Japan International Cooperation Agency(JICA)
Department of Transportation And Communications (DOTC)

No.

Final Report

The Feasibility Study on the Development of Road RO-RO Terminal System for Mobility Enhancement in the Republic of the Philippines

Main Report

November 2007

The Overseas Coastal Area Development Institute of Japan (OCDI)
Pacific Consultants International (PCI)

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Exchange Rate (As of August, 2007)

1.00 USD = 46 Php = 118 JPY

PREFACE

In response to a request from the Government of the Republic of the Philippines (hereinafter referred to as "GOP"), the Government of Japan decided to conduct a Feasibility Study on the Development of Road RO-RO Terminal System for Mobility Enhancement in the Republic of the Philippines and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team to the Philippines four times between August 2006 and September 2007, which was headed by Dr. Haruo Okada and composed of members from the Overseas Coastal Area Development Institute of Japan (OCDI) and Pacific Consultants International (PCI).

The team held discussions with the officials concerned of the GOP and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of this Road RO-RO Terminal System and to the enhancement of friendly relations between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the GOP for the close cooperation they extended to the team.

November 2007

Eiji Hashimoto

Vice President

Japan International Cooperation Agency

LETTER OF TRANSMITTAL

November 2007

Mr. Eiji Hashimoto
Vice President
Japan International Cooperation Agency

Dear Mr. Hashimoto,

It is my great pleasure to submit herewith the Final Report of the Feasibility Study on the Development of Road RO-RO Terminal System for Mobility Enhancement in the Republic of the Philippines.

The study team composed of the Overseas Coastal Area Development Institute of Japan (OCDI) and Pacific Consultants International (PCI) conducted surveys in the Republic of the Philippines over the period between August 2006 and September 2007 according to the contract with the Japan International Cooperation Agency (JICA).

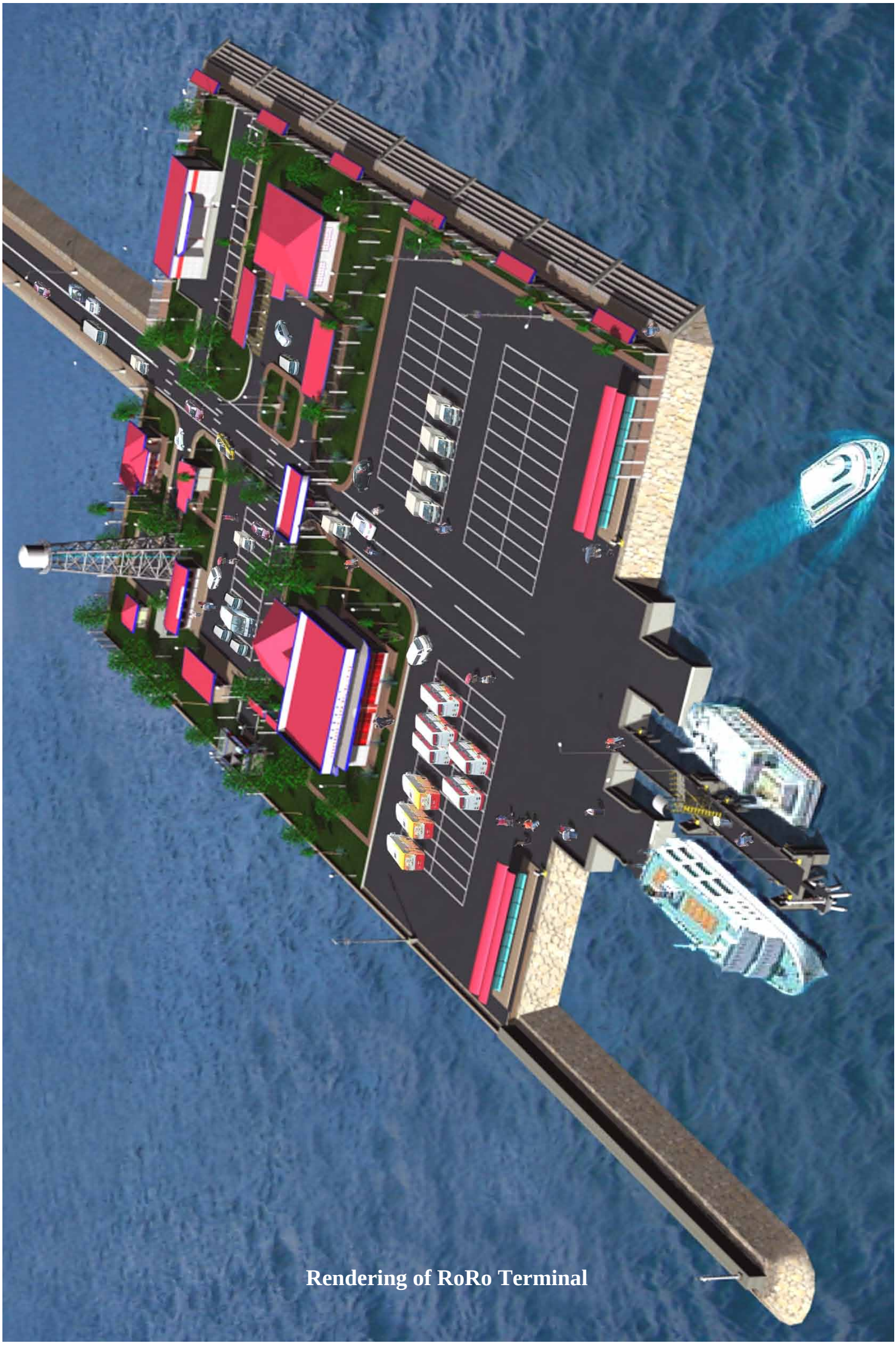
The study team compiled this report, which proposes a selection of RRTS routes to be developed by 2015 and a selection of RoRo terminals on the selected routes including a feasibility study of 15 RoRo terminals ports, through close consultation with officials of the Government of the Republic of the Philippines and other authorities concerned.

On behalf of the study team, I would like to express my sincere appreciation to the Government of the Philippines and other authorities for their diligent cooperation and assistance and for the heartfelt hospitality which they extended to the study team during our stay in the Philippines.

I am also very grateful to the Japan International Cooperation Agency, the Ministry of Foreign Affairs of Japan, the Ministry of Land, Infrastructure and Transport of Japan, Japan Bank for International Cooperation and the Embassy of Japan in the Republic of the Philippines for giving us valuable suggestions and assistance during the course of the study.

Yours faithfully,

Haruo Okada
Team Leader
The Feasibility Study on the Development of Road RO-RO Terminal System for Mobility Enhancement in the Republic of the Philippines



Rendering of RoRo Terminal

Table of Contents

Part I

Part II

List of Appendices

List of Figures

Part I

Part II

List of Tables

Part I

Part II

LIST OF ABBREVIATIONS

A	AC	Asphalt Concrete
	AC	Asphalt Concrete Pavement
	ACP	Asphalt Concrete Pavement
	ADB	Asian Development Bank
	AO	Administrative Order
	APEC	Asia-Pacific Economic Corporation Conference
	ARMM	Autonomous Region in Muslim Mindanao
	ASEAN	Association of South East Asian Nations
	ATI	Asian Terminal, Inc.
	ATS	Abolitz Transport System Corporation
B	B	Bulk Cargo
	B/B	Break Bulk Cargo
	BD	Breasting Dolphin
C	CAR	Cordillera Administrative Region
	CDO	Cagayan De Oro
	CENRO	Community Environmental and Natural Resources Office
	CEZA	Cagayan Economic Zone Authority
	CODMRO	Cagayan De Oro Maritime Regional Office
	COTMRO	Cotabato Maritime Regional Office
	CPA	Cebu Port Authority
D	D	Depth
	DBP	Development Bank of Philippines
	DENR	Department of Environment and National Resources
	DMRO	Davao Maritime Regional Office
	DOTC	Department of Transportation and Communication
	DPWH	Department of Public Works and Highways
	D/R	Dock Receipt
	DSDP	Domestic Shipping Development Plan
	DTI	Department of Trade and Industry
	DW	Dead Weight (Tonnage)
	DWT	Deadweight Tonnage
E	EIRR	Economic Internal Rate of Return
	EMB	Environmental Management Bureau
	EO	Executive Order
F	FIRR	Financial Internal Rate of Return
	F/S	Feasibility Study
G	GCR	Greater Capital Region
	GDP	Gross Domestic Product
	GNP	Gross National Product
	GOP	Government of the Philippines
	GRDP	Gross Regional Domestic Product
	GRT	Gross Tonnage
H	HDW	Howaldtswerke Deutsche Werft AG
	hpa	hectopascal

I	I/A	Implementing Arrangement
	IAPH	International Association of Ports and Harbours
	IEE	Initial Environmental Examination
	IRR	Internal Rate of Return
	IT	Information Technology
	ITDP	Inter-modal Transport Development Project
J	JBIC	Japan Bank for International Cooperation
	JICA	Japan International Cooperation Agency
	JV	Joint Venture
K	KfW	Kredittanstalt fuer Widerauflau (Germany)
	KVA	Kilovolt-Ampere
L	L/A	Loan Agreement
	LGU	Local Government Unit
M	MARINA	Maritime Industry Authority
	MC	Memorandum Circular
	MD	Mooring Dolphin
	M/M	Minutes of Meeting
	MM	Metro Manila
	MMDA	Metropolitan Manila Development Authority
	MRT	Metro Rail Transit
	MT	Metric Ton
	MTPDP	Medium-Term Philippine Development Plan
N	NAMRIA	National Mapping Resource Information Authority
	NCR	National Capital Region
	NEDA	National Economic and Development Authority
	N.M.	Nautical Mile
	NPPD	National Plan for Port Development
	NPV	Net Present Value
	NSO	National Statistics Office
O	OCDI	Overseas Coastal Area Development Institute of Japan
	O-D	Origin and Destination
	ODA	Official Development Assistance
	OECD	Organization for Economic Cooperation and Development
	OECF	Overseas Economic Cooperation Fund (Currently JBIC)
P	PB	Pile Bent
	P/C	Passenger Cargo
	PCC	Portland Concrete Cement
	PCCP	Portland Concrete Cement Pavement
	PCG	Philippine Coast Guard
	PCI	Pacific Consultants International
	PENRO	Provincial Environment and Natural Resources Offices
	Php	Philippine pesos
	PMO	Port Management Office (PPA)
	PMO-Ports Office	Project Management Office (DOTC)
	POPCOM	Population Commission
	PPA	Philippine Ports Authority
	PSP	Private Sector Participation

R	RA	Republic Act
	RC	Reinforced Concrete
	RCBC	Reinforced Concrete Box Culvert
	RCDG	Reinforced Concrete Deck Girder
	RO/RO	Roll On / Roll Off
	ROA	Return on Assets
	ROE	Return on Equity
	ROI	Return on Investment
	RRTS	Road Ro-Ro Terminal System
S	SBMA	Subic Bay Metropolitan Authority
	SC	Steering Committee
	SLDP	Sustainable Logistics Development Program
	SONA	State of Nations Address
	SRNH	Strongly Republic Nautical Highway
T	TEU	Twenty Feet Equivalent Unit
	TMO	Terminal Management Office
	TOR	Terms of Reference
U	USAID	US Agency for International Development
V	VAT	Value Added Tax
	VOC	Vehicle Operating Cost

Executive Summary

1. Background and Objective of the Study

Maritime Transport is playing a vital role in the Philippines, an archipelagic country. The Department of Transportation and Communications (DOTC) has been making efforts to promote and upgrade the maritime transport. It has conducted a series of development studies: Cebu Integrated Port Development Study (2002), Master Plan for the Strategic Development of National Port System (2004), Domestic Shipping Development Plan (2005), and Southern Philippine Intermodal Transport Development Project (2006). In the course of these studies, DOTC has been taking steps to realize its proposal of a RoRo transport network between Luzon and Mindanao via Mindoro, Panay and Negros islands. The Strong Republic Nautical Highway (SRNH) became a reality in 2003.

Since the operation of SRNH started, the advantage of the RoRo transport system has been understood widely among public and private sectors. The government of the Philippines took steps to promote the RoRo transport system further by issuing Executive Order (EO) 170 in 2003, which aimed at the development of the Road RoRo Terminal System (RRTS) and directed those agencies concerned to establish procedures to facilitate the RoRo transport service. The development of three Nautical Highways, i.e., the Eastern, Central and Western Nautical Highways are one of the priority projects in the Medium-Term Philippine Development Plan (2004-2010).

The objectives of the study are:

(1) Selection of RRTS routes to be developed by 2015,

(2) Selection of RoRo Terminals on the selected Routes

(3) Implementation of the Feasibility Study of 15 RoRo Terminals ports.

2. Premise of the Study

The study shall be conducted on the basis of the policies and the achievements of the following development plans and studies:

(1) Medium-Term Philippine Development Plan (MTPDP) 2004-2010

(2) The Study on the Master Plan for the Strategic Development of National port System, 2004 (National Port Master Plan)

(3) Domestic Shipping Development Plan, 2005 (DSDP),

(4) EO 170, 170A and 170B

3. Outline of Study

3.1 Concept of RRTS

The National Port Master Plan classified the RoRo port into four categories in accordance with their roles and functions (see Figure 1):

(1) Maritime Trunk Routes

The long-distance inter-island maritime transport routes connecting Luzon and Mindanao Islands via Visayas Region. There are two routes; Manila - Cebu - North Mindanao, and Western route; Manila-Iloilo/Bacolod - Western Mindanao - South Mindanao

(2) RoRo Routes for Mobility Enhancement in the Regions

a. North - South RoRo trunk routes (Nautical Highways)
b. East-west complementary routes between the North-south trunk routes

(3) Remote Island Link

(4) Feeder Link (Social reform related RoRo link)

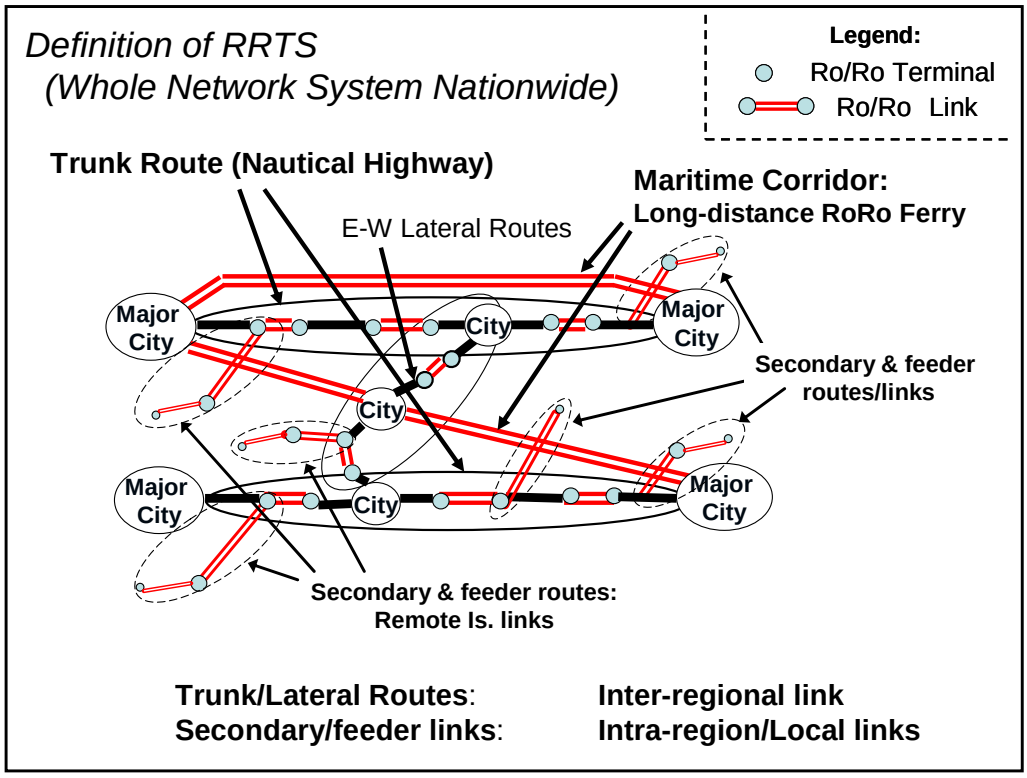


Figure 1 Hierarchy of RRTS Routes

Among these four categories, the study focuses on the second category.

3.2 Present Situation of RoRo Transport

As of August 2007, two Nautical Highways are operational over the full lengths.

(1) Pan-Philippine Highway

Manila - Matnog (Southern Luzon) - Allen (Samar Is.) - (Bridge) - Liloan (Leyte Is.) - Lipata (North Mindanao)

(2) Strong Republic Nautical Highway

Manila - Batangas - Calapan (Mindoro Is.) Roxas - Caticlan (Panay Is.) Iloilo - Bacolod (Negros Is.) - Dumaguete - Dapitan (North Mindanao)

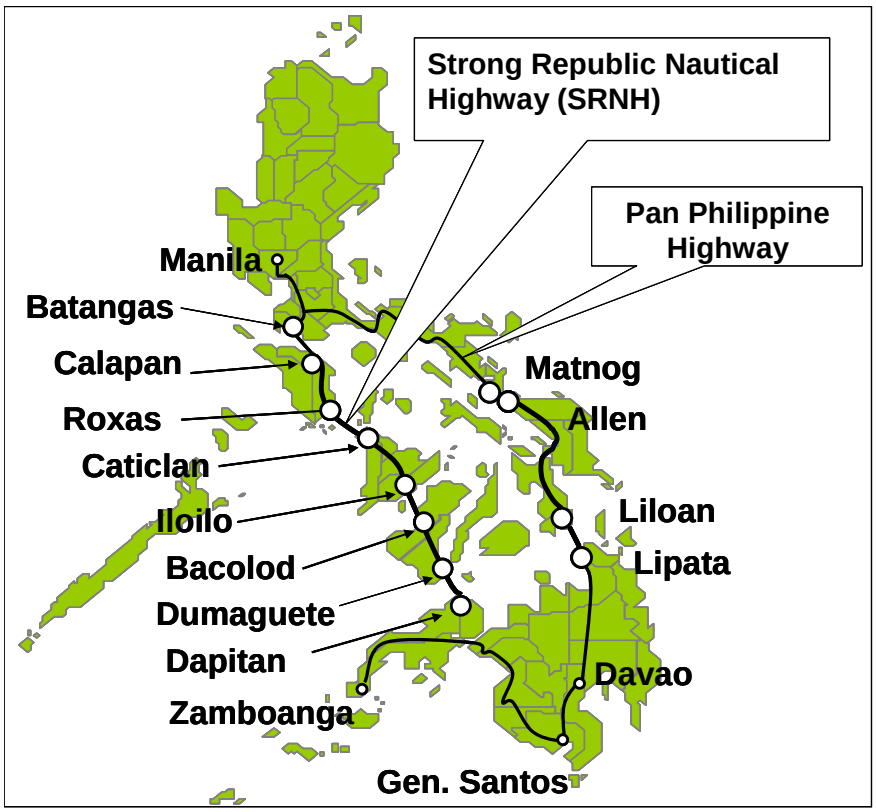


Figure 2 Existing RoRo Trunk Routes

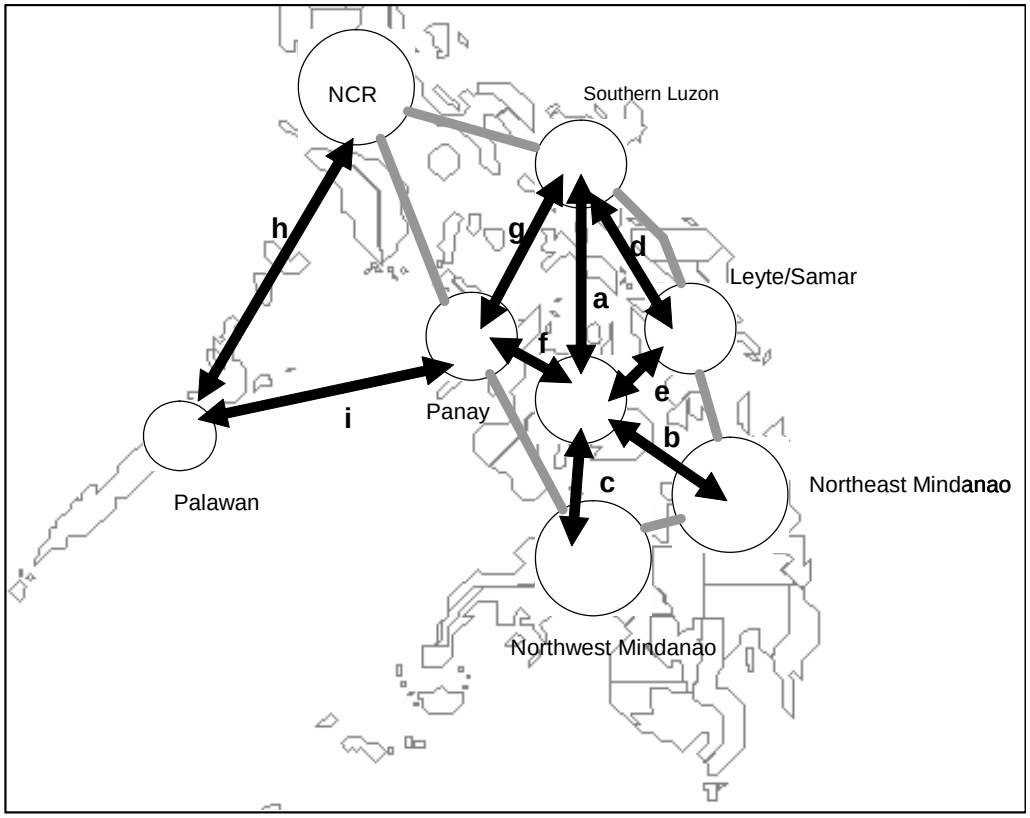
3.3 Basic Concept Employed in the Selection of RRTS Routes

The study aims at mobility enhancement in the regions. Figure 3 shows the geographic locations of Visayas and adjacent regions and under developed RoRo links under development.

a) Cebu Is. - Masbate Is. - Southern Luzon
b) Cebu Is. - Bohol Is. - North Mindanao
c) Cebu Is. - Negros Is. - North Mindanao
d) Southern Luzon - Masbate Is. - Leyte/Samar Is.
e) Cebu Is. - Bohol Is. - Leyte/Samar Is.
f) Cebu Is. - Negros Is. - Panay Is.
g) Panay Is. - Masbate Is. - Southern Luzon

a) through c) correspond to the Central Nautical Highway indicated in MTPDP that connect Southern Luzon - Masbate Is. - Cebu Is. - North Mindanao, d) corresponds to a part of the Eastern Nautical Highway, e) through g) compose the East- west links proposed by DOTC. In addition, the following two links correspond to the Palawan links, which were proposed in the National Port Master Plan,

h) Batangas - Palawan
i) Iloilo - Palawan



Source: Study Team

Figure 3 Underdeveloped Inter-Regional RoRo Links

4. Selection of RRTS Routes and RoRo Links to be Developed and RoRo Terminals that require Feasibility Studies

4.1 Selection of RRTS Routes for Priority Development

The above mentioned Inter-regional links "a" through "i" are grouped into the following eight routes in accordance with the actual cargo and passenger flows. These eight routes are called the Strong Nautical Highways (SRNH) taking after the name of the Western Nautical Highway.

(1) SRNH 1 Eastern Nautical Highway (Pan-Philippine Highway)

The existing East trunk route

-Eastern Nautical Highway Extension

The route interconnects Leyte Is. and Sorsogon Province via Biliran and Masbate Islands.

(2) SRNH 2 Western Nautical Highway

The existing west trunk route that extends from Batangas to Dapitan in Mindanao via Mindoro, Panay, and Negros Islands.

(3) SRNH 3 Central Nautical Highway

The route is comprised of three links a, b, c as shown in Figure 3, and extends from Legaspi to North Mindanao via Masbate, Cebu and Bohol Islands.

-Central Nautical Highway Extension

Link c that passes from West Mindanao to Cebu City via Negros is included in the Central Nautical Highway as its extension.

(4) SRNH 4 Negros – Southern Leyte Nautical Highway

The route denoted by e and f in Figure 3 interconnects Negros and Southern Leyte regions. It extends from Bacolod City in Negros to the Eastern SRNH in Southern Leyte via Cebu, Bohol Islands.

(5) SRNH 5 Panay – Leyte Nautical Highway

The route denoted by e and f in Figure 3, passes the northern part of Visayas island: from Roxas City in Panay Is. to Tacloban in Leyte Is. via Negros and Cebu Islands.

(6) SRNH 6 Panay – Masbate Nautical Highway

This route corresponds to link g in Figure 3. It extends from Roxas City to Masbate City where it merges with the Central SRNH.

(7) SRNH 7 Batangas – Palawan Nautical Highway

This route corresponds to link h in Figure 3. It extends from Batangas City to Puerto Princesa in Palawan via Mindoro Is. and Busuanga Is.

(8) SRNH 8 Iloilo – Palawan Nautical Highway

This route corresponds to c in Figure 3. It connects Taytay (Palawan Is.) and Iloilo (Panay Is.) via Cuyo Island. It merges with Western SRNH at Iloilo

4.2 Selection of RoRo Links on the Eight SRNH

The eight routes are conceptual routes and include several alternative RoRo links. The advantages and disadvantages of the alternative RoRo links have been examined from the following viewpoints. Those links evaluated to be the most competitive are chosen.

a. Distance of sea link
b. Traffic volume: existing and potential
c. Existing situation of port facilities, access road and social/environmental impacts
d. Opinion of RoRo Ferry operators
e. Current port administration: PPA, CPA, LGU or Private operator

Table 1 summarized the selected RoRo terminals on the SRN. The locations of the selected RoRo terminals are shown in Figure 4.

Table 1 Selected RoRo Terminals and the Selection of RoRo Ports for Feasibility Study

No.	RRTS Route	Port[1]		Administration	Connection	Port	RoRo Service	Proposal	Freq.	Ramp	F/S Category
1	Easter SRNH	Matnog	Sorsogon	PPA	Allen/San Isidro		Operational	PPA Pre-F/S	18/day	3	
		Allen/Dadap	Northern Samar	Private	Matnog		operational		18/day	3	
		Liloan	Southern Leyte	PPA	Lipata		operational		4/day	3	
		San Ricardo	Southern Leyte	PPA	Lipata	New	Not yet in service	PPA Pre-F/S	-	None	
		Lipata	Surigao del Norte	PPA	Liloan/San Ricardo		operational	PPA Pre-F/S	4/day	3	
	Eastern SRNH. E	**Naval**	Biliran	PPA	Esperanza	Improve.	Not yet in service		-	None	**1**
2	Central SRNH	**San Antonio**[3]	Pilar, Sorsogon	PPA	Masbate	New	Not yet in service	PPA Pre-F/S	-	None	**1**
		Masbate		PPA	San Antonio		To Cebu/Lucena		3/wk each	2	
		Esperanza[3]	Masbate	(PPA)	Daanbantayan/Bogo	New	Not yet in service	SONA	-	None	**1**
		Daanbantayan	Cebu	LGU	Esperanza	New	Not yet in service		-	None	**1**
		Cebu	Cebu	CPA	Tubigon		operational			5	
		Tubigon	Bohol	PPA	Cebu		operational		7/day	2	
		Jagna	Bohol	PPA	Balingoan/CDO/Nasipit		operational		3/week	1	
		Balingoan	Misamis Oriental	PPA	Jagna		operational		3/day	2	
		Cagayan de Oro	Misamis Oriental	PPA	Jagna		operational		3/week	2	
		Nasipit	Agusan del Norte	PPA	Jagna		operational		3/week	3	
	Central SRNH Ext	Mainit (Santander)	Cebu	Private	Sibulan (Dumaguete)		operational		3/day	2	
		Matiao (Santaande	Cebu		Tampi (Dumaguete)		operational		6/day	2	
3	Western SRNH	Batangas	Batangas City	PPA			operational		26/day	8	
		Calapan	Mindoro Oriental	PPA			operational		26/day	8	
		Roxas	Mindoro Oriental	PPA			operational		6/day	1	
		Caticlan	Antique	LGU	Roxas	New	operational		4/day	1	**2**
		Dumangas	Iloilo	PPA	Bacolod	Improve.	operational		2/day	1	**2**
		Bacolod (BREDCO	Negros Occidental	Private	Dumangas		operational		4/day		
		Dumaguete	Negros Oriental	PPA	Dapitan		operational		4/day	1	
		Siaton[2]	Negros Or.	PPA	Dapitan	New	None	Fund requested	-	None	
		Dapitan	Zamboanga del Norte	PPA	Dumaguete/Siaton		operational		4/day	2	
4	Negros Southern Leyte SRNH	San Carlos	Negros Occ.	PPA	Toledo		operational		8/day	3	
		Toledo	Cebu	CPA	San Carlos	Improve.	operational		8/day	1	**2**
		Pt. Engano	Cebu	CPA	Getafe	Improve.	operational		3/day	1	**2**
		Getafe	Bohol	PPA	Pt. Engano	Improve.	operational		3/day	1	**2**
		Ubay	Bohol	PPA	Bato/Maasin	Improve.	operational		2/day	2	**2**
		Bato	Leyte	Private	Ubay		operational				
		Maasin[3]	Southern Leyte	PPA	Ubay		To and from Cebu	SONA		1	
5	Panay Leyte SRN	**Culasi, Ajuy**	Iloilo	Private/CPA	Victorias		None		-	None	**2**
		Cadiz	Negros Occ.	LGU			None		-	None	
		Escalante	Negros Occ.	LGU	Tabuelan		RoRo operational		3/day	2	
		Tabuelan	Cebu	Private/CPA	Escalante		RoRo operational		3/day	1	**2**
		Bogo	Cebu	CPA/LGU	Palompon		None		-	2	**2**
		Palompon	Leyte						-	1	
6	Panay Masbate SRNH	**Balud**	Masbate	LGU	Culasi, Roxas	New	None		-	None	**1**
		Aroroy[2,3]	Masbate	PPA	San Antonio		None	SONA,Fund Reqtd	-	None	
7	Batangas Palawa	San Jose[2]	Mindoro	PPA	Coron/Taytay		From Batangas	Fund requested	-	1	
		Coron	Palawan	PPA	San Jose/Taytay				-		
	SRNH	**Taytay**[2]	Palwan	PPA	Coron	New	None	Fund requested	-		**1**
8	Iloilo Palawan SRNH	San Jose de Buenavista	Aklan	PPA	Cuyo/Taytay		None		-	1	
		Cuyo	Palawan	PPA	Taytay/S. Jose de B. Vista				-	1	

Legend

1	RoRo Terminals along the RRTS Trunk and Complementary Routes
2	PPA 8 ports under evaluation of NEDA for Funding
3	SONA ports

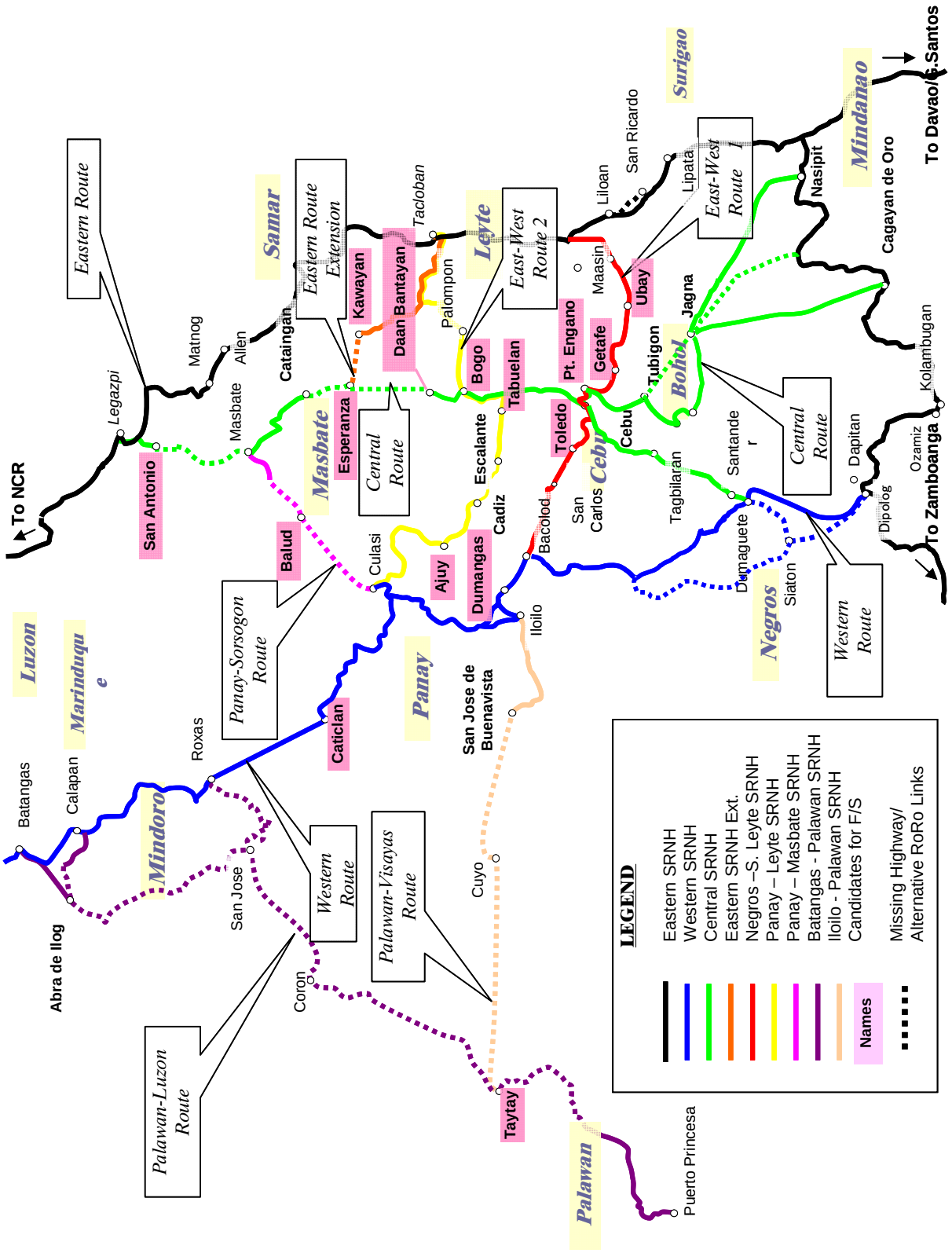


Figure 4 Selected SRNH Route and RoRo Terminals

4.3 Selection of RoRo Terminals for Feasibility Study

The above selected SRNH routes compose the arterial routes of RRTS and, therefore, the government is responsible for leading the development. The study is intended to identify and propose the projects that should be implemented by the government by 2015. Thus, prior to the formulation of the projects, the feasibility of the development plans of all the RoRo ports composing SRNH should be evaluated.

Accordingly, 15 ports for the feasibility study have been selected in the light of the following criteria (see Table 1).

- Category 1: New RoRo ports on New SRNH which do not have development plans
- Category 2: New or existing Ports that requires large scale investments and that have no development plans

5. Traffic Forecast

The traffic forecasts estimated for the year 2009 and 2024 presented in the National Port Master Plan have been employed for the traffic forecast in 2015. The results are listed in Table 2.

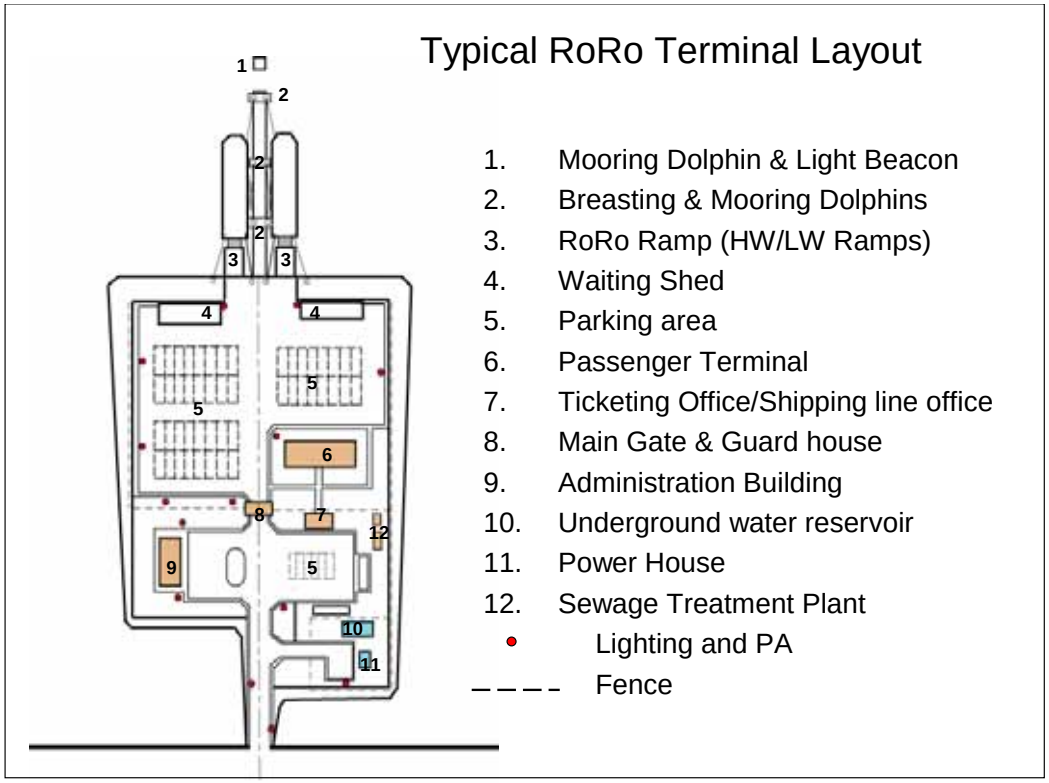
Table 2 Cargo and Passenger Forecast

Route	RoRo Ferry Link	Cargo (t)		Passenger (Pax)	
		2005	2015	2005	2015
Eastern SRNH	Matnog- Allen	1,772,017	3,373,467	1,594,887	2,957,478
	Liloan, San Ricardo- Lipata	366,110	647,039	435,499	769,309
Eastern SRNH Extension	San Andres - Masbate	21,840	42,048	85,127	168,085
	Esperanza - Kawayan	97,500	185,615	104,300	193,409
Western SRNH	Batangas – Calapan	651,779	1,059,154	1,123,086	1,796,554
	Roxas – Caticlan	163,061	338,426	652,769	1,026,903
	Iloilo, Dumangas - Bacolod	190,442	518,280	220,320	346,431
	Dumaguete, Siaton - Dapitan	132,296	276,623	519,308	806,469
Central SRNH Route	Pilar, San Antonio – Masbate	161,700	311,317	360,600	712,011
	Esperanza – Daanbantayan	157,900	294,319	206,600	344,465
	Cebu - Tubigon	105,860	191,015	1,444,945	2,028,412
	Janga - Balingoan	214,415	372,725	118,800	151,852
	Benoni, Guinsiliban - Balingoan	22,756	38,104	386,287	449,186
Negros Southern Leyte SRNH	San Carlos - Toledo	114,285	253,790	265,266	394,171
	Pt. Engano - Getafe	114,285	206,217	164,427	230,822
	Ubay - Maasin	155,235	286,106	137,925	215,736
	San Ricardo - Lipata	366,110	647,039	435,499	769,309
Panay Leyte SRNH	Ajuy – Cadiz, Victorias	74,300	202,204	131,400	206,613
	Escalante - Tabuelan	152,336	338,289	159,860	237,544
	Bogo - Palompon	114,400	210,845	149,857	234,399
Panay Masbate SRNH	Culasi - Balud	62,000	142,131	74,700	131,708
Batangas Palawan SRNH	San Jose - Coron - Taytay	147,400	231,550	121,000	190,442
Iloilo Palawan SRNH	San Jose de Buenavista - Cuyo - Taytay	142,500	295,752	71,500	112,480

Source: Study Team

6. Layout Plan of RoRo Terminals

A standard layout plan that includes all the necessary facilities have been employed for the RoRo terminals of SRNH (see Figure 5). For the newly developed Terminals, the standard berth was placed at the locations where the water depth of at the RoRo ramp is deep enough for the design ships. For the expansion of the existing RoRo ports, the layout plan has been modified so that the existing facilities are fully utilized and only those lacking have been added. For the RoRo ports that are exposed to open sea, breakwaters are added to the standard layout plan.



Source: Study Team

Figure 5 Standard Layout of RoRo Terminal

7. Economic Feasibility Evaluation

7.1 Methodology

The economic feasibility evaluation has been carried for route by route instead of link by link because the economic benefits are generated only when the routes are operational over the full lengths. The cost components include not only construction costs and maintenance costs of port and highway infrastructures but also the costs of ship procurement and operation costs.

The following cost components are employed in the economic analysis:

- Port and Highway construction costs: Estimated costs were converted to the economic costs (see Table 3). The construction costs of highways are estimated for gravel road.
- Annual maintenance costs: 1% of initial construction costs of ports and highways and 5% of ship procurement cost.
- Annual ship operation cost: P 20million for 500 GRT ships and P102million for 2,000 GRT ships.
- The project life is assumed to be 25 years.

Table 3 Economic Price of Project and RoRo Vessels Procurement Costs

Route	Link	Economic Cost (1,000 pesos)	
1. Western SRNH	Batangas – Calapan – Roxas – **Caticlan** –	Construction Cost of Caticlan Port	***P418,021***
		Purchase Cost of 11 RoRo Vessels (500 GRT)	***P1,130,738***
	Dumangas – Bacolod – Dumaguete, Siaton -	Construction Cost of Dumangas Port	***P98,532***
		Purchase Cost of 9 RoRo Vessels (500 GRT)	***P641,413***
2. Central SRNH	**San Antonio**– Masbate– **Esperanza** – **Daan Bantayan** – Cebu	Construction Cost of San Antonio Port, Esperanza Port and Daan Bantayan	***P943,305***
		Purchase Cost of 17 RoRo Vessels (500 GRT)	***P1,745,700***
		Gravel Pavement Construction Cost	***P203,067***
3. Eastern SRNH Ext.	San Antonio - Masbate- Esperanza - **Naval**	Construction Cost of Naval Port	***P128,395***
		Purchase Cost of 5 RoRo Vessel (500 GRT)	***P595,125***
4. Negros-S. Leyte SRNH	Bacolod - San Carlos - **Toledo** -	Construction Cost of Toledo Port	***P204,544***
		Purchase Cost of 3 RoRo Vessels (500 GRT)	***P317,400***
	Pt. Engano - **Getafe**- **Ubay** - Maasin- San Ricardo -	Construction Cost of Pt. Engano, Getafe and Ubay Ports	***P656,762***
		Purchase Cost of 11RoRo Vessel (500 GRT)	***P1,051,388***
5. Panay-Leyte SRNH	**Ajuy** – Cadiz– Escalante - **Tabuelan** – **Bogo** -	Construction Cost of Ajuy, Tabuelan and Bogo Ports	***P640,208***
		Purchase Cost of 13 RoRo Vessels (500 GRT)	***P1,196,863***
6. Panay - Masbate SRNH	Culasi - **Balud**	Construction Cost of Balud Port	***P345,423***
		Purchase Cost of 3 RoRo Vessel (500 GRT)	***P347,156***
		Gravel Pavement Construction Cost	***P270,756***
7. Batangas-Palawan SRNH	San Jose – Coron – **Taytay**	Construction Cost Taytay Port (50% of total cost) and San Jose Port	***P782,409***
		Purchase Cost of 3 RoRo Vessel (2,000 GRT)	***P981,956***
		Gravel Pavement Construction Cost	***P67,689***
8. Iloilo-Palawan SRNH	San Jose de Buenavista – Cuyo– **Taytay**	Construction Cost Taytay Port (50% of total cost) and San Jose de	***P303,409***
		Purchase Cost of 3 RoRo Vessel (2,000 GRT)	***P981,956***
		Gravel Pavement Construction Cost	***P67,689***

7.2 Benefits of Projects

Economic benefits consist of quantifiable and non-quantifiable benefits.

1) Benefit elements for quantitative evaluation

There are three basic elements of economic benefits, i.e. reduction of travel time, reduction of transport cost and reduction of spoilage/pilferage. These three benefit components are generated by the following elements.

-Reduction of cargo transport cost

-Reduction of passenger travel time

-Saving of vessel fuel cost by RoRo vessel system

-Reduction of cargo damages, pilferage and robbery cost by security and safety facilities

-Reduction of vessel operation cost by smooth mooring operation system

-Reduction of vehicle operation cost in smooth access road and adequate parking area system

-Reduction of suspension of shipping services

-Passenger suspension time reduction

-Saving vehicle operation costs (VOCs) in terms of running cost, fixed costs and time costs

2) Benefits for qualitative evaluation

In addition to the quantitative benefit, the following indirect benefits will be generated.

-Reduction of investment cost for storage or warehouse and cargo handling equipment.

-Promotion of logistics business

-Promotion of market of high value perishable agricultural or fish products with shorter travel time.

-Promotion of service businesses at the port and along the connecting highways

-Encourage travel and promotion of tourism businesses.

-Promotion of shipbuilding and improvements in ship maintenance

-Improvement of maritime transport safety

7.3 Evaluation of Economic Feasibility

Economic Internal Rate of Return (EIRR) has been calculated by SRNH routes as the difference in the costs and benefits between with and without cases.

Table 4 Economic Internal Rate of Return (EIRR)

SRNH	Route (RoRo links)	EIRR	Sensitivity Analysis								
		Base Case	Cost	0%	0%	10% up	20% up	10% up	10% up	20% up	20% up
			Benefit	-10%	-20%	0%	0%	-10%	-20%	-10%	-20%
1. Eastern SRNH Ext.	San Antonio - Masbate- Esperanza - Naval	28.6%		25.2%	21.5%	25.5%	22.7%	22.2%	18.6%	19.5%	16.1%
2. Western SRNH	Batangas – Calapan – Roxas – Caticlan – Iloilo	15.4%		13.2%	9.7%	13.4%	10.9%	10.3%	6.8%	7.7%	4.0%
	Iloilo-Dumangas – Bacolod – Dumaguete, Siaton - Dapitan	88.9%		78.8%	68.1%	79.8%	71.7%	70.1%	59.7%	62.4%	52.4%
3. Central SRNH	Legaspi-San Antonio– Masbate– Esperanza – Daan Bantayan – Cebu	19.4%		17.1%	14.7%	17.3%	15.5%	15.2%	12.8%	13.4%	11.1%
4. Negros-S. Leyte SRNH	Bacolod - San Carlos - Toledo - Cebu	22.8%		19.5%	16.2%	19.8%	17.3%	16.8%	13.7%	14.4%	11.5%
	Cebu-Pt. Engano - Getafe- Ubay - Maasin- San Ricardo - Lipata	22.2%		19.2%	16.1%	19.5%	17.1%	16.7%	13.8%	14.5%	11.7%
5. Panay-Leyte SRNH	Roxas-Ajuy – Cadiz– Escalante - Tabuelan – Bogo - Palompon -Tacloban	37.1%		32.7%	28.1%	33.1%	29.6%	28.9%	24.7%	25.8%	21.8%
6. Panay - Masbate SRNH	Roxas - Culasi - Balud - Masbate	34.8%		32.0%	29.1%	32.3%	30.1%	29.6%	26.8%	27.5%	24.9%
7. Batangas-Palawan SRNH	Batangas - Abra de Ilog - San Jose – Coron – Taytay - Puerto Princesa	16.4%		14.1%	11.6%	14.3%	12.4%	12.0%	9.6%	10.2%	7.8%
8. Iloilo-Palawan SRNH	Iloilo - San Jose de Buenavista – Cuyo– Taytay	51.3%		46.3%	41.0%	46.8%	42.8%	42.0%	36.9%	38.2%	33.2%

As indicated in Table 4, EIRR is larger than 15%, which is the hurdle value in the evaluation. The projects are assessed to be economically feasible.

8. Financial Analysis

The financial analysis has been carried out for individual RoRo terminals. The base case employed the current tariff system. In addition, sensitivity analyses have also been carried out for the following nine cases to assess the financial feasibility and examine possible funding schemes:

Case 1 : The project cost increases by 10%

Case 2 : The revenue decreases by 10%

Case 3 : The project cost increases by 10% and the revenue decreases by 10%

Case 4 : Increases by 10% of the tariff rate is assumed every 5 year after 2010

Case 5 : Double price of the tariff rate is assumed after 2010

Case 6 : 20% of project cost subsidized by the government

Case 7 : 40% of project cost subsidized by the government

Case 8 : Traffic volume increases by 10%

Case 9 : Traffic volume increases by 20%

The results are shown in Table 5.

Table 5 Financial Analysis (FIRR)

Name of Port	FIIR (%) Case									
	Base case	1	2	3	4	5	6	7	8	9
San Antonio	3.3	2.7	2.6	2.0	5.9	8.0	4.7	6.6	3.9	4.4
Esperanza	3.5	2.9	2.8	2.2	6.2	8.5	5.0	7.1	4.2	4.8
Daanbantayan	-	-	-	-	3.0	4.8	1.8	3.6	-	1.5
Naval	3.1	2.5	2.4	1.8	5.7	8.0	4.6	6.6	3.7	4.3
Balud	-	-	-	-	-	-	-	-	-	-
Ajui	1.5	-	-	-	4.1	6.2	2.9	4.7	2.1	2.6
Tabuelan	0.8	-	-	-	3.5	5.9	2.3	4.3	1.4	2.0
Bogo	1.5	0.9	-	-	4.2	6.6	3.0	4.9	2.1	2.7
Caticlan	-	-	-	-	2.7	4.8	-	2.3	-	-
Dumangas	4.8	4.3	4.2	3.7	9.7	17.4	6.0	7.5	5.3	5.8
Toledo	-	-	-	-	2.3	4.8	-	1.7	-	-
Pt.Engano	-	-	-	-	-	2.6	-	-	-	-
Getafe	-	-	-	-	2.1	4.6	-	1.5	-	-
Ubay	-	-	-	-	2.2	4.6	-	1.7	-	-
Taytay	3.9	3.2	3.1	2.5	6.6	9.3	5.5	7.8	4.6	5.2
Package A	1.8	1.2	1.1	-	4.4	6.5	3.2	5.2	2.4	3.0
Package B	-	-	-	-	3.4	5.9	1.4	3.1	-	-
15 Ports	-	-	-	-	3.8	6.2	2.2	4.0	1.4	2.0

As seen in Table 5, only four terminals attain FIRR higher than 2% as far as the current tariff system is employed. Thus, either an increase of tariff (see Case 4 and 5) or government subsidies is needed to make the projects financially viable.

Assuming that the operation cost should be paid by revenue and the government subsidies are provided up to the extent that the FIRR exceeds 2%, the amounts of subsidies have been computed. The results are shown in percentage terms on the initial construction costs (see Table 6).

Table 6 Amount of Subsidy needed to Attain FIRR 2%

Name of Port	Government subsidy (Percentage on construction cost)
	Adjustment of FIRR; 2.0%
Daanbantayan	30.0%
Balud	84.5%
Ajuy	12.0%
Tabuelan	22.0%
Bogo	12.0%
Caticlan	48.0%
Toledo	54.0%
Pt.Engano	74.5%
Getafe	58.0%
Ubay	55.0%

In this way, if port tariffs are not revised, it is necessary to include Government subsidies shown in Table 6 among initial investment costs. In the development of a RoRo terminal, government subsidizes the facilities shown in Table 7. Port management body bears other construction costs and

maintenance / operating cost using its own revenue.

In principle, PPA, CPA develops basic facilities by Government subsidies and port management body develops operation facilities using port fees.

Table 7 Facilities that should be Covered by Subsidy

	Basic facilities				Operation facilities						
Item	Marine Works	Navigational Aids	Berthing Facilities	Civil Works	Utilities Works	Electrical Works	Lightings	Appurtenant Works	Access Road	Building Works	RORO Ramp, Fender
Daanbantayan	■										
Balud	■	■	■	■	■	■	■	■			
Ajuy	■										
Tabuelan	■										
Bogo	■										
Caticlan	■										
Toledo	■	■	■	■							
Pt.Engano	■	■	■	■	■	■					
Getafe	■	■	■	■	■						
Ubay	■	■	■	■							

9. Social and Environmental Considerations

In the course of the study, IEE check lists have been prepared for 21 ports based on the field surveys. The results have been fed back during the stage of the selection of RoRo terminals. When social and environmental impacts are expected to be substantial, alternative ports have been chosen. Thus, social and environmental impacts caused by the development of the 15 selected RoRo terminals are assessed to be manageable.

10. Project Proposal

SRNH's are effectively utilized only when they are operational as the transport network. Thus, the development of RoRo terminal should be done in a package. The study proposes to implement the project in three packages:

- Package A: six terminals on the SRNH connected to Masbate Is.

  San Antonio, Balud, Esperanza, Naval, Daan Bantayan, Taytay

  Total project cost: P 2,472 million

- Package B: nine terminals on other SRNH

  Dumangas, Culasi/Ajuy, Toledo, Tabuelan, Bogo, Punta Engano, Getafe, Ubay, Caticlan/Tabon

  Total project cost: P 3,080 million

- Package C: Three sections of highways

  Esperanza-Cataingan Highway (Masbate Is.)

  Balud - Milagros Highway (Masbate Is.)

  Taytay Terminal Access Road (Palawan Is.)

  Total project cost: P 780 million

11. Conclusions and Recommendations

11.1 Conclusions

The priority routes proposed in the study were not selected based on the grounds that each of them has great potential in terms of future traffic demand but that collectively they can form an effective nationwide trunk traffic network. As the proposed trunk traffic network is considered to be able to cope effectively with traffic demand to be generated among regions and islands all over the country at least in the coming three decades, the most important step to be taken is to develop this trunk traffic network as soon as possible recognizing that this network is one of the most basic and indispensable national infrastructures to support social/economic development of the nation.

The improvement and development of the fifteen RORO terminals proposed in the study should be followed by the improvement of the other RORO terminals on the priority routes to ensure that all terminals meet the same structural standards. At the same time, it is also necessary to improve the existing roads and highways continuously. Only through these efforts can transport safety, environmental preservation and a reduction in transport time be realized, thereby enhancing the social and economic development of the nation as a whole.

The traffic routes which can not be covered by the above-mentioned efforts are those which connect small remote islands, those which cater to local traffic demand within regions and those used exclusively for industrial purposes. Different from the above-mentioned trunk traffic routes, it is considered appropriate that these traffic routes be developed mainly by the related LGUs and private entities.

Regarding the sharing of roles between public and private entities, it is proposed in the study that the improvement and development of roads, highways, ports and RORO terminals should basically be the responsibility of the former while the procurement, management and operations of RORO vessels should be the responsibility of the latter with supportive measures from the government. However, our proposal does not include details of the procurement, management and operations of RORO vessels. This is because representatives of RORO vessel operators could not reach a consensus on desirable supportive measures from the government and their own business plans. In the economic analysis of the priority routes and financial analysis of RORO vessel operations, therefore, the procurement cost for RORO vessels was calculated under the assumption that existing RORO vessels will be fully utilized in order to minimize the procurement cost of RORO vessels. For this reason, RORO vessels to be introduced are assumed to be mainly 500GRT class, but needless to say, vessel size should increase according to the increase of traffic volume and the greater profitability of RORO vessel operations in future.

11.2 Recommendations

DOTC shall try to promote the following policy issues on its own initiative.

1) Authorization of the National Nautical Highway Network

The National Nautical Highways proposed in the study are highly important national transport infrastructure for unifying the whole land of the Philippines.

It is important for the government of the Philippines, therefore, to authorize the proposed highways and RoRo links which form the National Nautical Highway Network as “The National Nautical Highways” and “The National Nautical Highway RoRo Links” and declare them in the government policy as the priority projects for government investment in the coming ten years.

2) Formulation of a System to Approve New National Nautical Highway RoRo Links

It is recommendable for the government of the Philippines to formulate a system to approve new RoRo terminal projects and RoRo vessel services being proposed now and that will be proposed in future by PPA, CPA, LGU and private entities (in addition to the projects on the links proposed in the study).

In this case, the criteria to be applied for the approval of such new projects should be based on whether the projects meet the technical/managerial standards prepared by the government and whether the offered new terminals can contribute to expanding and strengthening the National Nautical Highway Network proposed in the study.

3) Scheme to Implement the Infrastructure Projects Proposed in the Study

Given the great importance of national transport infrastructure, it is considered appropriate that government agencies directly implement the infrastructure projects (with the exception of RoRo vessel operations) proposed in the study as follows.

- Highways and Roads: DPWH
- RoRo Terminals: PPA, CPA

  Given the current state of privatization and decentralization, it is also necessary for the government, however, to formulate a system enabling it to entrust the management/operations of RoRo terminals to private entities by lease or concession when they request to manage and operate the terminals for themselves. However, it will be first necessary to carefully examine their business plans.
- DOTC shall be the sole agency responsible for receiving loans to implement the projects

It is recommendable for the government to formulate a system to properly supervise and guide LGUs and private entities which have been entrusted with the management of RoRo terminals (in other words, implemented projects which cannot be taken over by government agencies).

4) Supportive Measures for RoRo Vessel Operators to be Prepared by the Government

Based on the premise that RoRo vessel services will continue to be provided by private entities, it is recommendable for the government to prepare supportive measures for RoRo vessel operators to prevent the lowering of service quality and suspension of operations until an adequate volume of transport is generated. It is also recommendable to prepare suitable measures to prevent a decline in efficiency and sustainability of operations that could arise from excessive competition among RoRo operators. It is required to formulate a system to restrict the provision of excessive tonnage on a RoRo link compared to the actual traffic volume.

Part I

1. Introduction

1.1 Objectives of the Study

The Philippines is a country composed of more than seven thousand large and small islands and has unique geographical characteristics which are not seen in any other country in the world. For not only is the country composed of a large number of islands but it also has a unique geographical configuration in that its two major islands of Luzon and Mindanao are located on the northern and southern ends of the country while most of the other islands are dotted between these two islands.

Another geographical characteristic is that the distance between each of these islands is too great to permit direct connection by subterranean tunnels or long-span bridges and instead require several hours of sailing. This geographical condition has presented various difficulties in planning the nationwide transport network. To form an effective nationwide transport network, an important issue is to determine what type of marine transport is most suitable.

Based on these geographical conditions, the government of the Philippines has introduced the concept of "Road and RoRo Terminal System (RRTS)" and tried to improve the nationwide traffic situation through the construction of more and more RoRo terminals and by encouraging private RoRo operators to provide services on the links connecting these terminals. It would certainly be convenient for the residents in nearby areas to have more RoRo terminals. This way of traffic infrastructure development, however, has various problems. Firstly, unless the government carefully supervises the construction of terminals by LGUs and/or private operators based on a fixed standard, there is a possibility that terminals lacking efficiency, reliability and safety will be constructed one after another, in addition, many more roads must be constructed to provide access to all of these RoRo terminals. And secondly, increasing the number of terminals will lead to a dispersion of traffic and ultimately unprofitable RoRo operations. As a result, it will become difficult at some of these terminals to continuously provide efficient, safe and reliable RoRo services with high service frequency. Accordingly, the economic feasibility of this manner of infrastructure development is rather low.

An alternative way to secure higher economic feasibility is to develop an efficient nationwide trunk traffic network using existing well-maintained highways and a limited number of short-distance RoRo links with standardized RoRo terminals on both ends. Restricting the number of RoRo links involves political problem as it is impossible to satisfy the demands of all LGUs, but in this way a higher level of transport efficiency can be achieved with a lower level of investment.

Based on the above-mentioned idea, the government of the Philippines has designated a series of alternate land and sea routes as Nautical Highways and proposed to cover the whole country with the network composed of such highways. The nationwide trunk traffic network already authorized by the government is composed of four north-south trunk routes (i.e. the Eastern Nautical Highway, the Eastern Nautical Highway Extension, the Central Nautical Highway and the Western Nautical Highway) and several east-west complementary routes. Among these routes, RO/RO operators began operations in 1993 between Mindoro (Roxas) and Panay (Caticlan) islands, and as a result, the Western Nautical Highway is developing as a full-fledged nautical highway with steadily increasing traffic volume at present.

The government of the Philippines is trying to develop each route on the abovementioned planned nationwide traffic network one by one according to the economic and social needs of the country and the region. Based on the abovementioned situation, the objective of the study is firstly to identify the priority routes for development in the coming decade until 2015 from among routes in the authorized nationwide traffic network and propose "the National Nautical Highway Network" composed of such trunk traffic routes. Next, the most suitable RO/RO terminal from among several terminal alternatives on the priority route will be selected, and finally, measures to secure financial

soundness of the RO/RO terminal and RO/RO vessel operations will be examined. The last issue will be very important in terms of government policy to maintain firmly the National Nautical Highway Network as a most basic and important infrastructure of the country.

1.2 Basic Concepts Applied to Select the Priority Routes

(1) The north-south Nautical Highways, the Eastern Nautical Highway and the Western Nautical Highway, are the most important trunk traffic routes of the country. The government of the Philippines must continue to improve these two highways at all costs in accordance with the expected traffic increase in future.

(2) The purpose of developing the priority routes is mainly to facilitate economic and social development of relatively underdeveloped areas such as Sorsogon, Leyte and Bohol by developing traffic routes connecting the above two trunk traffic routes and the Visayas area via Masbate Island and further enhance accessibility to the Palawan area by developing traffic route connecting the Western Nautical Highway and Palawan Island.

(3) The Nautical Highway Network we propose is formed mainly to connect the Visayas area to the above-mentioned two trunk traffic routes via Masbate Island. This network will greatly improve accessibility from the second most important hub of the country, the port of Cebu, as well as from the port of Manila to relatively underdeveloped areas such as Sorsogon, Leyte, Samar, Bohol and North Mindanao. The development of this network, therefore, is expected to contribute greatly to the economic and social development of these areas.

(4) As mentioned above, the port of Cebu located in the center of the Visayas area is the second most important hub of the country in terms of long-distance marine transport following the port of Manila. The port of Cebu must continue to serve as the base port for middle and long-distance transport from domestic and overseas ports in future. It is important, therefore, to continue to improve and develop the port of Cebu at all costs in accordance with the expected traffic increase in future.

(5) In the case of long-distance transport, for example between Luzon and Mindanao, transport means such as long-haul ferry will be much more beneficial in terms of costs and time than using Nautical Highways including many RO/RO links for both cargoes and passengers. In this case, Nautical Highways can not compete with long haul ferries. Therefore, the major purpose of developing Nautical Highways should not be to facilitate long-distance transport. Transport via Nautical Highways should be mainly for shorter distances, two RO/RO links at most. At such a distance, trucks can return to the starting point within a day or at most two minimizing idling time. In the case of long and/or middle-distance transport, long and/or middle haul ferries will remain as strong competitors. The Nautical Highways share the role of domestic transport with middle and long-distance ferries, bunker boats, fast boats and so on to secure the smooth transport of passengers and cargoes throughout the country.

(6) On the Nautical Highways it is necessary to guarantee RO/RO services with appropriate frequency and reliability regardless of profitability of RO/RO operations. It is anticipated that it will be difficult to achieve profitability on the newly opened RO/RO links for at least several years due to the inadequate traffic demand. Accordingly, it will be required to prepare supportive measures including provision of subsidy by the government.

2. Background of the Study

2.1 Historical Studies on Maritime Transport Study in the Philippines

2.1.1 General Aspect

RoRo ferry service between Batangas Port in Batangas City and Calapan Ports in Mindoro Oriental started in the 1970s. The concept of using RoRo ferry service as a part of highway connection was first introduced to the Pan-Philippine Highway. In 1983, two RoRo ferry boats, i.e. Mahalika I and Mahalika II, started operation between Matnog (Sorsogon, Southern Luzon) – San Isidro (Northern Samar) and Liloan (Southern Leyte) – (Lipata, Surigao del Norte). In 1990's, many RoRo ships had been introduced in short-distance shipping links especially in Visayas Regions.

To promote the RoRo ferry service further, the Department of Transportation and Communications (DOTC) in cooperation with the PPA first carried out a nationwide RoRo transport development study in 1992. Since then, DOTC has been making efforts to establish development policies and implementation plans covering not only port infrastructure but also coordination with the government agencies concerned. The following studies that have been carried out by DOTC and other agencies since 1992.

- 1992 Nationwide Roll-on Roll-off Transport System Development Study (DOTC-JICA)
- 2000 Social Reform Related Feeder Port Development Project (DOTC-JBIC)
- 2001 - Bohol Ferry Link and Terminal Feasibility Study (DOTC)
  - Implementation Program for Roll-on Roll-off Ferry network
  - Development Project for the Trans-Visayas
  - Intermodal Transport Network (DOTC)
- 2004 Master Plan for the Strategic Development of the National Port System (DOTC-JICA)
- 2005 Domestic Shipping Development Plan (DOTC, MARINA-JICA)
- 2005 Projects Proposed by the Development Bank of the Philippines (DBP)
- 2006 Inter-modal Transport Development Project for the Southern Philippines (DOTC-ADB)

Results of these studies are summarized in the following sections:

2.1.2 Study on RoRo transport system

1) RoRo Study (JICA, 1992)

This is the first study that examined potential RoRo links nationwide. Based on a systematic analyses and evaluation, the study proposed development priority of the RoRo terminals. The proposed links are listed in Table 2-1. The links showed in bold are those links where regular RoRo ferries are currently operational. Current situation of the links where RoRo ferry service is not operational is as follows:

- **First Priority Group**

(1) Matnog – San Isidro;

The sea route Matnog – San Isidro is longer that of Matnog – Allen. Therefore, most of the ferries are docking at Allen and Dap-dap, a private port near Allen.

(2) Escalante – Tuburan;

The access road leading to Tuburan Port was once damaged by a typhoon. Since then, Tabuelan Port, a private Port located near Tuburan Port, has been used as the RoRo terminal of the Cebu side.

(3) Tandayag – Bato;

Between Santander, southern tip of Cebu Island, and Dumaguete area, there are several RoRo links currently operational. The RoRo terminals of the two links are private ports.

Table 2-1 Potential RoRo links and Development Priority

RoRo Link		Evaluation Criteria												
		Car Owner-ship	Road Condi-tion	Thru Traffic	Shipping	Cargo Cargo	Pax	Pax's Requ-est	RoRo Ramp	Const.. Cost	Sub Total	Dev't Policy	Regio-nal Center	Total Points
		10	5	5	5	25	10	5	5	10	80	15	5	100
First Priority														
Batangas City	**Calapan**	4	4	5	5	25	10	1	5	5	64	15	0	79
Toledo	**San Carlos**	10	4	3	3	25	10	3	5	0	63	15	0	78
Matnog	San Isidro	2	5	5	5	20	10	1	5	10	63	15	0	78
Matnog	**Allen**	2	5	5	5	25	10	1	5	5	63	15	0	78
Cebu City	**Tagbilaran City**	8	4	1	3	25	8	3	2.5	10	64.5	10	2.5	77
Iloilo City	**Bacolod**	6	5	1	3	25	10	1	0	0	51	15	5	71
Liloan	**Lipata**	2	5	5	5	15	6	1	5	10	54	15	0	69
Cebu City	**Tubigon**	8	3	3	3	20	8	5	0	5	55	10	2.5	67.5
Cebu City	**Ormoc**	8	3	3	3	15	8	5	0	5	50	15	2.5	67.5
Escalante	Tuburan	10	3	5	5	10	6	3	3.5	5	50.5	15	0	65.5
Tandayag	Bato	10	3	3	5	10	6	1	2.5	10	50.5	15	0	65.5
Guihulngan	**Dumanjug**	10	2	5	3	15	4	1	0	10	50	15	0	65.5
Second Priority														
Dumagute	**Santander**	10	3	3	0	15	6	3	2.5	5	47.5	15	0	62.5
Iloilo City	**Jordan**	4	4	1	1	20	10	3	0	10	53	5	2.5	60.5
Tubod	**Tangub**	6	3	3	5	20	4	1	5	10	57	3	0	60
Dumaguete	**Dapitan**	4	3	3	3	10	4	5	2.5	10	44.5	15	0	59.5
Iloilo City	Pulupandan	6	5	3	0	15	6	1	0	5	41	15	2.5	58.5
Batangas City	**Abra de Ilog**	6	3	3	0	10	4	5	5	5	41	15	0	56
Jagna	Cagayan de Oro	6	4	5	3	10	4	3	2.5	5	42.5	10	2.5	55
Lucena City	Balanacan	2	3	5	5	20	8	1	0	0	44	5	0	49
Zamboanga City	**Basilan**	4	1	3	3	10	10	5	0	5	41	5	2.5	48.5
Zambaonga City	**Jolo**	2	1	1	3	15	4	5	0	10	41	5	2.5	48.5
Benoni	**Balingoan**	6	3	5	3	5	8	3	0	10	43	5	0	48
Tabaco	**Virac**	4	3	5	3	15	4	3	0	5	42	5	0	47
Bulan	Masbate	2	3	3	3	10	4	3	2.5	5	35.5	10	0	45.5
Cebu	Talibon	8	3	1	3	10	4	3	1	0	33	10	2.5	45.5
Third Priority														
Ajuy	Manapla	6	3	1	1	10	4	3	0	0	28	15	0	43
Cavite City	Mariveles	10	5	3	0	15	6	1	0	0	40	3	0	43
Matnog	Masbate	2	3	3	0	5	2	3	5	10	33	10	0	43
Davao	**Babak**	8	3	1	1	10	2	5	0	5	35	5	2.5	42.5
San Jose	New Washington	4	2	3	0	5	2	1	2.5	5	24.5	15	0	39.5
Roxas	New Washington	4	2	3	0	5	2	3	0	5	24	15	0	39
Argao	**Loon**	8	3	3	0	10	2	3	0	0	29	10	0	39
Carmen	**Isabel**	8	2	3	0	5	2	3	0	0	23	15	0	38
Lucena City	**Sta. Cruz**	2	3	1	3	10	4	5	0	5	33	5	0	38
Ubay	**Maasin**	4	1	3	3	10	4	3	0	0	28	10	0	38
Dumaguete	Larena	6	2	1	1	5	2	3	2.5	10	32.5	5	0	37.5
Roxas	Odiongan	2	1	1	1	5	2	5	0	10	27	5	0	32
Jagna	Mambajao	4	2	3	0	5	4	3	0	5	26	5	0	31
Milagros	Estancia	2	1	3	3	5	2	5	0	0	21	10	0	31

Source: Nationwide Roll-on Roll-off Transport System Development Study, 1992, DOTC-JICA

· **Second Priority Group**

(1) Iloilo – Pulpandan;

Though Pulpandan Port has been developed by PPA, no regular RoRo ferry service is

available yet.

(2) Jagna – Cagayan de Oro;

Currently, major link between Bohol and Cagayan de Oro is Tagbilaran – Cagayan de Oro. No regular RoRo ferry is available for this link.

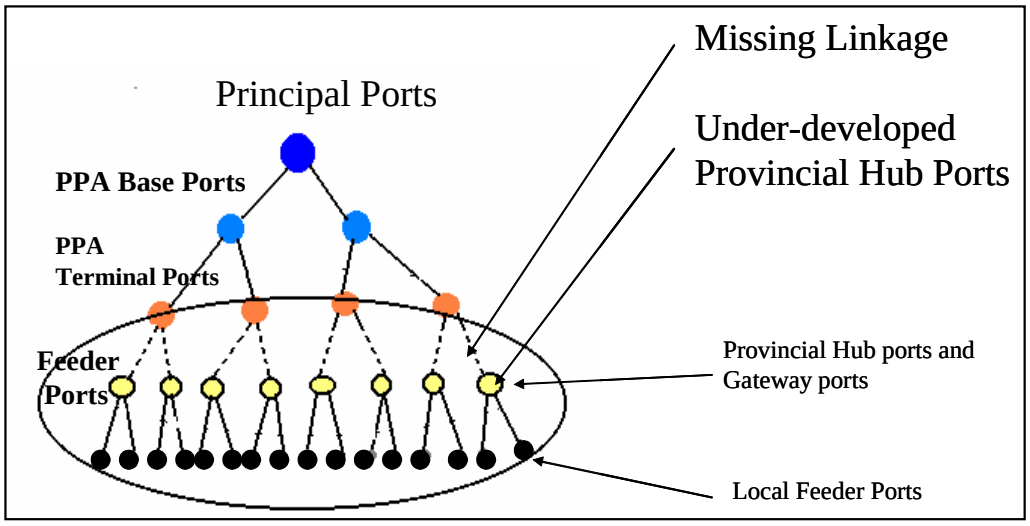
2) Master plan for Social Reform Related Feeder Port Development

In the 1980's, for the purpose of improving the transport system in remote areas, various studies of small ports, which have been called tertiary, feeder or municipal ports, covering the whole country were carried out using funds from various foreign financing institutions: ADB, USAID, OECF and KFW. Based on these studies of various funding agencies, a total of 141 feeder ports were chosen and the funds needed for the development were expected to be financed by four agencies: ADB (39 ports), OECF (56 ports), USAID (41 ports) and KFW (5). USAID focused on northern regions (Northern and Central Luzon), and OECF focused on central regions (Southern Luzon, and Visayas, while ADB focused on southern regions (Visayas and Mindanao).

Feeder port development was first implemented between 1991 and 1994 under "Nationwide Feeder Ports Project", and twenty-seven feeder ports were developed. As the second package of the feeder ports development, another project started in 1998 under "Social Reform Related Feeder Port Development Project" to complete the development of a total of 56 feeder ports to be financed by OECF. The project has been completed recently. Table 2-2 shows the list of the ports developed under these two projects (also see Appendix I-2-1 for route map).

The consulting service of the second package included the preparation of the master plan of the feeder port development up to 2020. The master plan discussed the development concepts of the port system of the whole country composed of large, medium and small scale ports (previously port development had been often done port by port rather than systematically).

The master plan pointed out the missing links between the PPA port system, which consists of large and medium scale ports, and the feeder port system, which are small scale ports (see Figure 2-1).



Source: Master Plan Report for Feeder Port Development, DOTC, March 2000

Figure 2-1 National port system and the missing links

Table 2-2 Ports Developed Under Feeder Port Development Projects

Region	Province	Number of Ports			Name of ports			
		PK-I	PK-II	Total	Package-I	Location/Function	Package-II	Location/Function
II (3)	Batanes		3	3			Sabtang	Isolated Island
							Ivana	Isolated Island
							(Batanes: Design only)	Isolated Island
IV (36)	Aurora	3	5	8			Dingalang	Main Island
	Quezon				Mauban	Main Is.	Polillo	Isolated Island
					Pitogo	Main Is.	Alabat	Isolated Island
					San Andres	Main Is.	Atimonan	Main Is./Ferry to Alabat
							Real	Main Is./Ferry to Polillo
	Batangas	4		4	Calatagan	Main Is.		
					Lobo	Main Is.		
					Nasgub	Main Is.		
					Tigloy	Isolated Island		
	Mindoro Occ.	2	1	3	Tayamaan		Tilic	Isolated Island
					Sablayan			
	Mindoro Ori.	1	1	2	Roxas	Ferry to Romblon	Recudo (Pinamalayan)	Ferry to Romblon
	Romblon	4	5	8	***Looc***	Isolated Island	***Looc***	Isolated Island
					Azagra	Isolated Island	Said	Isolated Island
					San Agustin	Isolated Island	Corocuera	Isolated Island
					Sta. Fe	Isolated Island	Banton	Isolated Island
							Concepcion	Isolated Island
	Palawan	7	6	12	Balabac	Isolated Island	Araceli	Isolated Island
					Coron	Isolated Island	Liminangcong	Main Is.
					El Nido	Main Is.	***Roxas***	Main Is.
					Isugod	Main Is.	Poblacion	Main Is.
					Macaracas	Main Is.	Manguinguisda	Main Is./Fishing Port
					Roxas	Main Is.	Cuyo	Isolated Island
					San Vicente	Main Is.		
V (7)	Masbate		3	3			San Jacinto	Isolated Island
							Aroroy	Isolated Island
							Cataingan	Isolated Island
	Camarines Sur		4	4			Caramoan	Main Is./Fishing Port
							Pasacao	Main Is./Fishing Port
							San Jose	Main Is./Fishing Port
							Tamban(River)	River port
VI (8)	Iloilo	4	3	5	Banate	Main Is.	Clasi	Main Is.
					Dumangas	Main Is.	***Dumangas***	Main Is.
					Estancia	Main Is./Fishing Port	***Estancia***	Main Is./Fishing Port
					Guimbal	Main Is.		
	Negros Occ.	1	1	2	Vito Sagay	Main Is.	Victorias	Main Island
	Aklan		1	1			Aregria (Buruanga)	Main Is.
VII (2)	Bohol	1	1	2	Ubay	Isolated Island	Pitogo	Main Island
VIII (1)	West. Samar		1	1			San Sebastian	Main Is./Fishing Port
CARAGA (2)	Surigao Norte		2	2			Placer	Main Is./Ferry
							Socorro	Isolated Island
Total	15	27	37	56*				

* Note Total number of ports ***Ports in Italic Bold*** are included in both packages

Source: Master Plan Report for Feeder Port Development, DOTC, March 2000

Of about 1,200 feeder ports, the master plan identified a total of 36 clusters that includes about feeder 106 ports to be developed over the coming decades. The clusters and feeder ports included in the clusters are listed in Appendix I-2-2. In the process of identifying the clusters, the following development concepts were employed:

a. Development of Provincial/local hub port

Primary idea of the master plan is to formulate a local port system or "cluster", which is comprised of a local hub and feeder ports. Based on this idea, two possible ways were proposed to

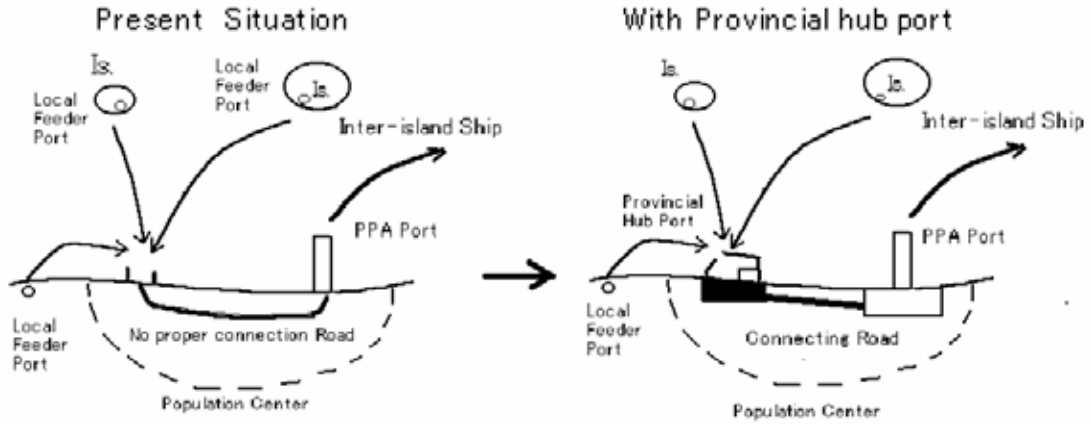
formulate local hub port:

(1) to develop a local hub port that has efficient access to a PPA/CPA port to improve the linkage between feeder ports and PPA/CPA Port system (see Figure 2-2)

(2) to develop a local hub port in an island within an island group and to secure regular and more frequent and faster shipping service between the main island and island group (See Figure 2-3)

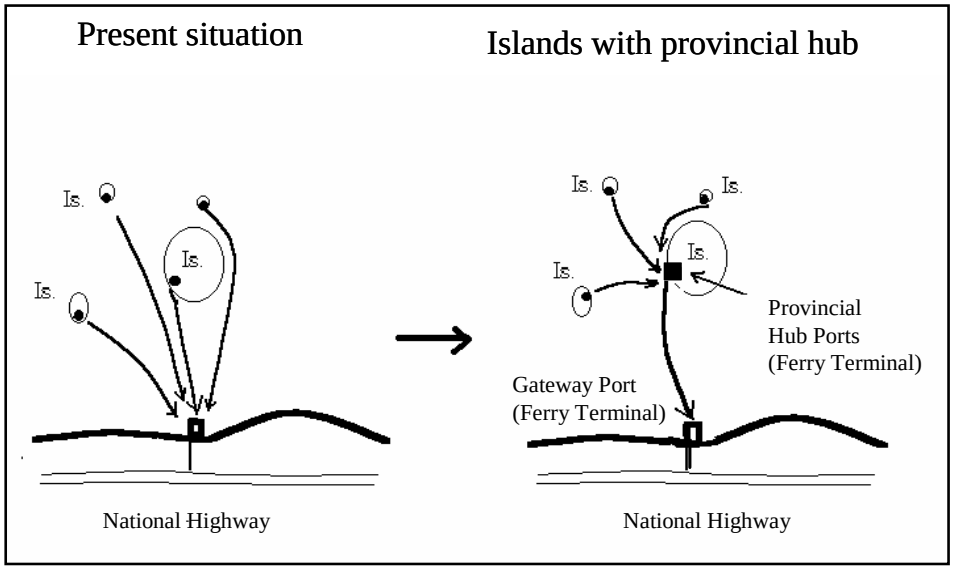
b. Gateway Port (See Figure 2-4)

This attempt to expand the hinterland of a port is a similar concept to the provincial hub, but the idea is to collect cargoes and passengers via road network in the island instead of via boats from other local feeder ports. When there are several ports in a municipality or several municipalities are located close to each other, investment shall be concentrated in one port. With the road network, one port can serve not only the municipality but also other municipalities nearby. With the gateway ports, cargoes and passengers can be transported by RoRo ferries and delivered to the final destination in the same vehicles.



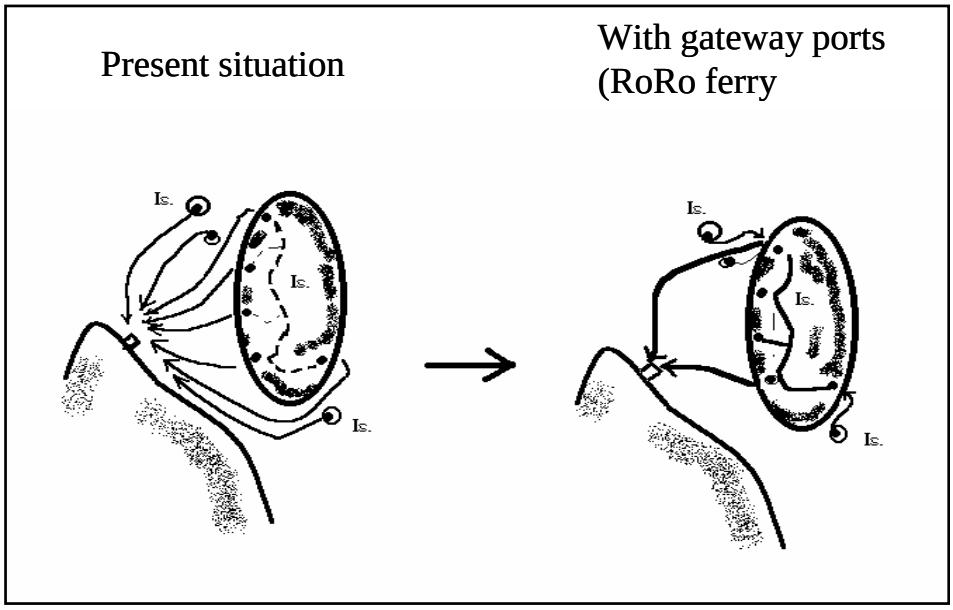
Source: Master Plan Report for Feeder Port Development, DOTC, March 2000

Figure 2-2 Provincial Hub Port (Example 1)



Source: Master Plan Report for Feeder Port Development, DOTC, March 2000

Figure 2-3 Provincial Hub Port (Example 2)

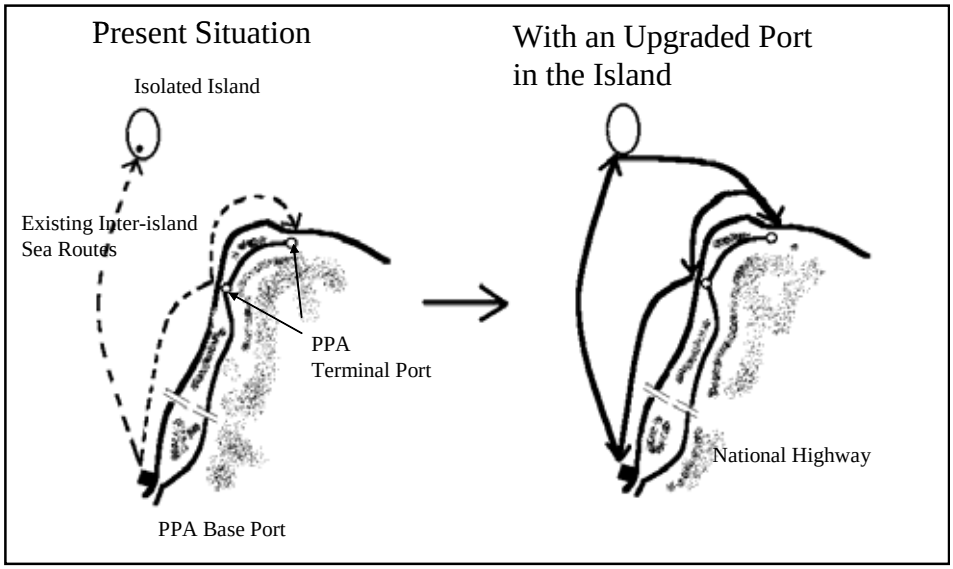


Source: Master Plan Report for Feeder Port Development, DOTC, March 2000

Figure 2-4 Gateway Ports

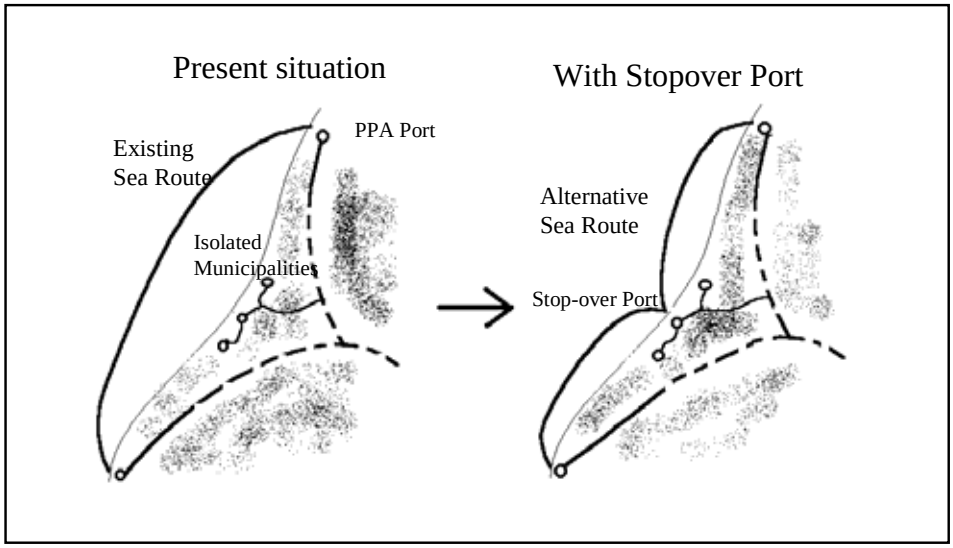
c. Alternative sea routes (see Figure 2-5 and Figure 2-6)

With improved feeder ports, ships that would otherwise pass by may stop over at the port. This seems to be realistic if the island is located along or near the existing regular shipping service routes.



Source: Master Plan Report for Feeder Port Development, DOTC, March 2000

Figure 2-5 An Alternative Sea Route (Example 1)



Source: Master Plan Report for Feeder Port Development, DOTC, March 2000

Figure 2-6 An Alternative Sea Route (Example 2)

3) DOTC RoRo study

DOTC had been following up the promotion of the RoRo ferry services after the completion of Nationwide Roll-on Roll-off Transport System Development Study in 1992. In 2001, DOTC carried out the field reconnaissance survey of 26 ports that were proposed in the 1992 Study for the purpose of updating its data and information for planning. The survey covers the 26 ports listed in Table 2-3.

For the further development of RoRo service, especially in the Visayas Region, DOTC conducted two feasibility studies: Trans-Visayas and Bohol Ferry

Table 2-3 Survey Port for Updating 1992 Study

Allen	Ormoc	Tubod	Batangas	Lucena	Pilar
San Isidro	GGC	Tangub	Calapan	Balanacan	Cataingan
Philtranco		Dapitan	Abra de Ilog	Tabaco	Bulan
Matnog		Tabigue	Mansalay	Virac	Masbate
Liloan		Mukas			
Lipata		Ozamis			

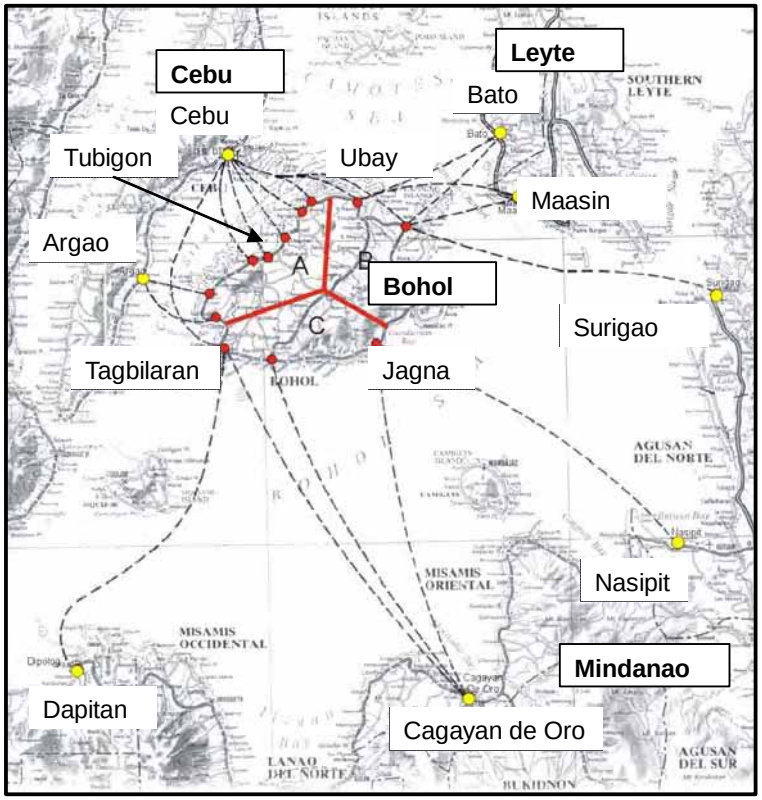
i) Development Project for the Trans-Visayas

This study focused on the RoRo ferry links between Panay Masbate, Southern Luzon, Samar, Leyte and Cebu Islands. The feasibility study was carried out on the ferry links of Culasi (Roxas, Panay Is.) – Mandaon (Masbate), Aroroy (Masbate) – Pilar (Sorsogon), Bogo (Cebu) – Cataingan (Masbate), Cataingan (Masbate) – Calbayog (Samar) and Bogo (Cebu) – Palompon (Leyte).

This study provided the basis for the concept of Nautical Highways and later expanded to the Central and Eastern Nautical Highways.

ii) Bohol Ferry Link and Terminal Feasibility Study (DOTC, 2001)

This feasibility study evaluated the development priority among various RoRo ferry links between Bohol and adjacent islands such as Cebu, Leyte and Mindanao (see Figure 2-7). Tagbilaran, Tubigon, Jagna and Ubay ports were identified as the priority ports for development.



Source: Bohol Ferry Link and Terminal Feasibility Study (DOTC, 2001)

Figure 2-7 Bohol Zonal Delineation and Possible Ferry Links

In the feasibility evaluation, those ferry links shown in Table 2-4 were employed. The study ensured the economic feasibility of the development of Tagbilaran, Tubigon and Ubay Ports.

Table 2-4 Bohol Ferry Link System with Cebu, Leyte and Mindanao

Ferry Link/Route	Link and Vessel Type
1) Tagbilaran – Cebu City	• Combination Ferry • Fast Ferry • Ro-Ro Ferry
2) Tagbilaran – Cebu City /Dumaguete / Dapitan / Cagayan de Oro	• Fast Ferry
3) Tagbilaran – Cagayan de Oro	• Ro-Ro Ferry
4) Tagbilaran – Dipolog/Dapitan	• Ro-Ro Ferry
5) Tagbilaran – Ozamis/Iligan	• Ro-Ro Ferry
6) Tubigon – Cebu City	• Combination Ferry • Fast Ferry • Ro-Ro Ferry
7) Tubigon - Mactan	• Ro-Ro Ferry
8) Jagna – Cagayan de Oro	• Ro-Ro Ferry
9) Jagna – Cagayan de Oro/ Dapitan/Ozamis	• Combination Ferry
10) Jagna - Nasipit	• Ro-Ro Ferry
11) Jagna – Dipolog/Dapitan	• Ro-Ro Ferry
12) Jagna – Cebu City	• Combination Ferry
13) Ubay - Maasin	• Ro-Ro Ferry
14) Ubay - Bato	• Ro-Ro Ferry
15) Ubay – Cebu City	• Combination Ferry
16) Ubay - Surigao	• Ro-Ro Ferry
17) Ubay – Massin/Surigao	• Combination Ferry

iii) Strong Republic Nautical Highway

Based on the studies mentioned above, DOTC introduced a new development policy in RoRo ferry services, which is called the Strong Republic Nautical Highways (SRNH). The new policy focuses on the development of ferry service network rather than the development of individual links so that the RoRo links, together with the highway network, will serve as the national highways. The development concept of the Strong Republic Nautical Highways is as follows:

· **General Aspects**

-Rehabilitation/Improvement/Development of Road Roll-on/Roll-off Terminal Facilities

· **Development Goal**

-Ultimately link the various areas of the country by interconnecting land and sea transport routes.

· **Objectives**

−Improve access and provide for a safer and more efficient transport/movement of goods, people and services.

−Reduce the cost of inter-island transport through the establishment of an effective road Roll-on/Roll-off terminal system.

−Enhance tourism, transportation and commerce throughout the country.

−Provide support to the agro-fisheries modernization and food security programs of the government.

· **Benefits expected from Strong Republic Nautical Highway (SRNH)**

−Provide alternative transport route for special cargoes

−Reduction of transport cost from Mindanao to Luzon

−Faster loading and discharging time of vessel

−Promotion of tourism development

−Promote trade in hinterlands

−Increase shipping competition

· **Components**

−Upgrading and Improvement of north-south corridor in the eastern and western seaboard

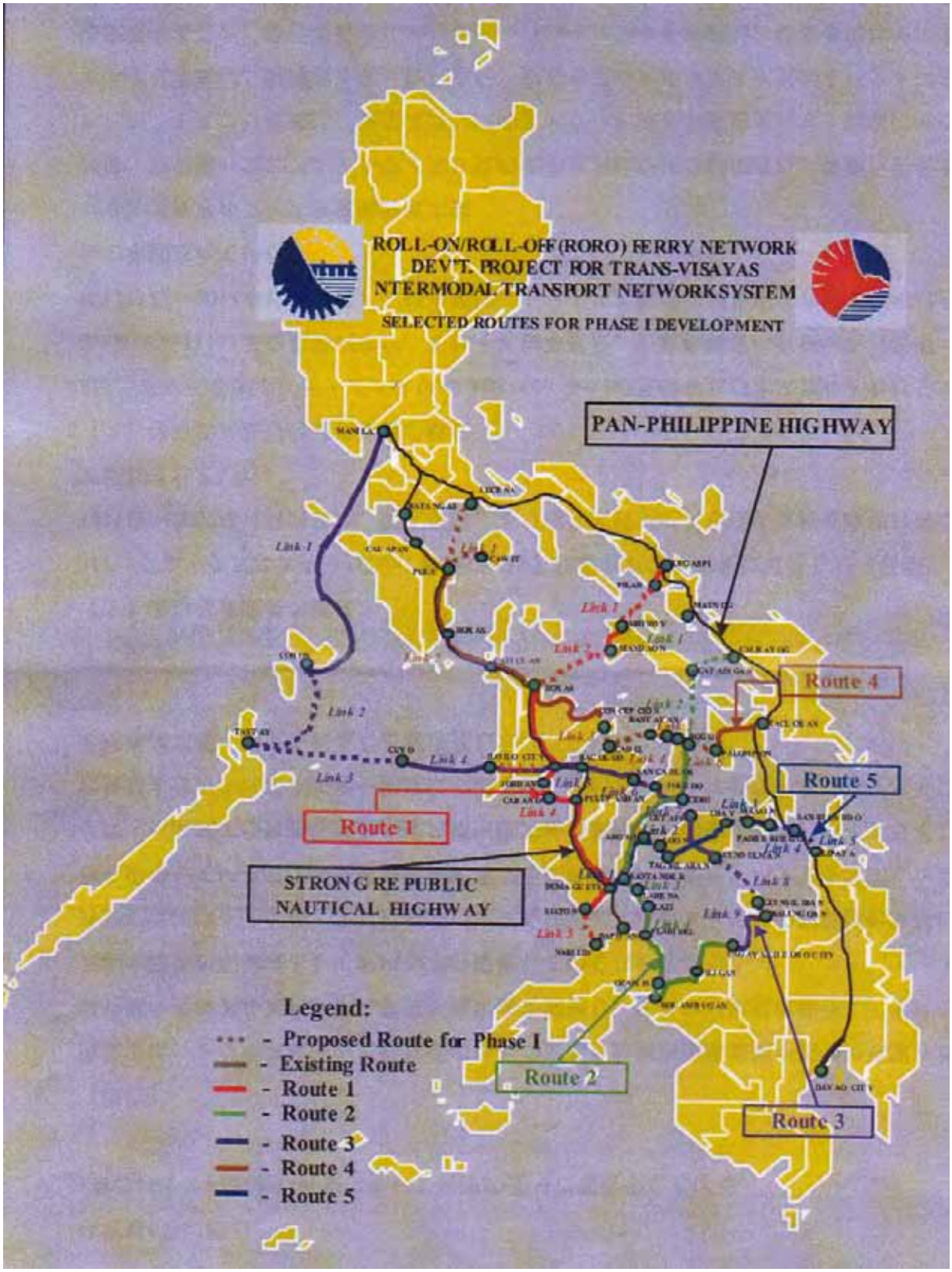
−Development/Improvement of east-west lateral links

−Formation of Regional Maritime Transport Bases

−Port development in remote island and rural areas

The first attempt of DOTC to realize a nautical highway was made on the route between Batangas City to Dapitan via Mindoro, Panay and Negros Islands. The route was shown in Figure 2-8 together with other proposed routes such as Trans-Visayas and Bohol Ferry routes, which were named Route 1 though 5. The RoRo terminal ports included in the SRNH are listed in Table 2-5.

Incidentally, Pan-Philippine Highway Route has been operational since 1983, while the Strong Republic Nautical Highway, which is also called Western Seaboard, has been operational since 1993. Those routes denoted by Route 1 through Route 5 are the candidate RoRo ferry routes that were originally proposed by DOTC for the feasibility study.



Source: DOTC

Figure 2-8 Strong Republic Nautical Highways and other Nautical Highway Routes

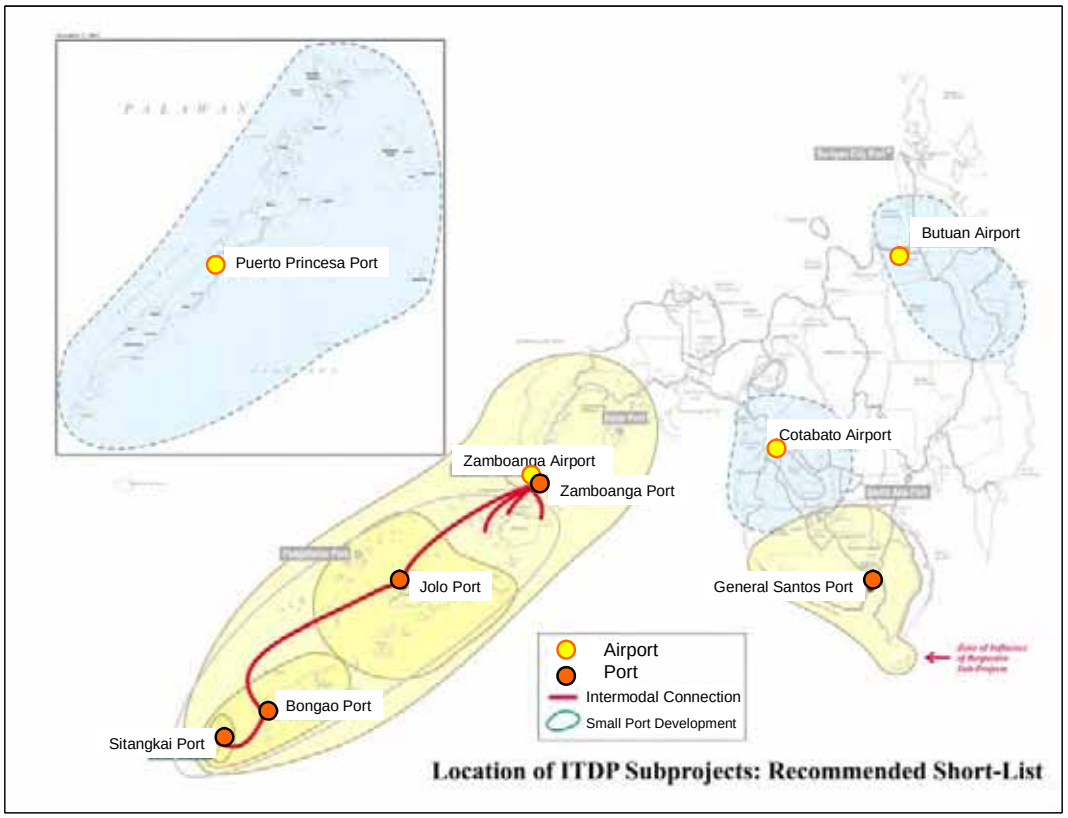
Table 2-5 Proposed RoRo terminal ports for Nautical Highways

Pan-Philippine Highway	SRNH Western Route	Trans-Visayas Intermodal Transportation Network				
		Route 1	Route 2	Route 3	Rouye 4	Route 5
Manila	Manila	Legaspi	Calbayog	Manila	Tacloban	Lipata
Lucena	Batangas	Pilar	Cataingan	Coron	Palompon	San Ricaldo
Legaspi	Pola	Aroroy	Bogo	TayTay	Bogo	Padre Burgos
Matnog	Roxas	Mandaon	Cebu	Cuyo	San Remigio	Maasin
Calbayog	Caticlan	Roxas	Santander	San Jose de Buenabista	Santa Fe	Ubay
Tacloban	Roxas	Iloilo City	Larena	Iloilo	Bantayan	Tagbilaran
San Ricardo	Iloilo	Jordan	Lazi	Bacolod	Cadiz	Loon
Lipata	Bacolod	Cabano	Praridel	San Carlos	Concepcion	Argao
Davao	Pilpandan	Pulpandan	Ozamiz	Toledo	Roxas(Culasi)	Santander
	Dumaguete	Dumaguete	Kolanbugan	Cebu	Caticlan	
	Dapitan	Siaton	Iligan	Getafe	Roxas (Min.)	
		Nablid	Caqgayan de Oro	Guindulman	Pola	
				Guinsiliban	Calapan	
				Balingoan	Manila	
				Cagayan de Oro		

Source: DOTC

iv) Inter-modal Transport Development Project in Southern Philippines

This project aimed at upgrading the inter-modal transport system in Mindanao region and Palawan. Feasibility studies have been carried out for airport and seaport components: three air ports and two major ports and three feeder ports. A great effort was made for the selection of the components from the viewpoint of inter-modal transport network. As for sea ports, the feasibility study recommended a RoRo service route between Zamboanga Port and Sulu Archipelago: Zamboanga-Jolo-Bongao-Sitankai (see Figure 2-9).



Source: Inter-modal Transport Development Project in Southern Philippines, 2006, DOTC

Figure 2-9 RoRo ferry links in Southern Philippines

v) Sustainable Logistics Development Program

This is a study conducted by the Development Bank of the Philippines. It aims at improving infrastructure which would have a direct impact on prices of basic commodities, as an anti-poverty strategy and spur economic activity in the countryside, and focuses on the food chain, particularly grains and perishables including fish, fruits and vegetables.

The study elaborated the following three programs for the establishment of efficient logistics in the food chain:

(1) Grain highway (rice and corn)

This program aims at the establishment of integrated logistic service of rice and corn in bulk from the production zones to consumption zones and includes the development of the following elements:

-the processing centers with mechanical shelling, drying and storing in bulk at the production areas such as Mindanao, Northern Luzon and Palawan, .

-Bulk trucking,

-Terminal facilities such as silos and mechanical loading/unloading equipment at the ports,

-bulk carriers.

The study identified the potential grain transport route:

-from Mindanao to Manila and Cebu

-from Palawan to Manila

-from Northern Luzon to Manila

As the priority projects, the study identified the Mindanao Corn Highway:

-General Santos/Cotabato to Manila/Cebu

-Cagayan de Oro to Manila and Cebu, and

-Dapitan to Manila

(2) Road RoRo Ferry Network

A total of 49 links were listed as “DBP-SLDP Road RoRo Ferry Network Routes” (See Figure 2-10, also see Table A.6-3 in Appendix 6-3-1 for RoRo terminal ports). Since the target of the program is the promotion of economic activities in the countryside, the proposed routes include many links that were proposed in the “Master plan for Social Reform Related Feeder Port Development”.

Of the 49 routes, the SLDP has given priority to the RoRo links that formulate the Strong Republic Nautical Highway (Western Corridor) :

-Batangas City to Calapan (Mindoro), (No. 2 in the list shown in Figure 2-10)

-Roxas (Mindoro) to Caticlan (Aklan), (No. 47)

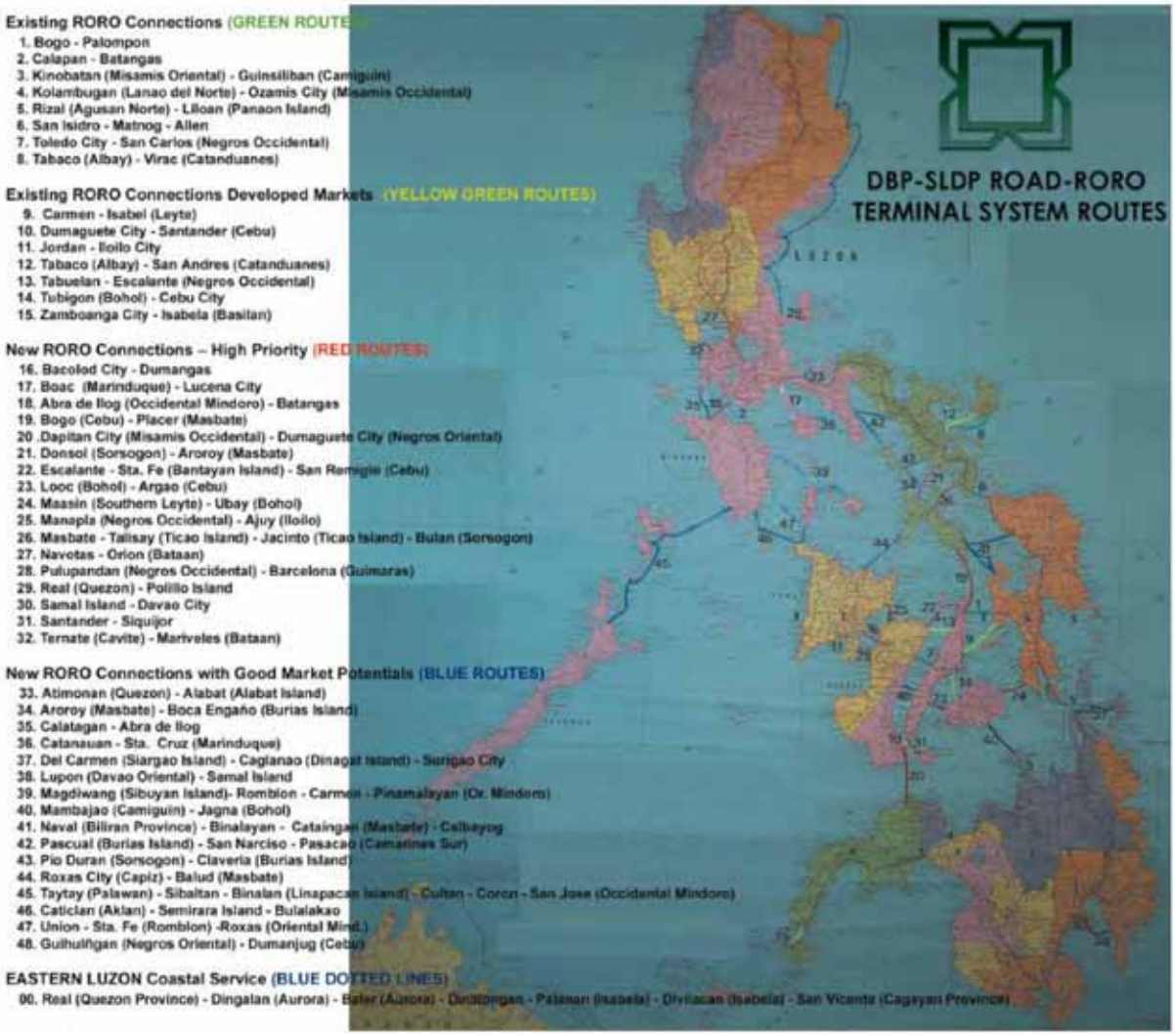
-Iloilo to Jordan & San Lorenzo to Pulpandan, (No. 11)

-Dumaguete to Dapitan & Ozamiz to Kolambugan (No. 20)

(3) Cold chain

To establish integrated logistic service, the construction of aggregating and processing centers and Reefer transport equipments are proposed.

Summing up the investment costs for the three programs, DBP has estimated that there will be a need for a total of 30 billion Pesos for the private sector and LGU's to realize the three programs over the coming years (See Table 2-6).



Source: Sustainable Logistic Development Program, DBP, 2003

Figure 2-10 Proposed RRTS Route in SLDP by DBP

Table 2-6 Three year DBP Strategy

Sub Program	Description	Units	Cost P. Billion
Bulk Chain	Establish 12 Processing (aggregation) Centers	12 sets	2.5
	Bulk terminals, handling and transport equipment		4.0
Road RoRo	Serial building of 96 Vessels or improvements	96 ports	4.9
Ferry Network	Financing construction of new ports or improvements		3.5
Cold Chain	Establish 16 Processing and marketing centers	500 units	8.0
	Aggregate Centers - 160 Areas		3.0
	Reefer transport equipment/vehicle		5.0
	Total		30.0

Source: Sustainable Logistic Development Program, DBP, 2003

2.1.3 Port Master Plan Study

1) PPA 25-Year Development Plan

In 1998, PPA in cooperation with NEDA prepared the 25-year Development Plan as the base of the MTPDP 1999-2004. This plan aimed at the following six targets:

(1) Container Terminal for international transshipment

Establishment of world-class ports that can compete on an international scale especially with respect to transshipment cargo. This will include the ports of Manila, Pagbilao, Saul, Irene, Real, Iloilo, Cagayan de Oro, Davao, General Santos and Zamboanga.

(2) Intermodal transportation between Central Luzon and Visayas

Development of the Manila-Central Visayas Corridor through the implementation of the Manila-Cebu Corridor Intermodal Transport Plan (MCCITP). This intermodal transport route is envisioned to run from Pagbilao or Lucena to Central Visayas, and From Bicol (Pantao) to Central Visayas. In Central Visayas, it will involve the Port of Balamban and San Carlos, and improve travel time to Culasi (Roxas), Estancia, Bacolod and Iloilo.

(3) Pan-Philippine Highway Ferry

Development of the Pan-Philippine Highway ports which involves the ferry ports of Mango (Sorsogon), San Isidro (Northern Samar), Liloan (Southern Leyte) and Lipata (Surigao del Norte).

(4) Nationwide RoRo Ferry Route

Development of a nationwide Ro-Ro network. This will involve the routes between Batangas and Calapan, Dalahican and Marinduque Island, and an East-West Visayas Ro-Ro Network starting from Ormoc, Cebu, Balamban, San Carlos, Pulpandan, Guimaras, Iloilo and Culasi.

(5) Rationalization of the Hubs and Spokes System

This involves the review of the system by which bigger ports serve as the hub with the smaller ports as its spokes. The big liner vessels as well as long-haul ferries would be expected to call at the hub ports, as these would have greater water depths and more facilities. A hub port would then be linked to its spokes through barges and tramp vessels for cargoes and fast ferries for passengers.

(6) Support for the Development of BIMP-EAGA/ARMM

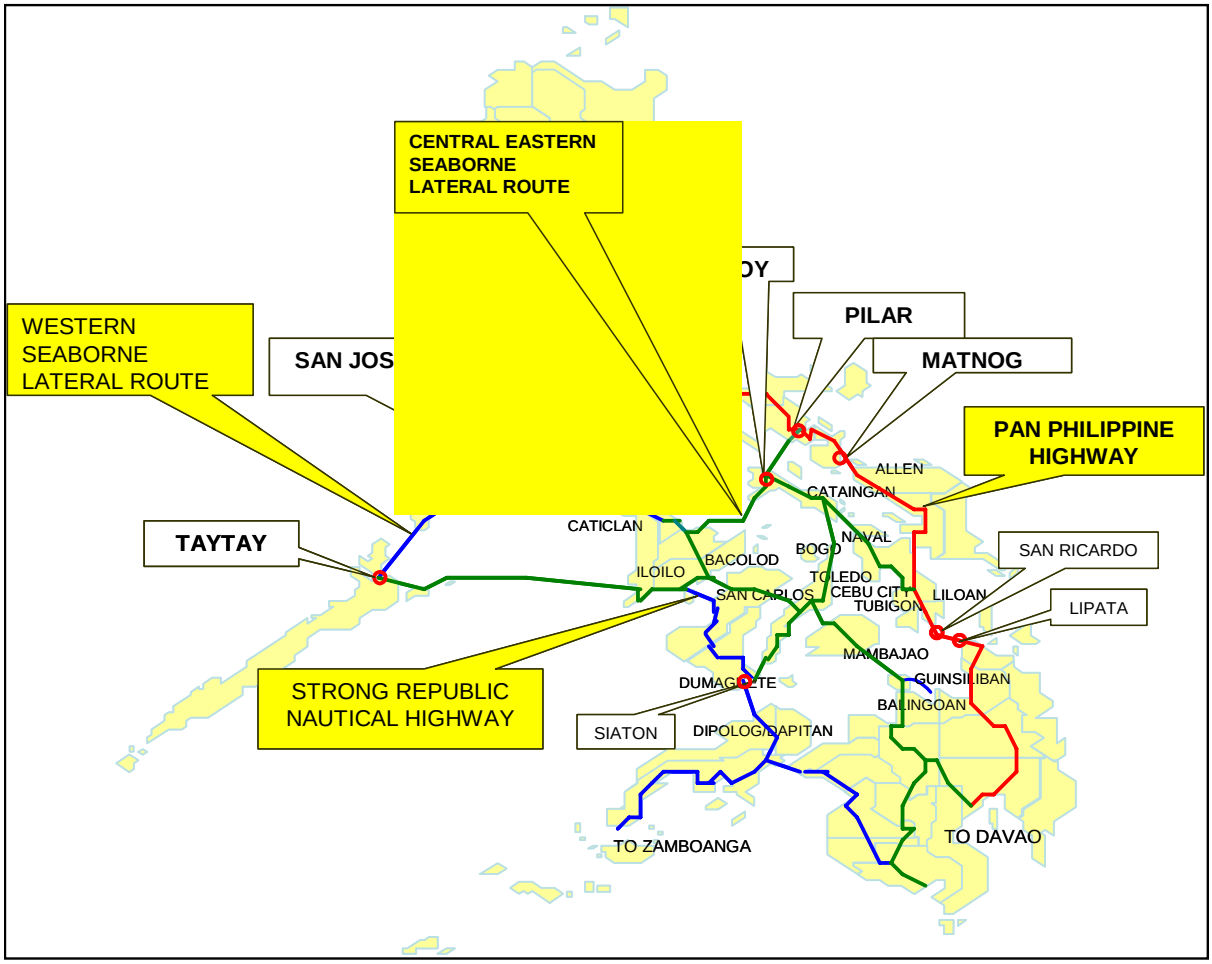
This refers to the program to support southern ASEAN links and the zone of peace and Development for Mindanao and Palawan. To achieve the goal, PPA proposed the following public investment plans: short-term (1 to 5 years), medium-term (6 to 10 years) and long-term (11 to 25 years), and the projects implemented under BOT scheme (see Table 2-7)

Table 2-7 PPA 25-Year Development Plan

Short range (1-5 years)		Middle Range (5 - 10 Years)		Long-range (10 - 25 Yrs)	
1. Master planning the	Nationwide Development	1. Cavite	International Port	***1. Pagbilao***	Expansion
2. Southern Manila Bay	Port	2. Northern Manila Bay	Domestic Port	***2. Lopez (Quezon)***	New port
3. Manila	New Cruise Termina	***3. Pagbilao***	Phase II	***3. Dingalan***	New port
4. North Harbor	passenger Terminal	***4. Currimao Port***	Expansion	***4. Pantao***	Establishment
5. Pagbilao (Lucena City)	New Port	***5. Pantao***	Bicol 2000	5. South Harbor	Harbor
6. Cebu (turned over to CPA)	Passenger Terminal	***6. Calapan***	Expansion	***6. Dumangas***	Expansion
7. North Panay Port (Roxas)	New Port	***7. Dingalan***	New port		
8. Capinpin (Orion, Bataan)	New Port	8. Cagayan de Oro	Expansion		
9. Dalahican (Lucena) Port	New Port	9. Iloilo Port	Expansion		
10. North Manila Bay	Domestic Port	10. Davao Port	Expansion		
11. Zamboanga Port	Expansion	***11. Colon (Palawan)***	Expansion		
12. Polloc	Industrial Port	***12. Bicobian (Isabela)***			
13. South Harbor	Venture	13. South Harbor	Expansion		
14. Manila	VTS (Vessel Traffic Service)				
15. Manila	Grain Terminal				
16.Port Irene	Expansion (CEZA)				
17. Real					
18.El Nido	Cruise Terminal				
19. Kuala Baru Port					
20. Dumangas (Iloilo)	Bulk Terminal				
21. Balanban (Cebu Is.)					
22. Bongao (Tawi-Tawi)	New Port				
23.Jojo	Expansion				
24. El Nido	Terminal				
25. Puerto Galera	Terminal				

Source: PPA

In line with PPA development plan and the recent movement of the government toward the promotion of RRTS, PPA has prepared the development and improvement plan for the RoRo ports along the East, Central and Western Nautical Highways that are part of the infrastructural development of MTPDP 2004-2010. Incidentally, the development of TayTay Port in Palawan is also included in the Priority Ports of PPA. The plans are in the process of being reviewed by NEDA for approval.



Source: PPA

Figure 2-11 PPA Priority RORO Ports

2) CPA Port Master Plan Study (2002)

This study proposed the development of a new Cebu Port as the international gateway of Visayas Region at Consolacion, which is located about 10 km to the north of present Cebu Port, and the renovation of the existing Cebu Port to facilitate domestic shipping, especially RoRo ferries and Passenger crafts as well as container and conventional cargo ships, RoRo ferries and Passenger ships. The study also proposed the development of Toledo and San Remigio Ports for the promotion of short distance ferries: RoRo ferries and Passenger fast crafts.

The master plan with the target year 2020 includes the following facilities:

- New Cebu Port

  1200m long foreign container terminal with a water depth of -14 m.

  380 m long foreign multipurpose terminal with a water depth of -10m

  Access road from the port to Cebu North Coastal Road.

- Cebu Base Port (Renovation of the existing Cebu Port)

  Expansion of apron by 30 m offshore as the backup area for domestic conventional cargo

  Expansion of the piers for larger domestic ships

  Expansion of backup area for RoRo ferries

Development of out ports

· Toledo Port

Construction of two RoRo berths with water depth – 4 to 6 m

Fast craft berths

320 m long general cargo berths with a depth of – 6 m

Backup area, passenger terminal building and warehouse

· San Remigio Port

Construction of new facilities near the mouth of Hagnaya Bay, which includes two jetties for RoRo berths with a water depth of – 4m and fast craft berths,

Back up area, passenger terminal building and warehouse.

The total cost was estimated to be 22.95 million Pesos. The breakdown by ports is as shown in Table 2-8.

Table 2-8 Cost estimate of master plan of Port in Cebu

Port	New Cebu Port	Cebu Base Port	Toledo Port	New San Remigio Port	Grand Total
Cost (Million Pesos)	17,922	3,567	967	501	22,957

Source: The Study on the Cebu Integrated Port Development Plan, DOTC-JICA, 2002

3) Port Master Plan Study (2004)

The Philippine Ports Authority (PPA) had been playing a fundamental role in developing, managing and administrating all Philippine ports in a uniform manner since 1974, but this port management system underwent drastic changes in 1990. Since 1990, the Cebu Ports Authority (CPA), the Subic Bay Metropolitan Authority (SBMA), the PHIVIDEC Industrial Authority (PIA), the Cagayan Economic Zone Authority (CEZA), the Bases Conversion and Development Authority (BCDA), the Regional Port Management Authority (RPMA)-ARMM and local governments have been taking charge of port development and management in their own regions. While PPA and CPA are under the umbrella of DOTC and these agencies work together for the port system under these two port authorities, other agencies sometimes propose and implement their port facilities without coordination with DOTC. This would cause conflict in the development policy or redundancy of the investment.

In addition, the development of nautical highways, which was proposed by DOTC to establish an alternative nationwide transport corridor, involves ports under LGU's as well as PPA/CPA port system. Thus, DOTC conducted a study of the Master Plan for the Strategic Development of the National Port System to clarify the allotment of the roles and functions and the development priority.

The study first classifies the ports into four categories by the roles and functions as shown in Table 2-9.

Table 2-9 Port Classification

Type of Port	Functions of ports (the extent to which the port contributes to international/domestic maritime transport)
International gateway port (Gateway port)	Ports as major "windows" of the country to the world
Principal international trade port (Principal port)	Highly important ports for **both** international **and** domestic maritime transport (The ports have at least one dedicated berth for international cargo)
Major port (including RO/RO ports for major corridors)	Important ports for domestic and/or international maritime 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 fear vessels
Regional port	All ports not included in above types. Regional ports, which mainly support regional society as maritime transport bases, consist of RO/RO port for short and middle distance transport (RO/RO port for mobility enhancement, RO/RO port for remote islands development), Social reform support port, etc

Source: Master plan for the Strategic Development of the National Port System, DOTC-JICA, 2004

The master plan set the following two objectives for the strategic port development plan:

(1) Establishment of Nationwide Maritime Transport Network,

Establishment of fast, economical, reliable and safe maritime transport network accelerating the development of national economy, and

(2) Formation of maritime transport bases to support regional society.

In order to achieve the first objective, the study emphasized the importance of the formulation of a nationwide efficient maritime transport network, which consists of a) International Gateways, b) Domestic Maritime Trunk Routes and c) Land and Inter-modal Trunk Routes. The concepts of these are schematically shown in Figure 2-12.

a) International Gateway Ports (Figure 2-12 (1))

The study proposed the priority development of the international gateway ports for respective greater regions (See Figure 2-12):

-Greater Capital Region (GCR): Manila (MICT, South Harbor), Subic Bay, and Batangas

-Visayas Region; Iloilo and Cebu

-North Mindanao Region; Cagayan de Oro, and

-South Mindanao; Davao and General Santos.

b) Domestic Maritime Trunk Routes (See Figure 2-12 (2))

The domestic maritime trunk routes consist of two corridors: East Maritime Corridor and West Maritime Corridor. The former is the maritime corridor that serves the eastern areas of the countries: Southern Luzon, Visayas Islands and North and Northeast Mindanao, while the latter serves Visayas Islands and West and South Mindanao.

c) Land and Inter-modal Trunk Routes (See Figure 2-12 (3))

Land and inter-modal trunk routes consist of two inter-modal trunk routes and two land trunk routes.

The inter-modal trunk routes are the Eastern Corridor, which is known as the Pan-Philippine Highway, and the Western Corridor, which is known as Strong Republic Nautical Highway. The land trunk routes are Northern Land Corridor and Northern Mindanao Land Corridor (the north coastal highway).

The study proposed concrete development plans to formulate the National Maritime Transport network including selection of the ports for development, facility requirements for the short- and long–term development, costs and schedule of development. It should be noted that, among others, the study emphasized the importance of the strengthening and upgrading of the two inter-modal corridors: Pan-Philippine Highways and Strong Republic Nautical Highway.

In order to achieve the second, the study proposed the development of regional RoRo transport network development at the following three levels:

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

For the promotion of regional development, inter-regional and intra-regional RoRo transport network should be developed. RoRo links of this category serve as the lateral connection between the Domestic Maritime Trunk Routes and the Inter-modal Trunk Routes.

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

RoRo transport links of this category are the extension of the maritime and inter-modal trunk route and lateral routes to remote islands. The study identified RoRo routes to those islands that have populations of more than 5,000.

(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.

Summary lists of these proposed ports for the long-term and the short-term port development plan are shown in Appendix I-2-3 by port category.

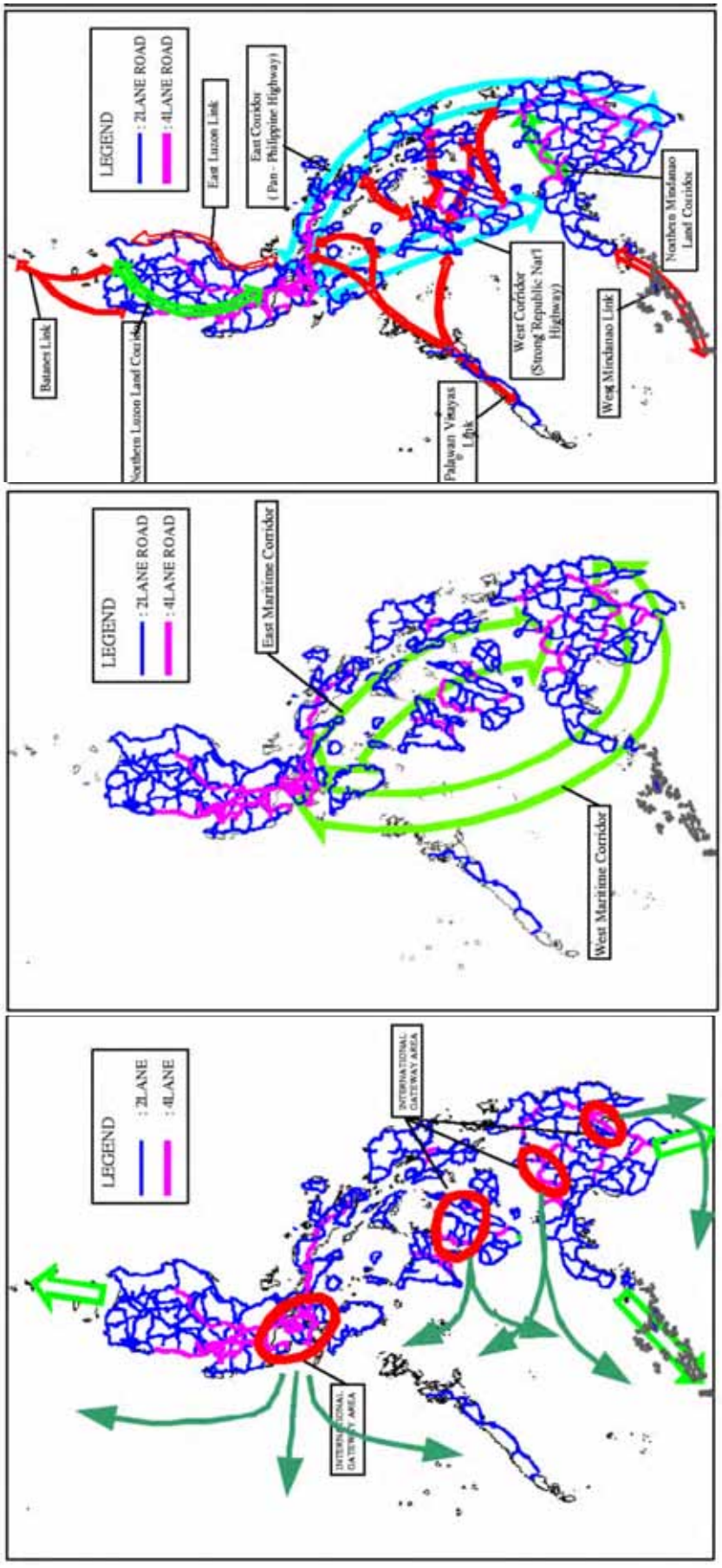


Figure 2-12 Maritime Trunk Routes

2.1.4 Domestic Shipping Development Study

This study is a comprehensive master plan study that covers the following:

(1) Policy, regulatory and institutional issues for maritime transport development

(2) Participation of LGU in the maritime transport development

(3) Development scheme of domestic shipping for typical commodities such as dry and liquid bulk, cold chain, and promotion of RoRo ferry service network

(4) Standardization of RoRo ships and RoRo ports

(5) Promotion of shipbuilding industry in the Philippines,

(6) Sustainable Ship Modernization Scheme including financing, ship procurement plan and ship leasing through the Maritime Equity Corporation (MEC), which is under the umbrella of the National Development Company (NDC).

(7) Feasibility studies of Pilot projects: Manila-Cebu trunk line long-distance RoRo ferry service employing a new generation ship and Road Roll-on/Roll-off Terminal System (RRTS) links connecting Masbate Island.

The various issues covered in the study are summarized below.

1) Domestic Shipping Development Policies and Strategies

i) Shipping Policy and Institutional Development

Re-examination of the Existing Package of Regulations and Incentives for Improving Shipping Services and Lowering Tariff Setting in the light of the RA 9295, known as the Domestic Shipping Development Act of 2004 (DSDA) deregulated fare setting with the objective of keeping tariffs competitive and affordable.

Provision of Incentives to LGUs for Developing Local Shipping for the devolution of regulatory powers over local shipping routes to LGUs and the participation in the infrastructure support for the development of municipal ports

Enhancement of Maritime Safety, Protection of Marine Environment and Increasing Awareness in Maritime Security in Conforming with Relevant International Initiatives by categorizing Sea Areas, rationalizing areas for wooden-hulled vessels, rationalize phase-out of single-hulled tankers and designating an Admiralty Court

ii) Maritime Transport System Development

Upgrading of Trunk Liner Shipping Service to provide more competitive and diversified freight services and to Replace aging RoRo ships with new-generation RoRo ships

Expansion of Dry Bulk Shipping in place of barges to carry dry bulk cargoes in bulk with lower unit transport cost.

Upgrading of Liquid Bulk Shipping to enhance its transport efficiency and quality through renewal of tankers in considering effects to marine environment, to develop legal framework on the prevention of marine pollution and to Promote domestic shipbuilding for double-hull tankers

Development of Cold Chains by providing necessary shipping services and related facilities for the establishment of cold chain system. Based on the level of perishable cargo traffic, the Study has identified candidates for cold chain infrastructure development as follows:

· For Fish

-from Palawan, South Cotabato, Capiz/Iloilo, Zamboanga del Sur to NCR

-from Zamboanga del Sur, and Misamis Oriental to Cebu

· For Fruits and Vegetables:

-from Davao del Sur, South Cotabato, Misamis Oriental, Agusan del Norte, and Iloilo to NCR

-from Misamis Oriental/Occidental to Cebu

· For Live Animals (dressed or processed):

-from South Cotabato, Misamis Oriental, Cebu, Iloilo to NCR

Effective Implementation of the Wooden-hull Replacement Program by facilitating the introduction of RoRo operation to replace wooden-hull operation, by setting a clear directive regarding phase out plan and strict enforcement of phase-out regulations, and by providing guideline of safe wooden-hull operation and social safety net.

Development of Short-distance RoRo ferry System for the acceleration of development of the RRTS by fostering of RoRo operators and port operators with delivery of new RoRo vessels.

Improvement of Public Port Operations especially at the major domestic shipping ports in line with development of trunk liner shipping network of RoRo ferries and container vessels.

iii) Development of Shipping and Related Maritime Industries

Facilitation of Modern Management in Shipping Business by promoting modern shipping management. To this end, various policy tools will be introduced from institutional, technical, capacity building and industry activation/restructuring viewpoints.

Introduction of Ship-management Service for Domestic Fleet for upgrading of Domestic Shipbuilding Capability, facilitation of investment to increase domestic shipbuilding capacity for delivering more domestic vessels; upgrading and modernization of production processes and technology for modernizing domestic fleets; and the creation of new domestic shipping system in collaboration with the shipping and shipbuilding industries under clear government policy directions.

Providing Sufficient Ship Repairing and Ancillary Services. To this end, it is necessary to develop the ship repairing industry into an efficient and lucrative business and to develop the ancillary service industries related to shipbuilding and ship repair and/or develop a closer network with those industries in other countries.

Facilitation of Supply Chain Management through IT. To this end, a national policy of nationwide logistics development should be formulated.

2) Sustainable Ship Modernization Scheme

i) Framework of Beneficial Fiscal Regimes for Domestic Shipping

The historical and current government policy and financial incentives on domestic shipping development and programs and measures for shipping finance are summarized and grouped into 1) incentives in taxation, 2) public finance for domestic shipping and 3) public finance for development.

ii) Fleet Procurement and Modernization Plan

The domestic shipping industry has to continuously procure vessels for additional demand and replacement. The study estimated that a total of 1.4 million GRT of cargo ships will be procured over the period from 2005 through 2015 to cope with the increasing maritime traffic volume (see Table 2-10). Based on the estimate the study proposed a fleet procurement and modernization plan to gradually reduce the average age of the domestic fleet, i.e., vessels over 35 years will be scrapped in 2010 and those over 30 years in 2015, and to adopt the restriction policy on vessel importation of less than 500 GT, which is granted to MARINA by RA 9295.

Table 2-10 Required Vessel Procurement and Investment Cost

	2005-2010	2011-2015	Total
Vessels for Procurement (000GT)	697	714	1,411
Investment Cost (Bil. P)	41	52	93

Source: Domestic Shipping Development Project, MARINA, 2005

iii) Comparative Analysis of Ship Procurement Alternative

To facilitate the procurement by shipping lines, the various financing schemes that are currently available were compared: Ordinary finance based on collateral, Project finance, Lease finance scheme, Co-ownership with the public sector, and Bare-boat charter. In addition, to make it easier to procure new ships, the study proposed a revised public ship financing scheme. The scheme is a modification of Project financing scheme that has been employed for the Domestic Shipping Modernization Project (DSMP), the so-called “two-step Loan” through the DBP.

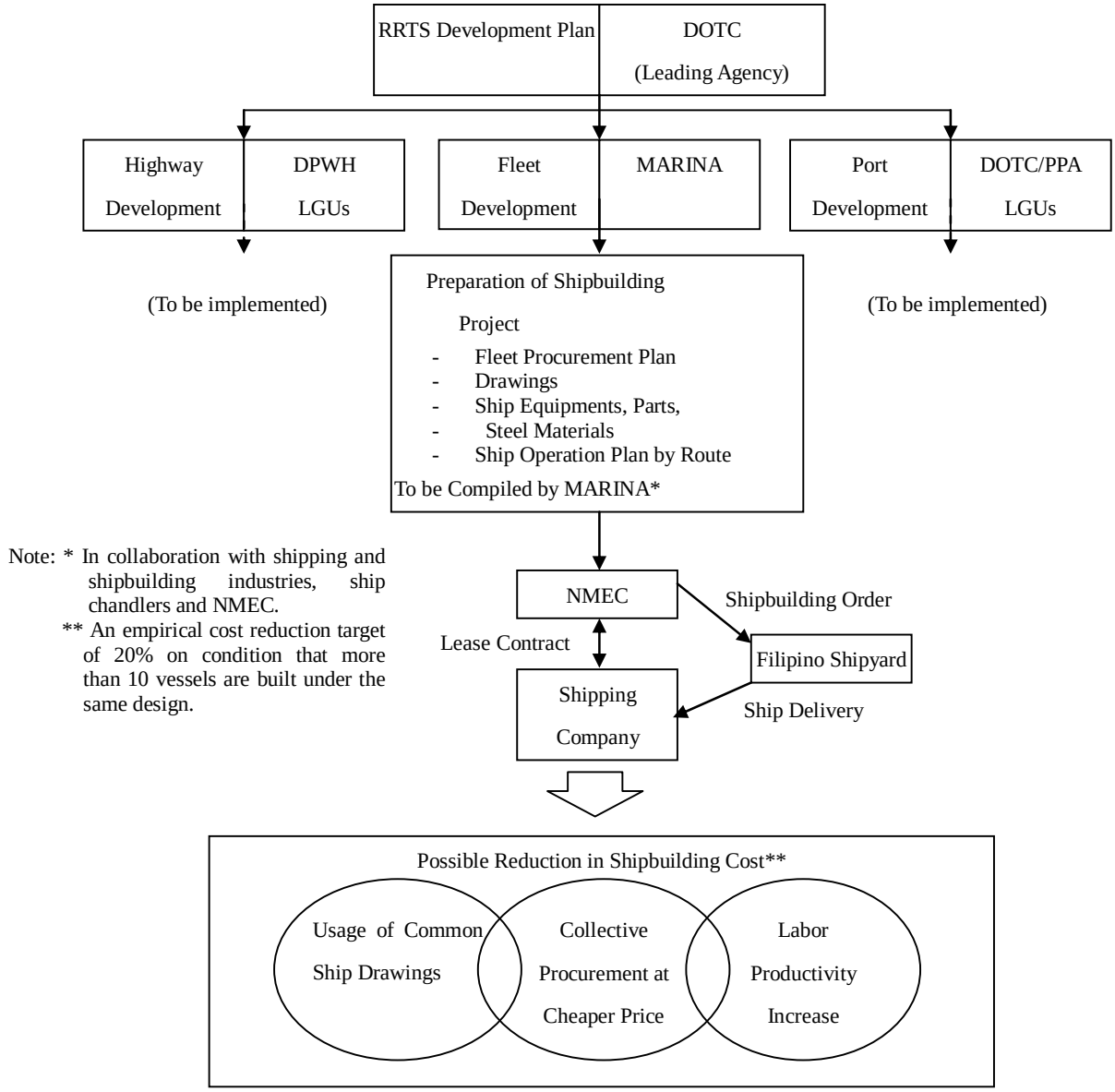
The revised ship procurement scheme utilizes Maritime Equity Corporation (MEC) under National Development Company as the implementing tool of the project. The MEC is a ship leasing company that constructs new ships by the project fund. The implementation scheme is shown in Figure 2-13.

3) Pilot Project at Masbate / Sorsogon / Panay / Cebu

The study also conducted feasibility studies for the introduction of a new type of RoRo ship in Manila-Cebu Link and RRTS pilot projects of the RoRo links to Masbate from adjacent islands.

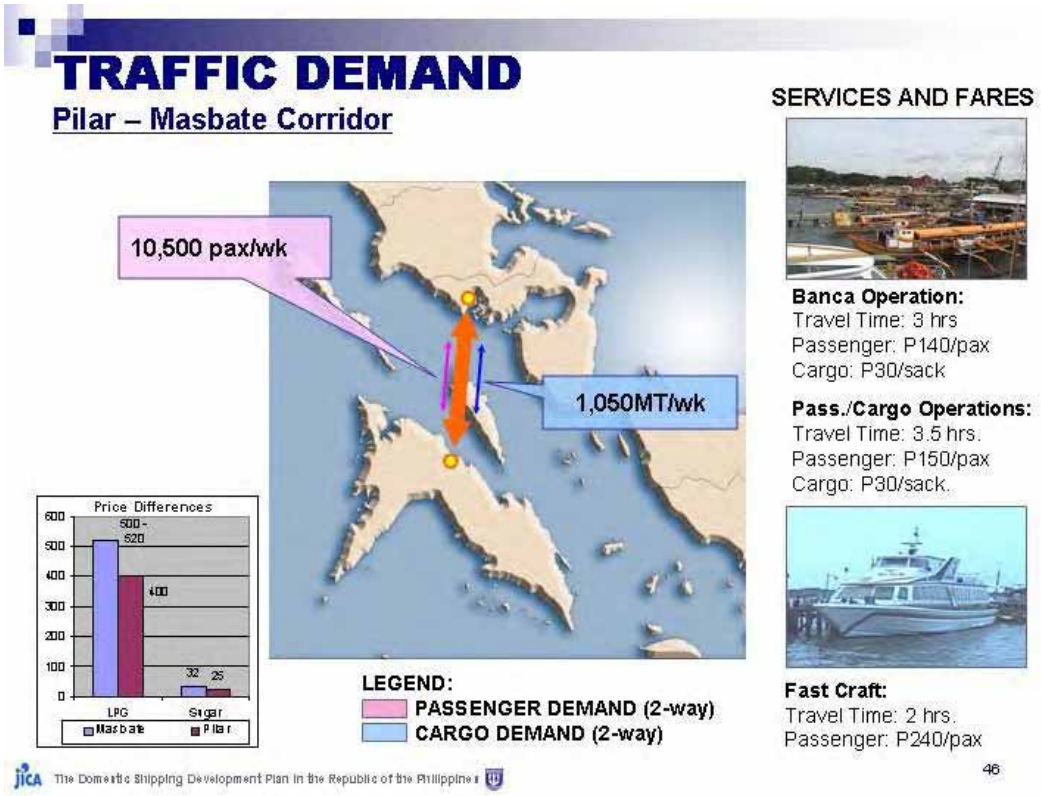
The feasibility study for Manila-Cebu link is intended to examine the feasibility of the introduction of a standard ship of 16,000 GRT and standard RoRo port facilities design. The study concluded the operation of a new generation RoRo ship is feasible.

For the pilot project, the study chose the following three RoRo links: Pilar (Sorsogon) – Masbate (Masbate), Cataingan (Masbate) – Bogo (Cebu) and Balud (Masbate) – Roxas (Culasi, Capiz) (See Figure 2-14, Figure 2-15 and Figure 2-16, respectively).



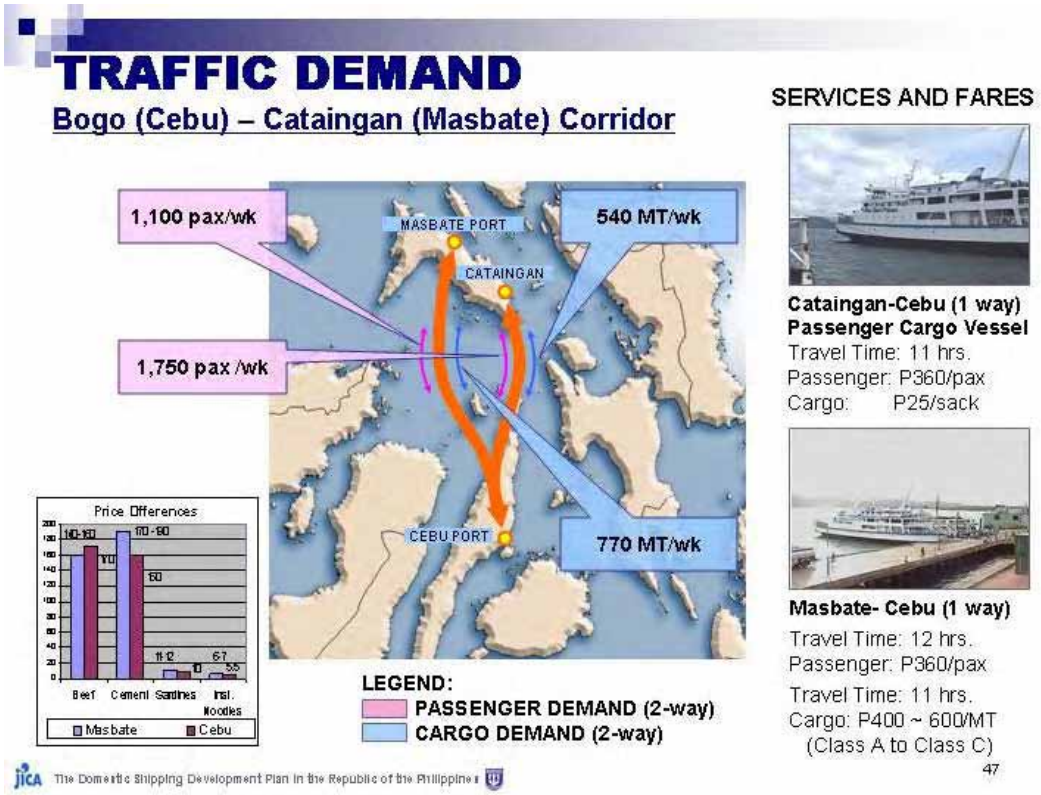
Source: Domestic Shipping Development Project, MARINA, 2005

Figure 2-13 Proposed Implementation Scheme for A NMEC Shipbuilding Project (in the case of RRTS RoRo vessels)



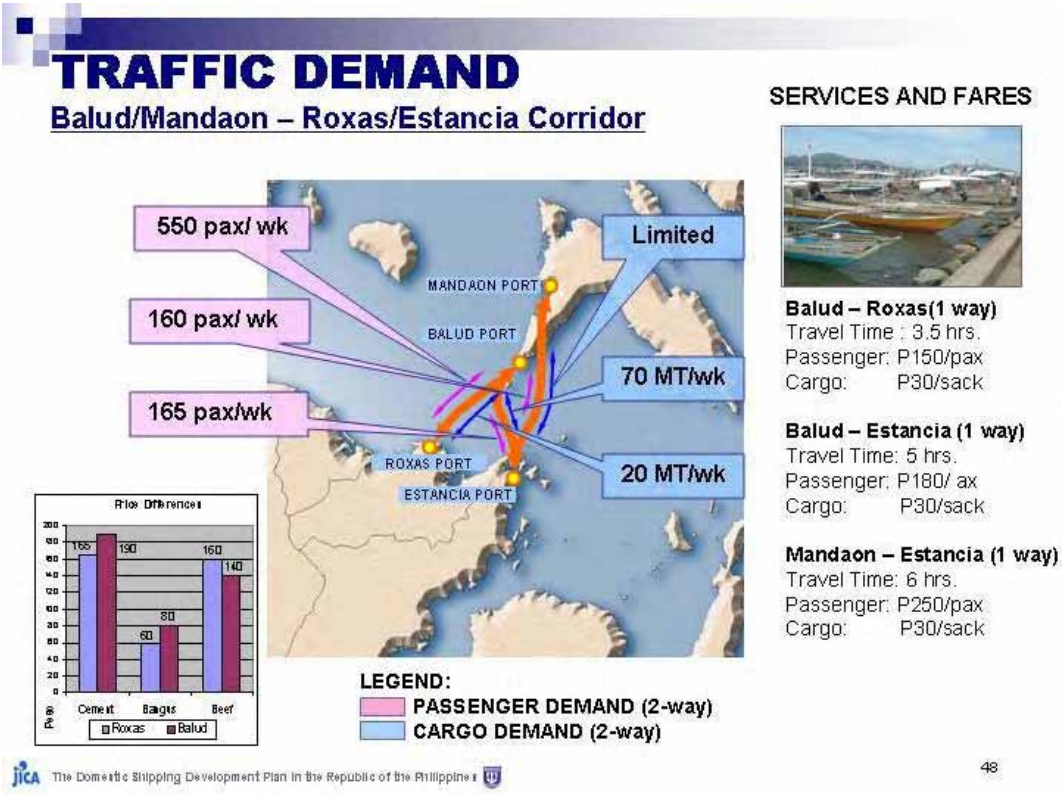
Source: Domestic Shipping Development Project, MARINA, 2005

Figure 2-14 Pilot project Masbate-Pilar RoRo link



Source: Domestic Shipping Development Project, MARINA, 2005

Figure 2-15 Pilot project Cataingan - Bogo RoRo link



Source: Domestic Shipping Development Project, MARINA, 2005

Figure 2-16 Pilot project Balud – Culasi (Roxas) link

The cargo and passenger traffic volumes along the three links were estimated as shown in Table 2-11, while other quantities employed for the feasibility analyses are shown in Table 2-12.

Table 2-11 Traffic Demand forecast by Pilot Route

		2004	2008	2010	2015	2025	2030
Masbate City – Pilar	Cargo (MT)	1,548	2,004	2,233	2,854	6,009	4,642
	Passenger (PAX)	5,250	7,173	8,153	10,729	16,063	19,171
Cataingan – Bogo	Cargo (MT)	1,613	2,331	2,691	3,729	5,294	6,169
	Passenger (PAX)	2,850	3,055	3,157	3,382	3,690	3,759
Balud – Roxas	Cargo (MT)	345	406	437	508	646	715
	Passenger (PAX)	875	1,084	1,188	1,419	1,881	2,112

(Traffic volume per week for both directions)

Source: Domestic Shipping Development Project, MARINA, 2005

The result of the feasibility Study showed that the Masbate- Pilar link and Cataingan – Bogo link are economically and financially feasible, while Balud – Roxas link is not feasible. The financial analysis was carried out for three financing schemes. The FIRR is the highest when MEC Lease-purchase scheme was applied. Thus, the study reemphasized that, for the procurement of new ships, the MEC Lease-purchase scheme was essential.

Table 2-12 RoRo Operation Plan by Route (Opening Year)

Item	Unit	Pilar-Masbate	Cataingan-Bogo	Balud - Roxas
Assigned Vessel Type		Type1	Type 1	Type 2
Gross tonnage	GT	1,400	1,400	1,000
Pax cap	pax	300	300	250
Cargo cap	trucks	12	12	6
Vessel Speed	knots	12	12	12
Pax Demand (2-way)	pax/week	7,173	3,055	1,084
Cargo Demand (2-way)	MT/week	2004	2331	406
Req'd Freq to Serve Demand	trips/week	19	16	8
Distance	n. mile	27	53	30
Round trip time	hr	6.5	10.8	7
Operating hrs/day	hr	16	16	16
Theoretical vessel requirement	units	1.4	2.4	0.6
Operational vessel requirement	units	2	2	1
Total cost	mill. Peso	104	122	44
Pax Load Factor	%	45%	58%	32%
Pax Load Factor	%	39%	67%	32%

Source: Domestic Shipping Development Project, MARINA, 2005

Table 2-13 Result of Financial Analysis

	Pilar – Masbate		Cataingan – Bogo	
	FIRR	ROE	FIRR	ROE
Commercial Loan		0.20%		4.20%
JBIC Sub-loan	17.20%	5.90%	13.00%	15.70%
MEC Lease-purchase		11.40%		19.40%

Source: Domestic Shipping Development Project, MARINA, 2005

2.2 Development Plans and Policies

2.2.1 Medium-Term Philippine Development Plan (MTPDP) 2004 – 2010

1) General

The Medium-Term Philippine Development Plan (MTPDP) 2004-2010 was announced in October 2004, soon after President Gloria Macapagal-Arroyo was inaugurated.

The Plan consists of five parts:

-Part I: Economic Growth and Job Creation

-Part II: Energy

-Part III: Social Justice and Basic Needs

-Part IV: Education and Youth

-Part V: Anti-Corruption and Good Governance.

The first part covers nine chapters to accelerate growth and job creation, namely, (1) Trade and Investment, (2) Agribusiness, (3) Environment and Natural Resources, (4) Housing Construction, (5) Tourism, (6) Infrastructure, (7) Fiscal Strength, (8) The Financial Sector, and (9) Labor.

Special emphasis was planned on supporting for micro, small and medium enterprises and agribusiness as they are the most efficient generators of jobs in terms of jobs to investment ratio.

One key strategy for job generation is to develop two million hectares of new lands for agribusiness that is expected to generate two million new jobs and enhance the productivity and incomes of Filipino farmers who comprise most of the country's poor. The Plan also aims to create three million micro enterprises and provide them with credit, technology and marketing support.

It is mentioned that development plans should consider the Philippine's archipelagic economy. Philippine islands have to be interconnected by good transport and communications networks that will open up new economic opportunities, reduce transportation and transaction costs of business, and increase access to social services. This interconnection will also strengthen the socioeconomic, cultural and political linkages between and among regions. Eventually, this connection will decentralize progress and bring development to the countryside. An efficient transport network will reshape the country's physical and economic configuration; from fragmented and island economies separated by mountains and seas, the country will develop into a unified, well-integrated economy where people and goods can move and trade swiftly and efficiently, locally and internationally.

Transport infrastructure shall be provided in pursuit of the following:

-Providing easier access to markets at home and abroad to alleviate poverty in the countryside and isolated regions;

-Enhancing peace and order in conflict-affected regions through efficient transport and trade; Strengthening national unity, family bonds and tourism by making the movement of people faster, cheaper and safer;

-Facilitating the decongestion of Metro Manila via a transport logistics system that would ensure efficient linkages between its business centers and nearby provinces; and

-Generating more transport infrastructure with minimal budget cover or contingent liabilities. Private sector-initiated infrastructure should be deficit-neutral, with minimum government exposure in the project.

2) Ports

The government will prioritize infrastructure projects that are strategic and critical to stimulate trade and investments, such as: (a) RORO ports and the highways connecting them; (b) roads and rail systems that will decongest Metro Manila, the Clark-Subic Highway, and highways that are catalytic to development in Luzon, Visayas and Mindanao; (c) roads and airports to tourism hubs; and (d) affirmative action projects for Mindanao and other highly impoverished conflict-ridden areas.

To enhance mobility and improve linkages between islands/provide access to markets/ activity centers, as well as support the agro-fisheries sector, the government shall expand the coverage of the SRNH through the completion of the vital links of the Western, Eastern and Central Nautical Highways.

A Maritime Equity Corporation of the Philippines will be established to provide support to the full implementation of the Road-RORO Terminal System through the acquisition of modern RORO vessels to be leased to qualified operators under a lease purchase agreement.

To encourage private sector participation in port development, simplification of the guidelines and procedures in the processing/issuance of required Clearance to Develop/Permit to Construct and Certificate of Registration/Permit to Operate shall be pursued. To further enhance privatization and in support of Executive Order (EO) 170, Promoting Private Sector Participation and Investment in the Development and Operation of the Road Roll-on/Roll-off (RORO) Terminal System,

and 170-A, Amending EO 170 to Expand the Coverage of the RORO Terminal System, the Terms of Reference for the privatization of existing government-owned SRNH RORO ports/terminals shall be prepared.

To make the maritime transport more cost-efficient and discourage monopolies/cartels, the government will attract new players in the industry through deregulation of routes and rates. A comprehensive review of the present port tariff system shall be undertaken and consequent development and implementation of a cost-based tariff shall be pursued. The application of the SRNH RORO tariff, which eliminates cargo-handling costs, will be expanded to cover all ports where RORO operations are being carried out. In its place, a RORO Terminal Fee Cash Ticket to facilitate movement and documentation of purely RORO cargo at SRNH ports will be applied.

Priority shall be given to the coordination of port development plans to ensure an integrated and efficient port system. The government shall likewise encourage the modernization of vessels by giving incentives as embodied in the newly enacted RA 9295, An Act Promoting the Development of the Philippine Domestic Shipping, Shipbuilding and Ship Repair and Ship Breaking, Ordaining Reforms in Government Policies Towards Shipping in the Philippines, and for Other Purposes.

Transport costs from Mindanao through the Visayas to Luzon shall be reduced. The nautical highway system introduced in 2003 to maximize the use of the RORO system to transport produce from Mindanao through the Visayas to Luzon has reduced travel time by 10 hours, and reduced costs by 40 percent for passengers and 30 percent for cargo. The project cost of the Nautical Highway is Php 40,000 million. The nautical highway system shall be completed through the following high priority routes:

i) Western Nautical Highway (also known as Strong Republic Nautical Highway)

-Oroquieta City- Dapitan City-Dipolog City Road

-Dipolog-Dumaguete City RORO

-Dumaguete-Samboan, Cebu RORO

-Samboan- Barili- Toledo City Road

-Toledo- San Carlos City RORO

-San Carlos- Dumaguete Road

-Dumaguete- Bacolod City Roads− Dumaguete- Bais- Mabinay- Kabankalan- Bacolod route− Dumaguete North Road- San Carlos Coastal- Bacolod North Road

-Bacolod- Iloilo City RORO

-Iloilo City- Caticlan (Aklan) Roads− Iloilo City- Passi- Calinog- Ivisan- Kalibo- Nabas-Caticlan Road − Iloilo East Coast- Capiz Road

-Caticlan, Aklan- Roxas, Mindoro Oriental RORO

-Roxas-Calapan, Mindoro Oriental Road

-Calapan- Batangas City RORO

ii) Central Nautical Highway

-Calinan, Davao-Buda, Bukidnon-Misamis Oriental Road

-Butuan City- Agusan del Norte- Misamis Oriental Road

-Balingoan, Misamis Oriental- Guinsiliban, Camiguin RORO

-Guinsiliban- Mambajao Road, Camiguin

-Mambajao, Camiguin- Jagna, Bohol RORO

-Jagna- Tubigon Roads, Bohol− Bohol Circumferential Road− [Loay Interior Road] Jagna- Sierra Bullones- Clarin- Tubigon Road

-Tubigon, Bohol- Cebu City RORO

-Cebu City- Toledo Road

-Toledo- San Carlos RORO

-San Carlos- Dumaguete Road

-Dumaguete- Samboan RORO

-Samboan- Cebu City Road

-Cebu City- San Remigio, Cebu Road

-San Remigio- Placer, Masbate RORO

-Placer, Masbate- Aroroy, Masbate Road

-Aroroy, Masbate- Boca Engano, Masbate RORO

-Boca Engano, Masbate- Claveria, Masbate Road

-Claveria, Masbate- Pantao, Albay RORO

-Claveria, Masbate- San Pascual, Masbate Road

-San Pascual, Masbate- Pasacao, Camarines Sur RORO

iii) Eastern Nautical Highway

-Davao- Compostela Valley- (Alegria- Santiago, Bayugan- San Francisco- Trento- Monkayo)- Agusan- Surigao Road

-Surigao City- Liloan, Southern Leyte RORO

-Liloan, Southern Leyte- Naval, Biliran Highway

-Naval, Biliran- Cataingan, Masbate RORO

-Cataingan- Aroroy, Masbate Highway

3) Highways

i) Infrastructure Situation

Over the past years, the government provided better roads and bridge networks to support the requirements of a growing economy. Road capacity improvements and traffic management and reduction in major urban centers like Metro Manila, Cebu and Davao.

The arterial road system has been given more emphasis in the DPWH development program by putting large investment into it, however, inadequate funding for road maintenance over the years has resulted in huge backlog of rehabilitation needs which resulted in the diversion of some of the funds intended for new construction or improvement to road rehabilitation. Difficulties in ROW acquisition prove to be a major deterrent for the construction of new roads and widening of existing roads.

DPWH completed the improvement of the Pan-Philippine-Highway in most parts of Cagayan Valley, Central Luzon, and Southern Luzon and upgrading the arterial roads in other regions, particularly the Camarines Provinces, Negros, North Cebu, Samar, Zamboanga peninsula, and General Santos-Davao-Bukidnon corridor.

Meanwhile, road safety program was also instituted. DPWH established a computerized Road Information and Management Support System to improve the quality and delivery of services in the provision and management of the national road network.

ii) Overall Transport Infrastructure

We will prioritize infrastructure projects that are strategic and critical to stimulate trade and investments, such as the roll-on-roll-off (RORO) ports and the highways connecting them.

To enhance mobility and improve linkage between islands/provide accesses to markets/activity centers, as well as support the agro-fisheries sector, the government shall expand the coverage of the Strong Republic Nautical Highway (SRNH) through the completion of the vital links of the Western, Eastern and Central Nautical Highway.

· **Nautical Highway to Link the Entire Country**

Reduce transport cost from Mindanao through the Visayas to Luzon. The nautical highway system introduced in 2003 to maximize the use of the RORO system to transport produce from Mindanao through the Visayas to Luzon has reduced travel time by 10 hours, and reduced cost by 40 percent for passengers and 30 percent for cargo.

· **Enhancing Tourism Complexes**

Roads leading to major tourism destinations shall be improved ports shall be rehabilitated/upgraded to serve as gateways to tourism complexes.

· **Undertaking Affirmative Action for Peace and Development**

The road network in underdeveloped regions and roads leading to conflict-affected areas will be improved to promote development and to help solve the peace and order problems.

iii) Present Status

The overall road network of the Philippines as of end-2003 measures 200,035 km, which translates into a density of 0.67 km per square km of land area. This density is already much higher than those of other developing countries in the ASEAN region. In terms of road quality, however, as measured by the paved road ratio, i.e., the length of paved roads over the total length of roads, the Philippines fall below its neighbors.

Table 2-14 Road Densities and Paved Road Ratios, Philippines and other ASEAN Countries

Country	Road Density (km/sq.km.)	Paved Road Ratio	Year
Philippines	0.60	0.41	2003
Indonesia	0.19	0.47	1995
Malaysia	0.27	0.75	1996
Thailand	0.13	0.97	1996
Vietnam	0.32	0.25	1996

The length of roads and paved road ratios by classification of roads by end-2005 is as follows;

Table 2-15 Total Road Length and Paved Road Ratios, by Classification, End of 2005

	Length	% Paved Road Ratios
National Roads	28,971	70
National Arterial	15,564	79
National Secondary	13,407	60
Provincial Roads	26,925	20
City Roads	7,052	77
Municipal Roads	15,803	34
Barangay Roads	121,989	7
Total	200,740	22

The overall paved road ratio was pulled down to the low level of 0.22 largely by the huge inventory of Barangay roads, totaling 121,989 km of the total length. Since many of these Barangay roads are slightly used, few of them actually warrant paving but should instead be maintained as all-weather roads.

In the national road system of 28,971 km alone, however, substantial investment for rehabilitation and upgrading over the last six years resulted in the following improvement;

Table 2-16 Percentage of Paved and All-weather National Roads (1998-2005)

	AS OF END 1998		AS OF END 2005	
	PAVED	ALL-WEATHER	PAVED	ALL-WEATHER
National Arterial Roads, 15,564km	68%	90%	79%	95%
National Secondary Roads, 13,407 km	42%	77%	60%	80%
Total National Roads, 28,971 km	60%	84%	70%	88%

About 93 percent of the 263,400 lineal meters of bridge along national roads are now permanent structures, compared to 83 percent in 1998.

Inadequate road maintenance funding and works over the years have resulted in a huge backlog of rehabilitation needs, thus pre-emption funds which otherwise would have been used for additional road improvement and new construction. The enactment of the Public Works and Highways Infrastructure Program Act of 1995 (RA 8150) provided the medium-term perspective for improving the arterial road network. National road maintenance by the private sector groups expanded then contracted due to budget reversals. ROW difficulties continued to hound government projects. The government completed the improvement of the Pan-Philippine Highway in most parts of Cagayan Valley and the Camarines provinces and completed the Sto. Tomas Lipa Expressway. Also being undertaken is the upgrading of the arterial roads in developing regions, particularly Pan-Philippine Highway from Camarines to Sorsogon and from Agusan del Norte to Compostela Valley and those in Negros, North Cebu, Samar, the Zamboanga peninsula, and the General Santos- Davao Bukidnon corridor. Meanwhile, a Road Safety Program was instituted. The DPWH has started to install a computerized Road Information and Management Support System to improve the quality and delivery of services in the provision and management of the national road network.

About 85 percent or 171,922 km of the total Philippine road network is composed of provincial, city, municipal, and barangay roads, which fall under the responsibility of the Local Government Units (LGUs). Due to inadequate financial and technical resources, only about 10 percent of these local roads are paved. Excluding barangay roads, 31 percent of the remaining local roads are paved.

While the average road density for the Philippines appears high at 0.67 km for road per square km of total land area, many areas have road densities much lower than the Philippine average, such as the Cordillera (CAR), and Regions II, IV-B, V, XII and XIII. Regions with very low paved road ratios include CAR and Regions II, IV-B, IX, X, XII, and XIII. These regions with low road densities and/or paved road ratios generally are also the less economically developed regions or have markedly undeveloped provinces.

Road transport has been, and will continue to be the dominant mode of transportation in the Philippines, accounting for about 22 billion ton-kilometers per year or 53 percent of the total domestic freight traffic, and around 83 billion passenger-kilometers per year or 89 percent of the total domestic passenger traffic. The road network carries almost all intra-island traffic.

The principal deficiencies of the highway network are as follows;

-Only 79% of the total national arterial road network is paved, 48% of the section needs to be rehabilitated and 21% is unpaved.

-For the national secondary roads about 60% is paved, 49% of the existing paved section need to be rehabilitated while 40% are still unpaved.

-About 22% of the total length of all roads is paved and 78 percent is unpaved.

-Some national roads, provincial and Barangay roads require upgrading because of initially low standards, deficient and/or substandard construction, inadequate maintenance and/or damage from overloaded vehicles.

-Areas where roads are most sparse and unimproved are also the most economically underdeveloped.

-Missing or weak bridge lessen the usefulness of many roads. About 26% of existing structures must be rehabilitated, replaced and retrofitted.

iv) Strategy of Nautical Highway

Strategy	Statement of Objective	Target Scope	Target Date /Period
Complete the nautical highway to transport the produce of Mindanao to Luzon and Visayas	Complete paving and improve remaining unimproved road sections of the Western, Central, and Eastern Nautical Highways. Rehabilitated or replace weak bridges along the routes.	100%	2005-2006

Table 2-17 Nautical Highway Project

NAME OF PROJECT	SCOPE OF WORKS	EST. COST (P 'M)	IMPREMEN-TATION SCHEDULE	FUNDING SOUCE
ON-GOING				
Luzon				
1. Calapan North & South Road Mindoro Oriental	Asphalt Overlay	125.000	2000-2005	IBRD
2. Masbate-Milagros Road, Masbate	Asphalt Overlay	40.000	2001-2005	IBRD
Visayas				
1. Naga Toledo Road, Cebu	Const/improvement 34.8kms. of road	1,045.586	2002-2006	JBIC

2. Iloilo East Coast-Capiz Road	Const/improvement 39.52km. of road	470.242	2002-2007	JBIC
3. Kabankaian-Basay/San Enrique-Villahermosa Road	Improvement 48.0kms. & 28.0kms.	668.102	2000-2006	IBRD
4. Iloilo City-Caticlan (Aklan) Highway	Improvement of critical sections	40.000	2005	IBRD
5. Iloilo East Coast-Capiz Road (Iloilo/Capiz Section)	Asphalt Overlay	80.000	2000-2005	IBRD
6. Iloilo East Coast (Balansan-Carles Section)	Asphalt Overlay	48.000	2000-2005	IBRD
7. Bacolod South-Kabankalan Negros Oriental	Asphalt Overlay	40.000	2001-2005	IBRD
8. Bacolod South-Kabankalan Bago-Maao Bago City (Negros Oriental Section)	Asphalt Overlay	87.000	2000-2005	IBRD
9. Bacolod North Road San Carlos Coastal (Negros Occidental Section)	Asphalt Overlay	115.000	2002-2005	IBRD
10. Maharlika Highway Leyte	Asphalt Overlay	40.000	2001-2005	IBRD
11. Lemon-Leyte-Biliran Road Leyte	Asphalt Overlay	40.000	2001-2005	IBRD
12. Maharlika Highway (Bdry. Mahaplag-Sogod-Liloan) Southern Leyte	Asphalt Overlay	40.000	2001-2005	IBRD
13. Patnongon-Culasi Road (Aklan-Antique-Iloilo Road)	Improvement 68.39 kms. of road	858.793	2000-2005	ADB
14. Culasi-Nabas Road	Improvement 44.3 kms of road	803.268	2000-2005	ADB
15. Tacloban0Liloan Road	Construction of Agas-Agas Bridge	519.764	2003-2007	ADB
16. Kalibo-Nabas Road	Rehabilitation 42 kms of road	239.059	2000-2005	
Mindanao				
1. Agusan-Davao Road Tabon-Tabon (Sibagat) – Bayugan Section Bayugan – Awa (Prosperidad) – San Francisco Section Tagum – Carmen Section Langkilaan (Trento) – Monkayo Section	Rehabilitation of 97 kms of road	3,716.719 484.772 1,009.145 1,142.971 1,079.831	1997-2005	JBIC
2. Pan-Phil Japan Friendship Highway Road Rehabilitation Project in Mindanao Phase II Alegria-Santiago Section San Francisco – Rosario – Bunawan – Trento (Agusan del Sur/Davao del Norte Bdry)	Rehabilitation of 153.5kms of road & 30Bridges	2,280.177 536.377 1,743.800	2001-2007	JBIC
3. Monkayo Bypass 2.6 km Monkayo – Nabunturan – Tagum 60.9km/9brs.	Improvement of 2.6km of road bypass and rehab of 60.9km	1,715.708	2002-2007	JBIC
4. Davao-Bukidnon Road (Calinan – Buda Section)	Improvement 46.0km	583.930	2001-2003	IBRD
5. Oroquieta City – Plaridel – Calamba – Sapang Dalaga, Misamis Oriental	Asphalt Overlay	40.000	2002-2005	IBRD
6. Pagadian – Ozamiz Road Tangub City	Asphalt Overlay	38.000	2001-2005	IBRD

7. Misamis Oriental – Agusan Road (Magsaysay – Gingoog Road)	Asphalt Overlay	37.000	2001-2005	IBRD
PROPOSED				
Luzon				
1. Calapan-Socorro Section	Improvement 58.04 km Bridge 726.98 linear mater	875,154	2006-2011	
2. Socorro – Bongabon – Mansalay Section	Improvement 91.5 km Bridge 1,242.97 linear mater	1,400.282	2006-2011	
Visayas				
1. Bacolod – Kabankalan Road (Bacolod-Bago Section)	Improvement 27.0 km Bridge 590.0 linear mater	475.700	2006-2011	
2. Cebu South Coastal Road Project Segment 3B-2	Improvement	1,265.000	2006-2009	
3. Iloilo East West Road (Conseption - Sara-San Rafael-Passi-Calinog Road)	Improvement 105.60 km	1,215.000	2007-2011	
4. Santander – Barili – Teledo City Road	Improvement 342 km	4,104.000	2008-2014	
5. San Carlos-Dumaguete Road	Improvement 167 km	2,004.000	2008-2014	
6. Bacolod – Murcla – Don Salvador Benedicto-San Carlos City Road	Improvement 82 km	984.000	2008-2012	
7. Iloilo City – Caticlan (Aklan) Highway	Improvement 222 km	2,664.000	2008-2014	
8. Butuan City, Agusan del Norte – Misamis Oriental Road	Improvement 18 km	216.000	2008-2010	
9. Cebu City – Bogo Road	Improvement 106 km	1,272.000	2008-2014	
10. Placer – Aroroy Highway	Improvement 165 km	1,980.000	2008-2014	
11. Liloan (Panaon) – Navai (Biliran) Highway	Improvement 429 km	5,148.000	2008-2016	
12.Jagna – Sierra Bullones – Clarin – Tubigon Road	Improvement 77 km	912.000	2008-2012	
Mindanao				
1. Viaduct along Camigium Road	Const. of viaduct of 1.90 km along Camiguin Road	324.400	2008-2011	
2. Oroquieta City-Dapitan City-Dipolog City Road	Improvement 93 km	1,116.000	2008-2011	

2.2.2 Institutional Strengthening for the Promotion of RoRo Transportation

1) Executive Orders

i) EXECUTIVE ORDER NO.170 (January 22, 2003)

PROMOTING PRIVATE SECTOR PARTICIPATION AND INVESTMENT IN THE DEVELOPMENT AND OPERATION OF THE ROAD ROLL-ON / ROLL-OFF TERMINAL SYSTEM

· Definition of terms:

-Roll-on/Roll-off or Ro-Ro Operations shall refer to the method of loading and discharging of self-powered vehicles, such as cars, and trucks, on their own wheels by their owners or drivers between vessel and shore via a ramp;

-Ro-Ro vessel shall refer to a ship type or design duly approved for Ro-Ro operations;

-Road Ro-Ro Terminal System (RRTS) shall refer to the network of terminals all over the country, separated by a distance of not more than fifty (50) nautical miles and linked by

Ro-Ro vessels; (*1)

-Lane-meter shall refer to one (1) meter of deck with a width of 2.5 to 3.0 meters.

RRTS Toll – The RRTS toll shall consist of the following: (*2)

-A terminal fee levied by the RO-Ro terminal operator on vehicles and passengers for the use of the terminal;

-A passage fee levied by the Ro-Ro vessels operator on self-powered vehicles based on lane-meter;

-A passage fee levied by the Ro-Ro vessel operator on passengers; and

-A berthing fee levied by the Ro-Ro terminal operator on the Ro-Ro vessel for mooring or berthing at the Ro-Ro terminal

· RRTS Documentary Requirements

To the extent permitted by law, the Maritime Industry Authority (MARINA), Philippine Ports Authority (PPA), Cebu Ports Authority (CPA) and other concerned Government agencies shall ensure that the RRTS shall be covered by reduced and simplified documentary requirements. No clearance shall be required for motor vehicles using the RRTS: Provided, however, that the owners or operators of Ro-Ro vessels shall comply with the reporting requirements under Section 11 of the Anti-Carnapping Act of 1972 (Republic Act No. 6539).

· Private Commercial Terminals

The PPA and the CPA shall ensure that Ro-Ro terminals established and constructed through private investments shall be operated as private commercial terminals. The PPA and CPA shall likewise take concrete steps to privatize state-owned Ro-Ro terminals to attract investments in the RRTS.

· Private Sector Financing for the RRTS

The Development Bank of the Philippines shall make available long-term loan/financing to eligible projects and qualified borrowers under its Sustainable Logistics Development Program.

ii) EXECUTIVE ORDER NO.170-A (June 9, 2003)

AMENDING EXECUTIVE ORDER NO. 170 TO EXPAND THE COVERAGE OF THE ROAD ROLL-ON/ROLL-OFF TERMINAL SYSTEM

(*1) of Executive Order No. 170 is amended to read as follows:

"c. Road Ro-Ro Terminal System (RRTS) shall refer to the network of terminals all over the country, regardless of the distance covered and linked by Ro-Ro vessels;"

(*2) of Executive Order No. 170 is amended to add thereto a new paragraph which shall read as follows:

"The RRTS toll shall be applicable to:

-All self-powered vehicles loaded and discharged on their own wheels by their owners or drivers between vessel and shore via a ramp; and

-All vessels to the extent that they are actually engaged in Ro-Ro operations."

The Department of Trade and Industry and the Department of Transportation and

Communications (DOTC) are directed to formulate and submit for the approval of the President an incentive program for Ro-Ro vessel and terminal operators in pioneering, missionary, developmental or underdeveloped routes or links.

iii) EXECUTIVE ORDER NO.170-B (September 19, 2005)

Encouraging Further Expansion of The Country's Road Roll-On/Roll-Off Terminal System (RRTS) And Reduction of Transport Cost Through Increase In The Number of RORO-Capable Pots And Conversion of More Private Non-Commercial Port Operations To Private Commercial Port Operations

· Transport Cost Reduction

The port authorities and Maritime Industry Authority (MARINA) to ensure that the spirit and intent of Executive Order (EO no.170, series of 2003, as amended, to lower the cost of transport is reflected in the Road Roll-On/Roll-Off Terminal System (RRTS) charges, and that the reduction of cargo handling costs is passed on to the users in form of lower freight rates. In no case shall the existing cargo handling charges be retained in any form or manner, such as, change in the nomenclature of the fee/charge, provided that cargo conforms with the prescribed operating norms for RORO where there is no participation and responsibility over the cargo attached to the cargo handler and/or terminal operator as contemplated in EO 170, as amended.

· Encouraging Conversion to Private Commercial Ports.

All port authorities to allow and encourage the conversion of private non-commercial ports into private commercial ports under the RRTS network. Proximity to and direct competition with a public port shall not be a valid cause for non-approved of any private port conversion; and

· DOTC as Lead Agency

The Department of Transportation and Communications (DOTC) shall coordinate the activities of the aforementioned agencies, monitor their compliance with the directives under this EO and related issuances, seek the cooperation of the private sector and regularly report to the office of the President progress of the government's program to realize the ultimate goal of bringing down transport costs.

2) ADMINISTRATIVE ORDER

i) ADMINISTRATIVE ORDER NO.123 (July 4, 2005)

AUTHORIZING THE SECRETARY OF THE DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS TO PERFORM ALL POWERS AND FUNCTIONS NECESSARY TO CONNECT THE COUNTRY THROUGH THE DEVELOPMENT OF TRANSPORTATION NETWORKS SUCH AS THE ROLL-ON/ROLL-OFF SYSTEM

· Role of the DOTC Secretary.

The DOTC Secretary is hereby authorized to direct, manage and coordinate all activities, mobilize available government agencies concerned for the implementation of the RO-RO System in accordance with applicable laws.

· Cooperation and Support of Government Agencies.

All departments, bureaus, offices and other government agencies and instrumentalities, including government-owned and/or controlled corporations are hereby directed to extend full cooperation, support and assistance to the DOTC and the DOTC Secretary regarding all matters and

requests specifically related to and covered by this order.

The following departments, agencies and corporations shall form the core of the interagency group for the development and implementations of RO-RO system with the following composition:

-Secretary, DOTC	-	Chairman
-Administrator, MARINA	-	Co-Vice-Chairman
-General Manager, PPA	-	Co-Vice-Chairman

As members, the following departments/entities shall be included and represented by an Assistant Secretary or an Official of equivalent rank:

-DPWH, DA, DOT, DTI, DILG, DBP

The private sector shall also be included and represented from the following associations:

-Federation of Philippine Industries

-Philippine Chamber of Commerce and Industry

-Distribution Management Association of the Philippines

The DOTC shall provide a Secretariat for the Inter-Agency Group to be headed by an Assistant Secretary and composed of officials of the Department and its attached agencies with a rank equivalent to a Director.

3) State of Nations Address 2006 (July, 2006)

i) TRANSPORT INFRASTRUCTURE

· Expansion of the nautical highway system

The government pursued the expansion of the Nautical Highway System to maximize the use of Ro-Ro facilities to move passengers and cargo from Mindanao through the Visayas to Luzon. The Ro-Ro ferry highway route from Zamboanga del Norte to Negros Island to Panay island to Mindoro Island to Batangas and from Cagayan de Oro to Manila invigorated domestic trade and tourism in the country.

The travel time from Mindanao through Visayas to Luzon has been reduced by 10 hours and cargo transport cost by 30 percent. All ports and road connections along these Ro-Ro routes are in place, regular services in all routes are being ensured and port facilities are being expanded as needed.

Western Nautical Highway (Strong Republic Nautical Highway) or the western seaboard trunk route from Manila to Dipolog (northwestern tip of Mindanao) connects to the central trunk route at Cebu city (Central Visayas).

-The link, Dapitan – Dumaguete - Bacolod (Private port) - Iloilo – Caticlan – Roxas – Calapan – Batangas – Manila - Orion, is already Ro-Ro capable. A number of Ro-Ro vessels operating/plying along this route effectively connect the following islands/economic corridors: Dapitan – Dumaguete - Cebu; Bacolod – Iloilo - Cagayan de Oro - Ozamiz; Caticlan - Roxas; and Calapan - Batangas.

-Improved 683.9 kilometers out of the 920.6 kilometer-road sections mainly in Negros, Mindoro Oriental, Aklan, Iloilo and Misamis Occidental; 22.9 km are being improved,

mainly in Aklan, Negros, Mindoro and Cebu and 136.8 km are proposed for improvement in Iloilo, Capiz, Negros and Mindoro Oriental.

-Completed construction of back-up area and improvement of access road (April 2005) and the widening of R.C. pier and construction of additional RoRo ramp in Roxas (January 2006).

-Ongoing projects/activities include expansion/reclamation of Dapitan Port (97% complete); construction of RoRo ramp and breasting dolphin and port lighting system (88% complete); construction of three units of RoRo ramp in Batangas; improvement of river wharf in Iloilo (15% complete) and eligibility screening of interested bidders for Dumaguete Port expansion

Central Nautical Highway has the following links:

a) Balingoan-Guinsiliban / Benoni-Mambajao-Jagna-Tubigon / Tagbilaran-Cebu Bogo-Cawayan / Esperanza-Masbate / Aroroy-San Antonio
b) Balingoan-Guinsiliban / Benoni-Mambajao-Jagna-Ubay-Hilongos-Allen (private port)-Matnog

-RoRo vessel routes operating/plying along and connecting into these routes include: Blingoan-Guinsiliban; Balingoan-Benoni; Jagna-Cagayan de Oro; Jagna-Nasipit; Tubigon-Cebu; Cebu-Tagbilaran; Masbate-Cebu; Masbate-Manila; Masbate-Ormoc; Masbate-Calubian; and Masbate-Lucena

-RORO vessel routes operating/plying along and connecting into these routes include: Balingoan-Guinsiliban; Balingoan-Benoni; Jagna-Cagayan de Oro; Jagna-Nasipit; Tubigon-Cebu; Cebu-Tagbilaran; Masbate-Cebu; Masbate-Manila; Masbate-Ormoc; Masbate-Calubian; and Masbate-Lucena.

-Completed construction of RoRo ramp in Jagna in April 2006 while closing of breather in Masbate is 47% complete.

-Ongoing feasibility and preliminary engineering studies for development/improvement of Aroroy, Mambajao, Masbate and Hilongos.

-Improved 328.6 kilometers out of the 803.1 kilometer-road sections mainly in Davao del Norte, Bukidnon, Cebu and Masbate; 22.1 kilometers are being improved in Cebu and 205.7 kilometers are proposed for improvement in Bohol, Cebu and Masbate.

Eastern Nautical Highway route covers Lipata - Panaon/Liloan - Calubian/Balete – Cawayan/Esperanza - Masbate/Aroroy-San Antonio.

-At present, RoRo vessels make inter-island trips along the following network: Lipata-Lloan; Masbate-Cebu; Masbate-Manila; Masbate-Ormoc; Masbate-Calubian; and Masbate-Lusena.

-On-going projects include ferry terminal expansion in Liloan (20% complete) and improvement of the Cawayan Port

-Improved 362.9 kilometers out of the 689.5 kilometer of road sections mainly in Agusan del Sur and Davao del Norte. 53.9 kilometers are being improved mainly in Agusan del Sur and Davao del Norte and 76.5 kilometers are proposed for improvement in Davao del Norte, Leyte and Biliran.

· Developed new airports

Embarked on the development of new airports in Negros Occidental (Silay City), Iloilo (Sta. Barbara/Cabatuan), and Bohol (Panglao) to serve as gateways to tourism destinations such as Cebu-Bohol-Camiguin, Palawan and Boracay.

-Implemented the New Bacolod (Silay) Airport Development Project which involves the construction of a new airport at Silay City in Negros Occidental at a cost of P4.437 billion. The project, which aims to cater to the increasing number of air passenger and cargo traffic in Negros Occidental and its influence areas, is 37% complete, against the scheduled 40%, as of end-June 2006. The negative slippage is due to unfavorable weather conditions and late turn-over of the existing barangay road that crosses the project. Construction period is from August 2004 – January 2007.

-On land acquisition, 15 out of 16 landowners have received 90% just compensation and 6% legal interest payment representing 99.9% of the total area to be acquired for the project. Balance of 10% (retention) shall be released after the titles are transferred in the name of DOTC.

-Implemented the New Iloilo Airport Development Project which involves the construction of a new domestic airport of international standard in Sta. Barbara and Cabatuan, Iloilo City to replace the existing airport at Manduriao, Iloilo City. 100% of the project site (188 has.) for the P6.19 billion Iloilo Airport Development Project has been acquired by DOTC. Over-all physical accomplishment as of June 2006 is 55%. The project has encountered delays in view of the presence of the many yet to be relocated houses at the airfield and borrow pit areas, sourcing of suitable materials, untimely design changes to mechanical/electrical/building works and unfavorable weather site condition. Target project completion date is April 2007.

-Released P55 million for the installation of runway and taxiway edge lights for Kalibo Airport. Installation of simple approach lighting system and parcellary survey were completed in the first quarter of 2006 while acquisition of lots for glide slope and rehabilitation of runway edge is ongoing. Project shall be completed by August 2006.