.e. PTSS in 1996/7, Plan 21 in 1998, TICD in 1999 and MTPDP in 1999 & 2001).

#### 9.2.2 Existing Projects on Port Development

Each port management public corporation and related organizations have their own future port development plan. Some of them are, of course, based on the existing port(s) development studies. The Study Team puts together the major port development projects in Table 9.2.1.

# Table 9.2.1 Existing Port Development Projects

	-	-	-	Present (200	02)	-			Short terr	m (2009)	<u>]</u>			-							Long Terr	n (2024)	)
Org.	Name of Plan	Name of Port	Kinds of services	No of bert Length(m	) Depth(m)	2002 2003 2004	2005 2006 2	2007 2008 2009 No of	bert Length(m)	Depth(m) Target (if indicated)	2010 2011 2012	2 2013 2	014 2015	5 2016 201	7 2018 20	19 2020	2021 2022	2 2023 2	2024 No	of bertl	Length(m) De	pth(m)	Target (if indicated)
PPA	Development of MICT in Major port development plan of PPA	MICT	International container	5 1,300	0 12-14			1B 300m (-14)	6 1,600	12-14										6	1,600	12-14	
PPA	South Harbor expansion in Major port development plan of PPA	Manila South Harbor	International container	4 250 350 200	0 14 0 12 0 10			● 1B 250m (-12)	5 250 600 200	14 12 10		1 F	.B 250m ( Pier 5-1,2)	(-14), 1B 2: , deepeninį	50m (-12), 2 g of C1&C2	2B 360m 2 (200m	● (-11) ( re-d from 10 to	evelopn 11)	nent of	9	500 850 560	14 12 11	1.8m TEU + non-container cargo (at 2012): <u>Total</u> <u>15.5m tons</u>
PPA	North Harbor Modernization in Major port development plan of PPA	Manila North Harbor	Domestic container/ multi purpose	5,098	8 4 - 8	Developr 10B 1,13	nent of Termi 0m (-10.5) (t	inal-1: arget: 2012)	3,828 1,130	4 - 8 1.45m 10.5 TEU (Terminal (1.7m -1) TEU at 2012)	Development o	of Termin	nal-2 and 3	3							3,748	10.5	1.7m TEU, 2 m tons non- container cargo (at 2012): <u>Total</u> <u>26.6m tons</u>
PPA	Major port development plan of PPA	Batangas Port	Domestic multi purpose	2 400	0 4 - 8				2 400	4 - 8										2	400	4 - 8	
PPA	Major port development plan of PPA	Batangas Port	International container	0	) .	- 1B: 450m (-13 - 1B: 300r	) n (-13) 37	2B: 350m(-13), 70m(-13)	4 1,470	13	- 3B: 350m (-13) 13), 295m(-13)	3), 400m(	- - 1	3B: 350m 3), 400m(-	(-13), 350n 13)	n(-	•			10	3,615	13	1.15m TEU, 3.3 m tons non-container cargo (at 2012): <u>Total</u> <u>14.5 m tons</u>
PPA	Southern Philippine Port Development Package in Major port development plan of PPA	Iloilo Port (ICPC)	Domestic container/ multi purpose	400	0 10		- 370m (-1	10)	770	10											770	10	0.3m TEU, 3.6 m tons non- container cargo (at 2012): <u>Total</u> <u>6.4 m tons</u>
PPA	Southern Philippine Port Development Package in Major port development plan of PPA	Davao Port	International and Domestic container, multi purpose	/ 820	9 - 10	-3	000m (-10)		1,120												1,120		0.4m TEU + non-container cargo (at 2012): <u>Total 6</u> <u>m tons</u>
PPA	Southern Philippine Port Development Package in Major port development plan of PPA	General Santos Port	International and Domestic container, multi purpose	/ 726	5 10		270m (-10) - 290	0m (-10) (to 2013)	996	10	- 290m (-10) (to 2013)	þ	- 3501	m (-10)							1,636	10	0.25m TEU + non-container cargo (at 2012): <u>Total</u> <u>2.8 m tons</u>
PPA	Southern Philippine Port Development Package in Major port development plan of PPA	Zamboanga Port	International and Domestic container/ multi purpose	500	0 10		- 270m (-10) - 2(	240m (-10) (to 012)	700	10	- 240m (-10)										770	10	0.13m TEU + non-container cargo (at 2012): <u>Total</u> <u>2.1 m tons</u>
PPA	Major port development plan of PPA	Cagayan de Oro	Domestic container/ multi purpose	868	8 10	- 150m (-13) Back up area: to 2005		255m (-13)	868(10) 405(13)	10 - 13	- 255m (-13	3)									868(10) 660(13)	10 - 13	0.2m TEU, 1.3 m tons non- container cargo (at 2012): <u>Total</u> <u>3.3 m tons</u>

				Present	2002)						Short term	(2009)		]													Long T	erm (2024	)
Org.	Name of Plan	Name of Port	Kinds of services	No of bert Length	(m) Depth(m)	2002 2003 2004	2005 20	006 2007	2008 2009	No of bert	Length(m) D	Depth(m)	Target (if indicated)	2010	2011 2	012 201	13 2014	2015 20	016 20	17 2018	2019 20	020 2021	2022	2023	2024 No o	f bertl Le	ength(m)]	Depth(m)	Target (if indicated)
Private		Harbour Centre	e International private cargo Domestic container/ multi purpose		870 10-11.5 280 5-7.5						870 280	10-11.5 5-7.5															870 280	10-11.5 5-7.5	
Poro		Seaport of San Fernando	Internatiola/Domesti multi purpose	ic	700 8.6-15			- Exte	• ention 100m		800	8.6-15															800	8.6-15	
Subic	The Subic bay port master plan	Subic	Internatiola/Domesti multi purpose	ic 1.	323 12-14 411 8-10 117 4-8						1,323 411 117	12-14 8-10 4-8															1,323 411 117	12-14 8-10 4-8	
Subic	The Subic bay port master plan	Subic	International container		0 -	- 1B: 280m ( 2GC	(+13) - 11	B: 280m	(-13), 2GC		560	13					- 280n	1 (-13), 24	GC								840	13	
CEZA	Rehabilitation and Development of Port of Irene	Port of Irene	International container / multipurpose	1	189 7.8-11.8	- 2B: 400m ( Improved ex	(-14) incl isting fac	cility - 1B: 14)	200m (-	3	600	14				3B: 400	9m (-14)										6	1,000	
PIA		Mindanao container terminal	International container	0	0 -	• 300m (-	13), 2GC				300	13	270,000 TEU		100m (	(-13), 20	GC										400	13	500,00 - 550,000 TEU
PIA		Mindanao Bulk terminal	C International multi purpose	0	0 -		- 27	<b>0</b> 70m (-11)			270	11															270	11	
Cebu	Cebu integrated port development plan	Cebu (Existing Container)	International container, multi purpose >> Domesti container in the futhure	c 33	6.5 8.5						258.5	8.5															243	8.5	
Cebu	Cebu integrated port development plan	Cebu (New container)	International container								300	13		• - 2B:	: 600m	(-13) (3(	00m*2),	5GC		- 2 50	● B: 600r C	n (-13) (3	00m x	2),			1,200	13	
Cebu	Cebu integrated port development plan	Cebu (new Internationl multi purpose)	Internation multi purpose											• - 1B	: 190m	. (-10)				- 1	● B: 190n	ı (-10)					131 380	8.5 10	
L	1	1	1		I					1	L		1	1											1	I			I

				H	Present (2002)								Short ter	m (2009)		٦													Long	Гегт (2024)
Org.	Name of Plan	Name of Port	Kinds of services	No of ber	t Length(m) De	epth(m)	2002 2003	3 2004	2005 2006	5 2007	2008	2009	No of bert Length(m)	Depth(m)	Target (if indicated)	2010	201	1 2012	2013	2014 2	2015 20	016 2	017 2018 2019	2020 2021	1 2022	2 2023 2	2024 N	o of bert	Length(m)	Depth(m) Target (if indicated)
Cebu	Cebu integrated port development plan	Cebu (Domestic multi purpose)	Domestic multi purpose		3,972	4 - 7							503 3192	8.5 4 - 8	5								- Rehabiliati	) on/renovati	ion of	existing	berth		450 3191	8.5 5 - 8.5
DOTC	Social Reform Related Feeder Ports Development Project	10 Ports (Package E (2004-2006)	s Feeder Port E )			•							10 Ports (Package E (2004- 2006)																	
DOTC	Trans-Visayas intermodal transport network	17 ports in Visayas area	Ro/Ro					- 17 Ro	/Ro ports c	levelop	ment		17 ports																	
PPA	PPA 25-Year Development Plan (*1) (1995 - 2020, This plan indicates the port capacity in long term.)	Puerto Princesa	a		195	10-12																							<u>773</u>	<u>10-12</u>
PPA	PPA 25-Year Development Plan (1995 - 2020, This plan indicates the port capacity in long term.)	Legaspi			404	4-8																							<u>647</u> (*2)	<u>4-8</u>
PPA	PPA 25-Year Development Plan (1995 - 2020, This plan indicates the port capacity in long term.)	Tabaco			310	8-10																							<u>945</u>	<u>8-10</u>
PPA	PPA 25-Year Development Plan (1995 - 2020, This plan indicates the port capacity in long term.)	Tacloban			622	4-8																							<u>1,549</u> (*3)	<u>4-8</u>
PPA	PPA 25-Year Development Plan (1995 - 2020, This plan indicates the port capacity in long term.)	Dumaguete			358	8-10																							<u>2,073</u> (*4)	<u>8-10</u>
PPA	PPA 25-Year Development Plan (1995 - 2020, This plan indicates the port capacity in long term.)	Tagbilaran			266	4-8																							<u>2,431</u>	<u>4-8</u>
PPA	PPA 25-Year Development Plan (1995 - 2020, This plan indicates the port capacity in long term.)	Iligan			620	8-10																							<u>1.320</u>	<u>8-10</u>
PPA	PPA 25-Year Development Plan (1995 - 2020, This plan indicates the port capacity in long term.)	Nasipit			185	4-8																							<u>3,743</u>	<u>4-8</u>
PPA	PPA 25-Year Development Plan (1995 - 2020, This plan indicates the port capacity in long term.)	Surigao			342	8-10																							<u>1,118</u>	<u>8-10</u>
PPA	PPA 25-Year Development Plan (1995 - 2020, This plan indicates the port capacity in long term.)	Ozamiz			410	4-8																							<u>2,076</u>	<u>4-8</u>
PPA	PPA 25-Year Development Plan (1995 - 2020, This plan indicates the port capacity in long term.)	Jolo			364																								<u>863</u>	

(Note) \*1 PPA 25-Year Development Plan indicates the port capacity in the long term. Thus, the length of berths might not show the plan of investment. \*2 According to the 25 year development plan, there is no capacity over current facilities. This figure is based on the PPA port development plan 2002 \*3 This figure excludes the new port development \*4 Berths in Inner harbour area are not counted because of shallow water.

#### Chapter 10 Master Plan with the Target Year of 2024

#### 10.1 Types of Ports to be Considered in the Master Plan

It is proposed that the government establish the Master Plan of port development for public ports. At the same time, however, the government should also be prepared to monitor, regulate and coordinate with the private sector to grasp the total demands of maritime transportation.

#### 10.2 Proposed Nationwide Maritime Trunk Routes

After examining regional economies, development of economic zones, expected population growth, regional linkages, potential growth areas etc., three kinds of maritime trunk routes are proposed, i.e. the land and intermodal trunk route, the domestic maritime trunk route and areas for international maritime linkage (see Figure 10.2.1).

#### 10.3 Port Classification

The overall evaluation on the importance of an individual port (although a port usually has various functions with varying degrees of importance) is indispensable when coordinating with future plans of other sectors, in particular the road sector. According to the extent to which the port contributes to international/domestic maritime transportation, the notion of port classification is introduced here. In the classification, ports are classified into four types (see Table 10.3.1).

Criteria to be classified as a Gateway port, Principal port or Major port, as of 2001 is proposed in Table 10.3.2. Since the cargo volume of nationwide ports in 2024 will be 3.29 times of that in 2001, the criteria in 2024 is set three times higher than that in 2001. Similarly, the criteria in 2009 is set 1.5 times higher than that in 2001. All Gateway ports, Principal ports and Major ports are listed in Table 10.3.3.

It should be clarified here that criteria in the future is based on the cargo forecasted in this Study. The criteria can be revised according to the future nationwide cargo, the cargo of individual port, etc. Naturally, the number of ports under each type in Table 10.3.3 may increase or decrease.

Regional ports are smaller sized ports in terms of cargo/passenger volume compared to those of Gateway ports, Principal ports and Major ports. It should be stressed, however, that the selective development of a number of small and medium scale ports can not only provide the socio-economic foundation of a region but also can contribute to raising the socio-economic bottom lines nationwide. Thus, it is proposed to develop RO/RO ports for mobility enhancement as well as RO/RO ports

supporting the development of remote areas. A hundred (100) RO/RO ports are expected to carry out the former function in 2024 while 83 RO/RO ports will have the latter role in 2024. Furthermore, it is possible for some small-scale ports without RO/RO facilities to support social reform. This kind of port is also proposed to be developed as a social reform support port. Twenty-two (22) ports will be developed until 2024. In addition, other regional ports will be developed in response to the actual demand.

	Type of port	Functions of ports (The extent to which the port contributes to international/domestic maritime transport)
Intern	ational gateway port	Ports as major "windows" of the country to the world
(Gate	way port)	
Princi (Princ	pal international trade port cipal port)	Highly important ports for <b><u>both</u></b> international <b><u>and</u></b> domestic maritime transport (The ports have at least one dedicated berth for international cargo)
Major	r port (including RO/RO ports for	Important ports for domestic and/or international maritime
major	corridors)	transport
	Major domestic container port	Ports which are important for domestic container transport (Among the Major ports, ports which have container handling dedicated quay side cranes and/or have at least one dedicated berth for long distance RO/RO ferry vessels)
Regio	onal port	All ports not included in above types. Regional ports, which mainly support regional society as maritime transport bases, consist of RO/RO ports for short and middle distance transport (RO/RO ports for mobility enhancement, RO/RO ports for remote islands development), Social reform support ports, etc.

Table 10.3.1Port Classification



Figure 10.2.1 Proposed Maritime Trunk Routes

(3) Areas for International Maritime Linkage

10-3

(1) Land/Intermodal Trunk Route

				Ι	Domestic carg	0
Year	Type of port	Total cargo	International	Do/Do	B, B/B	Containar
			curgo	K0/K0	(exci. Ro/Ro)	Container
	Gateway port	1,000	1,000			
	Principal port	1,000	100			
2001		500				
2001	Major port	200		30		
	wajoi port	200			150	
		200				150
	Gateway port	1,500	1,500			
	Principal port	1,500	150			
2009		750				
(Draft)	Major port	300		45		
	wajoi port	300			225	
		300				225
	Gateway port	3,000	3,000			
	Principal port	3,000	300			
2024		1,500				
(Draft)	Major port	600		90		
	wajor port	600			450	
		600				450

# Table 10.3.2Criteria on Port Classification in 2001, 2009 and 2024<br/>(Gateway Port, Principal Port and Major Port)

(Unit: '000 tons)

100010.5.5 Outeway 1010, 1110 part of the and 114 joint of the in 2001, 2007 and $202$
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Type of port		Name of port	
Type of port	2001	2009 (Tentative)	2024 (Tentative)
Gateway port	Subic, Manila, Cebu	Subic, Manila, Batangas, Cebu, CDO/MCT, Davao	Subic, Manila, Batangas, Cebu, CDO/MCT, Davao
Principal port	CDO/MCT, Iloilo, Davao, General Santos, Zamboanga, San Fernando, Batangas	Iloilo, General Santos, Zamboanga, San Fernando	Iloilo, General Santos, Zamboanga
Major port	Bay/river, Calapan, Pto. Princesa, Tabaco, Legazpi, Matnog, Masbate, Tacloban, Liloan, Dumaguete, Tagbilaran, Surigao, Lipata, Nasipit, Ozamiz, Dapitan	Bay/river, Calapan, Pto. Princesa, Tabaco, Legazpi, Matnog, Masbate, Tacloban, Liloan, Culasi, Dumaguete, Tagbilaran, Surigao, Lipata, Nasipit, Ozamiz, Dapitan, Masao	San Fernando, Bay/river, Calapan, Pto. Princesa, Tabaco, Legazpi, Matnog, Masbate, Tacloban, Palompon, Liloan, Culasi, Dumaguete, Tagbilaran, Surigao, Lipata, Nasipit, Ozamiz, Dapitan, Masao

## 10.4 Long-Term Strategic Port Development Plan

## **10.4.1** Planning Principles

The premise of the long-term strategic port development plan is to carry out the following two missions *concurrently* and *strategically*. The missions are,

- Establishment of fast, economical, reliable and safe maritime transport network accelerating the development of national economy, and
- Formation of maritime transport bases to support regional society.

Under the premise, the principles for the planning of each mission are proposed as follows.

(1) Establishment of Nationwide Maritime Transport Network

In order to formulate nationwide efficient maritime trunk routes (see Figure 10.2.1), the rationale / importance of individual port development should be examined in terms of the following principles.

1) Concentrated Development of Specific International Gateway Bases

Major ports for international container trade can be classified into international hub ports and international gateway ports. To focus exclusively on international hub function might be difficult since the major market for international container cargo in Asia is not located near the Philippines. Instead, it is necessary to intensively develop the international maritime gateway functions, which accept foreign cargo as well as export products for economic development of the Philippines under the international lateral division of labor in the economy. One of the urgent tasks in this country is the development of international container gateway ports at Greater Capital Region (GCR) in order to handle the cargo currently concentrated in Manila across a wider area. Consequently, Manila (MICT, South Harbor), Subic Bay, and Batangas are expected to share the load.

Moreover, in order to promote regional development at the middle and south part of the Philippines as well as to reduce the burden of GCR, the strategic development of international gateways at Visayas area, North Mindanao area and South Mindanao area is required.

2) Improvement of Domestic Container Transport Efficiency

It is estimated that about 60% of domestic container cargo are carried by long distance RO/RO ferry vessels with passengers<sup>\*1</sup> at present while other container cargo is carried by geared vessels. It is expected that transport by RO/RO ferry vessel will continue in the future.

<sup>\*&</sup>lt;sup>1</sup> Long distance passengers stay on board more than twelve hours.

It is forecasted, however, that the increase ratio of container cargo volume will be larger than that of passengers, and as a result, the volume of container cargo carried by non RO/RO ferry will increase. It is forecasted that about half of the containers will be transported by non-RO/RO ferry in 2024. Thus, it is proposed that quayside cranes such as gantry cranes and mobile cranes, which enable more efficient container handling at berths, should be introduced at some major domestic container ports strategically. Consequently, these two different modes for container transport will grow through chasing each other.

## 3) Development of Break Bulk and Bulk Cargo Handling Facilities

While the volume of break bulk cargo will increase steadily in the coming 20 years, bulk cargo will increase rapidly. However, the majority of bulk cargo has been handled at private terminals. On the other hand, almost all break bulk cargo and some bulk cargo has been handled at the same berth in public ports due to limited port facilities. It is expected that this mixed cargo-handling system will continue in many public ports, since cargo-handling volumes are not expected to greatly increase in future.

Thus, it is proposed that the public sector develop "multi-purpose berths" to handle these kinds of cargo in accordance with the demand for ports. Since greater private sector participation is expected, in particular in the field of the improvement of bulk cargo handling operation, public and private partnerships which coordinate/enhance private investment in cargo handling equipments/warehouses should be pursued.

# 4) Port Planning at the Greater Capital Region

In order to meet the cargo demand with minimum negative economic externalities related to land traffic congestion, it is proposed that the expansion of existing ports in Manila be avoided as much as possible for the moment. Thus, the non-consumer goods for NCR such as industrial materials might be handled outside NCR. It is proposed that Subic Bay port and Batangas port be developed intensively for this purpose.

## 5) Formation of Major Corridors

There are two north-south intermodal corridors in the Philippines, i.e. Pan-Philippine Highway and Strong Republic Nautical Highway at present. It is proposed that the RO/RO ports along the major corridors be strategically developed.

# (2) Formation of Maritime Transport Bases to Support Regional Society

Small and medium scale port development to formulate maritime transport bases to support regional

society is another goal of the planning. Major principles for these ports are described as follows. Ports which are not applicable to the principles should also be developed steadily in accordance with their demand.

## 1) Enhancing the Mobility of People and Goods in the Region

While socio-economic development often requires the concentration of resources in a specific area, it is desirable to pursue the development of the nation as a whole. In order to resolve these two contradictory issues, it is necessary to promote "National Dispersion through Regional Concentration"<sup>1</sup> through the formation of an effective intermodal network and elicitation of regional growth potential. Thus, it is proposed that RO/RO ports which enhance the inter-regional and intra-regional mobility of people and goods should be strategically selected and developed.

## 2) Securing Transportation Bases to Support Daily Life in Remote Islands

An improved transportation system can not only secure a more stable daily life in remote islands but also contribute to economic development. Thus, for remote islands that have a population of more than 5,000 in 2024 and existing port facilities, RO/RO ports should be strategically selected and developed considering the growth potential of remote islands as well as the accessibility to population center in main islands and other islands.

## 3) Supporting Social Reforms

Improving accessibility and supporting the production activities such as fishery in remote islands without port facilities and other isolated areas can reduce regional gaps and contribute to poverty alleviation. Thus, it is proposed that social reform support ports should be strategically developed to form maritime routes linking the isolated area/island and population center, to support the establishment of population centers within isolated areas as well as to upgrade existing shipping services.

# **10.4.2** Planning Options

Under the above-mentioned principles, it is proposed that the following major port functions be considered as planning options. The required facilities of each planning option at ports will be examined taking into account the separate berth usage according to the types of cargo handling.

- (1) International Transport
  - 1) International container transport

<sup>&</sup>lt;sup>1</sup> NEDA (1998), The Philippine National Development Plan for the 21<sup>st</sup> Century

- 2) International bulk and break bulk cargo transport
- (2) Domestic Transport
  - 1) Domestic container transport
  - 2) Domestic bulk and break bulk cargo transport
  - 3) RO/RO transport for short and middle distance
  - 4) Social reform support
  - 5) Passenger transport

It is also proposed that a port which will be developed during long-term and short-term planning period be called Strategic Development Port.

#### 10.4.3 Required Port Facilities in 2024 and Strategic Development Ports

(1) Ports for International Transport

Nine ports will handle international container cargo in 2024, and it is necessary to install container handling dedicated quayside cranes such as gantry cranes at these ports (see Table 10.4.1 and Figure 10.4.1). Six of these ports, i.e. Subic, Manila (MICT, South Harbor), Batangas, Cebu, Cagayan de Oro (CDO/MCT) and Davao, will function as international gateway ports, and must be developed in line with the growing demand. International containers will also be handled at Iloilo, General Santos and Zamboanga. Thus, these three ports also require the installation of dedicated container quayside cranes.

International bulk and break bulk will be mainly handled at fourteen (14) ports in 2024. Of the eight ports among them which are not international gateway ports, three ports (Iloilo, General Santos and Zamboanga) are developed as Principal international trade ports while the other five ports are developed as Major ports.

Strategic Development Ports, which will be developed from 2004 to 2024, and their required facilities are shown by each planning option in Table 10.4.1. Twenty-three (23) berths for international container and 10 berths for international bulk and break bulk (including "multi-purpose usage" with other cargo) are required to be developed.

- (2) Ports for Domestic Transport
- 1) Ports for Establishment of Nationwide Maritime Transport Network

With regard to domestic container transport, ten ports will be developed nationwide as Major domestic container ports in 2024, and container will be transported by long distance RO/RO ferry

and other vessels. It is proposed, in particular, that eight ports (i.e. Manila (North Harbor), Batangas, Cebu, Cagayan de Oro (CDO/MCT), Iloilo, Davao, General Santos, Zamboanga) among these ten ports install container handling quayside cranes such as mobile cranes, and that gearless container vessels be used at the eight ports to improve the container handling efficiency. It should be noted that the role of long distance RO/RO ferry vessels will continue to be important in the future. These two different modes of transport will complement one another (see Table 10.4.2 and Figure 10.4.2).

Domestic bulk and break bulk will be mainly handled at twenty-eight (28) ports in 2024. Among them, ten (10) are Major domestic container ports and Eighteen (18) are Major ports.

Strategic Development Ports, which will be developed from 2004 to 2024, and their required facilities are shown by each planning option in Table 10.4.2. Twenty-two (22) berths for domestic container and 50 berths for domestic bulk and break bulk (including "multi-purpose usage" with other cargo) are required to be developed.

At present, there are 12 RO/RO ports along the two major corridors, i.e. Pan-Philippine Highway (East corridor) and Strong Republic Nautical Highway (West corridor). However, Matnog Port, Lipata Port, Calapan Port, Dumaguete Port and Dapitan Port need additional RO/RO ramps to cope with increasing transport demand. In addition, since RO/RO facilities of Caticlan Port are decrepit and cannot cope with larger RO/RO ships, Caticlan Port should be promptly upgraded to secure an efficient transport network. Moreover, Mansalay port in Mindoro Island is more suitable than the existing Roxas port in terms of location, calmness and the depth of basin area. Therefore, Mansalay Port should be developed as a RO/RO port for major corridors instead of Roxas Port.

San Recardo Port, which is located at the southern tip of Panaon Island along the East corridor has a calm basin area and is nearer to Lipata Port than Liloan Port, which has sea linkage to Lipata port at present. Since the land linkage between Panaon Island and Leyte Island will be better, it is preferable to develop San Recardo Port as a RO/RO port and to change the existing Lipata–Liloan route to the Lipata–San Recardo route. This will result in a considerable time savings. Thus, 8 RO/RO ports for major corridors should be strategically developed by 2024 (see Table 10.4.3).

			Name	Population	Income	RO/RO	RO/RO	Existing	Existing	Strategic	
	Name of Port	Region	of	of	classification	Cargo	Passenger	RO/RO	RO/RO	Development	Remarks
			Municipality	Municipality	of	Volume	-	Ramp	vessels calling	Ports	
				(2024)	Municipality	(2024)	(2024)	(2001)	(2001)		
PAN-l	PHILIPPINE HIGHWAY (East Corridor)	-									
1	Matnog (PPA)	Region V	Matnog	45,012	4th	5,682,586	6,773,232				Additional 4-RO/RO Ramps
2	Balwharteco (Allen)	Region VIII	Allen	30,139	5th	4,946,266	5,141,586				Private Port
3	San Recardo	Region VIII	San Recardo	13,464	5th	1,840,094	2,051,509				6-RO/RO Ramps
4	Lipata (PPA)	Region XIII	Surigao City	189,299	2nd	1,613,094	1,437,492				Additional 4-RO/RO Ramps
STRO	NG REPUBLIC NAUTICAL HIGHWAY (West	Corridor)									
1	Batangas (PPA)	Region IV	Batangas City	438,478	1st	949,971	13,329,339				
2	Calapan (PPA)	Region IV	Calapan City	187,567	4th	947,014	3,817,337				Additional 1-RO/RO Ramp
3	Mansalay	Region IV	Mansalay	69,142	3rd	189,403	763,467				
4	Caticlan	Region VI	Malay	34,155	4th	189,403	763,467				Additional 1-RO/RO Ramp
5	Iloilo (PPA)	Region VI	Iloilo City	509,587	1st	438,811	5,218,398				
6	Bacolod (PPA)	Region VI	Bacolod City	597,703	1st	593,033	10,564,751				Private Port
7	Dumaguete (PPA)	Region VII	Dumaguete	145,523	2nd	123,975	4,416,573				Additional 1-RO/RO Ramp
8	Dapitan (PPA)	Region IX	Dapitan City	105,335	2nd	94,093	3,973,536				Additional 1-RO/RO Ramp
						17 607 743	58 250 687	10	10	8	

Table 10.4.3 List of RO/RO Strategic Development Ports for Major Corridors (2024)

			Intern	lational cont.	ainer				Internation	nal bulk, bre	sak bulk			Principal		
Name of port	No. of berths (@250- 300)	Berths length (m)	Berths length to be developed (m)	Depth of berth (m)	Qauy side cranes	Cranes to be installed	Strategic Dev't Ports for int'l container	No. of berths (@200)	Berths ength (m)	Berths length to be leveloped (m)	Depth of berth (m)	Strategic Dev't Ports for int'l bulk and break bulk	Int'l i gateway port ( (Int'l ( Int'l cargo > c 3m ton)	nt'l trade port Total:3m ( and Int'l argo:0.3 m ton or more)	Major port Fotal 1.5 n ton or others)	Remarks
thic	3	840	840	13	6 GC	6 GC		1	200		10.5					
Ianila (MICT)	9	1,600	300	12-14	12 GC	2 GC										
Aanila (South Harbor)	4	1,200	250	10.5-12	8 GC	2 GC	I	10	1,800		10.5					
atangas	6	3,020	3,020	13	18 GC	18 GC		1	200		10.5					
Cebu	4	1,200	1,200	13	8 GC	8 GC		2	400	400	10.5					
CDO / MCT	2	009	300	13	4 GC	2 GC		2	400	200	10.5					
Davao	2	009	350	12	4 QC	4 QC		2	400	200	10.5					
loilo	1	250	250	12	1 QC	1 QC		2	400	400	10.5					
Jeneral Santos	1	250	250	12	2 QC	2 QC		1	200		10.5					
Camboanga	1	250	250	12	1 QC	1 QC		1	200		10.5					
san Fernando								3	600		10.5					
Pt. Princesa								1	200(*)	200(*)	10.5				*	*) Multi purpose usage of int'l B, B/B and long dis. RO/RO
Dzamiz								1	200(*)	200(*)	10.5				*	*) Multi purpose usage of int'l B, B/B and long dis. RO/RO
Tacloban								1	200(*)	200(*)	10.5				*	*) Multi purpose usage of int'l B, B/B and long dis. RO/RO
egazpi								1	200	200	10.5				D	Development will be at Tabaco or Pantao
Note): Port of Irene and Lim	nay, which	are Regiona	d ports, also	handle inter	national bul	lk cargo.										

Table 10.4.1 Plans for international container, bulk and break bulk in 2024

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			Dom	testic contai	ner					Domesti	c bulk, break	: bulk					
Name of port	No. of berths (@200)	Berths length (m)	Berths length to be developed (m)	Depth of berth (m)	Qauy side cranes	Cranes to be installed	Strategic Dev't Ports for dom'c container	No. of berths (@100)	Berths length (m)	Berths length to be developed (m)	Depth of berth (m)	Short dis. RORO b serth (m) d	RORO berth to be leveloped (m)	Strategic Dev't Ports for dom'c bulk and preak bulk	Major dom'c ontainer	Major port Fotal 1.5 n ton or others)	Remarks
Manila (South Harbor)	2	400		-7.5												ſ	
	3	600	600	-10.5	6 QC	6 QC	1				-65 or					<u>  *</u>	More 250m of harth is required Conneration with
Manila (North Harbor)	11	2,200	2,200	-7.5 or more				12	1,200	950 (*)	more					<u>ц</u>	) avore zoon or octur is required. Cooperation with fatbour Centre is indispensable.
Batangas	1	200		-7.5	1 QC	1 QC		3	300		-6.5	700					
Cebu	3	600		-10.5	2 GC, 4 QC	4 QC		10	1,000		-6.5	1,100					
CD0/MCT	0 1 2	200 200 400	200	-10.5	1 QC	1 QC		7	700	400	-6.5						
Davao	1	200	200	-7.5	1 QC	1 QC		4	400	100	-6.5	100	100				
Iloilo	1 2	200 400		-10.5	2 QC	2 QC		10	1,000		-6.5	200					
General Santos	1	200	200	-10.5	2 QC	2 QC		5	500	300	-6.5						
Zamboanga	1	200	200	-10.5	2 QC	2 QC		7	700	200	-6.5	200	100				
Nasipit	1	200		-7.5				5	500	400	-6.5			*		* 0	<ol> <li>The development for domestic B, B/B cargo will be arried out at Masao.</li> </ol>
Dumaguete	1	200		-7.5				4	400	200	-6.5	100	100	(Major corrido	(V)	ajor corridors)	
Bay/river		150	Ť	105	T	Ť		× -	800		-6.5				$\uparrow$	$\uparrow$	
Masao Pt. Princesa	1	200(*)	200(*)	-10.5				4 1	400	200	-10.5	100				*	) Multi purpose usage of int'l B, B/B and long RO/RO ferry
Ozamiz	1	200(*)	200(*)	-10.5				9	600	300	-6.5	600	300			*	) Multi purpose usage of int'l B, B/B and long RO/RO ferry
Matnog												700	400 0	Major corridors)	)/	Major corridors)	
Tacloban	1	200(*)	200(*)	-10.5				8	800	200	-6.5					*	) Multi purpose usage of int'l B, B/B and long RO/RO ferry
Tagbilaran								6	600	400	-6.5						
Legazpi								9	600	200	-6.5			*		<u> </u>	) The development for domestic B, B/B cargo will be arried out at Tabaco or Pantao.
Tabaco								2	200	100	-6.5	400	200				
Lipata								2	200	200	-6.5	500	400	(Major corridors)	)/	Major corridors)	
Dapitan	1	200		-7.5				2	200	200	-6.5	100	100	(Major corridors)	¥	Major corridors)	
Masbate								4	400	200	-6.5	300	200				
Surigao								9	600	300	-6.5						
San Fernando			Ť	Ţ		Ť		m +	300	Ť	-6.5	000	100				
Calapan								-	100		-6.5	300	100		V	Major corridors)	Milli
Palompon	1	200(*)	100(*)	-7.5				2	200	100(*)	-7.5(*)	200	100			. <u>н</u>	) Mutt purpose usage of long dis. KO/KO ferry and dom c 3, B/B
Culasi	-	200		-7.5					100		-6.5	100					
Liloan Note): Some short distance E	2⊖/RO hert	ie at the nort	e alona tha n	maior corrid	lors are also	indicated in	thic table	1				200	100	Major corridors)	V	Major corridors)	

10-11





#### 2) Formation of Maritime Transport Bases to Support Regional Society

Port development for short and middle distance maritime transportation which supports regional society is carried out not only by port authorities / public port development bodies but also DOTC since the national government is responsible for assisting disadvantaged and economically depressed areas. On the other hand, since the investment is not so large due to the small scale of the projects, Development Bank of the Philippines has launched new scheme to develop small facilities utilizing private investment. In this long-term plan, it is proposed that two kinds of ports for short and middle distance vessels be established for supporting regional society: short and middle distance RO/RO ports and ports for small and medium scale vessels without RO/RO facilities. Considering the functions of both kinds of ports, the former is proposed to be sub-classified into RO/RO ports for mobility enhancement and RO/RO ports for remote islands development. The latter will be categorized as social reform support ports. It is recommended that priority be given to the ports applicable to the following principles, but other regional ports should be also properly developed in accordance with their demand.

#### a) RO/RO Port for Mobility Enhancement

Based on the criteria described in Table 10.4.4, a hundred (100) ports are selected as RO/RO ports for mobility enhancement in 2024. Among them, fifty-four (54) ports should be newly developed as Strategic Development Ports by 2024 (see Table 10.4.5). The RO/RO port network for mobility enhancement in 2024 is shown in Figure 10.4.3. In addition, the number of people benefiting from mobility enhancement will increase from 14 million in 2000 to 40 million in 2024 as a result of the proposed project.

Kinds of ports	Criteria
RO/RO ports for	RO/RO cargo volume is about 30 thousand tons or more in 2024. (Except RO/RO major corridor ports)
mobility	The port is prioritized if it is located in the Special Zone of Peace and Development (SZOPAD).
enhancement	Road connection is good in 2024. (Except ports located in the SZOPAD)
	The port has different hinterland of neighboring RO/RO ports.
	The port has high growth potential of hinterland, or the port forms a vital link in the RO/RO Transport
	Network. (Except ports located in the SZOPAD)
RO/RO ports for	Population of the island that has existing port facilities is more than 5,000 in 2024.
remote islands	The port is prioritized if it is located in the SZOPAD.
development	Income classification of the municipality where the port is located is 3rd or less in 2001. (Except ports located
_	in the SZOPAD)
	The port has different hinterland of neighboring RO/RO ports.

Table 10.4.4 Criteria for RO/RO Port (2024)

#### b) RO/RO Port for Remote Islands Development

Based on the criteria described in Table 10.4.4, eighty-three (83) ports are selected as RO/RO ports for remote islands development in 2024. Among them, seventy-four (74) ports should be newly developed as Strategic Development Ports by 2024 (see Table 10.4.6). In addition, eighteen (18) ports should be newly developed as RO/RO ports connecting remote islands with the population center of the main island/other island and linking to RO/RO ports for remote islands development (see Table 10.4.7). Among the 120 remote islands which have existing port facilities, 92.5% of the population will have safe and improved access to population centers in 2024 as a result of the proposed project (30.1% in 2000).

The above-mentioned development plans of "RO/RO ports for major corridors", "RO/RO ports for mobility enhancement", "RO/RO ports for remote islands development" and "RO/RO ports connecting remote islands" are collectively referred to as the "Nationwide RO/RO port development plan".

						Crite	eria				Existing		
			Population	Cargo	*1 Road	Peace and	Different	Growth	Formation	Existing	RO/RO	Strategic	
	Name of Port	Region	of	Volume	Access	Dev't	Hinterland	Potencial	of RO/RO	RO/RO	Vessels	Dev't	Remarks
	rune of ron	Region	Municipalita	(tem)	Tiecess	Arres	rinneriand	- f	Transat	Dema	Celling	Devit	Remarks
			Municipality	(ton)	(202.0)	Area		01	Transport	Ramp	Calling	POR	
			(2024)	(2024)	(2024)	(2001)		Hinterland	Network	(2001)	(2001)		
1	Navotas	NCR	296,068	72,024									
2	San Vicente (Sta. Ana)	Region II	30,321	52,576									
3	Maconacon	Region II	5,221	42,679									
4	Palanan	Region II	21,490	41,429									
5	Mariveles (Aplaya)	Region III	120,863	140,201									
6	Dilasag	Region IV	25,991	42,538									
7	Casiguran	Region IV	38,004	50,734									
8	Baler	Region IV	52,994	61,473									
- 9	Dingalan	Region IV	35,698	55,965									
10	Catanauan	Region IV	102,250	118,610									
11	San Narciso	Region IV	68,137	79,039									
12	Bucana (Naic)	Region IV	128,722	140,201									
13	Calatagan	Region IV	79,815	45,631									
14	El Nido (PPA)	Region IV	47,868	55,527									
15	Taytay	Region IV	95,027	109,563									
16	Pasacao (PPA)	Region V	52,870	121,885									1-RO/RO Ramp on-going const.
17	Tabaco (PPA)	Region V	147,460	1,213,798									Additonal 3-RO/RO Ramps
18	Pilar	Region V	79,668	34.521									
19	Masbate (PPA)	Region V	98,303	691.612									Additonal 2-RO/RO Ramps
20	Arorov	Region V	80.841	34,521									
21	Cataingan	Region V	64 112	86,835									
22	Placer	Region V	61,112	70.898									
23	Mandaon	Region V	43 443	49.968									
24	Concencion	Region VI	47.696	29.029									
25	San Jose de Ruenavista (PPA)	Region VI	67,228	154 891									
26	San Lorenzo (PPA)	Region VI	28 094	32 589									
27	Cadiz	Region VI	197 742	281.004									
28	Dango (Escalante) (PPA)	Region VI	110 184	127 813									
20	Bais	Region VII	96.928	28.086									
30	Siston	Region VII	01/30	148 970									
31	Bantavan	Region VII	91,439	251.075									
32	Mahayahay (Daanbantayan)	Region VII	90,942	70 808									
32	Rogo (Polambato)	Region VII	98,005	153 630									Additonal 1 PO/PO Pamp
24	Malahuwaa	Region VII	90,880	28.096									Additional 1-KO/KO Kaliip
25	O-I-L (CDA)	Region VII	24,212	28,080									
33	Logi	Region VII	26.0(1	20,0/3									
20	Lazi	Region VII	20,061	30,231									Additonal 1 BO/BO Barra
3/	Tanal (Ubay)	Region VII	85 124	803,488									Additional 1-KO/KO Kamp
20	Lapar (UUay)	Region VII	41 502	51 192									
39	Vauauman	Region VII	41,503	20,502									
40	Nawayan	Region VIII	20,296	30,303									Additional 1 PO/PO Par
41	raiompon(PPA)	Region VIII	106,233	434,/33									Additional 1-KU/KU Kamp
42	Maasin (PPA)	Region VIII	106,887	125,521									1-KU/KU Kamp on-going const.
43	Padre Burgos	Region VIII	13,407	52,640									
44	Nabilid	Region IX	52,003	148,970									
45	Siocon	Region IX	50,520	58,603									
46	Sirawai	Region IX	25,545	59,264									
47	Zamboanga(PPA)	Region IX	929,772	387,343									Additonal 1-RO/RO Ramp
48	Solar (Olutanga)	Region IX	34,954	40,547									
49	Guinsiliban (PPA)	Region X	7,506	108,478									
50	Plaridel	Region X	43,157	50,062									
51	Ozamis (PPA)	Region X	162,759	5,519,862									Additonal 4-RO/RO Ramps
52	Kolambugan (PPA)	Region X	35,641	41,344									
53	Buli-Buli (Sumisip)	ARMM	70,173	81,401	-								
54	Languyan	ARMM	57,048	66,176	-								
1 7				13.051.742		10	54	46	43	7	14	54	

 Table 10.4.5
 List of RO/RO Strategic Development Ports for Mobility Enhancement (2024)

Note: \*1 Connection to 4 Lane National Highway, Connection to 2 Lane National Highway, Connection to other Good Road



Figure 10.4.3 RO/RO Port Network for Mobility Enhancement (2024)

		1				I I	(	riteria			Existing		
			Nama of	Nama of	Population	Population	Danca and	Incomo	Daffarant	Growth	PO/PO	Stratogia	
	Nama of Port	Pagion	Municipality or City/	Island	ropulation	ropulation	Dav't	alocsification of	Deficient	Rotantial	Vassals	Dav't	Pamarka
	Name of Fort	Region	Drawings	Isialiu	Municipality	UI Island	Amon	Municipality.	Hinternand	rotentiai	Calling	Devi	Remarks
			Province		Municipality	Island	Areas	Municipality		IO I	Calling	Port	
_	Tel	D . H		Tel	(2024)	(2024)		(2001)		Hinterland	(2001)		
1	Itbayat	Region II	Itbayat/ Batanes	Itbayat	5,073	5,075		Sth					
2	Calayan	Region II Region II	Basco/ Batanes	Calayan	9,424	15,070		5th					
3	Canayan	Region II	Calayan/ Cagayan	Canayan	20,076	5 522		400 4th					
-+	San Pafaal (Purdaas)	Region IV	Calayali/ Cagayali Burdoos/ Quozon	Polillio	20,070	80.648		4th					
6	Patnanungan Sur	Region IV	Patnanungan/ Quezon	Patnanungan	19 5/1	19 541		4th					
7	Sitio	Region IV	Iomalig/ Quezon	Iomalig	10 302	10 302							
8	Tinglov	Region IV	Tingloy/ Batangas	Maricaban	30 157	30.157		5th					
9	Tilik	Region IV	Lubang/ Mindoro Occ.	Lubang	40.549	44.946		5th					1-RO/RO Ramp proposed
10	Concepcion	Region IV	Concepcion/ Romblon	Maestro de Campo	8,294	8,294		-					
11	Banton	Region IV	Banton/ Romblon	Banton	11.988	11.988		5th					
12	Corcuera	Region IV	Corcuera/ Romblon	Simara	19,431	19,431		5th					
13	Calatrava	Region IV	Calatrava/ Romblon	Tablas	15,723	255,874		5th					
14	Sta. Fe (Tablas Is.)	Region IV	Sta. Fe/ Romblon	Tablas	25,042	255,874		-					
15	Said (San Jose)	Region IV	San Jose/ Romblon	Carabao	14,568	14,568		-					
16	Ambulong (Magdiwang)	Region IV	Magdiwang/ Romblon	Sibuyan	21,309	93,181		5th					
17	Cagayancillo	Region IV	Cagayancillo/ Palawan	Cagayan	11,242	8,485		6th					
18	Linapacan	Region IV	Linapacan/ Palawan	Linapacan	16,290	8,690		5th					
19	Araceli	Region IV	Araceli/ Palawan	Dumaran	19,293	29,484		5th					
20	Bancalaan	Region IV	Balabac/ Palawan	Bancalaan	44,730	11,396		3rd					
21	Balabac	Region IV	Balabac/ Palawan	Balabac	44,730	16,113		3rd					
22	Mangsee	Region IV	Balabac/ Palawan	Mangsee	44,730	10,879		3rd					
23	Visita	Region V	Tabaco City	San Miguel	14,746	15,761		5th					
24	Caracaran	Region V	Rapu-rapu/ Albay	Batan	40,146	25,867		4th					
25	Rapu-rapu (Poblacion)	Region V	Rapu-rapu/ Albay	Rapu-rapu	40,146	13,423		4th					
26	San Pascual	Region V	San Pascual/ Masbate	Burias	52,106	99,427		4th					
27	Claveria	Region V	Claveria/ Masbate	Burias	52,836	99,427		4th					1-RO/RO Ramp on-going const.
28	San Jacinto	Region V	San Jacinto/ Masbate	Ticao	34,097	103,814		4th					
29	Talisay (San Fernando)	Region V	San Fernando/ Masbate	Ticao	26,390	103,814		-					
30	Caluya	Region VI	Caluya/ Antique	Caluya	27,928	8,917		4th					
31	Poro (CPA)	Region VII	Poro/ Cebu	Camotes	30,448	104,057		5th					1-RO/RO Ramp proposed
32	Pilar (Ponson Is.)	Region VII	Pilar/ Cebu	Ponson	15,975	15,975		5th					
33	Pitogo	Region VII	Pres. Carlos Garcia/ Bohol	Lapining	29,519	25,438		5th					
34	Bitaugan	Region VIII	Guiuan/ Eastern Samar	Homonhon	58,118	6,322		3rd					
35	Bobon (San Antonio)	Region VIII	Capul/ Northern Samar	Capul	15,950	15,950		5th					
36	San Antonio	Region VIII	San Antonio/ Nor. Samar	Dalupiri	11,888	11,888		5th					
37	Biri	Region VIII	Biri Is./ Nor. Samar	Biri	13,067	6,615		5th					
38	Lunang I & II	Region VIII	Almagro/ Western Samar	Almagro	15,950	14,023		5th					
39	Sto. Niño	Region VIII	Sto. Niño/ West. Samar	Sto. Niño	18,843	12,402		5th					
40	Sevulla	Region VIII	Sto. Niño/West. Samar	Camandog	18,843	6,441		5th					
41	Daram	Region VIII	Daram/ West. Samar	Daram	53,369	48,865		4th					
42	Zumarraga	Region VIII	Zumarraga/ West. Samar	Zumarraga	23,165	23,165		Sth					
45	Tagapul-an	Region VIII	Tagapul-an/ West. Samar	Tagapula	12,572	12,572		5th					
44	Binalayan (Maripipi)	Region VIII	Maripipi/ Biliran	Maripipi	12,495	12,495		5th					
45	Limasawa	Region VIII	Limasawa/ Southern Leyte	Limasawa	/,/40	110.476		oth					
46	Kaputian	Region XI	Is. Garden City of Samal	Samal	132,257	119,476		5th					
4/	Sta. CrttZ Potuco (Saronggoni Is.)	Region AI	is. Garden City of Samal	I allcud Saranggani	132,257	0.275		5th					
48	r auco (Saranggani IS.) Patuganding (Palut Is.)	Region XI	Saranggani/ Davao dei Sur	Balut	29,444	9,3/5		5th					
49	Datugatiunig (Balut IS.)	Region AI	Lorato/Suriasa dal Neri	Dalut	29,444	20,069		511 51-					
51	San Juan	Region AIII	San Jose/ Surigao del Norte	Dinagat	15,9/5	150 429		5th					
52	Cardianao	Region XIII	Cardianao/ Surigao del Nor.	Dinagat	40,775	159,438		Jui 4th					
52	Talisay (San Benito)	Region XIII	San Banito/ Surigao del Nor	Siargao	20,579	107.409			-				
54	Dana (PPA)	Region XIII	Dana/ Surigao del Nor	Siargao	31 154	107,408		5th	-				1-RO/RO Ramp on-going const
55	San Miguel	Region XIII	Dana/ Surigao del Nor	East Bucas	31,134	8 335		5th					
56	Socorro (PPA)	Region XIII	Socorro/ Surigao del Nor	Bucas Grando	28 637	28 637		5th					
57	Patino	Region XIII	Tagana-an/ Sprigao del Nor	Masanelid	20,037	6 362		5th					
58	Pilas	ARMM	Lantawan/ Basilan	Pilas	37.300	5.750		4th					
50	Dungon	ARMM	Tongkil/ Sulu	Bucutua	21 621	5 8/1		5th					
60	Tongkil	ARMM	Tongkil/ Sulu	Tongkil	21,621	5.607		5th					
61	Capual	ARMM	Luuk/ Sulu	Capual	52,677	7,310		3rd					
62	Simbahan (Pangutaran)	ARMM	Pangutaran/ Sulu	Pangutaran	35,568	28,280		4th					
63	Pata	ARMM	Pata/ Sulu	Pata	16,000	13,083		5th					
64	Lugus	ARMM	Lugus/ Sulu	Lugus	25.565	24.992		5th					
65	Siasi	ARMM	Siasi/ Sulu	Siasi	80.157	65.839		4th					
66	Tapul	ARMM	Tapul/ Sulu	Tapul	20,194	18,349		4th					
67	Lapak	ARMM	Pandami/ Sulu	Pandami	27,091	19,991		5th					
68	Tampakan	ARMM	South Ubian/ Tawi-Tawi	South Ubian	37,047	14,832		-					
69	Tandubas	ARMM	Tandubas/ Tawi-Tawi	Tandubas	33,789	22,106		-					
70	Tubig Indangan	ARMM	Simunul/ Tawi-Tawi	Simunul	43,372	27,642		-					
71	Tabawan	ARMM	South Ubian/ Tawi-Tawi	Tabawan	37,047	10,397		-					
72	Lamion	ARMM	Bongao/ Tawi-Tawi	Bongao	78,942	44,320		-					
73	Sitangkai	ARMM	Sitangkai/ Tawi-Tawi	Sibutu	71,612	71,612		4th					
74	Cagayan de Sulu (Tawi-Tawi)	ARMM	Cagayan de Tawi-Tawi	Cagayan Sulu	29,869	29,869		4th					
							25		74	48	4	74	
_						-							

# Table 10.4.6 List of RO/RO Strategic Development Ports for Remote Islands Development (2024)

Table 10.4.7 List of RO/RO Ports Connecting Remote Islands (2024)

			Population of	Income	Existing	*1 Road	Strategic	
	Name of Port	Region	Municipality	classification of	RO/RO	Access	Dev't	Remarks
				Municipality	Vessels Calling		Port	
			(2024)	(2001)	(2001)	(2024)		
1	Currimao (PPA)	Region I	14,405	5th				
2	Aparri (PPA)	Region II	82,842	2nd				
3	Mauban	Region IV	88,787	1 st				
4	Nasugbu	Region IV	170,216	1 st				
5	Pinamalayan	Region IV	129,210	2nd				
6	San Jose (Bulalacao)	Region IV	49,053	4th				
7	Bataraza	Region IV	73,422	2nd				New Port
8	Pantao (PPA)	Region V	91,109	2nd				1-RO/RO Ramp on-going const.
9	Bacon & Banao	Region V	58,020	4th				
10	Guiuan (PPA)	Region VIII	58,118	3rd				
11	San Jose, Carangian (PPA)	Region VIII	20,373	5th				
12	Talalora	Region VIII	9,883	5th				
13	Davao (Sasa) (PPA)	Region XI	1,836,533	1 st				
14	Lupon	Region XI	91,404	1 st				
15	Taganaan	Region XIII	20,512	5th				
16	Lahing-Lahing	ARMM	52,677	3rd				
17	Punay	ARMM	29,098	5th				
18	Bongao (Pag-asinan)	ARMM	78,942	-		-		
					4		18	

Note: \*1 Connection to 4 Lane National Highway,

Connection to 2 Lane National Highway, Connection to other Good Road

#### c) Social Reform Support Port

To contribute to the reduction of regional gaps and poverty alleviation, social reform support port should be strategically developed to form maritime routes linking the isolated area/island and population center, to support the establishment of population centers within isolated area as well as to upgrade existing shipping services. DOTC proposed 93 ports in its long-term development plan, i.e. "Master Plan Report for Feeder Port Development (March, 2000)" from the viewpoint of promoting social reform. Among them, twenty-two (22) ports are selected as social reform support ports (see Table 10.4.8). Other ports are assumed to be developed under the scheme of " RO/RO port for mobility enhancement" and " RO/RO port for remote islands development". The percentage of remote islands and certain isolated areas/islands without sufficient port facilities (126 islands/areas in total) will decrease from 92.9% in 2001 to 37.3 % in 2024 as a result of the projects.

			Name	Income	Population	Name	Population		Peace		Growth	Strategic	
	Name of Port	Region	of	classification	of	of	of	*1 Road	and	Defferent	Potential	Dev't	Remarks
			Municipality	of	Municipality	Remote	Remote Is.	Access	Development	Hinterland	of	Port	
			. ,	Municipality	(2024)	Island	(2024)		Area		Hinterland		
1	Quezon	Region IV	Quezon	5th	25,846	Alabat	69,515	-					Complementary port for Alabat Port
2	Gumaca	Region IV	Gumaca	2nd	106,598								Connecting port for Quezon Port
3	Dumaran	Region IV	Dumaran	4th	29,427	Dumaran	29,484						Complementary port for Araceli Port
4	Mercedes	Region V	Mercedes	4th	57,397								Connecting port for Siruma Port
5	Siruma	Region V	Siruma	5th	22,482			-					Isolated area
6	San Vicente	Region V	Caramoan	4th	54,547								Connecting port for Mayngaway Port
7	Mayngaway	Region V	San Andres	4th	43,293								Complementary port for San Andres Port
8	Milagros	Region V	Milagros	3rd	61,335								Marine Products Center of Masbate Is.
9	Calumpang	Region V	Balud	4th	41,374			-					Isolated area
10	Semirara	Region VI	Caluya	4th	27,928	Semirara	11,671	-					Isolated island, New port development
11	Malapascua	Region VII	Daanbantayan	3rd	98,665	Malapascua	4,665	-					Isolated island, New port development,
	-	-	-			-							High growth potential of tourism
12	Langub	Region VII	Sta. Fe	5th	32,666	Guintacan	9,158	-					Isolated island, New port development
13	Laoang	Region VIII	Laoang	3rd	81,894								Port for alternaitive route from east coast
	U	U.S.	U U		-								municipalities of Northern Samar to
													Legaspi
14	San Ishidro	Region VIII	San Ishidro	4th	44,174								Connecting port for Marapascua Port
15	San Francisco	Region VIII	San Francisco	5th	16,325								Port for cross-bay (Sogod Bay) sea route
		U.S.											to Padre Burgos Port
16	Malabang Municipal	Region XII	Malabang	-	50,197								Port providing another outlet to the
	ъ.	e e	U		-								southern area of Lanao del Sur
17	Ganassi	Region XII	Ganassi	-	28,667								ditto
18	Palimbang	Region XII	Palimbang	3rd	66,182								Isolated area (at least up to 2009)
19	Butuan Municipal	Region XIII	Butuan City	1 st	426,845			-					River port providing water transportation
	•	e e	-		-								to municipalities with poor access roads
													alomg Agusan River
20	Escolta	Region XIII	Dinagat	5th	15,783	Dinagat	159,438	-					Complementary port for San Jose Port
21	Pilar	Region XIII	Pilar	5th	13,416	Siargao	107,408	-					Complementary port for Dapa Port
22	Parang	ARMM	Parang	1 st	82,689								Port as an alternative to the new port
	5		č										development plan of Cotabato City
									5	22	17	22	
Note:	*1 Connection to 4	Lane National	Highway, C	onnection to 2.1	ane National	Highway	Connection	to other Go	ood Road				

Table 10.4.8List of Social Reform Support Ports

#### 3) Ports for Passenger Transport

Maritime passenger services using fast craft vessels dedicated only for passengers are already found in some parts of Visayas and Northern Mindanao areas and this mode will increase in the future. The majority, however, of maritime passengers will be transported by conventional way. Namely, long distance passengers are expected to be transported by long distance RO/RO ferries similar to the current system while short and middle distance passengers will be transported by RO/RO ferries and/or passenger vessels.

#### (3) Ports for Greater Capital Region

As discussed in section 10.4.1, in order to avoid the negative economic externalities related to the land traffic congestion, it is proposed that Subic Bay port and Batangas port be developed intensively, and cargo, especially international container cargo, be handled there as much as possible. On the other hand, when the road network becomes well developed, the expansion of the existing Manila port might be possible since scale merits can be obtained.

Table 10.4.9 shows the required number of berths and the generated road traffic in the case of dispersion to Batangas/Subic and in the case of concentration in Manila. In case of concentration in Manila, the estimated traffic is 4,400 vehicles per day more than that in case of dispersion to Batangas/Subic. This is an increase more than 25% of the surveyed traffic at Manila port in 1996.

Therefore, diverting cargo to Batangas should be the basic direction of future development. However, after the port development in Batangas progresses to some extent, if the road network in Manila as well as the development of railway network sufficiently progresses, and the generated traffic can be absorbed, development of new port and/or expansion of existing ports in Manila area can be one of the options in the future.

	Dispersion to	Batangas	Concentration	n in Manila		
Name of port	No. of berths	No. of vehicles in 2024 (per day)	No. of berths	No. of vehicles in 2024 (per day)	Deference (Concentration case - Dispersion case)	Remarks
Manila (MICT)	6	26 767	9	21 210	4 443	16,200 /day in 1996
Manila (S. Harbor)	4	20,707	5	51,210	4,445	Harbor, N. Harbor)
Batangas	9	13,746	5	8,787	-4,959	
Subic	3	4,459	3	4,239	-220	

 Table 10.4.9
 Comparison of Generated Land Traffic between Batangas and Manila

Note): 1. No of vehicles at Manila includes the port-related vehicles from

MICT, S. Harbor, N. Harbor and Harbour Centre

2. The generated traffic includes not only trucks but also jeepnies.

#### 10.4.4 Estimated Cost for the Development

Construction costs of new facilities in each planning option are shown in Table 10.4.10. Investment of about 150 billion pesos will be required for 2004-2024 in addition to an initial five-year investment of 41 billion pesos. Roughly speaking, about half of the investment will be spent on the international trade facilities of which the majority of the investment goes to international container facilities.

	(Unit: Mil pesos)	
	2004-2024	Share (%)
Int'l container	68,650	45.9
Int'l B, B/B	13,800	9.2
Dom container	23,200	15.5
Dom B, B/B	25,370	16.9
Major corrdors	3,400	2.3
Mobility enhancement	9,620	6.4
Remote island development	5,175	3.5
Social reform	506	0.3
Total	149,721	100.0

Table 10.4.10 Investment for New Construction

With regard to the share of the investment by area, Luzon area, Visayas area and Mindanao area share 43%, 30% and 27% respectively. While the investment on the international container facilities shares more than half in Luzon area, the investment on other facilities such as domestic bulk, break bulk as well as short/middle distance RO/RO port facilities shares more than half in Visayas and Mindanao area. (see Appendix 10.4.1)

#### 10.4.5 Possibility of Other Proposed Port Development Projects

This study, which is to formulate the long-term master plan for the coming 20 years and the initial 5 year development plan of all public ports in the Philippines, is conducted based on the premise that present trends regarding socio-economic activities and population will continue in the coming 20 years. In addition, the plan is basically in harmony with the government's policy. As to individual regional development and its related port development, projects which will not be feasible according to our trend base development scenario are not included in the plan. Whether or not these projects are to be included in the plan should be examined in the NPPD Council (mentioned in a latter part of the study) after the project takes concrete shape. However, as to the following two projects, the JICA Study Team offers its opinions below, because some strongly request that the project be included in the plan, at least in the long-term development plan.

(1) Possibility of Irene Port Development Project

Cargo handling volume of Irene Port was only about 56 thousand tons in 2001 although forecast to increase to more than 180 thousand tons in 2024. Nonetheless, since its hinterlands are not only Region II but also the whole of the Northern Luzon particularly in term of international trade, Irene
Port should continue to be developed.

However, it would be difficult to make Irene Port an international hub-port without the participation of a shipping company in an Irene Port development project. The only possibility would be for a single mega shipping company to decide to make Irene Port a container base port in the Asian region where most of the that company's own container cargo would be concentrated. In this case, not only the shipping company but also the government and domestic private companies will invest in the development project.

Other alternative development plans may be possible. For example, the Cagayan Economic Zone could be a supporting area for Taiwanese industries taking advantage of its nearness to Taiwan. In this scenario, Irene Port would be a feeder port for Taiwan.

It should be stressed that the above mentioned analysis does not deny the important roles currently being played by Irene Port. It is necessary to continue the current support of the development of Irene Port for the growth of Northern Luzon as well as the Cagayan Economic Zone.

(2) Possibility of Port Development Projects in Eastern Luzon

Most of the major ports in the Philippines are located on the west side of the country and no major port faces the Pacific Ocean. Therefore, new port development projects are proposed from the viewpoint of balanced national development and foreign trade with the USA. One of them is an international container hub-port development project in Eastern Luzon. However, it would be difficult to establish an international hub-port in Eastern Luzon without the participation of the private sector in the port development project.

Provided that the road network in Eastern Luzon and linkage between GCR and this area is improved and regional development such as agro-industry, tourism, and economic zone progresses, a single mega shipping company could establish a container port in this area as an international container base in the Asian region where most of the that company's own container cargo would be concentrated.

# Chapter 11 Initial 5-Year Development Plan with the Target Year of 2009 (Short-Term Development Plan)

## **11.1 Selection of Priority Projects**

The priority projects for the short-term development plan will also be selected on the basis of the planning options which have been discussed in section 10.4. The cargo forecasts on individual ports are used to examine the necessity of facility development.

## 11.2 Required Port Facilities in 2009 and Strategic Development Port

## (1) Ports for International Transport

Eight ports will handle international container cargo in 2009, and it is necessary to install container handling dedicated quayside cranes such as gantry crane at six ports until 2009 (see Table 11.2.1 and Figure 11.2.1). The six ports, i.e. Subic, Manila (MICT, South Harbor), Batangas, Cebu, Cagayan de Oro (CDO/MCT) and Davao, will function as international gateway ports, and must be developed in line with the growing demand. International containers will also be handled at General Santos and Zamboanga. Thus, these two ports also require the installation of container quayside cranes.

International bulk and break bulk cargo will be handled mainly at fourteen (14) ports in 2009. Of the eight ports which are not international gateway ports, four ports (Iloilo, General Santos, Zamboanga and San Fernando) are developed as Principal international trade ports while the other four ports are developed as Major ports.

Strategic Development Ports, which will be developed from 2004 to 2009, and their required facilities are also shown by each planning option in Table 11.2.1. Eight berths for international container and three berths for international bulk and break bulk are required to be developed (including "multi purpose usage" with other cargo).

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	Remarks									) Multi purpose usage of int'l and dom'c container	) Multi purpose usage of int'l and dom'c container		) Multi purpose usage of int'l and dom'c B, B/B and long dis. RO	) Multi purpose usage of int'l and dom'c B, B/B and long dis. RO	) Multi purpose usage of int'l and dom'c B, B/B and long dis. RO	Development will be at Tabaco or Pantao	
	Major port (Total 75m ton : others)									*	×		*	*	*	D	
rincipal	nt'l trade port otal:1.5 m and Int'l 0. nrgo:0.1 or n ton or more)	-															
P	Int'l in ateway (T port (Int'l 5n ton) 51	-															
Π	Dev't Dev't orts for n'l bulk d break 1.																
k bulk	S epth of P irth (m) ir	10.5		10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	-6.5	-6.5	10.5	
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	Name of port	Subic	Manila (MICT)	Manila (South Harbor)	Batangas	Cebu	CD0 / MCT	Davao	Iloilo	General Santos	Zamboanga	San Fernando	Pt. Princesa	Ozamiz	Tacloban	Legazpi	Note): Port of Irene, Li

11-2





### (2) Ports for Domestic Transport

1) Ports for Establishment of a Nationwide Maritime Transport Network

With regard to domestic container transport, seven ports will be developed as Major domestic container ports in 2009 nationwide, and container will be transported by long distance RO/RO ferry and geared/gearless vessels. It is proposed that all seven ports (i.e. Manila (North Harbor), Cebu, Iloilo, Cagayan de Oro (CDO/MCT), Davao, General Santos, Zamboanga) as well as Batangas port install container handling quayside cranes such as a mobile crane, and that gearless container vessels be used at these ports to improve the container handling efficiency (see Table 11.2.2 and Figure 11.2.2).

Domestic bulk and break bulk will mainly be handled at 27 ports in 2009. Among them, 7 are Major domestic container ports and 20 are Major ports.

Strategic Development Ports, which are developed from 2004 to 2009, and their required facilities are shown by each planning option in Table 11.2.2. Nine berths for domestic container and nine berths for domestic bulk and break bulk (including "multi-purpose usage" with other cargo) are required to be developed.

As mentioned in Chapter 10, RO/RO ports along the two major north-south corridors already have RO/RO ramps. However, Liloan Port and Lipata Port need additional RO/RO ramps to cope with increasing transport demand until 2009. In addition, Caticlan Port should be promptly improved to secure an efficient transport network. Moreover, Mansalay Port, which has deeper basin area and is located nearer to Caticlan Port, should be developed instead of the existing Roxas Port to cope with berthing of larger RO/RO ships.

The San Recardo Port along the East Corridor, which is strategically located and can form advantageous sea route to Lipata port in Mindanao Island instead of Liloan Port, should be promptly developed. In this regard, taking into account the uncertainty of the improvement of land linkage between Panaon Island and Leyte Island, it is assumed that both the Lipata–Liloan route and the Lipata–San Recardo route will be in operation in 2009. Thus, 5 RO/RO ports for major corridors should be strategically developed by 2009 (see Table 11.3.1).

2) Formation of Maritime Transportation Bases to Support Regional Society

It is proposed that port development be implemented for enhancement of mobility, supporting the remote islands development and social reform as in the long-term plan.

Table 11.2.2 Plans for Domestic Container, Bulk and Break Bulk in 2009

			Dom	estic contain	ner		_			Domestic	: bulk, break	bulk			_	foio.	
Name of port	No. of berths (@200)	Berths length (m)	Berths Berths length to be developed (m)	Depth of berth (m)	Qauy side cranes	Cranes to 1 be installed	Strategic Dev't Ports for dom'c container	No. of berths (@100)	Berths ength (m)	Berths Berths length to be teveloped (m)	Depth of Serth (m) b	short dis. R RORO ber erth (m) dev	CORO P th to be ( (m) hree (m)	trategic M Dev't dc orts for dc dom'c p ulk and p sak bulk	lajor om'c ( tainer 0 oort t	4ajor port 75 m on or thers)	Remarks
Manila (South Harbor)	2	400	Ì	-7.5					T	Ì							
	2	400	400	-10.5	4 QC	4 QC	1										
Manila (North Harbor)	11	2,200	750(*)	-7.5 or more				13	1,300		-6.5					*) F	Part of the long dis. RO/RO ferry berth will be deepened.
Batangas	1	200		-7.5	1 QC	1 QC		2	200		-6.5	400					
Cahu	1	200		-10.5	2 GC			0	000		-65	100					
Cedu	3	600		-7.5				r	2002		r.n-	00+					
CD0/MCT	_	200	200	-10.5	1 QC	1 QC		4	400	100	-6.5						
	2 .	400		-7.5		000			000								
Davao	,	200		-7.5	1 00	100		7	200		-6.5						
lloilo		200		-10.5	1 QC	1 00		13	1,300		-6.5	100					
		200(*)	200	-10.5	1 00	1 00										N (*	Aulti murnose usage of int'l and dom's container
General Santos	-	200		-7.5	22	2.2		5	200		-6.5						varianting a strong prime tarts to advant and the strong
7t	1	200(*)	200	-10.5	1 QC	1 QC		ų	500		27	100				N (*	Multi purpose usage of int'l and dom'c container
zamboanga	1	200		-7.5				n	000		0.0-	100					
Nasipit	1	200		-7.5				3	300	200	-6.5			*		The out	development for domestic B, B/B cargo will be carried at Masao.
Dumaguete	1	200		-7.5				3	300(*)	100	-6.5					*) N RO	Multi purpose usage of dom'c B, B/B and short dis. /RO
Bay/river								7	700		-6.5						
Masao		150(*)		-10.5(*)				1	150(*)		-10.5(*)					*) N RO	Aulti purpose usage of int'l and dom'c B, B/B and long /RO ferry
Pt. Princesa	1	200(*)		-10.5(*)				1	200(*)		-10.5(*)					*) N RO	Aulti purpose usage of int'l and dom'c B, B/B and long /RO ferry
Ozamiz		300(*)	<u> </u>	-6.5					300(*)	<u> </u>	-6.5	300 1	ramp			*) N RO	Multi purpose usage of int'l and dom'c B, B/B and long /RO ferry
Matnog												300			V)/	lajor corridors)	
Tacloban		500(*)		-6.5(*)					500(*)		-6.5(*)					*) N RO	Aulti purpose usage of int'l and dom'c B, B/B and long /RO ferry
Tagbilaran								4	400	200	-6.5						
Legazpi								4	400		-6.5						
Tabaco								1	100		-6.5	200	ramp				
Lipata								_	100	100	-6.5	200	100 //	Major corridors)	Ø/	lajor corridors)	
Dapitan	1	200		-7.5				2	200	200	-6.5		╡		0/	lajor corridors)	
Masbate		200(*)		-6.5(*)					200(*)		-6.5(*)	100				*) N ferr	Aulti purpose usage of dom'c B, B/B and long RO/RO y
Surigao		300(*)		-6.5(*)					300(*)		-6.5(*)					*) N ferr	Aulti purpose usage of dom'c B, B/B and long RO/RO y
San Fernando								3	300		-6.5						
Calapan			T		T	T		-	100	T	-6.5	200	╡	┥	Q/	lajor corridors)	
Culasi	1	200(*)		-7.5(*)					200(*)		-7.5(*)	100				*) N ferr	Aulti purpose usage of dom'c B, B/B and long RO/RO y
Liloan			-									200	100 (Ma	jor corridors)	0/	lajor corridors)	
Note). Some chart dictance D	O Port	ve of the norte	- along the n	moior corrid.	Are are alco	indicated in	· this table										

short distance RO/RO berths at the ports along the major corridors are also indicated in this table. Note): Some

#### a) RO/RO Port for Mobility Enhancement

Mainly based on the criteria described in Table 11.2.3, fifty-one (51) ports are selected as RO/RO ports for mobility enhancement in 2009. Among them, since it is necessary to closely link the two major north-south corridors immediately to enhance the mobility in this country, twenty-nine (29) ports along east-west links are selected. In addition, eight (8) ports along the East Luzon Link are selected to enhance the mobility of the Eastern Luzon area where the road network is inadequate. Moreover, it is proposed that a port should have priority if it is located in "Special Zone of Peace and development (SZOPAD)" which the Philippine Government designates as prioritized development areas in Mindanao Island and Palawan Island (as a result, twelve (12) ports are selected). Tabaco Port and Ozamiz Port need additional RO/RO ramps to cope with the increasing transport demand in 2009. Twenty-eight (28) out of above 51 ports should be newly developed as Strategic Development Ports by 2009 (see Table 11.3.1). The RO/RO port network for mobility enhancement in 2009 is shown in Figure 11.2.3. In addition, the number of people benefiting from mobility enhancement will increase from 14 million in 2000 to 22 million in 2009 as a result of the proposed project.

Kinds of ports	Criteria
RO/RO port for	RO/RO cargo volume is about 30thousand tons or more in 2009. (Except RO/RO major corridor ports)
mobility	The port is prioritized if it is located in the Special Zone of Peace and Development (SZOPAD).
enhancement	Road connection is good in 2009. (Except ports located in the SZOPAD and along the East Luzon Link)
	The port has different hinterland of neighboring RO/RO ports.
	The port is able to contribute to forming a close linkage between the north-south corridors (except ports
	located in the SZOPAD) or the East Luzon Link.
RO/RO port for	Population of the island that has existing port facilities is more than 10,000 in 2009.
remote islands	The port is prioritized if it is located in the SZOPAD.
development	Income classification of the municipality where the port is located is 5th or less in 2001. (Except ports located
1	in the SZOPAD)
	The port has different hinterland of neighboring RO/RO ports.
	The port has high growth potential of hinterland. (Except ports located in the SZOPAD)

Table 11.2.3 Criteria for RO/RO Port (2009)

### b) RO/RO Port for Remote Islands Development

Based on the criteria described in Table 11.2.3, in order to support the daily life in remote islands and remote islands development, thirty-one (31) ports are selected as RO/RO ports for remote islands development in 2009. For remote islands that have a population of more than 10,000 in 2009 and existing port facilities, a port in such an island should be given priority if it is located in the SZOPAD, or the income classification of the municipality where it is located is 5th or less and it has high growth potential. Twenty-seven (27) out of 31 ports should be newly developed as Strategic Development Ports by 2009 (see Table 11.3.1). In addition, four (4) ports should be newly developed as RO/RO ports connecting remote islands by 2009 (see also Table 11.3.1). Among the 120 remote islands which have existing port facilities, 64.3% of the population will have safe and improved access to population centers in 2009 as a result of the proposed project (30.1% in 2000).

### c) Social Reform Support Port

From 22 social reform support ports described in chapter 10, seven (7) ports are selected from the viewpoint of promptly securing the accessibility of isolated islands/areas with high growth potential (see Table 11.3.1). The percentage of remote islands and certain isolated areas/islands without sufficient port facilities (126 islands/areas in total) will decrease from 92.9% in 2001 to 71.4 % in 2009 as a result of the project.

3) Ports for Passenger Transport

Same to the long-term plan, it is expected that the majority of maritime passengers will be transported by conventional way. Namely, long distance passengers are expected to be transported by long distance RO/RO ferries similar to the current system while short and middle distance passengers will be transported by RO/RO ferries and/or passenger vessels.

### **11.3** Estimated Cost for the Development and Development Schedule

The investment cost by planning options and the development schedule during initial five years will be shown in Table 11.3.1. The development schedule is proposed taking into account the urgency and importance of them. Total investment cost during five years is about 41 billion pesos, and the cost of the urgent projects is about 15 billion pesos.



Figure 11.2.3 RO/RO Port Network for Mobility Enhancement (2009)

Table 11.3.1 Cost for New Development Projects by 2009 and the Development Schedule

						Imple	mentation sche	dule	
Purpose of investment	Name of port	Berth length (m)	Depth (m)	Cost (m Pesos)	Total cost by option (m Pesos)	Urgent	First half	Second half	Remarks
	Subic	560	-13	6.800		0			
	Batangas	200	-13	1.020		0			
International container	Cebu	300	-13	3.700	14,120			0	
	Davao	250.20C	-12	2.600		0			Part of 500m berth.
	Cebu	Dredging for 200	-10.5	50			0		
	Iloilo	400	-10.5	1.700		0			
International bulk and break	Zamboanga	Dredging for 200	-10.5	50	3,300		0		
VIIIO	Legazpi	200	-10.5	1,500				0	Due to the limitation of space, the development will be
	Cehu	Dredging for 200	-10.5	50			0		For dom'c container dedicated.
	Cacavan de Oro/MCT	200-100	-105	1 670			0		For dom's container dedicated
	Batangas	100		100			0		For dom's container dedicated.
	Iloilo	100		100			0		For dom's container dedicated.
	Davao	100		100			0		For dom'c container dedicated.
Domestic container	General Santos	200.100	-10.5	1.670	11,905		0		For dom'c container dedicated.
	Manila (North Harbor)	Terminal I	-10.5	6,495			0		For dom'c container dedicated, and long dis. RORO ferry.
	Zamhoanga	200 100	-10.5	1 670			0		For dom'c container dedicated
	Culasi	Dredoing for 200	-105	50				0	
	Cebu	Dredging for 900	-6.5	50			0		
	Zamhoanca	Dredoing for 500	-65	50			0		
	CDO/MCT	100	-6.5	500			0		
	Dapitan	200	-6.5	1.000			0		
Domestic bulk and break bulk	Nasipit	200	-6.5	1,000	4,600			0	Due to the unsuitable soil condition, the development will he dowe at Masso
	Taobilaran	200	-6.5	1.000				0	
	Dumaouete	100	-65	500				0	
	Linata	100	-6.5	500				0	
RO/RO ports for major	2 Ports (Caticlan, San Ricardo)				0		0		
corridors	3 Ports (Lipata, Liloan, Mansalay)			068	068			0	
	18 Ports (Tavtav. Mandaon. Conception Tapal. Guindulman. Maasin. Padre Burge	. Cadiz. Bantavan. Bo os. Guinsiliban. San V.	go. icente.			0			
KO/KO for mobility	Maconacon, Palanan, Dilasag, Casiguran	, Baler, Dingalan)		4,520	4,520				
enhancement	10 Ports (El Nido, Tabaco, Nabilid, Sioc	on, Sirawai, Olutanga,					С		
	Ozamiz, Kolambugan, Sumisip, Languya	n)					)		
	27 Ports (Basco, Calatrava, Sta Fe (Tabl. Balabac. Poro. Pilar (Ponson Is.). Pitogo.	as Is.), Magdiwang, A. Kaputian. Balut. San	raceli, Juan						
RO/RO for remote island	(Loreto). San Jose (Dinagat Is.). San Ber	nito. Dapa. Pangutara	n. Pata.	1,705	1,705			0	
mannquian	I aput, Lugus, Slast, Lapak, 1 atupakati, J Tubig Indangan (Simunul Is.). Lamion (B	i anuuoas, Cagayan ue 30ngao Is.). Sitangkai)	,niuc						
	4 Conecting Ports (Currimao, Lupon, Pu	inav. Bongao (Pag-asi	nan))						
Social reform ports	6 Ports (Mercedes, Siruma, Calumpang, I anouh Palimhano)	Malapascua,		161	161		0		
			Total:	41,1	161	15,180	15,516	10,465	

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#### Chapter 12 Environmental Consideration

#### 12.1 General

Many infrastructure development projects aimed at promoting economic growth and improving people's living standards impact the environment of the project site and the surrounding area. It is indispensable to control the environmental impact within the tolerance limit and promote Sustainable Development.

Rules and regulations related to the environment are fairly comprehensive in the Philippines, however, it is difficult to say that those environmental rules and regulations are fully observed and that the environment is fully protected.

The culture of environmental compliance by industries as well as people might not be sufficient to keep the State clean and free from pollution. Rivers and seashores around urban areas are always found full of debris and polluted water and main roads in the cities are congested by vehicles which emit noxious gases. Such a situation jeopardizes both economic growth and people's health.

It is essential to select an environmentally-friendly mode of transportation for the sustainable development of the State. Maritime transportation is the more environmentally-friendly compared with land and air transportation. Various modes of marine transportation must be employed proactively to accommodate the increasing cargo and passenger and the stricter environmental requirements.

During the planning and implementation of port projects, it is important to duly plan and implement the environmental consideration as well as the resettlement of the affected residents.

#### **12.2** Institutional Framework for Environmental Consideration

#### 12.2.1 Basic Framework

The 1987 Philippine Constitution lays down the basic framework for environmental policy. Section 16, Article II states that "*The State shall protect and advance the rhythm and harmony of nature*." Section 15 of the same Article also mandates the State "*to protect and promote the people's right to health*."

#### 12.2.2 Framework for EIS System

The basic environmental ordinance consists mainly of two Presidential Decrees (P.D.).

- P.D. No. 1151 (Established and enacted on June 1977) : the "Philippine Environmental Policy" which constitutes the environmental policy of the State, the responsibility, the Environmental Impact Statements, etc.
- P.D. No. 1152 (Established and enacted on July 1977) : the "Philippine Environmental Code" which regulates Air Quality Management, Water Quality Management, Land Use Management, Natural Resources Management and Conservation, Waste Management, etc.

The Environmental Impact Statement (EIS) System was formally established in 1978 by virtue of Presidential Decree (PD) No. 1586 on the basis of PD 1151, and DENR Administrative Order (DAO) No. 37, series of 1996 or DAO 96-37 together with its Procedural Manual was established to further streamline the EIS System and to strengthen the processes for its implementation. It describes in its objectives that environmental consideration should be incorporated at the earliest possible stage of project development and that public participation on the EIA process should be maximized to validate the social acceptability of the project.

The EIS System is applicable for Environmentally Critical Projects (ECP) and the projects within Environmentally Critical Areas (ECA). Basically, the former is required to prepare the Environmental Impact Statement and the latter the Initial Environmental Examination, however in the Philippines, "major port and harbors" and "reclamation projects exceeding 5 hectares" are required to prepare the EIS instead of the IEE without reference to the project location.

Laws and regulations for EIS System are fairly comprehensive. The EIS System must be implemented and maintained as an effective planning, regulatory and management tool and be improved for further effective environmental performance.

### **12.2.3** Framework for Pollution Control and Waste Management

Other major laws and regulations on environmental protection are;

- Republic Act No. 6969 "Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990": Regulates the importation, use, movement, treatment and disposal of toxic chemicals and hazardous and nuclear waste
- Republic Act No. 7160 "Local Government Code of 1991" : Mandates LGUs to undertake the function and responsibilities on general hygiene and sanitation, beautification, and solid waste collection and disposal system
- Republic Act No. 8749 "The Clean Air Act of 1999" : Provides a comprehensive air pollution management and control program
- Presidential Decree No. 984 "Rules and Regulations of the National Pollution Control Law" : Provides guidelines for the prevention and control of pollution from solid, toxic and hazardous waters

- Presidential Decree No. 979 "Marine Pollution Control Decree of 1976" : Prevents and controls the pollution of the seas by prohibiting the dumping of waste and other matter
- Presidential Decree No. 825 "Garbage Disposal Law" : Provides penalties for improper disposal of garbage and other forms of uncleanliness
- Presidential Decree No. 856 "Sanitation Code" : Requires cities and municipalities to provide an adequate and efficient system for collection, transportation and disposal of reuse
- Presidential Decree No. 1181 "Vehicular Emissions Control Law" : Prevention, control and abatement of air pollution from motor vehicles

### 12.2.4 Framework for Resettlement of Inhabitants

Illegal occupants can be seen in most of the major and medium class port areas in the Philippines. Some make their homes there while some are venders along the passage way to the ports; most rely on port related activities for their livelihood.

"Policy Guidelines for the Implementation of the Resettlement Assistance Program to Local Government Units" which takes care of involuntary resettlement was prepared by the National Housing Authority and specifies the roles and responsibilities of the government agencies (NHA, LGUs and others) and project proponents concerned, applicable beneficiaries, operational procedures, etc. when involuntary resettlement occurs due to the implementation of the public development projects.

Whenever a resettlement project becomes necessary due to a public development project, NHA provides technical assistance and a certain portion of the funds for the land development to LGUs who in turn provide the resettlement land and any necessary remaining funds.

### **12.3** Environmental Consideration in Port Development and Use

Generally, port activities are closely related to the industrial development and other projects in the hinterland, and thus the impact of port activities is wide ranging.

Port activities impact on the environment in various ways through the implementation of construction works, closing water area by breakwater, navigation of vessels, cargo handling at wharves, etc. In addition, various activities closely related to the port are also seen in the areas behind the port, for instance, production activities. And this often results in increased traffic to and from the port. Furthermore, the populations of urban areas surrounding the port tend expand in line with the growth of economic activities, and various pollution issues or negative impacts on the environment tend can arise.

During the planning stage, the following environmental impact factors must be identified and taken into account for preparing the mitigation measures;

- Impact factors to be generated during the construction of the port and related facilities
- Impact factors resulting from the port activities
- Impact factors resulting from the industrial / commercial / livelihood activities which are making progress at the hinterland by utilizing the port

For port development projects, the environmental impact factors and the environmental components are as follows:

- Environmental impact factors ; Construction work, existence of port, use of water area facilities, use of land area facilities, operation of hazardous handling facilities, treatment and disposal of waste, traffic functions, industrial production activities, operation of distribution and storage function, use of recreational facilities, etc.
- Environmental components ; Air quality, water & bottom condition, noise & vibration, odor, topography, coastal hydrology, fauna & flora, scenic view, waste, socio-culture, socio-economy, etc.

### 12.4 Environmental Condition Survey

The Environmental Condition Survey was conducted at the ports nominated for the short term development plan of the Study. It is necessary to take into account the following findings when the port development projects are to be planned and implemented.

Squatters exist in and around areas located in major and medium urban ports except Batangas Port of which resettlement issues had been solved during the first phase of the project. The resettlement of the affected residents will be necessary at the ports where squatters are found in the course of the port development. It is important to facilitate smooth implementation on the resettlement of the affected residents.

Ports that were suffered from the earthquakes due to their locations situated on or near the fault lines are Padre Burgos, Masao, General Santos, Zamboanga and Lipata. In addition, ports of Mandaon, Tapal, Guindulman, Manila and Tagbilaran experienced the earthquake having the seismic intensity of around 6. Especially, the port of Padre Burgos is obliged to submit the Engineering Geological and Geohazard Assessment Report (EGGAR) to DENR as additional requirement for ECC application when developing port facilities because the said area locates near the probable fault lines. It is necessary to plan the port development with taking account of the earthquake impact.

Mangrove is found around the ports of Batangas, Mandaon, Tapal, Guindulman, Padre Burgos, Pilar,

Zamboanga, Ozamiz and Lipata and coral at Mindanao Container Terminal, Davao, Cadiz and Guinsiliban. It is necessary to examine the condition of the aquatic flora and fauna to protect the mangrove, coral and other aquatic resources in the course of the planning of the port development.

Insufficient water depth at Cadiz and Pilar port obstructs the smooth navigation of the vessels during the low tide and the navigation in Pilar port is also obstructed by the fish-traps installed in Pilar Bay.

The roads linking the ports of Masao, San Ricardo and Mandaon and their hinterland are found in poor condition, therefore, it is necessary to improve those access roads when the port development projects are implemented.

Heavy siltation is found at Masao Port and Santa Ana Pier of Davao Port. It is necessary to implement the survey on the siltation during the planning stage of the port development.

Heavy metals (lead, cadmium and copper) were monitored in the coastal waters by the DENR. It is necessary to carry out the seabed soil examination/analysis during the planning stage of the port development to prevent any spread of the hazardous substances due to the implementation of the port development project.

### 12.5 Environmental Partnership Program

The Philippine Environmental Partnership Program (PEPP), the government-industry partnership program was established with the objective of establishing support systems to enable industry to improve its Environmental Management System (EMS) and other preventive strategies. Under the program, a package of regulatory assistance, incentives, and other supports will be provided to allow industry to explore and implement cost-effective and sustainable solutions for managing industrial pollution.

The groundbreaking features of PEPP are as follows;

- Introducing the concept and approach of the Environmental Management System (EMS).
- Targeting at all levels of the establishments, i.e. one side is the top-shelf establishments who implement and maintain ISO 14001 based EMS, and another who aim for improved environmental performance but are not yet in full compliance with the administrative and/or technical requirements of environmental laws.

One of the most important factors of the Management System (EMS, QMS, or whatsoever) is to provide training for all levels of the constituent member of the establishments. During the course of the training, members will be introduced to the basic requirements of the establishment's EMS, together with the concrete procedures to maintain the system.

### 12.6 Recommendation

### (1) Promoting Environmentally-friendly Transportation System

Maritime and railway transportation modes are both highly energy efficient and environmentally-friendly. It is necessary to use environmentally-friendly transportation modes to reduce  $CO_2$  emissions which cause the green house effect and  $SO_2$  which causes acid rain. Since it is not likely or feasible that railway facilities can be developed to a sufficient extent in future, maritime transportation offers the best solution. Therefore, it is necessary to promote the further development of port facilities.

### (2) Consistent Environmental Consideration

It is necessary for the industries and public agencies to develop a culture of environmental compliance in their daily work through implementing and maintaining the EMS and its training. On the other hand, it is necessary to provide environmental education and training in school for children and students to promote and enhance understanding on the need for environmental protection and environmental compliance throughout the country.

During the planning stage of the port development projects, the government agencies, the port administrative bodies or private sector as a proponent of the project should take into account the environmental consideration for the whole life of the project, i.e. during the stages and period of planning, detailed designing, construction, port operation and expansion/modification/removal of the facilities. The project proponent must be responsible for ensuring that its engineering and designing division including outsourcing is taking measures during the planning and designing stage for reducing the environmental impact to the natural and social environment for the whole life of the project and selecting the structure type/materials/equipment that can be reused or recycled in the future as much as possible.

#### (3) Measures for Resettlement without causing problems and Poverty Alleviation

When selecting the site for a port development project, a location without any residents is the optimum choice, however, it may be necessary to select a location where residents are found. Should any resettlement of the residents occur in the course of port development project, the following must be taken into account;

- To conduct consultation with residents reflecting their diversity
- To complete the development of relocation site before the relocation commenced
- To involve residents in the formation of livelihood program

It is essential that the poverty alleviation policy be successfully implemented to remove the

underlying causes of illegal residents and occupants in urban areas.

As one of the approaches to promote poverty alleviation and eliminate the inequality of opportunity that is one of the causes of the poverty, significant investments in human capital are required. The quantity and quality of primary education must be improved if the country is to achieve sustainable growth.

## (4) Improving EIS System

The EIS System must be implemented and maintained as an effective planning, regulatory and management tool and be improved for further effective environmental performance.

It is recommended to include the soil contamination test as one of the contents of the EIS for onshore and/or seabed/riverbed soil to identify toxic substances, such as heavy metal, etc., and prevent the spread of any toxic substances due to the implementation of port development projects.

### Chapter 13 Economic Analysis

### 13.1 Objective of Economic Analysis

The objective of the economic analysis is to appraise the economic feasibility of the strategic port development projects proposed by JICA Study Team, focusing on the short-term port development projects in the target year 2009, from the viewpoint of the national economy. The Philippines is facing a growing need to catch up with increasing port capacity requirement year by year. In particular, international container cargo is growing faster than other port cargo. The Philippines' major port authorities are now preparing for port extension and provision of efficient equipment for container cargo handling. These urgent container terminal projects are analyzed from the economic impact point of view.

Apart from international cargo, domestic cargo is also increasing at a high growth rate toward the target years 2009 and 2024. In response to this, RO/RO port and related highway projects in the Philippines were launched in 2002 by the national government and are being promoted by making use of available financial resources. JICA Study Team has also planned the nationwide RO/RO development plan, which consists of RO/RO ports for major corridors, RO/RO ports for mobility enhancement, and RO/RO ports for remote islands. The economic analysis is carried out in order to examine the economic benefits of selected port projects, and to evaluate their economic viability by means of numerical comparison of costs and benefits.

In addition to the nationwide RO/RO development plan, domestic multi-purpose berths need to be urgently developed to meet the increasing seaborne cargo demand at ports. Recently, cargo vessel size has been increasing year by year, but 69% of berths in the Philippines have a water depth of less than 10m. Due to these draft constraints of ports, a number of cargo vessels have not been able to maximize cargo transport efficiency. Cargo handling system at berth also need to be urgently modernized. Both labor-oriented cargo handling and ship-gear loading/unloading system have been the cause of port congestion and ship waiting time at anchorage. In order to provide port users with much faster, safer and more reliable cargo handling, domestic multi-purpose berths must be renovated and restructured. All these cost requirements are examined and compared with benefits derived from modernization of ports.

#### 13.2 Methodology of Economic Analysis

EIRR is introduced to the economic analysis to appraise the economic feasibility of projects. EIRR is the discount rate which makes the present value of project costs equal to the present value of project benefits during the project life. NEDA, Government of the Philippines, has adopted EIRR of 15% or more as the appropriate value for public infrastructure investment programs. In order to examine the feasibility of a project when the given assumption is changed, a sensitivity analysis is carried out by using the following two alternatives.

- (1) Project costs increase by 10%, and
- (2) Project benefits decrease by 10%

### 13.3 Economic Analysis for Port Development Projects in the Philippines

In order to conduct the economic analysis, the following four (4) port development projects are selected.

- 1) Batangas Port Phase-2 project (International container terminal)
- 2) Iloilo Port international bulk / breakbulk terminal construction project,
- 3) Zamboanga Port domestic and international multi-purpose terminal construction project, and
- 4) Araceli RO/RO terminal construction project

Table 13.3.1 shows the result of the economic analysis of the above 4 port development projects. According to Table 13.3.1, all four (4) projects have a EIRR value of more than 15%. Among various kinds of economic benefits which are generated by project implementation, the reduction of vessel waiting time at port and cargo handling time at berth is the dominant factor. Regarding the economic analysis at Batangas Port, the reduction of land transport cost is the largest economic benefit from project implementation. Import/export products which are needed or generated at Export Processing Zones (EPZ) in the CALAVARZON region, are now transported to/from the Port of Manila. When the international container terminal at Batangas is operational, those import/export products at EPZ will be transported to/from the Port of Batangas, which is located close to EPZ in the CALAVARZON. The reduction of land transport cost for import/export products at EPZ is one of the most important benefits in terms of the economic justification of the Batangas international container terminal project.

The results of the sensitivity analysis are shown in the same table. In the sensitivity analysis, the higher construction cost lowers the economic viability of the project. If expected large vessels do not arrive at the port after the completion of the project, the economic justification for the project will have been lost. Although all EIRR values exceed 15%, project promoters should take the overall economic environment and port cargo demand in the Philippines into account. Port infrastructure investment should be achieved step by step in due consideration of changeable cost and benefits.

Classification	International GatewayPort	Important Internation	onal Transport Port	RO/RO Port
Port	Batangas Phase-2	Iloilo	Zamboanga	Araceli
Project	International	International bulk/	Domestic and	RO/RO Pier (30m),
	container terminal:	break bulk berths	international multi-	Causeway (250m)
	3 berths	(400m)	purpose berth	
			(200m)	
Project Cost	5,680 mil P	1,700 mil P	1,670 mil P	39 mil P
Benefits	1.Reduction of	1.Reduction of vessel	1.Reduction of	1.Reduction of vessel
	vessel waiting	waiting time.	vessel waiting time.	waiting time.
	time.	2.Reduction of cargo	2.Reduction of	2.Elimination of cargo
	2.Reduction of	handling time.	cargo handling time.	handling cost by means
	cargo handling		-	of abolition of terminal
	time.			operator service.
	3.Reduction of land			(Self-propelled
	transport time.			embarkation)
	-			3.Reduction of
				passenger's waiting time
				at embarkation.
				4.Reduction of cargo
				spoilage at embarkation /
				disembarkation.
EIRR	29.1%	28.4%	28.3%	22.2%
Sensitivity				
Analysis	26.00/	26.00/	26.20	20.20/
(The worse	26.9%	26.0%	20.2%	20.2%
scenario)				

Table 13.3.1 Result of Economic Analysis

Source: JICA Study Team

### Chapter 14 Port Management and Operation

### 14.1 General

For improving the efficiency of sea transportation in the Philippines and supporting regional socio-economic development, it is important not only to develop adequate port facilities but also to utilize port facilities efficiently. To improve the cargo handling efficiency for effective port facilities' utilization, it is necessary to solve various problems brought by not only port users but also terminal operators (arrastre) and port authorities. Furthermore, waning competitive power among ports, insufficient understanding of each port's condition, port security and insufficient port promotion activities are issues that need to be urgently addressed. In the following section, proper port management and operation system and implementation plans will be proposed.

#### 14.2 Cargo Handling

#### (1) General

Except for major ports with large volumes of cargo such as MICT, Manila South Harbor, Cebu, Davao and Batangas, cargo handling efficiency is not satisfactory. Poor cargo handling efficiency is mainly related to the cargo handling contract system, which does not give enough incentive for better productivity. Terminal operators at domestic trade ports do not have sufficient financial capability to invest in equipments due to limited revenue.

#### (2) Cargo Handling Contract in Major Ports

The terminal operator, Arrastre, operates the port on behalf of PPA with limited contract period. At the expiration of the period, unless the terminal operator fails to comply with the contract conditions, renewal (probationary) contract is given to the existing operators. The terminal operator does not have incentive to invest in the equipment, because contract period is shorter than the depreciation period of the equipment.

#### (3) Problems on Existing Cargo Handling

1) Lack of Equipment / Maintenance for Equipment Affects Efficiency

A terminal operator is obliged to supply sufficient equipment. However, shipping company often has to procure additional equipment, instead of the financially weak terminal operator. Furthermore, existing equipments are generally secondhand ones in government ports and are in poor conditions. 2) Lack of Incentives to Use Cargo Handling Equipment

Ships prefer to use own gear if berthing port tariff is bw, since there is no incentive to speed up operation by using port equipment, which require additional payment.

3) Mix Use of Berth Cause Various Negative Effects

In case of cargo handling volume is larger, because of insufficient berthing facilities, practice of mix use of berths for break-bulk, bulk, RO/RO and containers are observed, which cause various negative effects. Priority berthing and operations for RO/RO interferes and interrupts bulk cargo handling. In case of cargo handling volume is small, this problem doesn't exist.

4) Lack of Labor Qualification (Lack of Safety Matters)

Due to inexistence of labor qualification and license/certification system for special equipment handling, operators prefer to hire cheaper unskilled labors. Unskilled workers not only damage to the equipment and cargoes but also affect efficiency and safety on operation.

- (4) Proposal on Cargo Handling Efficiency and Contract
- 1) Longer Cargo Handling Contract Period for Operator
- In order to assure sufficient time to recover investment for the cargo handling equipment, the contract period should be extended at least more than 15 years.
- The port authority and public port development body should install the duty of getting license/certificate to terminal operators compulsory.
- The scope of the PPA's contract should be opened to the new entries to promote competition between the operators when the long-term contract is expired.
- 2) Assistance in Procuring Cargo Handling Equipment (Fund, Lease, Etc)

Most terminal operators do not have the financial means to procure and to install new/extra equipment. To expedite mechanization, establishment of fund on cargo handling equipment with the collection of few percentage of additional cargo handling charge need to be examined.

And for operators, some form of financial assistance for purchasing equipment or provision of equipment by the port authorities / public port development bodies should be examined.

3) Strict Monitoring of Terminal Operator's Productivity

At present, terminal operators report their efficiency to the Authority, however, the contents of the reports are sometimes inadequate. Strengthening of monitoring the performance of terminal operators is proposed. Concretely, the criteria of evaluation should be actually achievable and satisfactory. The Authority should monitor the terminal operator's productivity twice a year against their semi-annual productivity report. The Authority should suspend, cancel or terminate the contract of a terminal operator if he is unable to meet the required level of efficiency.

### 14.3 Port Tariff

### (1) Comparison of Port Tariffs with Other Major Ports

Except for the tariffs for international trade, port tariffs, both on ships as well as on cargoes in the Philippines are extremely lower than the level at the neighboring countries'. The one-day dockage and usage for a 10,000 GRT vessel in the Philippine port are less than 12 hours charge at most of other ports even though Philippine ports do not have less than one-day charge as indicated in the following table.

Port Name	Dockage	Usage
Philippines:	USD 0.039 x <u>1 day</u> x 10,000 GRT = USD 390	PHP 0.50 x <u>1 day</u> x 10,000 GRT = PHP 5,000
Kaohsiung:	USD 54.43 x 12 hours = USD 654	PHP 2,910 x 12 hours = PHP 34,920
Bangkok:	USD 0.002 x 12 hours x 10,000 GRT = USD 240	PHP 0.115 x 12 hours x 10,000 GRT = PHP 13,800
Tokyo:	USD 0.085 x 10,000 = USD 850	PHP 4.59 x 10,000 = PHP 459,100
Chiba:	USD 0.026 x 10,000 = USD 260	PHP 6.90 x 10,000 = PHP 69,000

#### (2) Comparison with Vessel Operation Cost

For a ship operator, share of port tariffs in the domestic vessel operation expense in the Philippines is only 1%. Major expenses on vessel operation are fuel, maintenance and personnel cost.

#### (3) Problem of PHP-USD Exchange Rate

Regarding the collection of PPA port tariffs, most of port tariffs are collected in pesos, although port dues, dockage and wharfage on foreign transship cargo are collected in US dollars. However, real value of port charges in pesos has been declining against dollar as the peso has become weaker.



Source: Data Book 2001, Domestic Shipping Industry in the Philippines, MARINA / JICA Figure 14.3.1 Share of Domestic Shipping Companies' Operating Expenses 2000



Source: JICA Study Team based on PPA Port Tariff (Usage), Philippine Statistical Yearbook 2002 by NSO (Consumer Price Index) and NWPC (National Wages and Productivity Commission), and RTWPBs (Regional Tripartite Wages and Productivity Boards) of NCR under DOLE (Minimum Wage)

Figure 14.3.3 Relationship between Usage, Consumer Price Index and Minimum Wage



\*The amount of usage fee, wharfage are converted into USD.



Source: JICA Study Team based on PPA Port Tariff (Exchange rate: The University of British Columbia) Figure 14.3.2 Real Value of Usage, Wharfage in US Dollars and PHP-USD Exchange Rate

#### (4) Comparison with Socio-Economic Factors

The relationship between usage, consumer price index and minimum wage is shown in Figure 14.3.3.

Raising the usage fee has been still less appropriate against the changing of consumer price index (whole). Raising the usage fee has been still less appropriate against the changing of consumer price index (whole). The gap is even greater for the labor's minimum wage and for the price index of fuel.

## (5) Proposal on Port Tariff

To improve berth utilization and cargo handling efficiency, and promote ports and economic activities in the hinterland, following tariff settings should be introduced.

• Shortening unit of the port tariff (from dairy basis to hourly basis)

Especially dockage at berth / anchorage and usage fee, unit of these tariffs should be changed from daily basis to hourly basis, and escalation fee for longer berthing vessels should be introduced as well. Ships will leave the berth as soon as possible, and berth utilization rate will be increased, thus costly berth extension may be postponed.

• Introducing lease contract with terminal operator (Fixed and variable tariff for lease agreement)

If a port has plural facilities and sufficient cargo volume, introducing "lease agreement" for specific berth should be introduced. The agreement includes the setting of "fixed fee" against the existing cargo handling volume for leasing facilities, and "variable fee" against the incremental cargo handling volume. Variable fee will give terminal operator an incentive to increase the efficiency by arranging new equipment, hiring skilled workers and so on. Although generally a port has only one multi-purpose berth, lease agreement which allows operators to utilize the berth for multi-purpose use (not to handle only one specific type of cargo) should be also introduced.

• Necessity of appropriate port tariffs

Present tariff levels for both ships berthing and for domestic cargo handling are set extremely lower than that required for financially viable operation. A port which handles only domestic cargo will find it difficult to maintain their port facilities using only their own port revenue. Therefore, most ports operated by local government units are not financially independent, and cannot attract any private investors.

Appropriate tariff setting (increasing domestic port tariffs) and liberalization of cargo handling tariff should be implemented so that those ports can be financially independent, at least to the extent that they could maintain their facilities and possibly attract private operators. In addition, port tariffs should be gradually increased.

### 14.4 Port Procedures

Port procedures are very complicated and often take much time. Simplification of port procedures is not only an essential element of efficiency improvement but also one of the most important factors for raising competitiveness as an international container hub port or gateway port.

Documents related to port procedures are not integrated. A system to integrate documents on port procedures needs to be introduced and DOTC should take the initiative in establishing this system.

### 14.5 Port EDI System

(1) Introducing Port EDI System and Single Window System

In recent years, more and more procedures involved in harbor entry and departure are being processed by EDI (Electric Data Interchange) system at major overseas ports, including those in other Asian countries. In the Philippines, PPA is now introducing an EDI system (known as "PROMPT"). PPA's EDI system should be expanded to major ports (International gateway ports and Principal international trade ports) under other port authorities / port development bodies and the establishment of the "e-Port Community" (= Single Window System) should move forward.

The concept of "Single Window" or "One-stop service" system is to unify all documents into one integrated application form. EDI system allows each organization to collect and exchange data each other through the network. Port users can thus enjoy the convenience of a Single Window System.

#### 14.6 Security Measures for Port Facilities

After the terrorist attacks in the US, port authorities in the world have been strengthening countermeasures against terrorism, and also working with related organizations such as the International Maritime Organization (IMO) to establish a global-scale maritime security framework. Furthermore, it is required to prepare the comprehensive port security based on a global-scale framework at a port. And following items should be introduced;

- (1) Secure the Port Security Standard Based on the Provisions of the SOLAS Convention
- (2) Coping with the United States' CSI and 24-Hour Rule
- (3) Risk Management System in Port Security

### 14.7 Port Statistics

### (1) Port Inventory

In a port system with various port authorities / public port development bodies as in the Philippines, identifying information such as port authority / public port development body, cargo volume and facilities of each port is important for formulating an efficient port plan. Therefore, these data need to be listed clearly in the Ports Inventory. In this connection, DOTC, which is the responsible authority for port administration, should make contribution in making detailed guidelines / check lists for the direct site surveys conducted by DPWH, and should enhance cooperation with DPWH personnel.

#### (2) Port Statistics

For effective national port system planning, cargo volumes from all ports (including other port authorities / public port development bodies) need to be compiled and properly classified. Thus, DOTC should consult and coordinate NSO which is responsible to put together these data.

#### 14.8 Port Promotion

In general, the objectives of port promotion activities are to increase more cargo, calling vessels and passengers which will generate more income at the ports and employment opportunities for residents. And if industry can be attracted to the port's hinterland, a further increase in port activities can be expected and this will benefit the economy of the region and that of the nation. In particular, port promotion activities for minor port should be liaised with local promotion programs.

### Chapter 15 Private Sector Participation

### 15.1 Private Sector Participation (PSP) in the Port Sector

### (1) Commercial Port PSP

The government of the Philippines introduced the Republic Act (RA) No.6957 of 1990, amended to RA7718 in 1994, for the national privatization policy. In the port sector, two international container terminals have been operated successfully under PSP scheme.

Manila International Container Terminal (MICT) has been leased to the International Container Terminal Service Inc (ICTSI) for management, operation as well as development of the container terminal.

Manila South Harbor has been leased to Asian Terminals Incorporated (ATI) for management, operation as well as development of the general cargoes, passengers and container handling terminals.

#### (2) Private Commercial Port

With the exception of a few port that have been developed as part of other projects, privately owned commercial ports, which are run solely by the operational income of the port, have not been developed in the Philippines.

#### 1) BREDCO

At BREDCO port in Negros Island, a private developer started land reclamation. A part of the reclaimed land became cargo handling terminals for general cargoes and passengers.

#### 2) Harbor Center

In 1996, a private sector created a multi-purpose terminal at the reclaimed land in front of Smoky Mountain, Manila.

#### (3) Specialized Terminals

Many terminals, which handle large quantities of specific liquid bulk or dry bulk cargo are developed and operated by private enterprises.

## 15.2 General Principles and Basic Requirements for PSP

### (1) General Principles

At the introduction of Private Sector Participation, the public sector has to understand the possible gap between expectation of the private party and the public sector.

A private enterprise pursue always profit. Without guaranteed profit, a private sector would not invest. At the initial stage of application for the project participation, various factors are not clearly identified. Therefore the private applicant is extremely cautious not to be involved with high risks with the project eventually demands higher return by the contract and it will result in less return to the public side than expectation. Therefore, the government side should not expect an easy return by the project.

### 15.3 Risks Involved with Private Sector Participation for Port Development and Operation

(1) Risks for the Private Sector

The risks faced by the private sector may be summarized as follows;

- 1) Funding
  - Investors tend to be obliged in non-profitable infrastructure developments such as channel dredging and land acquisition.
  - Construction costs tend to increase.
  - Extra insurance and interest payments may be required by delay of the project.
- 2) Administrative Procedure
  - Time required for various approval, EIA, compensation of property or rights and resettlement of people etc.
  - Government policy may change according to the social and political environment.
  - Government often revise tariff system.
  - The private sector has no means to adjust tariff.
- 3) Economic Environment
  - Foreign currency exchange rate change or inflation risks.
  - There is always a danger that the cargo volume is less than expected.

#### (2) Risks for the Public Sector

Due to the high risk involved in the BOT business, the number of players has been reduced to only a few big operators, which collectively manage world's major container terminals. Under these

circumstances, a port authority usually has less information on the worldwide container terminal market. Those mega-operators always have more information and vast experiences in the terminal contract negotiations.

Time required for the negotiation is another problem for the concession negotiation. Usually the applicant (operator) has no need to hastily conclude contract with a port unless the operator can obtain very favorable conditions. The port authority, however, desires to reach an agreement as soon as possible. Therefore, the more time spent on the negotiations, the more likely it is that the operator will obtain advantageous conditions.

### 15.4 Establishment of Transparent Procedure for PSP

It is desirable that the government should establish a strict and concrete "selection criteria" of PSP applicants. Arbitrary selection criteria will certainly create distrust among the investors. In order to attract foreign investors, the preparation of a guideline, which plainly explains the framework of PSP of the country, is also very useful. Furthermore, the government should make every effort to open the PSP-related information to the public as much as possible in order to upgrade the quality of the PSP system.

- (1) Keys to Successful Privatization
  - The government should not expect easy money from private investors.
  - Private investors never invest for unprofitable project

# 15.5 Recommendation

Successful introduction of PSP depends on various factors. Interests and expectation of the public and the private sector have to be compromised.

- (1) The public sector expects reduction of financial burden by PSP. The government tends to expect not only reduction of saving of budget deficit, but also expects larger revenue from the private operator/concessionaire.
- (2) A private sector always pursues profit. Without prospect of enough profitability, a private investor will never invest.
- (3) Estimated profit must have sufficient safety margin to compensate possible risks, which includes government interference, political, economic and social stabilities.

The government must recognize that PSP does not eliminate entire financial responsibility or burden of the public sector. A successful PSP project is only achievable by prudent preparation by the port (government or public landlord).

## Chapter 16 Port Administration

## 16.1 General

## 16.1.1 Present Situation

At present, there are more than 2,000 ports and about 420 fishing ports in the Philippines. The former ports are classified into two categories; public ports and private ports. Of the total number of ports, 1607 ports are public ports and 423 ports are private ports. Public ports include many LGU ports owned by government / municipalities. Private ports are composed of two types of port; one is ports for public use and the other is ports for exclusive private use. Other than these ports, there are many fishing ports. Fishing ports are basically used for fishing activity, however sometimes fishing ports are used for transportation of people and non-fishery goods.

Prior to 1992, Philippine Ports Authority (PPA) had managed, operated and controlled all of the ports in the Philippines. On and after 1992, CPA spun off from PPA, and Public Port Development Bodies (PPDBs) such as BCDA, SBMA, CEZA and RPMA in APMM were created one after another. Some LGU ports are managed and operated by local municipalities. As for fishing ports, major fishing ports are managed by PFDA while small fishing ports are managed by LGUs.

Vinds of port	Classification (by Port	authority / PPDB)	Number of Dort
Kinds of port	Port authority / PPDB	Ports	Number of Ports
	PPA	Base ports, Terminal ports	114
Public	СРА	Base ports, Out ports	42
Ports	PPA, CPA, LGUs	Ports located in LGUs	1,365
1 0115	RPMA (ARMM Region)	Port under RPMA	82
	SBMA, BCDA(JPDC), PIA, CEZA	Subic Port & others	4
	Total(1)		1,607
Private	Private company	Commercial (Public)	30
Ports		Non-Commercial port	393
	Total (2)	423	
Others			5
	Total (1) + (2)		2,035

 Table 16.1.1
 Classification of Port authority / PPDB and Number of Ports

Source: JICA Study Team

Except the ports under above-mentioned PPDBs, most ports including private ports are under the control of PPA or CPA from the viewpoint of both regional development and effective operation of

port and marine transportation. PPA and CPA are under the umbrella of DOTC (Department of Transportation and Communications) for the purpose of policy coordination. PPDBs including PIA are not under the supervision of DOTC. DOTC, responsible for development of small ports, is in charge of promotion, development and regulation of a dependable and coordinated transportation network, in which the port network is one of the most important elements.

## 16.2 Port-related Organizations

## 16.2.1 Department of Transportation and Communications(DOTC)

DOTC is, as mentioned above, the primary administrative entity of the government in the promotion, development, and regulation of a dependable and coordinated transportation network system. Among divisions of DOTC, those related to port development are Water Transport Planning Division of Transportation Planning Service, PMO-Ports and Project Management Service (PMS). Both PPA and CPA are also in charge of port development.

### (1) Water Transport Planning Division (WTPD)

The Water Transport Planning Division carries out the following tasks in terms of port development.

- a) Formulation of policies on port development
- b) Undertaking of feasibility study to look into the viability of proposals submitted by LGUs
- c) Preparatory work for ODA Project
- d) Work for maritime safety closely coordinated with the Philippine Coast Guard

The purpose of b) is to judge whether or not the proposal from a local municipality has a clear social need. Request for port development from local governments through the office of the President, Congressman, Secretary and Director are gathered in this division. These requests are prioritized taking into account all elements in this division. After taking into consideration the budget, a decision on which ports will be developed is made.

(2) Project Management Office for Ports (PMO-Ports)

PMO-Ports is in charge of ODA-related small ports projects. It's function and duties are as follows.

- a) Preparation of annual capital and operating budgets and programs of the projects for the approval of the department, and arranging for funding support.
- b) Act as secretariat of DOTC Pre-qualification, Bid and Award Committee (PBAC) for the per-qualification and selection of Consultants and Contractors.

- c) Ensuring consistency of construction activity with the approved plans and specifications.
- d) Recommendation on the approval of plans, specification, estimates, program of works, tender proposals, awards of contract and contract documents for the project .
- e) Monitoring and supervision of the overall project execution.
- f) Undertake such other function as may be assigned by the Department.

At present, this office is undertaking JBIC financed Feeder Ports Development project. This project is to construct/rehabilitate 36 feeder ports in region II, IV, VI, VII, VIII, XII and XIII and is scheduled to be completed in April 2006.

(3) Project Management Service (PMS)

PMS is the implementing arm of the DOTC, which performs the task of infrastructure project management to ensure the completion of locally-funded airports, municipal ports, and DOTC's local office building projects. PMS is responsible for monitoring the progress of the projects, ensuring its compliance with the conditions of the contract, and ensuring that the projects conform to all applicable policies, directives, laws and regulations.

#### 16.2.2 PPA

#### (1) Outline

PPA is the main government agency concerned with the planning and development of the country's seaports, a vital link in both domestic and international trade. Established in 1974, the PPA's Charter was amended by Executive Order 857 to expand its functions to cover the integration and coordination of port development nationwide. However, PPA's functions have been abridged since the establishment of PPBDs.

PPA has more than 4,300 staff including casual and contractual laborers, and many of them have a lot of knowledge and experience related to ports and harbors. Therefore PPA plays a very important role in port development, administration and management. PPA is a financially autonomous organization and is not permitted to fall into deficit. On the other hand, PPA is forced to be responsible for all ports under the PPA port system.

#### (2) Objectives

The main objectives of PPA are as follows:

a) To coordinate, streamline, improve and optimize the planning, development, financing, construction, maintenance and operation of ports, port facilities, port physical plants, and all

equipment used in connection with the operation of a port.

- b) To ensure the smooth flow of water-borne commerce passing through the country's ports whether public or private, in the conduct of international and domestic trade.
- c) To promote regional development through the dispersal of industries and commercial activities throughout the different regions.
- d) To foster inter-island sea borne commerce and foreign trade.

#### (3) Functions

PPA is to formulate in coordination with NEDA a comprehensive and practical port development plan for ports under the PPA port system and to program its implementation, renew and update the same annually in coordination with other national agencies. This plan is quite important because ports under the PPA system handle most of the cargo in the Philippines.

#### 16.2.3 CPA

CPA spun off from PPA in 1992. The territorial jurisdiction of the Authority includes all seas, lakes, rivers and all other navigable inland waterways within the Province of Cebu. CPA serves to integrate and coordinate the planning, development, construction and operation of ports and port facility within its territorial jurisdiction, consistent with the needs and requirements of the region. It enhances the flow of international and domestic commerce passing through or utilizing the regional ports. It promotes regional development by providing support service to sustain the growth of exports and other priority industries in the region.

### 16.2.4 BCDA and PPMC

#### (1) BCDA

BCDA is a regional development authority created by Republic Act No. 7227 for accelerating the conversion of military reservations into other productive uses. BCDA has the power to construct, own, lease, operate and maintain public utilities as well as infrastructure facilities including ports. Because of the creation of BCDA, the San Fernando Seaport was turned over from PPA to BCDA on February 1, 1997.

#### (2) PPMC

President Proclamation No.216 created the Poro Special Economic and Freeport Zone (PPSEFZ) on July 27, 1993. The PPSEFZ was placed under the ownership, control and jurisdiction of the BCDA,

the primary government entity tasked to implement the national bases conversion program,

On October 3, 2002, Executive Order No. 132 was issued, creating the Poro Point Management Corporation (PPMC) as the implementing arm of the BCDA over the Poro Point Special Economic and Freeport Development Zone. PPMC has a function to assess the development and performance of the seaport.

#### 16.2.5 SBMA

SBMA was designated as an operation and implementing agency to establish the Freeport and to ensure the promotion and development of various kinds of social projects. The Authority employs about 5,100 and has the following four divisions for port development: Port Management Division (PMD), Port Operations Division (POD), Terminal Operations Division (TOD) and Port Engineering Division(PED). A total of 234 persons are deployed in its four major divisions. The authority is now undertaking a container terminal development project using a JBIC loan. The bidding procedure is currently under way. The construction work is expected to commence at the beginning of next year (2004).

#### 16.2.6 PIA

PIA is a corporation which is owned by the government. It was established on August 13, 1974 through Presidential Decree No. 538. PHIVIDEC's container terminal at northern Mindanao is scheduled to be completed by the end of March in2004.

#### 16.2.7 CEZA

CEZA is mandated to supervise and manage the development of the Cagayan Special Economic Zone and Freeport (Cagayan Freeport) into a self-sustaining industrial, commercial, financial, and tourism / recreational center and Freeport with suitable retirement/residential areas, in order to create employment opportunities in and around the Cagayan Freeport, and to effectively encourage and attract legitimate and productive local and foreign investments. Republic Act No. 7922, creating CEZA, has effectively transferred the functions of planning, development, management, operation, repair, and maintenance of the port of Irene from the PPA to the CEZA.

#### 16.2.8 RPMA

RPMA was established at Cotabato city in 2002 for the purpose of port development in the
Autonomous Region in Muslim Mindanao. The functions of the authority which are almost the same as ones of other port authorities, are to plan, supervise, regulate, construct, manage and maintain the port in the region and provide necessary port services and facilities. There are three base ports and around 80 small ports in this autonomous region.

### 16.2.9 PFDA

PFDA is the government agency entrusted with the promotion of fishing development through harmonization among production activities, port facilities and processing facilities. Created on August 11, 1976, PFDA is vested with powers and responsibilities of promoting the growth of the fishing industry and improving efficiency in the handling, preserving, marketing and distribution of fishery products through the establishment and administration of fishing ports, fish markets and other infrastructure.

### 16.3 Current Problems on Port Administration

### 16.3.1 Port Development by Many Organizations

In 1992, CPA spun off from PPA. In addition, PPDBs, which are not under the jurisdiction of DOTC, were created on and after 1992. There is not sufficient coordination or consultation among organizations regarding the investment and time schedule of individual projects. It is necessary for proper port development to coordinate each project based on the cargo volume forecast, apportionment of function and alignment of ports nationwide through the single methodology. But this type of coordination is not undertaken. Port development in the Philippines is undertaken independently and separately.

## 16.3.2 Inadequate Port Facilities

Most port facilities in the Philippines are not suitable for efficient port operation, partly because facilities are aged without proper maintenance, and partly due to mixed use of berths for various types of cargoes and passengers vessels. Port Authorities are responsible for maintenance of port facilities, and terminal operators are responsible for efficient operation with suitable equipment and handling procedures as well as the repair of damages that occur during operation. However, both of these works have not been carried out in a proper manner.

### 16.3.3 Insufficient Budget for Port Development and Maintenance

Regarding the fiscal condition of PPA, Manila area terminals generate a large part of their revenues from foreign trade, especially container trade at international container terminals under long-term concession contracts. Other ports do not generate sufficient revenues to cover necessary management and maintenance costs due to low domestic port charges. Consequently, PPA has to manage other ports using its revenue from the Manila area and revenue from private ports.

However, PPA, as a financially autonomous government entity, must produce a net profit. Moreover, it must contribute 50% of its net profit after deduction of management expense as well as loan repayment and corporate tax to the government as a dividend. Therefore, the degree to which PPA can support PPA's ports is limited. Consequently PPA's funds to support LGU ports which do not generate sufficient revenue is extremely limited.

DOTC budget for port development for LGU ports is decreasing year by year because the revenue of the central government is running short.

As alternative sources of funds, various kinds of loans have been extended from foreign countries and international organizations. However, financing for port development from abroad including ODA from Japan is not expected to increase due to worsening economic or financial conditions of donor countries/organizations.

Introduction of private sector participation in the port operation and development may be a solution. As already introduced in Manila area terminals, PFI through concession and BOT is possible for the construction of foreign trade related facilities. However, because of present low domestic tariff level, investment in the local ports is not attractive to the private sector. There are only a few ports where a private company has invested in port development.

## 16.3.4 Lack of Integrated Port Development Plan

A large amount of money and long time are necessary for the construction of infrastructures. To ensure that the limited funds are utilized effectively, sound planning that is in harmony with national development plans is necessary.

Port development needs to be approached in the same manner. However, at present, each port development body formulates its own port development plan independently. There is no integrated port development plan. Therefore the prompt formulation of an integrated port development plan is required.

# 16.3.5 DOTC's Participation in Port Development

DOTC is the primary administrative entity of the government in the promotion, development, and

regulation of a dependable and coordinated transportation network system. However except for LGU port development projects, DOTC has played very limited roles in terms of port development. This is partly because PPA has historically played a prime role in port development and partly because many port development bodies are not under the jurisdiction of DOTC.

There is no coordination on port development planning among public port development bodies or among private ports. Recognizing these circumstances, DOTC has requested JICA to formulate an integrated port development master plan as a part of the national transportation network. With this procedure, all the port development plans of all port development bodies are going to be systematically incorporated in the plan. DOTC is expected to play the central role in formulating this plan, from beginning to end.

# 16.4 Proposals on National Port Plan

# 16.4.1 National Plan for Port Development

# (1) Long/Short Term National Port Development Plan

In order to formulate the fundamental port development plan in harmony with the basic political direction of the National Government, JICA Study Team has conducted "Study on the Master Plan for the strategic development of the national port system in the republic of the Philippines". The objectives of the Study are to formulate a long-term master plan and short-term development plan for the national port system. The Study shall be used as the prototype of "National Plan for Port Development" (NPPD).

The duration of NPPD long-term plans is 20 years while that of short-term plans is five years. The long-term master plan contains target year, demand forecast of the target year, facilities to be developed, rough investment cost and rough time schedule of port development. The short-term development plan describes more specific port development plans.

The head office of DOTC should be responsible for final formulation of NPPD in coordination with other organization including NEDA, DPWH and other related bodies (PPDBs). The long/short term plan prepared by the related port development organizations including PPA, CPA and PPDBs are incorporated in NPPD in view of development policies and priority of the projects.

(2) Formulation of Port Development Plan for Individual Ports

The NPPD is based on the port development plans of individual major ports. These plans are formulated by each port development organization. The port development plan of individual port stipulates the port facilities specifically to be developed by the target year based on the estimated traffic volume.

# 16.4.2 Establishment of NPPD Council

In order to periodically review, update, and revise the NPPD as well as important/fundamental policies on port development, a council should be set up. All decisions or conclusions are reported to DOTC. After being authorized, the NPPD should be widely respected by all departments of government and related organizations. A model for such councils can be found in the Japanese Port Council. Although PPA has a similar advisory body called "The National Port Advisory Council (NPAC)" for the formulation of the PPA's policies, PPA can exercise its power only over the ports under its jurisdiction. NPPD Council can recommend policies to all port development organizations.

The function of the NPPD Council is to coordinate the port development plans of port development bodies, and formulate the long-term master plans as well as short-term development plans. Therefore, the NPPD Council needs to be a neutral organization.

Meanwhile, it is extremely difficult to establish new governmental organization for coordination under present government policy of small government. Therefore, an existing coordination institution of the DOTC can be used as the council for coordination (hereinafter referred to as NPPD council). The Water Transport Cluster of DOTC is one of the proposed organizations.

## 16.4.3 Members and Business of the Council

The members of the NPPD Council are composed of not only governmental officials but also the representatives of private sector and PPBDs not under the jurisdiction of the DOTC.

The issuance of new Administrative Order (A.O.) is necessary in order to appoint the officials of entities not under the DOTC administrative jurisdiction as members to the NPPD Council.

DOTC which is responsible for overseeing the transportation sector can appoint/request, based on the new A.O., high-ranking officials from government agencies (in particular the DPWH, DA, DENR, DILG and NEDA) and representatives of other related bodies, as/to be members of the NPPD Council.

Main Members of NPPD Council are as follows

- Representatives of Department concerned: NEDA, DPWH, DA, DILG, DENR,
- Representatives of Attached Agencies: DOTC; PPA, CPA, MARINA, PCG and
  - PIA SBMA BCDA PPMC CEZA PPMA
- Representatives of PPDBs:
  Depresentatives of Drivets Sector

PIA, SBMA, BCDA, PPMC, CEZA, RPMA. PCCI,

• Representatives of Private Sector:

The NPPD needs to be reviewed and revised periodically as the social and economic environments change. The council shall deliberate on the change of circumstances surrounding port development and shall undertake the following matters;

- (a) Review and evaluation of progress of existing NPPD based on monitoring
- (b) Preparation for specific proposal by MPPD
- (c) Review of short-tern development plan
- (d) Formulation of new short-term development plan
- (e) Review of long-term master plan
- (f) Formulation of revised long-term master plan
- (g) Deliberation on change of basic policies for port development

## 16.4.4 Establishment of Secretariat of NPPD Council

The NPPD has to be reviewed and revised periodically as the social and economic environments change. Therefore, a permanent body as the secretariat should be built in DOTC to support the NPPD Council. The secretariat of the Water Transport Cluster committee is the WTPD and the NPPD Council meeting is to be held a few times as Water Transport Cluster committee meeting. However since present WTPD already has a significant workload. An independent secretariat for the NPPD Council should be set up outside the WTPD to deal with large amount of works that will be generated by the NPPD Council.

The independent secretariat shall be basically composed of the permanent staff of DOTC and the seconded staff from PPA, CPA, and PPDBs. The staff should have specialized knowledge and experience in the field of port administration and management as well as port planning and transportation network system. The secretariat is to be inaugurated with eleven (11) members including chief of the secretariat.

## 16.4.5 Procedure to Set up NPPD Council and its Secretariat

NPPD Council is planned to be an advisory body to DOTC and its secretariat is planned to be one permanent section of DOTC. Therefore the legal basis for two organizations is needed. In order to utilize an existing coordinating committee as the NPPD Council, DOTC shall request the office of the president to issue the A.O. to expand the membership and power and function of the committee. Moreover, the draft A.O. has to stipulate the following matters:

- a) The DOTC shall be the lead implementing agency for the implementation of NPPD and must be fully supported by all government departments, agencies, GOCC's, LGU's, existing port authorities / PPDBs, and those PPDBs which maybe later on created shall embody in its charter or order creating them, pertinent provisions of the proposed A.O.
- b) The DOTC shall prepare the implementing rules and regulation for the effective implementation of the order.

c) The DOTC shall appropriate the funds necessary to ensure the implementation of the order.

In addition, the DOTC which is responsible for overseeing the transportation sector appoint/request, based on the new A.O., high-ranking officials from government agencies (in particular the DPWH, DA, DENR, DILG and NEDA) and representatives of related organizations, as/to be the members of the NPPD Council.

# 16.4.6 Process to Review/Revise NPPD

Upon the DOTC Secretary's request, port development bodies will submit information on the present situation of port, port development projects and their long/short-term master/development plans to the secretariat of the NPPD Council. Every year the Secretariat prepare a document for monitoring the progress of the existing NPPD based on submitted information and monitoring. The Secretariat will make another documents for deliberation at the NPPD Council official meeting. The secretariat will also prepare documents for reviewing the present long/short-term national port development plan and, if required, formulate a draft new/revised NPPD.

# 16.5 Reform on Port Administration System

# 16.5.1 Inadequate Service of Ports in the Philippines

(1) Inadequate Service

In the Philippines, many port users feel that port service is insufficient. Many people believe that PPA is responsible for port service, because the PPA Charter stipulates that PPA is not only responsible for regulation and development of the port, but also responsible for providing operation services in the port either by itself or by contract. However, there are various problems relates to insufficient port service and their causes are complicated.

Major causes include port charge structure, and level, labor problem, inappropriate cargo handling method, old cargo handling equipment, contract between PPA and terminal operators, etc. As far as cargo handling tariff level is concerned, it is quite cheap compared with other foreign ports and with international container handling tariff in the Philippines, although Philippine port users feel that it is expensive. Labor problems composed of low quality of workers, continuously demanding higher salary, and uncontrollable labor forces.

# (2) Proposal in the Medium-Term Philippine Development Plan

To improve this situation, the Medium-Term Philippine Development Plan 2001-2004 compiled by

### NEDA states the following.

The government shall restructure port institutions to improve port service. Regulatory function shall be transferred to an independent regulator (or regulators), which shall have jurisdiction over all ports. Commercial decision-making, planning, and management of port operation shall progressively be decentralized to port District Office and Port Management Office in preparation for the privatization of individual ports or groups of ports. The government will pursue the amendment of the PPA charter to address, among other things the dual role of PPA as regulator and operator

However, the problems on insufficient port service are complicated, therefore it is necessary to deal with this problem in view of steady development of port in the Philippines.

In fact, only PPA has sufficient knowledge and experience in regulations of most ports. Therefore, it is impossible to separate regulatory functions from PPA and transfer them to other independent organizations.

In addition, PPA allocates the funds that are earned from Port of Manila to other PPA ports as fund for port development every year. This situation interrupts the functioning of principle of market mechanism among ports in the Philippines. But it is a fact that port charge of ports other than international container port would have to be raised to an extremely high level if the cross subsidy system would be stopped. Therefore, the cross subsidy system should be continued for the time being.

On the other hand, as to the operation function, PPA does not operate the ports directly : operations are contracted out to private terminal operators. The operators are selected from competitive bidding with fixed term contract. As far as the formality of this contract is concerned, it can be said that the port operation is privatized. Nevertheless, port users, particularly shipping companies, feel that PPA influences the port operation system and procedures of these private operators, because PPA collects 10% of all revenues of the company as government share from private companies that undertake operations on behalf of PPA.

PPA also collects government share from non-PPA ports, including private ports. The collected fund is used mainly for PPA port development. This situation results in complaint from operators and service providers of private ports.

Therefore, PPA should stop collecting 10% of cargo handling tariff from terminal operator and lease port facilities to terminal operator. In other words PPA should retain its regulatory function and divest itself of the instead operational function. This would generate competition among terminal operator and lead to the improvement of port service. This system must be applied to CPA and PPDBs

### 16.5.2 Contract System between Terminal Operator and Port Authority / PPDB

In order to make clear the scope of port operational responsibility between port authority / PPDB (port authorities and PPDBs ) and terminal operator, present contract system should be altered. Consequently, if the terminal operator contract system is altered to a terminal leasing contract system, a port authority's involvement on direct operation is eliminated. Under the proposed system, a terminal operator pays a fixed lease/rental fee to port authority / PPDB or the combination of fixed and variable fee. If a terminal operator deal with more than certain volume of cargoes, total money of a fixed lease/rental fee is less than 10% of total revenue earned by the operator at the port. At the same time, port authority / PPDB is expected to make cargo-handling tariff to be outside of regulation, so that a terminal operator can determine tariff without seeking approval of port authority / PPDB.

### 16.5.3 Regional Port Authorities (RPA)

Presently there are many port authorities / PPDBs such as PPA, CPA and regional development authorities including SBMA, CEZA and others. More decentralization and competition among those organizations must be promoted. For proper competition, organizations need to have appropriate sizes Therefore, it is necessary to consider that existing port district / management offices of PPA shall be converted to the Regional Port Authorities (RPAs).

each port should be developed based on the regional characteristics as well as needs of the areas by regional organizations (RPAs). it is desirable for group of ports to be converted to RPA as soon as the group are assessed to be able to achieve financial autonomy

CPA and existing PPDBs shall have the same status as the newly converted regional port authorities. Converted RPAs manage the ports under respective territories. Provincial government and municipal governments may take part in the management of the regional port authorities individually or jointly to reflect the local development policies and transport needs.

The regional port authorities should retain the status of public organization and should not be involved directly in port operations except in case of emergency or if no private operators are available. However, the problem is that some RPAs may not have sufficient financial basis to be independent from other organizations, while others may have. Some existing regional development authorities were created without considering financial autonomy of their specific port. In addition, most ports under PPA have been developed through cross subsidy from Manila port. Therefore, RPA should be established when ports of RPA would generate enough money to wholesomely manage their own RPAs.

## 16.5.4 Philippine Ports Administration Agency (PPAA)

When all RPAs are established, and to formulate their port development plans in view of regional development and competition among RPAs, an organization to formulate basic policies for port development, to coordinate main projects of all RPAs and to consider port security problems is required. Consequently, it is necessary that. Philippine Ports Administration Agency (PPAA) as the attached agency to DOTC.be established concurrently with the establishment of RPAs. In addition, NPPD Council secretariat should be integrated into PPAA.

As mentioned above, PPA has sufficient knowledge and experience in enforcement of regulatory function throughout the country. Consequently, PPA's regulatory element, together with regulatory element of CPA and PPDBs, should be reformed to PPAA which will have regulatory function covering not only ports under the present PPA ports system but also other all ports including those under CPA, LGUs, and PPDBs.

The main function of PPAA shall be as follows;

- To formulate basic policies for port development and management
- To make regulation and guidelines such as technical standard and safety standard
- To coordinate all the major port development plans including public and private ports.
- To draft the National Plan for Port Development (NPPD).
- To cooperate with foreign countries on the port related issues
- To manage budget related to port development

PPAA shall not be directly involved with the selection of a port concessionaire, an operator or other managerial decisions. In addition, it shall not operate a port directly.

### 16.5.5 DOTC

At present, some LGU ports, which are not under PPA Port System, have been planned, financed and developed by DOTC. PPA is now able to use its funds for development of ports other than those in the PPA Port System. However, PPA is required to produce net profit, so PPA is able to use small amount of money for profitable ports. Therefore port development using DOTC budget should be continued for the time being. When RPAs are established, LGUs ports should be basically included in the jurisdiction of RPA.

### 16.6 Progressive Reorganization of the Philippines Port Administration System

Because of various difficulties in implementing proposed reforms in the Philippine port administration system, gradual introduction of new institution or changes of existing system will be necessary. Following steps will be the most probable and pragmatic approach for reorganizing port administration system.

# • First Step: (Start from 2004)

- 1) Creation of NPPD Council
- Creation of NPPD Council's Secretariat
   The secretariat shall be attached to DOTC. The chief of the secretariat shall be appointed by the
   Secretary of DOTC, and key staff shall be detailed from PPA, CPA and DOTC.
   Functions of the NPPD Council Secretariat shall be limited to NPPD related matters at this
   stage.

# • Second Step: (Within five years)

Separation of operational function of port authority / PPDB
 Change the contract system between port authority / PPDB and terminal operator from the present system to the lease contract.

Liberalize operational tariffs throughout the Country.

Abolish operational functions of existing port authorities including PPA, CPA as well as PPDBs.

Alter existing Charters of PPA, CPA and PPDBs by deleting clauses relating to the port operation and provision of service by the port authorities.

Contract period for the operators should be extended from the present 10 years to at least more than 15 years, so that the operator can invest in the equipment and recover the cost within the contract period. In addition to the present terminal operation system, terminal leasing system and BOT system should be introduced at the large ports.

# • Third Step:

# 1) Decentralization of port authorities

Establish the Regional Port Authorities (RPAs) in order to enhance the competitive circumstances and consequently improve the efficiently of ports. In principle, RPAs should be established when all RPAs will have sufficient basis by increasing cargo volume handled at their ports and generating sufficient revenues for financial autonomy. The existing public port development bodies will have the same status of RPAs. Existing Port District/Management Offices of PPA is one of the option of the RPAs.

# 2) Establishment of PPAA

Establish PPAA as an administrative and regulating/coordinating organization among the RPAs at the same time of the establishment of RPAs. While fifty percent of net profit yielded by RPAs will be paid to central government through PPAA initially, this practice will be discontinued when the financial condition of the government improves in future.

However, depending on the circumstances, in which the division of PPA will be carried out along with the national policy on decentralization, some RPAs may not be financial autonomous. In this case, PPAA has to retain a part of cross subsidy system among RPAs. PPAA shall administer the fund collected from RPAs which will have already achieved financial autonomy, and re-distribute the fund to other RPAs composed of former PPA ports that lack funds for port development This cross subsidy system is expected to diminish in the future.

# Chapter 17 Implementation of the Plan

# 17.1 General

In the Philippines, port authorities including PPA and CPA now develop, manage and operate major ports using their own funds, while DOTC or municipalities develop small regional ports using taxes. To ensure the funds that are not necessarily sufficient for port development, these two systems should be maintained for the time being.

As for international container ports, private sector participation including concession has been actively utilized because container operation is highly profitable and attractive for private companies. International B/B ports, domestic container ports, domestic B/B ports etc. have been developed using the surplus gained from the operation of international container ports. This situation should be improved by changing the tariff structure. In addition, some of the B/B cargo handled at public ports should be converted to bulk cargo and handled at private ports. This would lighten the burden of public ports.

On the other hand, small regional ports should be basically developed using government tax revenue. However, all government organizations have been requested to reduce expenditures due to the shortage of revenue. Therefore, innovative ideas to attract greater private sector participation in port development are required.

## **17.2** Measures to Attract Private Sector Participation

Special incentives have to be prepared for less profitable small port development and management because private companies are reluctant to invest in port development unless a certain level of profit is attainable. Deregulation and incentives should be combined effectively to increase private sector participation.

Based on experience in Japan, the following measures can be adopted to attract private sector participation in port development.

# 17.2.1 Tax Incentives

When private companies develop ports, private companies have to pay taxes levied on these activities. Tax incentives can lower the financial burden on private companies, especially in the initial stage. In Japan there are many tax-lowering measures. This incentive is effective in the case where a shipping company owns and runs a private-commercial port.

Because a variety of tax-lowering measures have been tried with only mixed results, a bolder approach to tax incentives may be required. Tax exemption could also be applied to land acquisition. In addition, the rate of tax exemption could be adjusted in line with a business profitability(a large exemption would be given initially when the profit margin is smaller but tax would gradually increase as the company's income grows).

# 17.2.2 Lowering of Port Tariff

Private-commercial port owners pay half of the usage fee and wharfage fee to PPA. It is proposed that at the early stage of business when income and profit are small, port tariff paid to PPA be reduced. As income and profit increase, the tariff can be increased.

# 17.2.3 Joint-Ventures

In this case, both the national government (local government or port authority) and a private company bear fixed portions of the cost of developing port facilities. After completion of port facilities and start of operation, a private company pays the money corresponding to the depreciation and interest of the national government portion and the service charge to the national government.

In Japan, this kind of system is adopted in the case where a private company scraps an old or uneconomical vessel according to the direction of the national government and builds a modern vessel. A private company and Transport Facility Development Agency (the organization approved by the national government) jointly build a new vessel and then, the private company pays a usage fee to the Agency.

It is proposed that this system be applied to the port development in the Philippines. In Japan, the national government bears 60 - 80% of the total cost. However it is suggested that the share of the national government be half of the total development cost because the financial situation of the national government is very severe. It is proposed that the repayment period be prolonged to 20 years and that the interest rate be 2.5%. Under this system, a private company cannot cancel the contract on the way. (Lease - Irrevocable - Purchase Contract System)

As to the government portion, two cases should be examined. One is a case where the central government directly bears the port development cost and the other is a case where the central government, DBP, etc. establish a new governmental organization which bears the cost.

### **17.2.4** New Fund for Port Development

The fund system for cargo handling equipment proposed in Chapter 14 is applied to port development conducted by private companies. An independent organization subsidizes the difference between the interest rate of city banks and lower standard rate using the collected money when a private company develops port facilities.

### 17.2.5 Appropriate Port Tariff Structure

The quickest way for a private company to increase its income is to raise the port tariff. However, a high tariff is applied, cargo demand often falls. Therefore an appropriate port tariff structure should be set. It can be an incentive for promoting private sector participation.

### 17.2.6 Other Systems

There are two other systems to support private companies, however they would be difficult to introduce in the Philippines.

### (1) Subsidy

Subsidy is a system where the central government or a port authority can pay a part or all of the project cost provided that the project satisfies certain requirements.

At present the central government or a port authority bears all necessary cost for port development. If the subsidy system is adopted, the central government or a port authority can invite a private company to take part in port development by offering a subsidy.

#### (2) Low-Interest Loan

There are several low interest loans in Japan which are given based on the respective laws. A large amount of money is needed to adopt this system.

#### **17.3** Cooperation with Other Industries

As a port is an infrastructure supporting maritime transport, port development should be undertaken in coordination with the shipping and ship building sectors. Many secondhand vessels purchased from Japan have played an important role in Philippine maritime transport. However, it is proposed that small vessels of less than 1,000DWT could be newly built at an only slightly higher cost than secondhand vessels by using capital investment and technical assistance from foreign countries (foreign companies are now able to have more than a 50% interest in capital ventures) together with the relatively low cost of Philippine labor and cheap steel plate imported from China and Russia. In addition, the cost could be further reduced if designs were standardized and a large quantity of same design vessels were built at the same time. This also leads to the advantage of sharing spare parts among vessels. Moreover the shipbuilding industry can create jobs and thereby contribute to poverty alleviation.

## 17.4 Measures to Promote Development of Regional Ports

Management of small regional ports is very difficult because demand is small especially in the initial stage. In some cases, ports are forced to stop operations because their losses are too large.

It is important to begin with minimum port facilities and to expand them gradually in line with the increase of cargo and passenger except for the case where firm demand is fixed and a shipping company is committed to using a particular port.

# [Case Study] 17.4.1 Items Related to Cost

When planning a small port development in line with traffic demand, it is indispensable to avoid water areas where expensive protective facilities are needed and to select a calm sea area such as sheltered cove. It is also important to reduce construction cost by adopting standard construction methods and using construction materials that are produced in the Philippines like cement. In addition, it is desirable that a local or central government reduce the financial burden of an entity who is in charge of port development project by constructing the access road using public funds.

Moreover it is important to select the structure of a mooring facility that suits the shallow and calm sea water. Floating pier (pontoon) and piled piers with precast pre-stressed concrete piles are good options because they can be constructed in a factory are effective for rapid, mass and easy construction.

According to the preliminary cost estimation, PC piled pier can be constructed for less than 27 million pesos under the following conditions:

1) Local government bears the purchase cost for land for access road and port, or land is donated by owner(s);

2) Land leveling and construction of base for access road is carried out as a separate project. Construction cost is paid from another account.

Then, concrete pavement and U-type gutter will be built in line with the increase of traffic demand and income.

When an entity for port development bears the cost for access road and construct a terminal building at the first stage, the initial cost exceeds 100 million pesos in many cases.

# 17.4.2 Items Related to Income

(1) In case of a port where no RO/RO vessel calls

In the case of Atimonan, total income gained from port activities accounts for 100 - 180 thousand pesos a month. On the other hand, 80 thousand pesos are needed for management and operation of the port including personnel expenses, power supply and water supply. The annual net income reaches about 700 thousand pesos.

(2) In case of a port where RO/RO vessels call

When a port has 2 round trips a day from a vessel which carries 100 passengers and 14 vehicles, annual income of the port reaches 2.788 million pesos based on the present tariff, while maintenance and operation cost reach 1.256 million pesos. Therefore annual net income is 1.532 million pesos.

If port tariff were doubled, annual income would become 5.576 million pesos and net income would reach 4.320 million pesos.

# 17.4.3 Project Viability

As for a port where no RO/RO vessel calls, it would be impossible for a private company to participate in a small port development project even if the initial investment cost were reduced to a minimum level because annual income is too small.

In the case of a port where RO/RO vessels call, FIRR of a project is 1.21% under the following conditions:

1) Construction cost is 73 million pesos.

2) A RO/RO vessel that carries 100 passengers and 14 vehicles calls a port twice a day.

3) Present port tariff is applied.

However FIRR would be improved to 7.95%, if the port tariff were doubled and the initial construction cost could be held down to 50 million pesos. Moreover, if the initial construction cost would be 26 million pesos, FIRR would exceed 15%. It is probable that a private company would take part in a small port development project, if the incentives mentioned before are given in addition to the raising of the port tariff and the reduction of initial construction cost.



Figure 17.4.1 Relation Between Cost and Income

## 17.5 Return of Profit gained from LGU Port

The regional port development projects have been carried out using foreign ODA loans by DOTC. After completion of the project by DOTC, port facilities are transferred to a municipality and the net income gained from the facilities are to be used for the regional development as the municipality's income.

But since the Philippine government is facing financial difficulty due to the shortage of tax revenues deficiency, an idea has been proposed that a part of the net income from the port activities should be returned to the central government when a certain level of net income is posted.

The port facilities require not only personnel expenses to operate them but also maintenance cost which become larger as facilities age. In order to avoid discouraging municipalities from promoting port activities, a system where no money is paid to the central government when the net income (that is, the difference between the total income and the maintenance and operation cost) is under a fixed amount (for example 1 million pesos a year), and a certain portion, for example 50%, of the net income exceeding the fixed amount is paid to the central government when the net income is over the fixed amount should be established.

# Chapter 18 Financial Analysis, Policy and Strategy for National Port Development

# 18.1 Present Financial Situation

## 18.1.1 Present Financial Situation of National Government

In 2002, government expenditures amounted to 780 billion pesos while national revenue in the same year totaled only 624 billion pesos. The portion of the budget used to finance the deficit is increasing each year. The national government has been investing a considerable amount of money in social infrastructure such as transportation facilities, electric power facilities, irrigation facilities and so on. Investment in transportation infrastructure accounts for more than 30% of the national capital outlays. The majority of this money (25%), however, is going into the road sector. Only 774 million pesos was spent for port and lighthouse facilities. The amount of port investment is thought to be insufficient to meet the growing investment demand of government ports in the Philippines.

## **18.1.2** Present Financial Situation of Local Government Units

The overall financial performance of local government units (LGUs) is good; a year end surplus of 51.8 billion pesos was registered in 2002. However, it should be noted that there are large discrepancies in the finances of urban and rural areas. In fact, 31 of the total 79 provinces were in the red in 2002. Those provinces that are forced to service their debt will not be able to spend their financial resources on new transport facility investment.

## 18.1.3 Present Financial Situation of Philippine Ports Authority

The present financial situation of the Philippine Ports Authority (PPA) can be said favorable. The four financial indicators are the most closely monitored financial ratios and requirements. All indicators remain within a financially reasonable range. This can be attributed in part to PPA's policy of saving as much as possible in preparation for the large expenditures that will arise from the Port of Batangas Phase-2 project. PPA's expenses for annual port repair and maintenance are also being cut back these days. As a result, PPA is showing a large surplus each year. PPA derives a lot of its income from international container handling. Manila District Office accounted for 56% of the total income of PPA , and that figure reaches 64% when the income of the Head Office is added. In addition, 20 % or 1 billion pesos of PPA's revenue came from the port charge levied on private ports.

1 able 18.1.1 P	PA's Cash Fic	w during 199	97 and 2001	(Unit: r	nillion pesos)
Cash Flow	1997	1998	1999	2000	2001
A: Cash Balance Beginning	3,498	3,504	3,907	4,235	4,710
B: ash Inflow	4,061	4,168	4,423	4,501	5,246
B1:Revenue	3,322	3,494	3,734	4,152	4,711
B2:Foreign Loan Proceeds	449	288	310	12	144
B3:Others	290	386	378	338	390
C: Total Cash Available[A+B]	7,599	7,672	8,330	8,826	9,956
D: Total Cash Outlay	4,056	3,764	4,006	4,116	4,390
D1:Cash Operating Expenses					
(Personnel Services, Administration	1,599	1,237	1,330	1,308	2,200
Cost, Maintenance)					
D2: Capital Outlay	1,022	1,314	959	1,200	1,215
D3: Debt Services-Interest	333	304	374	302	245
D4: Debt Services-Principal	373	499	515	719	623
D5: Dividend Payment	729	410	828	587	107
E: Ending Cash Balance[C-D]	3,503	3,907	4,324	4,710	5,590

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Source: Financial Report CY 1999 and CY2001, PPA

#### 18.2 Port Development Plans and Investment Cost Prepared by Relevant Public Organizations

## **18.2.1** Port Cargo Throughput

Philippine seaborne cargo is expected to grow rapidly. Annual average growth rate of public cargo between 2001 and 2024 is 5.78%. Annual average growth rate of private cargo between 2001 and 2024 is 5.32 %, which is almost the same as public cargo. Among various types of cargo, container cargo has been growing most rapidly. Annual average growth rate of public container cargo between 2001 and 2024 is 6.94 %, which is much higher than the growth rate of public cargo as a whole. To cope with the increasing cargo, it is indispensable to develop new port facilities, although priority should be put on the proper maintenance and efficient use of existing facilities. In accordance with rapid growth of cargo throughput at port, port revenues are also expected to increase in future. In particular, revenue from container cargo handling is expected to become the main source of port revenues because handling charge of international container is 5 times higher than that of domestic cargo.

#### 18.2.2 International Container Terminal Development Plan

At present, 9 international container berths are operational in the Philippines. In order to meet the international container cargo demand forecast by the JICA Study Team, 7 more berths are required by the year 2009, and 17 more berths between 2010 and 2024. Total number of additional international container berths required by the year 2024 is 24.

#### **18.2.3** Public Port Investment Cost

The required port development investment cost for international container terminals is 15.7 billion pesos by the year 2009, and 38.8 billion pesos between 2010 and 2024 (this excludes the cost of international container terminals developed by the private sector). Total investment cost required by the year 2024 is 54.5 billion pesos.

On the other hand, the total port investment cost including international container terminals is 42.7 billion pesos in the short-term (2004 - 2009). The long-term (2004 - 2024) port investment cost including international container terminals is 135.5 billion pesos. This shows that intensive investment is needed during the short-term period (initial 5 years).

Table 16.2.1 Tolt PulletionF	"CDP 10 2024	(Unit. Dimon 1 CSOS)		
Port Function	Short-term	After 2010	Long-term	
	(2004 - 2009)	to 2024	(2004 - 2024)	
International Container Terminal	15.650	38.800	[*] 54.450	
International Bulk/Break Bulk Terminal	3.300	10.500	13.800	
Domestic Container Terminal	11.905	11.295	23.200	
Domestic Bulk/Break Bulk Terminals	4.600	20.770	25.370	
RO/RO Ports Development	7.236	11.465	18.701	
Total	42.691 (31.5%)	92.830 (68.5)	135.521 (100.0%)	

Table 18.2.1Port Function-wise Investment Cost Up To 2024(Unit: Billion Pesos)

Note: Manila MICT, Manila South and Batangas Phase-3 port expansion projects are assumed to be privatized. Accordingly, the long-term investment cost for international container terminals, which is different from the long-term investment cost shown in Table 10.4.11 (68.65 billion pesos), does not include these projects. Source: JICA Study Team

# 18.2.4 Public Port Revenues

Among various kinds of port revenues, the port tariff which consists of port due, anchorage fee,

usage fee, dockage fee, and wharfage are collected by port authorities and 100 % of those revenues are retained by those port authorities. On the other hand, cargo handling tariff is collected by terminal operators and shared between terminal operators and port authorities. When it comes to international container cargo handling, port authorities usually impose a fixed fee and variable fee on terminal operators based on a concession contract between the two parties. In addition to the above port charges, Philippine port authorities are collecting port tariff from private ports. The revenue collected from private ports amounted to 1.0 billion pesos in 2001. The accumulated revenue derived from private ports between 2004 and 2024 is estimated to be 42 billion pesos. Assuming that all kinds of port charges are stable up to the year 2024, the accumulated port revenues in the short-term plan period (2004 - 2009) and in the long-term plan period (2004 - 2024) are estimated to be 46 billion pesos and 256 billion pesos, respectively.

Cargo type-wise revenue analysis shows that the revenue from international container cargo accounts for almost 70 % of total revenues despite its relatively small share of the total cargo (approx. 20% in 2001 and 30 % in 2024). On the other hand, port revenues from domestic cargo handling account for less than 5% of the total revenue. This is because domestic port charge is set at a very low level.

10010 10.2.	W150 7 100		evenues	(Onte: minite	n pesos)	
	Short-term Plan Period (2004 - 2009)		2010 - 2024		Long-term Plan Period (2004 - 2024)	
Classification	Accumulated Revenues	Share	Accumulated Revenues	Share	Accumulated Revenues	Share
International Container Cargo	29,924	65.3%	146,915	70.0%	176,839	69.2%
International Break Bulk Cargo	2,303	5.0%	7,655	3.6%	9,958	3.9%
International Bulk Cargo	970	2.1%	4,095	2.0%	5,065	2.0%
Domestic Container Cargo	3,132	6.8%	13,072	6.2%	16,204	6.3%
Domestic Break Bulk Cargo	1,116	2.4%	3,169	1.5%	4,285	1.7%
Domestic Bulk Cargo	226	0.5%	985	0.5%	1,211	0.5%
Revenue from Private Ports	8,122	17.7%	33,995	16.2%	42,117	16.5%
Total	45,793	100.0%	209,886	100.0%	255,679	100.0%

 Table 18.2.2
 Cargo Type-wise Accumulated Port Revenues
 (Unit: million pesos)

Source: JICA Study Team

## **18.3** Comparison of Port Revenues and Investment Cost

# 18.3.1 Comparison of Long-term (2004-2024) Port Revenues and Investment Cost

The long-term (2004 - 2024) total port investment cost is 167.4 billion pesos, including maintenance and operational cost for newly built facilities. When the maintenance and operational cost of the existing port facilities and equipment, loan repayment and interest, and dividend payment to the national government is taken into account, in addition to the new port investment cost, the total port investment cost in the long term amounts to 255.4 billion pesos. On the other hand, the long-term total port revenues and the on-going foreign loan disbursement are 255.7 and 8 billion pesos respectively, resulting in a surplus of 8.3 billion pesos.

However, the cargo type-wise comparison of revenues and investment cost has important implications. The financing of international container terminals produces a surplus, but other types of port development projects result in deficit. In spite of this fact, there will be an overall surplus. Therefore, the greater part of public port development will be able to be financed by public port revenues in the long run with internal fund appropriation. "Internal fund appropriation" or "Cross subsidy" from profitable international container terminals to financially pressed domestic cargo facilities will be needed for a good while.

 Table 18.3.1
 Comparison of Long-term Port Revenues and Investment Cost

(Unit: billion pesos)

Accumulated	On-going	New Port	Accumulated	Accumulated	Dividend	Remaining:
Port Revenues	Foreign Loan	Development Cost	Maintenance and	Loan	payment	(5) = (1)+(2) -
(1)	Disbursement	(3) (Including	Operational Cost of	Repayment		(3) - (4)
	(2)	Maintenance and	Existing Port	and Interest		
		Operational Cost)	Facilities and			
			Equipment			
755 69	8.00	167.42	45.0	15.60	27.40	8 <b>2</b> 6
255.08	255.68 8.00 167.42		Sub-te	otal (4): 88.00		8.20

Note: On-going foreign loan projects are Subic Phase-1, Batangas Phase-2 (Stage-1) and Mindanao container terminal Source: JICA Study Team

## 18.3.2 Comparison of Short-term (2004-2009) Port Revenues and Investment Cost

The short-term (2004 - 2009) total port investment cost is 46.2 billion pesos, including maintenance and operational costs for newly built facilities. However, when the maintenance and operational cost

of existing port facilities and equipment, loan repayment and interest, and dividend payment to the national government in addition to new port development costs during 2004 and 2009 are taken into account, the total port investment cost amounts to 66.0 billion pesos. On the other hand, the short-term port revenue and the on-going foreign loan disbursement are 45.8 and 8 billion pesos respectively, resulting in a deficit of 12.2 billion pesos in the short term. Accordingly, the introduction of a low interest foreign loan in addition to internal fund appropriation is necessary for port project implementation in the Philippines. If the loans are obtained, a surplus will be registered in the short term. In addition, if port charges are raised, financial situation will be further improved.

Table 18.3.2	Comparison	of Short-term	(2004 - 20	09) Port Rev	enues and I	nvestment Cost
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					(Unit: bil	lion pesos)
Accumulated	On-going	New Port	Accumulated	Accumulated	Dividend	Remaining
Port Revenues	Foreign Loan	Development Cost	Maintenance and	Loan Repayment	Payment	:
(1)	Disbursement	(3)	Operational Cost	and Interest		(5) =
	(2)	(Including	of Existing Port			(1) + (2) -
		Maintenance and	Facilities and			(3) - (4)
		Operational Cost)	Equipment			
45 70	8 00	46 10	9.93	3.72	6.20	12.25
43.79	8.00	8.00 46.19		Sub-total (4): 19.85		

Note: On-going foreign loan projects are Subic Phase-1, Batangas Phase-2 (Stage-1) and Mindanao container terminal Source: JICA Study Team

# 18.4 Cash Flow Analysis of Port Authorities

# 18.4.1 PPA

PPA's cash flow in case of the short-term project implementation shows that the ending cash balance is always surplus towards the future. The JICA Study Team assumed that all port charges remain at their present level up to the year 2024. Cost estimation for new investment are as follows:

- Batangas Phase-2 (3 international container terminals) project is implemented by 2010. The total investment cost between 2004 and 2009 is 2.55 billion pesos, including land acquisition cost.
- (2) So-called Philippine Port package project is implemented during the short-term plan period. The Philippine Port package project consists of 4 port expansion projects at the ports of Zamboanga, General Santos, Davao and Iloilo. The total investment cost between 2004 and 2009 is 7.6 billion pesos.

(3) PPA also invests in port development and improvement projects at necessary ports within the PPA port system. The total investment cost between 2004 and 2009 is 13.2 billion pesos, and all investment cost is supplied by PPA's own fund.

PPA's cash flow with the above assumptions indicates that the ending cash balance goes down to 1.75 billion pesos in 2005, but steadily increases after 2005.

# 18.4.2 CPA

CPA's cash flow in case of the short-term project implementation shows that the ending cash balance is always surplus towards the future. The JICA Study Team assumes that all port charges remain at their present level up to the year 2024. Cost estimation for new investment is as follows:

- (1) Cebu International Container Terminal Phase-1 project is implemented during the short-term plan period. The total investment cost between 2004 and 2009 is 3.7 billion pesos, including land acquisition cost.
- (2) International container cargo will be handled at the existing multi-purpose berth with gantry cranes, until the new international container terminal is operational in the second half of the short-term period. The cargo handling capacity at the existing multi-purpose berth is assumed to be 200,000 TEU per year.
- (3) There is no remarkable port development project except for ordinary repair and maintenance.

Based on the above assumptions, CPA's ending cash balance continues to go up towards the future, assisted by steadily growing port revenues.

# 18.5 Financial Feasibility of Representative Projects

The financial feasibility of representative projects of each port function-wise project group is shown in Table 18.5.1. FIRR values of international container terminal projects (Batangas Phase-2, Subic Phase-1, Cebu Phase-1, and Davao New Container Terminal) are greater than 7%. On the other hand, based on the present port charge the FIRRs of Zamboanga and Araceli ports show a negative value. Thao of General Santos and Iloilo is 1.5% and 3.6% respectively. This is because the present port charge for domestic cargo handling is set lower than that required for project sustainability. If the port charges at these three ports are increased by 15 -116%, FIRRs exceed 3%. If port charges are not normalized, it will be difficult to realize port development projects and private sector participation.

Ports Group	Port	Representative Project	Investment Cost	FIRR
International	Batangas	Batangas Stage-1	4.150 bil P	80%
gateway port		Batangas Stage-2	1.530 bil P	0.0 %
	Subic	Subic Phase-1	6.800 bil P	11.1 %
	Cebu	Cebu Phase-1	3.700 bil P	7.4 %
	Davao	Int'l Container Terminal(250m)	2.600 bil P	9.9%
Principal	Zamboanga	I & D Multi-purpose berth (200m)	1.670 bil P	3.7%*1)
international	General Santos	Domestic Multi-purpose berth (200m)	1.670 bil P	3.1%*2)
trade port	Iloilo	International Bulk/Break Bulk Terminal	1.700 bil P	4.9%
Regional port	Araceli	RO/RO Terminal	0.039 bil P	3.0%*3)

Table 18.5.1 FIRR of Representative Short-term Port Development Projects

Note: \* are calculated based on raised port charges. 1); increase of 80%, 2); increase of 15%, 3); increased of 116% Source: JICA Study Team

# 18.6 Development of International Gateway Port

PPA is planning to construct a large scale international container terminal, the Phase-3 project of Batangas, after completion of the on-going container terminal project. The Team's cost estimation shows that 1.885 billion pesos will be invested as the initial construction and equipment cost in 2010 and 2011. According to the calculation, the financial internal rate of return (FIRR) is estimated at 25%.

The cash flow analysis of a port development project often indicates that the ending cash balance turns out to be a deficit in the short run. This is because the port must continue to repay the principal and interest of a loan before new port facilities are able to generate expected revenues. This is also true for prosperous international container terminal construction projects. The cash flow of Phase-3 project of Batangas Port also shows that the ending cash balance is deficit from 2010 to 2014. The maximum accumulated deficit of the Phase-3 project is 478 million pesos. The Port of Batangas will be in a very precarious financial situation unless it receives assistance from PPA. The project becomes profitable from the sixth year, but until that time the Port of Batangas will need help in coping with the enormous deficit.

# 18.7 RO/RO Port Development and Financial Scheme

## 18.7.1 Financial Scheme of RO/RO Ports Development

The JICA Study Team proposes the Nationwide RO/RO Port Development Plan, which consists of the following three development categories:

- 1) Major Corridor Development Project,
- 2) Mobility Enhancement Project, and
- 3) Remote Island Project.

Sources of financing for these projects include DOTC's general fund, low interest foreign loans, DBP's 2 step loan, PPA's own fund and private sector's own fund, depending on the financial viability of each RO/RO port project.

Large scale RO/RO port projects where the traffic demand and profitability are sufficiently high can be implemented by the private sector because a large amount of traffic demand is anticipated at large scale candidate ports, and revenues from the traffic will make the projects sufficiently profitable. DBP financially assists private investors in accelerating SLDP's RO/RO port projects. PPA is also playing an important role in accelerating RO/RO port development. In particular, PPA is keen to develop financially viable RO/RO ports which are covered by the Western Sea Board project.

When the FIRR of candidate RO/RO port projects is not greater than 15%, but those projects meet the medium scale traffic demand, private sector will be reluctant to participate in RO/RO port development without deregulation and incentives. Instead of a privatized financial scheme, DBP's 2 step loan, low interest foreign loans and PPA's own fund can be used to financially assist those medium scale RO/RO port projects. On the other hand, when traffic demand is smaller than the above cases, the national government should basically finance such RO/RO port development by means of DOTC's general budget. At the same time, PPA may also allocate funds and other resources to make those small scale candidate RO/RO ports effective alternative modes of transport and foster domestic /inter-island trade and commerce.

The above financial scheme is based on the present RO/RO port charge regulated by PPA. However, it would be possible to introduce foreign loan and private sector participation to small scale RO/RO port development if the following financial tactics are strategically taken by the relevant national / local government.

- 1) Port charge normalization,
- 2) Reduction of RO/RO port construction cost, and
- 3) Introduction of investment incentives for private investors such as local tax exemption,

### government's financial assistance and so on.

FIRR	Financing	Remarks
Project's	Privatization;	Supervision is required to ensure public utilization
FIRR>16-17%	B.O.T/Concession Contract	of ports.
Project's FIRR>12-13%	DBP(9.5-11%,15Y)	Vessel procurement & shipping business can be financially assisted
Project's FIRR>7-8%	ADB(5.6-5.8%, 25Y)	Interest rate was sharply reduced in 2002. However, a tight loan policy for port infrastructure development has been introduced.
Project's FIRR>3-4%	ODA(2.2%, 30Y)	The lowest interest rate currently available.
Project's FIRR<2%	Local or Public Fund	Government or public fund must be efficiently allocated. Cross-subsidy can be utilized.

 Table 18.7.1
 Relation between Financial Internal Rate of Return (FIRR) and Possible Financing Source

Table 18.7.2 Project Implementation Bodies for RO/RO Ports Development

	Private	PPA's Own		Foreign	National		
	Sector's	Fund (PPA	DBP	Loan	Government		
	Own Fund	Port)	Assistance	Assistance	Own Fund		
Large Traffic					-		
RO/RO Project A large amount of traffic demand is anticipated. Project ha				roject has			
	considerble	considerble profitability. Privatization scheme can be					
Medium Traffic	-				-		
RO/RO Project	Insufficient traffic demand for fully privatized project.						
	However, project implementation is vital to regional						
Small Traffic							
RO/RO Project	-						

# 18.7.2 Profitability of RO/RO Port Development

# (1) Case Study

The JICA Study Team conducted a case study on short haul RO/RO port development projects based

on the present port charge and freight, vessel procurement cost and initial construction/ maintenance cost in order to find out the break point between financially viable and entirely infeasible port projects. According to the case study, FIRR of RO/RO port construction projects and/or shipping operation business is 4.6% and 14.8% assuming 4 round trip shipping services (100 passengers and 14 trucks loading capacity per one navigation) per day by 2 used vessels and a port construction cost is 73 million pesos. On the other hand, if we assume only 2 round trip shipping services (same conditions) per day by 1 used vessel and the same construction cost, FIRR of RO/RO port construction projects is merely 1.2% (although the shipping operation business is financially viable with FIRR of 14.6%). However, even in case of 2 round trip shipping services per day by 1 used vessel, FIRR of the consolidated project consisting of both RO/RO port construction and shipping operation business increases to 11.1%. In all above cases, the finance of shipping operation is based on the utilization of used vessels. Otherwise, the shipping side will be in a difficult financial position. It is essential for RO/RO port investors to introduce suitable used vessels to their shipping operation.

### (2) Reduction of RO/RO Port Construction Cost

Reduction of RO/RO port construction cost substantially improves the project financial viability. Generally speaking, RO/RO port construction cost is 50 to 100 million pesos if the typical construction standard and the typical unit construction price are adopted. The above construction cost also includes the cost for RO/RO ramp, stair landing, causeway, back up area, navigation aids, access road, and passenger terminal. Among these port facilities, pavement of back up areas, construction of passenger terminal etc. can be postponed until the port is fully operational and begins to collect port fees. The construction of the access road should be shared between the port management body and the road management body. In addition, the design of port facilities should be reviewed and improved in order to reduce the construction cost. Making efforts to reduce RO/RO port construction cost is one of the most effective ways to make RO/RO port development projects financially viable.

## 18.8 Private Sector Participation

Increasing private sector involvement in public port development is an important policy of the Philippines. In general, when the value of FIRR is greater than 15 % or a private bank's interest rate, it is likely that the private sector will be interested in financing a port development project.

However, even when a project has a high FIRR, it is still necessary to offer incentives in order to secure private sector participation. The JICA Study Team recommends that measures such as local tax breaks or exemption, financial support from the national government, financial assistance from public banks and raising the port charge should be introduced to attract private investment in public port development.

# 18.9 Proposed Financial Policies for Public Port Development

Under the very tight financial situation of the national and local governments in the Philippines, it is important to maintain existing facilities properly and use them effectively.

Secondly, under the severe financial situation, private sector funds should be utilized as much as possible to accelerate port development. In order to accelerate the private sector involvement in public port development, the public sector should make all possible efforts to provide private investors with investment incentives such as deregulation, enlargement of government's financial assistance, tax exemption and so on.

Thirdly, to make the best use of limited funds for port development, over-investment and duplication of investment must be eliminated. There are a number of public port authorities functioning in the Philippines. This can sometimes lead to ineffective port development projects due to the superabundance and duplication of investment. It is also very important to coordinate port development projects with relevant surrounding projects such as highway construction and EPZ creation projects so as to maximize the benefits of projects. The role of the national government is essential to coordinate major port development plans.

Fourthly, the financial coordination and appropriate cost sharing within public sector should be pursued in an integrated manner. Port development greatly depends on the highway network in the hinterland of the port. Therefore, port and access road construction must be implemented at the same time. Cost sharing between the port and road sectors for access roads and related facility construction should be introduced.

Finally, a flexible approach should be taken to project financing. In addition to private sector participation, all possible funding for port development should be pursued. Internal fund appropriation or cross-subsidy is one of the most practical funding methods. Low interest loan should be also utilized. Port charge normalization (raise) will create a number of self-supporting port projects. Furthermore, issuing of bonds should be introduced to generate the necessary funds for infrastructure investment. Utilizing all these possible funding sources, urgent port projects can be efficiently implemented.

# 18.10 Proposed Financial Strategies for Public Port Development

Based on the financial policies described in the previous section, practical financial strategies for port development should be taken to accelerate port investment as effectively as possible without delay. The financial strategies to be taken are summarized in the Table 18.10.1 and 18.10.2.

Financial Strategy Menus	Financial Resources	Relevant Projects to Financial Policy Concerned, and Implementing Agencies/Private Sector	Remarks
1. Practical Use of Existing Facilities and Formation of Cost-saving Project	A number of financial resources are utilized, depending on project's financial viability.	LGUs, or private investors, which plan to construct RO/RO ports, in particular small scale rural ports for inter island transport.	Cost reduction will increase the viability of projects.
2. Internal Fund Appropriation or Cross Subsidy	Port revenues, mainly generated by international container cargo handling	Almost all domestic cargo handling facilities, including RO/RO and feeder ports in rural areas.	Growing international container cargo handling revenues can be used to cross-subsidizeprojects.
3. Port Charge Normalization	Port charge should be normalized (raised) in all accordance with the appropriate port operation and management cost.	All port development projects except international container port development project	It is necessary to win understanding on port charge normalization from port users and shippers.
4. Domestic Loan Appropriation	DBP's 2 Step Loan: 8.5% to 11%, depending on project viability. Loan period is 15 years.	Large / medium scale RO/RO ports development projects; Grain terminal projects at Manila, Batangas, Cebu and C.D.O.	Interest rate is lower than private bank's rate. Borrowers do not have to worry about fluctuations in exchange rates.

 Table 18.10.1
 Financial Strategies to be Taken (1)

Financial Strategy Menus 5. Acceleration of Private Sector	Financial Resources Private fund through Concession/BOT. Private	Relevant Projects to Financial Policy Concerned, and Implementing Agencies/Private Sector International container terminals at Manila	Remarks Appropriate revenue sharing between public
Participation -BOT or	Sector can utilize DBP's	Port(ICTSI, ATI).	and private sector is
Land Lord Type	2 Step Loan.	Multi-purpose domestic	necessary. Public berth
Privatization-		terminals at North	utilization must be
		Harbor.	secured and maintained.
6. Bond Issuing	Both international and	High interest rate is	Bond issuing agency
(Long-term Policy)	domestic monetary	anticipated for bond	must satisfy the
	resources can be	repayment. Thus, bond	financial reliability
	collected. Useful and	issuing should be	requirement. Financial
	necessary when foreign	restricted to profitable	viability of project must
	Ioan disbursement	port development	also be verified.
	reaches the maximum.	projects. (International	
		international bulk	
		terminals)	
7. Foreign Loan	Low interest foreign loan:	Medium scale port	Projects must satisfy
Appropriation	ADB-5.6% to 5.8%	development projects.	required FIRR value.
	interest with 25 year loan	International container	Foreign currency
	period; JBIC- 2.2%	terminal projects are most	stability must be also
	interest with 30 year loan	suitable.	taken into account.
	period.		
8. Expansion of	National government's	RO/RO feeder ports	National government's
National Government's	general account. At	development projects in	tight financial condition
Infrastructure	present, some 1% of	particular, small scale	is expected to continue.
Investment Budget	national capital outlay is	RO/RO feeder ports rely	DOTC's fund should be
(Long-term Policy)	spent for public ports.	on the national	invested in joint venture
		government's fund.	port projects between
			LGUs and private sector
			to accelerate port
			development.

Table 18.10.2 Financial Strategies to be Taken (2)