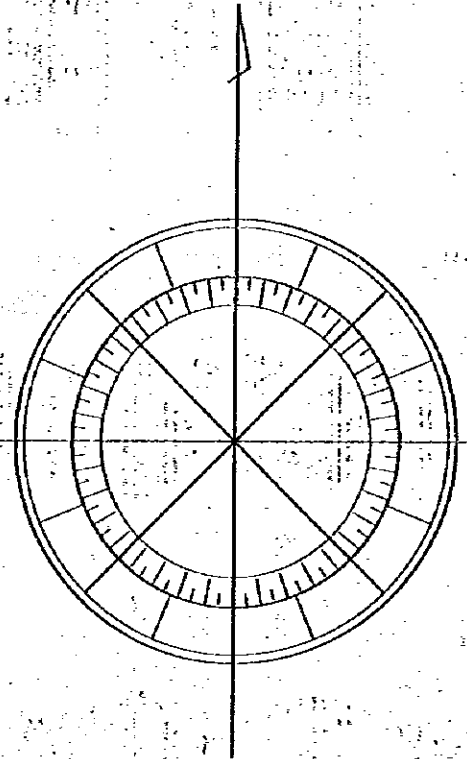


# MASTER PLAN STUDY ON COASTAL SHIPPING REHABILITATION AND DEVELOPMENT PROJECT IN VIETNAM

Final Report  
**SUMMARY**



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J. Yen 1 = Vietnam Dong 100  
(average during FY 1995-1996)

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
MINISTRY OF TRANSPORT (MOT), VIETNAM**

**MASTER PLAN STUDY ON  
COASTAL SHIPPING REHABILITATION AND DEVELOPMENT PROJECT  
IN VIETNAM**

**FINAL REPORT  
SUMMARY**

**MARCH 1997**

**THE MARITIME INTERNATIONAL COOPERATION CENTER OF JAPAN (MICC)  
OVERSEAS SHIPBUILDING COOPERATION CENTRE (OSCC)  
ALMEC CORPORATION**



## PREFACE

In response to a request from the Government of the Socialist Republic of Vietnam, the Government of Japan decided to conduct "Master Plan Study on Coastal Shipping Rehabilitation and Development Project in Vietnam" and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Vietnam a study team headed by Mr. Shojiro MIYANAGA, General Manager of the Maritime International Cooperation Center (MICC) and composed of members from MICC, Overseas Shipbuilding Cooperation Centre (OSCC) and ALMEC Corporation between December 1995 and January 1997.

The study team held discussions with the officials concerned of the Government of Vietnam and conducted field surveys at the study area. After the study team returned to Japan, the present report was prepared.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of Vietnam for their close cooperation extended to the study team.

March 1997



---

Kimio FUJITA

President

Japan International Cooperation Agency



March 1997

Mr. Kimio FUJITA  
President  
Japan International Cooperation Agency  
Tokyo, Japan

Dear Mr. FUJITA,

LETTER OF TRANSMITTAL

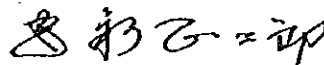
We are pleased to submit to you the master plan report on coastal shipping rehabilitation and development project in Vietnam. The study forged its master plan and short-term priority projects towards the years 2010 and 2000, respectively. The advice and suggestions of the authorities concerned of the Government of Japan and your Agency are duly incorporated into the report. Also included are comments made by the officials concerned of the Government of Vietnam during technical discussions on the draft report which were held in Hanoi and Ho Chi Minh City.

This report concludes that coastal shipping in Vietnam has a great development potential although it has not been developed adequately. And the report presents the development directions with a set of conditions integrally and strategically. We hope that implementing the Master Plan will improve and expand the role of coastal shipping, which would bring about large and extensive economic benefits through improvements to the national transport system, to shipping activity and maritime safety, and to the coastal environment.

Since it is economically and environmentally feasible and possible to mobilize various funds, we recommend that the Government of Vietnam fully implement this Master Plan as a top priority.

We wish to take this opportunity to express our sincere gratitude to your Agency, the Ministry of Foreign Affairs, the Ministry of Transport. We also wish to express our deep gratitude to the Ministry of Transport and other authorities concerned of the Government of Vietnam for the close cooperation and assistance extended to us during the course of the study.

Very truly yours,



---

Shojiro MIYANAGA

Team Leader

Master Plan Study on Coastal Shipping  
Rehabilitation and Development in Vietnam





Master Plan Study on Coastal Shipping Rehabilitation and Development Project in Vietnam

Coverage of the Study	Coastal shipping in Vietnam is subject to the Study. However, its territorial boundary has not been clearly defined either institutionally or physically. In this Study, coastal shipping is defined as a transport service with the following features: (a) traffic movement by classified seaborne vessels, (b) traffic movement on coastal ways including sea-cum-riverways, and (c) domestic traffic movement between Vietnamese seaports		
Traffic Demand Forecast	Year 1995(actual):2.7mil. tons, 1.02 bil. ton-km Year2000(estimated):1,440 mil tons, 3.73 bil. ton-km Year2010(estimated)3,430 mil tons, 8.77 bil. ton-km	Expected Roles of Coastal Shipping	①bulky cargo haulage over long distance ②regional linkage between the North and the South ③an alternative mode from land transport in emergency
Comprehensive Approach to Developing Coastal Shipping (Outline of the Master Plan)	<p>①Coastal Shipping Network: Medium size vessels will be assigned on trafficked routes. Future traffic requires the introduction of different types of services such as liner operation, container and Ro-Ro services and transport of specialized goods.</p> <p>②Coastal Shipping Fleet: The fleet will consist of general cargo/bulk ship, oil tanker/chemical tanker, container/semi-container ship, and Ro-Ro ship.</p> <p>③Shipyards: To meet ship repair work, 6 shipyards will be renovated. Effective quality control system should be introduced.</p> <p>④Coastal Shipping Ports: As key general coastal shipping ports, 17 ports will be expanded and developed. Specialized ports also needs to be developed. Restructuring of port charges and improvement of port operation should be undertaken.</p> <p>⑤Sea-cum-Riverways: A total of 832km of sea-cum-riverways should be developed to connect the coastal shipping ports by means of 1,000 - 5,000 dwt vessels.</p> <p>⑥Coastal Shipping Management: Management skills should be improved to strengthen marketing and customer relations. Particular attention should be given to small to medium operators to easily access to adequate finance.</p> <p>⑦Secondary Transport: Forms of secondary transport should be provided in accordance with the situation at each port.</p> <p>⑧Maritime Human Resources: An adequate supply of competent seafarers should be ensured by improving VIMARU and MTTTS. Practical O-J-T is needed.</p> <p>⑨Maritime Safety and Environment: Proposed measures include strict ship inspection, development of visual and electronic ATN, a search and rescue system and a national oil spill protection system.</p>		
Cost Estimates	<p>approx US\$ 1.76 bil. (the amount between 1997 and 2010, inclusive of various available resources)</p> <p>The amount of the three short-term priority projects is estimated at US\$ 510 mil.</p>	Evaluation	<ul style="list-style-type: none"> <li>• The Master Plan is expected to general a high EIRR of 34%. Benefits are cost saving, service improvement, time saving and reduction in accidents.</li> <li>• The Master Plan should be implemented within a tight financial condition.</li> <li>• No serious environmental effect is anticipated.</li> </ul>
Short-term Priority Project Packages	<p>①Program on North-South Trunk Route Development: improvement of 9 general coastal shipping ports and 5 sea-cum-riverways, deployment of visual ATN and maritime safety fleet, fleet modernization and shiprepair yards improvement</p> <p>②Program to Meet International Requirements: to provide coastal shipping service at a sustainable level in compliance with the related international conventions.</p> <p>③Program on Maritime Human Resources Development: to supply competent staff and to upgrade active ones on an increasing scale in the future</p>		



## EXECUTIVE SUMMARY

- Coastal shipping in Vietnam has not been developed adequately. Its territorial boundary has not been clearly defined either “institutionally” or physically. Overlapping functions and unclear demarcation exist between international shipping, as well as inland waterway transport operation. Coastal shipping services have been provided mainly by state-owned shipping operators but only as a secondary consideration after international shipping services, using the same fleet. No regular services have been provided and only specific clients and goods have been served. More importantly, coastal shipping has not been explicitly considered in national transport policy-making.
- In 1995, coastal shipping carried about 2.7 million tons or 1.02 billion ton-km of domestic cargo, which is equivalent to 4% or 37% of the total domestic goods traffic of the country. It is estimated that coastal shipping traffic will increase to 14.4 million, (4.7 million, excluding oil), and 34.3 million tons (14.9 million, excluding oil) by 2000 and 2010, respectively. Coastal shipping traffic is composed of mainly bulky types of cargo and those moving over long distance. If this cargo type were not transported by coastal shipping, both road and railway, which have limited capacities, will be heavily loaded and/or industrial developments may not take place as planned. The Study identified the expected roles of coastal shipping as follows:
  - (1) bulky cargo haulage over long distance as an economical means;
  - (2) regional linkage between two different economies, the North and the South; and
  - (3) an alternative mode from land transport in emergency.
- Development of coastal shipping, however, requires a comprehensive approach wherein relevant aspects should be effectively integrated, including network development, institutional/regulatory framework building, fleet expansion and modernization, management improvement, ports and waterways development, secondary transport improvement, maritime safety enhancement and environmental protection and human resources development. Initially, each aspect has been investigated independently, then potential areas of improvement and development strategies have been identified and appropriate plans have been prepared in an integrated manner to meet development targets for coastal shipping. Key findings derived from studies of each aspect are briefly as follows:
  - (1) Based on the anticipated future demand pattern, major coastal shipping routes have been identified on which deployment of 3,000 to 5,000 DWT vessels would be most economical. Expected diversification of coastal shipping traffic requires the introduction of different types of services. These include scheduled liner operation, introduction of container, semi-container and Ro-Ro services, and transport of specialized goods, especially oil, coal and cement.
  - (2) The coastal shipping fleet needs to be expanded and modernized. The types of ship needed to meet future traffic demand include general cargo/bulk ship, oil tanker/chemical tanker, container ship, semi-container ship, and Ro-Ro ship. A total of 84 cargo ships and eight passenger ships need to be acquired up to 2000, and a further 324 cargo ships and 27 passenger ships between 2001 and 2010, for which US\$ 226 million and US\$ 760 million are required, respectively. In order to meet the increasing demand for modern vessels, the

introduction of standardized cargo vessels may be considered. Multi-purpose cargo vessels with 1,000 DWT to 3,000 DWT are considered the most appropriate.

- (3) Improvement of shipyards is badly needed, especially to meet effectively the demands for repair work. Six shipyards in the north, central and south of the country have been selected for improvement which would cost about US\$ 16.8 million. Effective quality control system should also be introduced which would cost about US\$ 0.6 million.
  - (4) Seventeen ports have been identified as key general coastal shipping ports: Haiphong, Cai Lan, Hanoi, Viet Tri, and Ninh Binh in the north, Cua Lo, Ha Tinh-Quang Binh, Thuan An, Danang, Qui Nhon, and Nha Tran in the central region, and Saigon, Dong Nai, My Tho, Dong Thap, Can Tho, and My Thoi in the south. Improvement work, including civil work and equipment procurement, would cost US\$ 240.5 million. Specialized ports also need to be developed, and improvements made with regard to restructuring of port charges, provision of qualified port operators and realignment of government supervision of port management.
  - (5) A total of 832 km of sea-cum-riverways should be developed to connect the coastal shipping ports effectively so that they can accommodate 1,000 to 5,000 DWT vessels. The required cost is roughly US\$ 26 million initially and US\$ 1.7 to 2.2 million annually. Administrative improvement, including clarification of the division of responsibilities between VINAMARINE and IWB is also needed.
  - (6) Management skills of shipping operators should be improved to strengthen marketing and customer relations, and management know-how in modern business and ship operation practices. Particular attention should also be given to small and medium-scale operators to facilitate access to adequate finance and to do business in a more clear regulatory environment.
  - (7) Since coastal shipping transport often requires feeder services at either or both ends of the hauls, forms of secondary transport should also be provided in accordance with the situation at each port.
  - (8) Improving maritime human resources is particularly important for effective operation and management of coastal shipping. An adequate supply of competent maritime personnel should be ensured by improving existing institutions such as VIMARU and MTTTS. Training of maritime personnel is needed for managerial and other staff such as seafarers, landsmen, port-related personnel, maritime safety personnel, shipbuilding engineers and ship inspectors.
  - (9) Enhancement of maritime safety and environmental protection is becoming more and more important. Proposed measures include improvement of ship inspection, both during shipbuilding and in operation, development of visual and electronic aids to navigation systems, a search and rescue system, a maritime safety management information system, and a national oil spill protection system.
- The overall cost of the Master Plan is estimated to be US\$ 1.76 billion between 1997 and 2010. The largest anticipated expenditure would be incurred in vessel acquisitions by ship operators, followed by infrastructure development (refer to ES-1).

Table ES-1  
Estimated Cost of the Master Plan

Subsector/Category	Mainly Incurred by:	Estimated Cost	
		US\$ M	%
<b>Fleet Expansion and Modernization</b>			
-Vessel Acquisition <sup>1</sup>	Ship Operators	986.5	56.2
-Improvement of Ship Construction Yards	Ship Yards	14.3	0.8
-Improvement of Ship Repair Yards	Ship Yards	16.8	1.0
-Shipyard Quality Management Center	Ship Yards	0.6	0.03
<b>Ports and Waterways Development<sup>2/</sup></b>			
-Coastal Shipping General Ports Infrastructure	Port Operators	240.5	13.7
-Coastal Shipping Specialized Ports Infrastructure	Port Operators	61.4	3.5
-Sea-Cum -Riverway Infrastructure Improvement	VINAMARINE/IWB	26.0	1.5
<b>Coastal Shipping Management Modernization</b>			
-Training in Modern Operating Methods	Ship Operators	N/A	-
<b>Secondary Transport Improvement Programme</b>			
-Improvement of River and Road Infrastructure	IWB/VRA	N/A	-
<b>Maritime Human Resources Development Programme</b>			
-Improvement of VIMARU and MTTTS	VINAMARINE/VIMARU	22.7	1.3
-Training Equipment for Tanker Operation	VIMARU	2.7	0.2
<b>Maritime Safety Enhancement and Environment Protection Programme</b>			
-Establishing Testing Laboratories	VIRES	1.3	0.1
-Aids to Navigation Equipment	VMS	173.0	9.9
-Maritime Safety Vessels (for ATN and SAR)	VINAMARINE/VMS etc.	169.4	9.6
-Sea Communication Equipment	VISPHIEL/Ship Operators	40.4	2.3
<b>Total</b>		<b>1,755.6</b>	<b>100.0</b>

NOTE: (1) Including oil tankers (assuming the Dung Quat project is implemented)  
(2) Oil facilities excluded

- Implementing the Master Plan would improve and expand the role of coastal shipping, which would bring about large and extensive economic benefits through improvements to the national transport system, to shipping activity and maritime safety, and to the coastal and riverside environment. The benefits will not only be limited to the coastal shipping sector but also to other transport users and the community as a whole. Tangible benefits through cost savings, service improvement, passenger time savings, and reductions in accident costs, alone, generate a high economic internal rate of return of 34%. While the Master Plan is highly economically feasible, its financing raises critical issues. Possible measures to alleviate financing constraints include increasing the allocation of public finance to coastal shipping by re-assessing transport investment priorities, seeking ODA support, setting user charges at adequate levels, and encouraging domestic and foreign investment through market-oriented policy reforms.

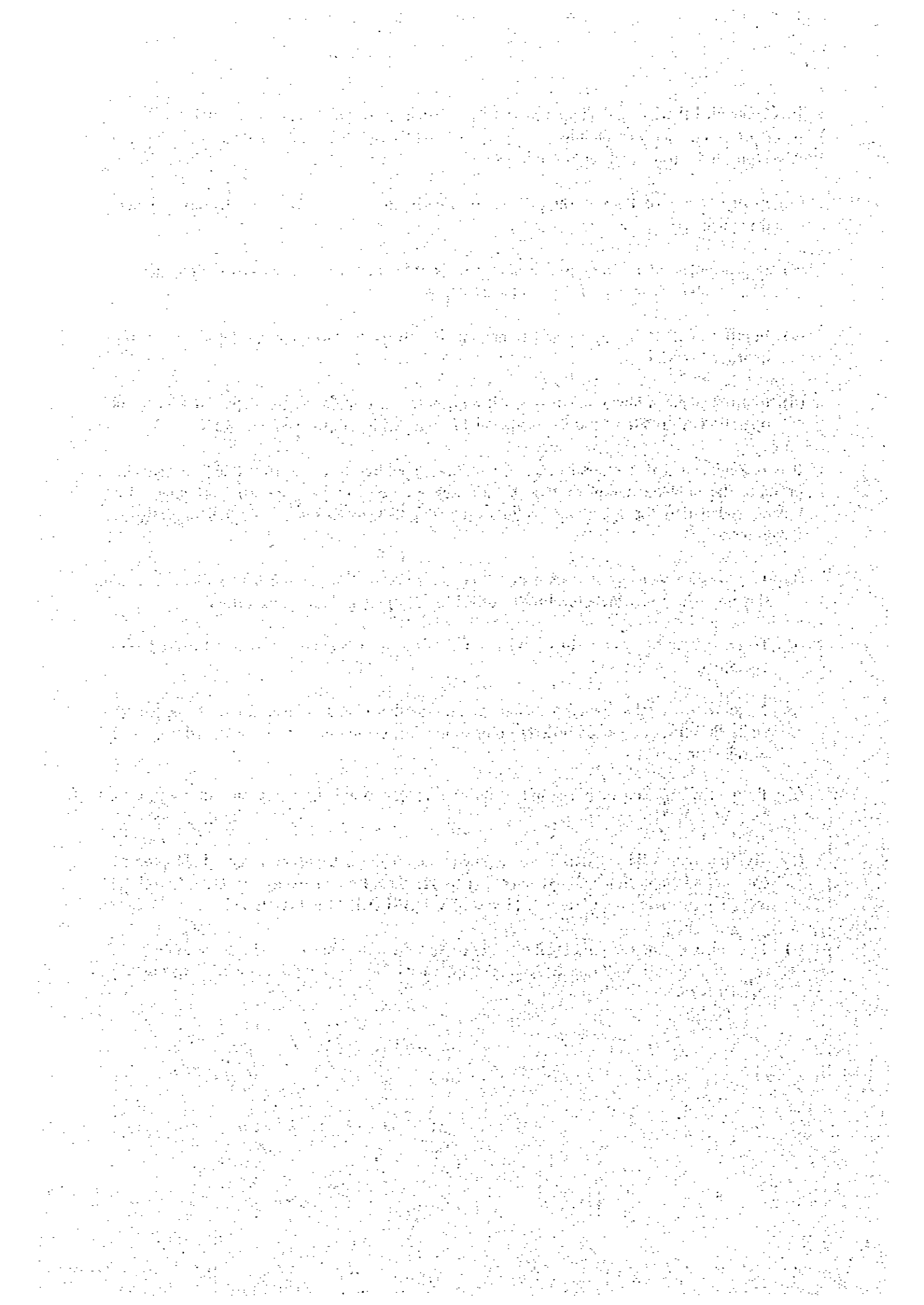
- Effective coastal shipping development is only possible if a number of interrelated individual projects are properly packaged and implemented in an integral manner. In order to implement the Master Plan effectively, three priority project packages have been identified for implementing in the short-term. These are:
  - (1) "Development of North-South Trunk Coastal Shipping Route" to establish a stable and regular coastal shipping operation along the most heavily-trafficked route. Once the trunk route is established, secondary routes will be developed more effectively and easily. This project package is composed of improvements to the following:
    - (a) Nine general coastal shipping ports (Haiphong, Hanoi, Cua Lo, Danang, Qui Nhon, Nha Trang, Saigon, Dong Nai and Can Tho);
    - (b) Five sea-cum-riverways serving the selected coastal shipping ports (Cua Nam Trieu-Haiphong, Lach-Giang-Hanoi, Vung Ganh Rai-Saigon, Cat Lai-Dong Nai and Cua Ding An - Can Tho);
    - (c) The visual ATN and maritime safety fleet deployed around the above ports and routes, and their necessary workshops;
    - (d) The shipping fleet and related ship repair yards; and
    - (e) Other aspects related to shipping operation.
  - (2) "Program to Meet International Requirements" to operate and manage coastal shipping at a sustainable level.
  - (3) "Development of Maritime Human Resources" to upgrade the existing maritime personnel and to provide enough qualified staff, so as to offer the higher standards of coastal shipping operation and management needed on an increasing scale in the future.
- The estimated cost of the priority project packages is US\$ 514.0 million (refer to Table ES-2).

Table ES-2  
Estimated Cost of the Priority Project Packages

PRIORITY PROJECT PACKAGE	COST (US\$ million)
<b>PACKAGE A</b>	471.4 <sup>(1)</sup>
- General Coastal Shipping Ports and Sea-cum-riverways	171.0
- Safety Equipment	65.8
- Acquisition of Ships	225.9 <sup>(1)</sup>
- Ship Repair Yards	8.7
<b>PACKAGE B</b>	42.6
- Sea Communication System complying with GMDSS	36.8
- VIMARU Training Equipment	4.5
- Testing Laboratories in VIRES	1.3
<b>PACKAGE C</b>	
- On-the-job Training, Seminars and other Measures (not requiring additional expenditure apart from the VIMARU training equipment)	
<b>TOTAL</b>	<b>514.0</b>

NOTE: (1) If ships are reassigned from international routes and chartered, then ship acquisition cost could be only about US\$ 103.6 million, and total cost would be only US\$ 349.1 million.

- It is concluded that coastal shipping in Vietnam has a great development potential. However, there are a number of conditions to be met if the expected benefits of coastal shipping development are to be realized, as follows:
  - (a) Incorporation of coastal shipping more clearly into the overall transportation policy framework;
  - (b) Improvement of relevant infrastructure in coordination with international shipping and inland waterway transport development programs;
  - (c) Improvement of management of shipping operators to meet the need for varied and improved services;
  - (d) Improvement of the regulatory environment to encourage cost-effective services and operation of private operators on an equal footing with state-owned operators.
  
- It is recommended that several necessary actions, identified in the Master Plan, be taken to promote the implementation of the identified priority project packages. In particular, it is recommended that the following institutional and policy measures be adopted urgently by government:
  - (a) To provide a clear policy statement and introduce more transparent regulations for coastal shipping which provide a level playing field for competing shipping operators;
  - (b) To implement a program of equity and privatization of state and provincial-owned ship operators;
  - (c) To allow reasonable government intervention at the minimum level in port management while the introduction of orderly competition in port services such as stevedoring and warehousing;
  - (d) To improve pricing of ports and waterways to encourage efficiency and adequate cost recovery;
  - (e) To strengthen VINAMARINE as the key regulatory organization for coastal shipping by ensuring adequate finance and removing its remaining commercial functions, as well as resolving the overlapping responsibilities of VINAMARINE and IWB; and
  - (f) To implement the required legal changes to introduce the improved regulatory framework regarding import and registration of ships, inspection standards of ships, and quality standards for shipbuilding and repair.





**SUMMARY REPORT FOR  
MASTER PLAN STUDY ON COASTAL SHIPPING REHABILITATION AND  
DEVELOPMENT PROJECT IN VIETNAM**

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**SUMMARY**

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## GLOSSARY OF TERMS

ADB	Asian Development Bank
ARPA	Automated Rader Plotting Aid
ATN	Aids To Navigation
BOT	Building, Operation and Transfer
CCID	Cement Consulting, Investment & Development Corporation
CRS	Coastal Radio Station
DGPS	Differential Global Positioning System
DWT	Dead Weight Tonnage
EIA	Environmental Impact Assessment
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GMDSS	Global Maritime Distress and Safety System
GPC	Government Pricing Committee
GRT	Gross Registered Tonnage
GSO	General Statistics Office
HP	Horse Power
IEE	Initial Environmental Examination
IMO	International Maritime Organization
IWB	Inland Waterways Bureau
JICA	Japan International Cooperation Agency
JV	Joint Venture
LASH	Lighter Aboard Ship
MARPOL	International Convention for the Prevention of Pollution from Ships
MOSTE	Ministry of Science, Technology and Environment
MOT	Ministry of Transport
MPI	Ministry of Planning and Investment
MTTS	Maritime Technical and Training School
NTSR	National Transport Sector Review
OD	Origin - Destination
ODA	Official Development Assistance
OECD	Overseas Economic Cooperation Fund of Japan
OPRC	International Convention on Oil Pollution Preparedness, Response and Cooperation
OSRAP	Oil Spill Response Action Plan ASEAN
RCC	Rescue Coordination Center

RO-RO	Roll-On Roll-Off ship
SAR	Search And Rescue
SOLAS	Safety Of Life At Sea
STCW	Standards for Training, Certification & Watchkeeping
TEDI	Transport Engineering Design Incorporation
TESI	Transport Economic Scientific Institute
UNDP	United Nations Development Program
VIMARU	Vietnam Maritime University
VINALINES	Vietnam National Shipping Lines
VINAMARINE	Vietnam National Maritime Bureau
VINASHIN	Vietnam Shipping Industry Corporation
VIRES	Vietnam Register of Shipping
VISAL	Vietnam Salvage Corporation
VMS	Vietnam Maritime Safety Agency
VNR	Vietnam National Railways
VRA	Vietnam Road Administration Bureau
VISHIPEL	Vietnam Ship Communications and Electronic Company
VTS	Vessel Traffic Service

## SUMMARY

### 1. INTRODUCTION

#### Background and Objectives

- Transport plays a major role in the economic development of a country. Over the past few years, Vietnam has experienced rapid economic growth. However, transport infrastructure development has not been able to keep pace with such growth due to financial constraints and various technological, institutional and management reasons. This is particularly true in the case of coastal shipping which has shown little development, compared with other transport sectors, despite the country's significant coastal and waterway resources. Seeking to improve the effective utilization of this natural transport system, the Government of the Socialist Republic of Vietnam decided to request assistance from the Government of Japan to conduct a study into building an effective coastal shipping system.
- The Study objectives are more specifically, as follows:
  - (a) to formulate a Master Plan on coastal shipping development and its related subsectors up to the year 2010;
  - (b) to prepare a short-term implementation plan (up to the year 2000) consisting of priority projects; and
  - (c) to facilitate technology transfer to counterpart officials within the study scope and period through workshops and regular meetings.

#### Definition of Coastal Shipping

- Coastal shipping in Vietnam has not been clearly defined, institutionally or physically, on its territorial boundary. Overlapping functions or unclear demarcation between international shipping and inland waterway transport operation exist. In this Study, coastal shipping has been defined as a transport service with the following features:
  - traffic movement by classified seaborne vessels;
  - traffic movement on coastal seaways including designated sea-cum-riverways; and
  - domestic traffic movement between Vietnamese seaports.
- Accordingly, foreign trade movements within delta areas and that by inland waterway vessels are excluded from the Study.

## 2. PROFILE OF THE STUDY AREA

### Natural/Physical Condition

- Vietnam has a total land area of 331 thousand sq. km which stretches along a 3,260-km-long coastline and occupies about a million sq. km of sea territory, including more than 3,000 islands and islets. The country's physical characteristics are highly advantageous for coastal shipping development.
- The country's territorial waters, however, are affected by typhoons; 13 times a year on average, of which six to seven hit the country directly. These typhoons originate mostly in the Philippines between June and November. Regardless of the intensity of the typhoons, vessels incur at least one month additional anchorage time yearly. Flooding during the rainy season also affects secondary transport of coastal shipping.

### Socioeconomic Condition

- The recent socioeconomic development of Vietnam is significant. Population increased from 68 million in 1991 to 73 million in 1995 at an average growth rate of 2.2% a year. GDP has grown remarkably at an average rate of 8.8% a year; thus per capita GDP increased to US\$ 288 in 1994. This economic development is attributable to the expansion of industry, construction and services, foreign trade with neighboring countries and control of inflation (refer to Table 2.1).

Table 2.1  
Socioeconomic Indices of Vietnam

Item	1991	1995	Growth Rate: % a year
1) Population: million	67.8	72.9	1.8
2) GDP: billion VND <sup>1</sup>	31,206	43,797	8.8
3) GDP per capita: 000 VND <sup>1</sup>	462	601	6.8
4) Industry Structure: %			
• Agri/Forestry/Fishery	41.1	27.5	-
• Industry	21.0	23.0	-
• Construction	3.6	7.1	-
• Service	34.3	42.4	-
5) Foreign Trade: US \$ million			
• Export	2,087	5,220	25.8
• Import	2,338	7,510	33.9
6) Inflation Rate: %	67.6	12.5	-

Source: General Statistics Office

<sup>1</sup> at 1989 prices

- A policy change to remove cooperative control has been contributing to the upsurge in rice production since 1990, owing to which food production increased to 27.5 million tons in paddy equivalent in 1995. Import of cereals gradually lessened and finally Vietnam became the third largest rice exporter in the world. Coffee, tea, rubber, etc. are major agricultural products. The forestry industry ships out three million cubic meters of products annually, while the fishing industry remains weak. Although industrial production increased significantly at the national level, production has become increasingly concentrated in the south.
- Industry has been a driving force of national economic development. Main industries are food processing (34% of the total industrial output), fuel (16%), textile/clothing (9%), construction materials (8%), chemical products (8%), etc. Industrial developments are concentrated in the North and South Triangle Zones, while a third one in central Vietnam is being planned. Due to this locational policy, three provinces, namely: Vung Tau, Ho Chi Minh City (HCMC), and Hanoi, collectively shared 52% of the total industrial output in 1994 (23%, 23% and 6%, respectively).

#### **Overall Transportation System**

- The Ministry of Transport (MOT) presently supervises various transport-related agencies including, among others, the Vietnam Road Administration (VRA), Vietnam National Maritime Bureau (VINAMARINE), Inland Waterways Bureau (IWB), Vietnam National Railway (VNR), and Vietnam Register of Shipping (VIRES). In addition, research and academic institutes and state companies are also under MOT such as the Transport Economic Science Institute (TESI), Research Institute of Transport Science and Technology (RITST), and Vietnam Maritime University (VIMARU). Other transport-related agencies under the direct supervision of the Government Office are, among others, the Department of Civil Aviation and the Department of Post and Telecommunications. Vietnam National Shipping Lines (VINALINES) and Vietnam Shipbuilding Industry Corporation (VINASHIN) are under the direct supervision of the Government Office and, at the same time, under the technical supervision of MOT.
- The country's national transportation network is composed of road, rail, water and air. The road network with a total of 106 thousand km comprises national roads (11,350 km), provincial roads (14,500 km), and other district/urban/village/special roads of which less than 10% are considered to be in good condition. The railway network consists of six lines with a total of 2,637 km and 261 stations, most of which are of meter gauge and have a large number of old bridges in poor condition. There are only 16 airports, most of which have been converted from military use and play only a limited role except in interregional passenger transport. The waterway network is extensive with a total length of 11,400 km navigable waterways out of 41,900 km of 2,360 rivers which are served by 25 river ports. The main waterway systems are the Red River/Thai Binh River system in the north and the Mekong River/Dong Nai River system in the south.

- Coastal shipping is provided with advantageous geographic conditions and supported with 70 seaports of which Haiphong, Danang and Saigon are the three major ones. Many ports suffer from outdated port equipment and siltation.

### Traffic Characteristics

- Total traffic demand in Vietnam in 1995 was approximately 82.8 million tons or 21.7 billion ton-km, and 602 million passengers or 18.5 billion passenger-km, which has been growing sharply especially since 1985. In terms of tonnage, road carries 64% of the total, while sea/coastal shares 74% in terms of ton-km. Passenger traffic is dominated by road (refer to Table 2.2).

Table 2.2  
Traffic Volume by Mode of Transport

Item			1985		1990		1995		Growth Rate: %/Yr.	
			No.	(%)	No.	(%)	No.	(%)	1985-90	1990-95
C a r g o	Rail	000 tons	4,050	(7.5)	2,341	(4.3)	4,350	(5.3)	(10.4)	13.2
		mil ton-km	870	(6.9)	847	(6.8)	1,501	(6.9)	(0.5)	12.1
		Ave. km	215	-	362	-	345	-	11.0	(1.0)
	Road	000 tons	31,275	(58.3)	31,765	(59.0)	53,052	(64.0)	0.3	10.8
		mil ton-km	1,595	(12.6)	1,620	(12.9)	2,228	(10.3)	0.3	6.6
		Ave. km	51	-	51	-	42	-	-	(3.8)
	Inland Water	000 tons	15,725	(29.3)	16,295	(30.2)	19,300	(23.3)	0.7	3.4
		mil ton-km	2,186	(17.2)	1,744	(13.9)	2,007	(9.2)	(4.4)	2.8
	Sea/ Coastal	Ave. km	139	-	107	-	104	-	(5.1)	(0.6)
		000 tons	2,621	(4.9)	3,484	(6.5)	6,140	(7.4)	5.9	12.0
	Total	mil ton-km	8,041	(63.3)	8,313	(66.4)	16,001	(73.6)	0.7	14.0
		Ave. km	3,068	-	2,386	-	2,606	-	(4.9)	1.8
P a s s e n g e r	Total	000 tons	53,671	(100)	53,885	(100)	82,842	(100)	0.1	9.0
		mil ton-km	12,692	(100)	12,525	(100)	21,737	(100)	(0.3)	11.7
		Ave. km	236	-	232	-	262	-	(0.3)	2.5
P a s s e n g e r	Total	000 pass	397	-	327	-	602	-	(3.8)	13.0
		mil pass-km	13,487	-	11,830	-	18,450	-	(2.6)	9.3
		Ave. km	34	-	36	-	31	-	1.1	(2.9)

Source: General Statistics Office

- The traffic characteristics vary by region. Overall traffic increase between 1985 and 1994 was significant in the north and south economic growth areas. Land transport, especially roads, plays the most important role in cargo transport except in the Mekong River Delta where inland water is the major mode. Interregional goods movement is limited. It is estimated that only about 1.5 million tons moved between the north and south in 1993.
- Road transport has been growing sharply as roads develop, and fares and entry control have been reduced. On the other hand, railway transport run by Vietnam



National Railways, a state-owned enterprise, still faces great difficulties in improving facilities and operation, although the situation is improving

- River transport services are provided primarily by public sector operators with relatively modern and large vessels carrying mainly coal and construction materials in the north, and by small-scale private operators with old ships carrying varied commodities in the south. In spite of that, dredging is inadequate for efficient vessel operation--capacity has been reduced to 0.5 million tons in 1993 from 5 million tons in 1980. More than 500 hazardous obstacles, such as shipwrecks, are other constraints. Accordingly, speed is usually limited to only 5 to 8 km/hour.

### **Development Policy and Directions**

- A basic socioeconomic development direction of the country is to accelerate industrialization and modernization. The recently published documents such as "Orientations and Tasks of 1996-2000 Five year Plan for Socioeconomic Development" (Report to the 8th National Congress of Communist Party of Vietnam, June 1996), and the "Socioeconomic Development and Investment Requirements for Five Years 1996-2000" (Government Report to Consultative Group Meeting, December 1995) depict the future socioeconomic development directions. A number of key aspects related to the Study are briefly as follows:
  - (a) Economy will grow at 9 - 10% annually.
  - (b) A total of US\$ 41 to 42 billion will be needed for investment in the coming five years, of which half will be mobilized from foreign sources.
  - (c) For effective use of investment, relevant institutions and policies will be reviewed and revised accordingly.
- Development policy on transportation is depicted in the "Master Plan for Development of Transport Infrastructure to the Year 2010" (MOT, 1995) including the following:
  - (a) Development of the trans-Vietnam route system to connect effectively all parts of the country via road, rail, sea and air,
  - (b) Transportation infrastructure developments in Northern, Central and Southern Economic Regions;
  - (c) Transportation infrastructure development in the rest of the country,
  - (d) Development of trans-Asia routes.
- To achieve the plan, it is estimated by MOT that a total investment of US\$ 28 billion is required between 1996 and 2010, while the World Bank indicates US\$ 17 billion would be an adequate level of public and private investment in transport sector over the same period.<sup>17</sup>

<sup>17</sup> This has been estimated assuming that 3% of GDP will be allocated to transport infrastructure, including 2.4% for improvement and construction, and 0.6% for routine maintenance.

### 3. WATER TRANSPORT SECTOR IN VIETNAM

#### Institutional and Regulatory Framework

- The Vietnam Maritime Bureau (VINAMARINE), which is responsible for all aspects of sea and coastal transport, was one of the prominent conglomerates in the field of maritime industry and had a total of 30,000 staff and a large number of subsidiary companies. However, almost all of its commercial functions have been transferred to VINALINES (ship and port management) and VINASHIN (shipyard management) which are general state-owned corporations managing substantial state-owned assets left over from past central planning policies. This reorganization allows VINAMARINE mainly to concentrate on its important regulatory function. Under the direct control of VINAMARINE are the head office, three branch offices, 17 port authorities and other agencies including the Vietnam Maritime Safety Agency (VMS). VINAMARINE is currently not well-equipped to perform its role for various reasons, and it is particularly weak in investment planning, legal and safety inspection
- The Inland Waterways Bureau (IWB), established on 30th January 1993, is responsible for inland waterway transport. IWB is mandated, firstly, to supervise water-borne transportation on rivers, lakes, river port waters and some sea routes between rivers and, secondly, to manage inland waterways, river ports and state-owned river vessel operators. VINAMARINE used to manage part of the rivers but IWB is now responsible for all the rivers after the issuance of CP-08 of 30 January 1993. Since VMS, which is under the control of VINAMARINE, still manages the entry channels of rivers, the physical demarcation between IWB and VINAMARINE is somewhat confused. There are more than 200 river ports, of which approximately 50 ports have wharves and piers. IWB directly manages only five ports, while provincial committees manage most of the others.
- Other agencies include the Vietnam Register of Shipping (VIRES), which is responsible as a ship registration body for technical supervision, classification, tonnage measurement, and issuance of ship certificate in compliance with international conventions. VMS is responsible for aid to navigation services, search and rescue, vessel safety, protection of maritime environment and hydrography. Vietnam Ship Communications and Electric Company (VISHIPEL) under VINAMARINE is in charge of operation and maintenance of the sea communication system.
- The legal basis for regulating maritime shipping activities, including coastal shipping, is defined in the Maritime Code, covering ship registration and inspection, international conventions, and regulation of tariffs.
- A number of deficient areas in organization and regulatory function are as follows:

- (a) Incomplete development of VINAMARINE from a shipping management body into a regulatory agency, in terms of manpower, technical and financial resources.
- (b) Retention by VINAMARINE of important commercial activities, such as port management, which makes it difficult for the organization to act as an independent regulatory body.
- (c) Lack of clear division of responsibilities between VINAMARINE and IWB, making it difficult to establish uniform regulatory standards and enforcement systems along riverways and to finance adequately navigational aids and maintenance of sea-cum-riverways.
- (d) Insufficient manpower, technical and financial resources of VMS.
- (e) Absence of many implementing regulations in maritime transport such as access by Vietnamese shipping operators to foreign routes and incorporation of international agreements.
- (f) Inconsistencies of certain rules with market principles, such as tariff limits on food stuff, restrictions on import of old vessels, charges for the use of infrastructure which discriminate between operators and service, over-restrictive rules concerning foreign investment. etc.

#### **Shipping Operation and Operating Bodies**

- There are 674 ships registered (1994-95) under the Vietnamese flag by VIRES and other associations, of which 463 are general cargo, refrigerated or oil tanker vessels mainly used for commercial transport and the rest as tugs, unpropelled barges, fishing and service vessels not normally used for transport. These merchant vessels are owned by 175 organizations, most of which are primarily engaged in the merchant shipping business as owner-operators (refer to Table 3.1).
- Most of the shipping capacity is state-owned. Although the state operators mainly provide ocean-going services, they dominate coastal shipping (carrying about 70% of this traffic). Other operators which specialize in coastal shipping carry only a small proportion of the traffic. Foreign ships carry 10% of all coastal shipping traffic because of a lack of suitable ships.
- Major shipping companies in Vietnam are state-owned, joint-venture or provincial government-owned operators, including VOSCO (20 vessels with 209 thousand DWT), VITRANSCHART (9 and 87 thousand), VINASHIP (5 and 31 thousand), SAIGON SHIPPING (6 and 13 thousand) and DAMATCOSCO (5 and 6 thousand). The first three are part of VINALINES. They specialize to some extent, as follows: VOSCO in international liner service, VINASHIP in domestic service, VITRANSCHART in bulk shipping or tramper, FALCON in crude oil etc.

**Table 3.1**  
**Characteristics of Shipping Fleet by Type of Ownership**

Service Type	Type of Owner	No. of Owners	No. of Ships by DWT Class							DWT		
			<200	200-499	500-999	1000-1999	2000-4999	5000-9999	>10000	Total	Total	Average
Mainly Ocean-going or Foreign Sea-going	State	67	26	64	19	44	12	11	16	192	445,295	2,319
	Joint Venture	12	2	3	2	1	7	3	4	22	278,216	12,646
	Foreign	2			1	1				2	4,792	2,396
	Sub-total	81	28	67	21	46	20	14	20	216	728,303	3,372
Mainly Coastal Shipping	Local Gov't.	60	29	83	11	26	11	3	1	164	141,678	864
	Cooperative	6	5	13	0	0	0	0	0	18	3,480	193
	Private	28	9	46	7	1	1	1	0	65	29,582	455
	Sub-total	94	43	142	18	27	12	4	1	247	174,740	707
Total	175	71	209	39	73	32	18	21	463	903,043	1,950	

Source: Ships Register 1994-1995

- Provincial companies operate both domestic and international routes but are finding it increasingly difficult to compete in coastal shipping. Private operators mostly developed from the former cooperatives and operate mostly on a small-scale. They are becoming increasingly active in acquiring new vessels.
- Many ship operators engage in other services such as ship agency, bunkering, chandlery, watering, etc. (often for foreign shipping companies). These provide important additional revenue sources which contribute to profits.

#### Coastal Shipping Service Characteristics

- In 1995 coastal shipping carried about 2.7 million tons of domestic cargo with average haulage of 691 miles. Traffic flow between the north and south is rather unbalanced. Cement, coal, steel etc. mainly comprise north to south goods movements, while agricultural products (mainly rice) dominate the opposite direction. In passenger movement, coastal shipping is rather insignificant.
- Present coastal shipping often provides poor level of service due largely to the reluctance of many state and provincial government operators, who have more profitable alternative forms of businesses, to upgrade their services. Customer services are particularly poor for those who would like to ship general cargo. These services currently involve long advance booking and unpredictable transport times. No liner service is available. Only unscheduled tramper services are provided, and specialized vessels are hardly ever used. A wide range of vessel size, between 500 and 5,000 DWT, is used for the main route between Haiphong and HCMC, while mainly 500-ton vessels are used for short routes.
- Profitability of coastal shipping operation has not been fully assessed due to lack of reliable data and the reluctance of operators to disclose financial statements. However, most of the operators state that coastal shipping is less profitable than

international shipping. Provincial government operators, like state operators, also find the coastal shipping business unattractive. On the other hand, private operators tend to find coastal shipping profitable, which can be confirmed from the fact that private investment in new ships has been increasing.

### **Identified Problems and Issues**

- On the basis of the analysis made on coastal shipping performance, the following problems have been identified:
  - (a) Rapidly changing economic and business environment, including difficulties in estimating future traffic demand, unclear government policy regarding foreign investment and the role of the state sector, frequent introduction of new legislation, etc.;
  - (b) Lack of a "level playing field" competition principle due to discriminatory port charges, a lack of transparent regulations, and a monopolistic industry structure dominated by VINALINES;
  - (c) Inadequate management of shipping and port operators who lack knowledge of modern practice, especially in marketing, and suffer from surplus staff;
  - (d) Lack of access to adequate finance, especially for the private sector;
  - (e) Lack of marketing agents and marketing know-how;
  - (f) Poor state of fleet and cargo handling equipment; and
  - (g) Poor condition of port and waterway facilities.

### **Shipbuilding and Ship Repair**

- In 1996 a total of 591 ships with 632 thousand GT were registered with VIRES, of which 418 or 71% had a gross tonnage of 500 and below. However, 57% of the GT is composed of ships larger than 3,000 GT. The most popular type of ship is the general cargo ship which is generally small in size (500 GT and below). Although 60% of general cargo ships are less than 10 years, a large proportion, 26%, are older than 16 years. Most seriously, about 70% of the tankers are older than 10 years including 42% which are older than 20 years.
- A total of 142 ships have been newly built between 1990 and 1995 including 134 general cargo ships, 5 tankers and 3 passenger ships. Most of these ships, including tankers and passenger ships, are smaller than 500 GT.
- A total of 59 shipyards are in operation most of which are located in HCMC and Haiphong as well as other places such as Danang, Nghe Tinh, Quang Ninh, Nha Trang, Hanoi, Thai Binh, Nam Ha, Vinh Phu, Can Tho, and Kien Giang. Major

ones include Bach Dang shipyard (new building capacity of 6,000 DWT and repairing capacity of 8,000 DWT) and Ha Long shipyard (5,000 DWT and 3,500 DWT, respectively), which are both located in the north. The rest generally have new building capacities of less than 1,000 DWT. There are no immediate shipbuilding problems under the current inactive shipbuilding market condition, although technical backwardness is found in methods of production and quality control. Some specific problems identified include the laxity of ship inspection by VIREC during construction, adverse effect of importation of different machinery, equipment and materials on quality control, absence of adequate costing method in shipbuilding, and short guarantee period (6 months) after ship construction

- The Research and Design Institute of Transport Industry (RDITI), which has recently been transferred to VINASHIN, undertakes ship designing based on more than 100 readily available ship designs. Naval architecture courses are provided by VIMARU but education facilities including textbooks, at this and other institutions, are unsatisfactory.

### Ports

- A variety of ports, in terms of ownership, operation, management, and size, exist in the country. Approximately 100 important ports have been identified for study. Ownership of the ports can be classified five-fold: MOT, local government, VINALINES, state-owned enterprises of other ministries, and enterprises owned by provinces/municipalities. Under MOT, VINAMARINE manages eight ports, while IWB manages five ports. Local government manages about 25 ports. The management of the two largest ports of Haiphong and Saigon has been transferred to VINALINES. State-owned enterprises of different ministries, such as the Ministry of Industry, Ministry of Trade, Ministry of Agriculture and Rural Development, and Ministry of Construction, also own and manage specialized ports. Port management usually is responsible for commercial services, such as stevedoring, warehousing, cargo handling, etc. Port authorities and VMS under VINAMARINE are responsible for management of vessel entry/exit, port access channels, collection of navigational charges, etc.
- Most of the port income arises from port charges, while the rest comes from operation of joint venture companies, other related services, etc. The ports are obliged to pay income tax, profit tax, and nominal capital charges for facilities/equipment provided in the past by the State. New capital investments are financed with port profits, subsidies or loans from the State budget, and loans from commercial banks and enterprises. The 1994/1995 financial statements indicate that VINAMARINE ports are becoming increasingly profitable.
- Equipment in all ports is usually 15 to 20 years old, sometimes even older. Their obsolete design has resulted in very inefficient cargo handling. A number of factors identified in the Study which compounds this problem include the following:
  - equipment breaks down frequently and repairs take a long time;

- there is a lack of proper maintenance, partly due to lack of know-how;
- there is a lack of basic equipment, such as forklifts;
- the lack of port equipment requires ships to have their own gear; and
- various minor spare parts necessary for cargo handling work are in short supply.

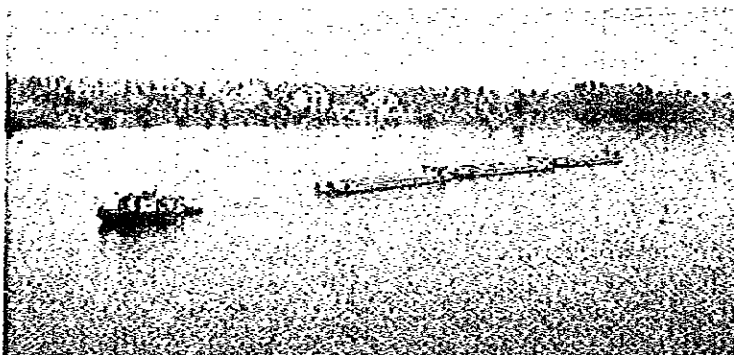
In spite of the above critical situation, provision of new equipment has been observed only at large ports.

### **Port Traffic Management**

- Accessibility to many ports in Vietnam poses a problem owing to constant siltation, shallow rivers, typhoons, lack of navigational aids, etc. Therefore, ships are usually forced to practice offshore transshipment, access only during high waters, and daytime navigation, etc. In the case of Danang, ships are forced to suspend operation about 45 days on average, between October and January, due to rough seas caused by monsoon. Other ports are also vulnerable to hazardous waters.
- Intra-port movement of cargo is essential to maximize port efficiency, and is composed of three typical patterns:
  - (i) Unloading/loading cargo between a ship, berthing at a quay, and trucks.
  - (ii) Transshipping cargo between a ship, berthing at a quay, and small ships or barges used for collection or delivery.
  - (iii) Transshipping cargo between a ship, at an anchorage area, and small vessels or barges used for transportation to or from a quay or consignees' premises.

### **Inland Waterways**

- The inland waterway network is extensive. A total of 11,400 km has sufficient depth for navigation and this covers most of the populated areas and industrial zones in the country. The navigational waterways under central government management extend to 6,787 km. These waterways are categorized into six classes according to depth and width for natural rivers and canals. Design standards are defined for radius, span and clearance of bridges.



A Group of Barges in the North

- Traffic demand for inland waterways has been growing rapidly both in cargo and passengers. Cargo traffic increased between 1990 and 1995 from 15.7 to 25.8 million tons while passenger traffic increased from 43.6 million to 144.3 million passengers during the same period.
- Inland waterway fleet capacity is estimated at one million tons and fleet characteristics vary by area. In the Red River Delta, 60% of the capacity is owned by the central government and is mostly steel-made ships. On the other hand, in the Mekong Delta, about 60% is owned by the private sector or cooperatives and is mostly small, wooden vessels.
- In the Red River Delta, waterways are barely navigable for ships larger than 1,000 DWT, although traffic demand is significant along several routes. Seasonal changes in water level are significant: six to seven meters in general and ten to 15 meters around Hanoi and upstream. Dredging work is insufficient, sharp curves exist in many sections, and navigation aids are poorly installed. Therefore, nighttime navigation is dangerous and difficult. On the other hand, in the Mekong River Delta, the main rivers have sufficient water depth, and seasonal change in water level is only about five meters. Waterways in the south have not been provided with the necessary equipment for nighttime navigation. Poor navigational aids in the inland waterways hamper safe and efficient operation.
- River transport services in the north are provided mainly by the Union of Water Transport Enterprise I. In the south, provincial and private operators predominate.
- For effective planning and development of waterways, hydrographic surveys are badly needed to prepare updated navigational charts and estimate dredging requirements. Approximately one million and 1.8 million cubic meters are dredged annually in the north and south, respectively. However, the dredging fleet is old and needs replacement. More finance is needed for dredging work.

### **Maritime Safety**

- A total of 174 accidents have been recorded during the six-year period between 1987 and 1992, involving ships over 100 tons. Of the total, 25% were due to collision, 17% engine trouble, 9% capsizing, etc., and 17% involved loss of lives and injuries. Operational errors and technical deficiencies are the main causes of accidents. The number of recorded accidents has been increasing year by year, especially between 1993 and 1995. Statistics on maritime accidents in Vietnam are not adequately prepared: most accidents are unrecorded and there is normally a lack of detailed information. Accident database management needs to be improved for safety improvement.
- Considering that many accidents occur in stormy weather and within 12 miles of the coast, consideration should be given to the establishment of improved vessel



traffic systems and regulations, weather forecasting services and effective communication systems, especially in heavily-trafficked areas.

- The Search and Rescue (SAR) system in Vietnam has yet to be established. There is no organization that is primarily responsible for SAR. Although VMS is in charge, not only for the conventional Aids to Navigation (ATN) services but also for new duties such as SAR, maritime environmental protection, maritime traffic safety, hydrographic services, etc., its staff and facilities are inadequate to undertake these duties. Since many accidents are taking place, it is urgently required to establish an effective SAR organization.
- Maritime safety communications are carried out via coastal stations, of which five are internationally registered ones located in Haiphong, HCMC, Danang, Nha Trang, and Vung Tau. They are operated and maintained by VISHIPEL to serve the need for SAR, medical assistance, weather forecasting, commercial and other services.
- The traditional distress and safety communications system using Morse code telegraphy has some problems, such as difficulty with long distance communication, difficulty to cope with sudden accidents, need for special skills in handling Morse code and more chance of human error. In order to solve these problems and improve the communication systems drastically, the GMDSS (Global Maritime Distress and Safety System) has been introduced under the SOLAS Convention and recognized as the standard international system.
- VMS has divided the country's territorial waters into five regions for management of ATN facilities. Fifty-five lighthouses, 89 light beacons, 308 lighted buoys, and five RACON units have been installed in the country. Most of the lighthouses are old and difficult to operate because they had been constructed with different specifications. ATN support facilities such as supply vessels are not sufficiently available.
- Ship inspection is undertaken during the construction process by VIRES with regard to quality of on-board equipment and operational safety of the ship. However, VIRES has presently no testing laboratory and, therefore, is unable to carry out mechanical and non-destructive examinations on its own. Outside institution and shipyard facilities are used but these are also not properly equipped. VIRES is planning to establish a modern testing laboratory with the cooperation of VIMARU. Most of the shipowners and seamen do not have enough knowledge about the ISM-CODE (SOLAS 74 Chp IX) which will take effect shortly and requires that all ship management companies shall prepare and enforce individual safety management systems for safe operation and pollution prevention.

## **Marine Environment**

- Environmental administration in Vietnam is done at three levels: National Assembly, Ministry of Science, Technology & Environment (MOSTE), and Provincial People's Committees. The National Environmental Agency (NEA) is in overall charge of environmental administration under MOSTE, while VINAMARINE, VIRES, and VIMARU have related responsibilities under MOT. This institutional arrangement does not function well. Contributing factors to maritime environmental degradation include: (i) water pollution due to noxious and harmful substances and garbage from ships, (ii) pollution of water, air and land due to industrial waste, untreated sewage, pesticides, chemicals and fertilizers, (iii) unsustainable and inefficient use of natural resources, especially water, biological and mineral resources, (iv) pollution due to oil spills from vessels and oil terminals, and (v) coral destruction through the use of dynamite as well as from mining.
- In order to maintain the cleanliness of coastal waters, it is important to control pollution from vessels and sources along the shore. For this, the monitoring and auditing system needs to be strengthened, seafarers education needs to be upgraded, and a national oil spill protection system (including an effective response system) be established.

## **Maritime Human Resources**

- There are a number of institutes related to maritime human resources development. VIMARU is the highest maritime educational institution whose graduates are now actively playing important roles in the maritime industry of the country. Maritime Technical Training School No. 1, the Haiphong and HCMC Maritime Technical and Training Schools supply coastal officers of Class 3 and Class 4, and ratings of all shipping sectors. The Riverway Technical School No. 1, Haiphong, specializes in training and upgrading of officers of all types of river and sea-cum-river vessels. The Inland Navigation Training Center No. 2, HCMC, undertakes training and re-training of sailors, captains, engineers, mechanics, and other workers in inland waterway in the southern provinces. The Technical Workers Waterway School, Haiphong, undertakes training of technical workers in maintenance of inland waterways and dredging work.
- The current condition of the above educational institutions is not satisfactory for internal and external reasons. Educational equipment is so poor that the required level of STCW 78 and revised STCW Convention of 1995 cannot be met. This makes it difficult to train seafarers with STCW certificates and seafarers able to work on modern ships. Improvement of curricula and training courses, and installation of modern training equipment are necessary to improve the situation.
- Lack of reliable data in VINAMARINE on seafarers makes it difficult to formulate adequate improvement measures for seafarers education. Constantly updated information is required on active seafarers, reserved seafarers, maritime schools, and numbers of certificates and licenses issued.

#### 4. ASSESSMENT OF CURRENT ROLE OF COASTAL SHIPPING

##### Policy Issues in Coastal Shipping

- The 1995 transport policy outlined by the Minister of Transport in "Transport Development till Year 2000 to meet the Changing Economy towards Industrialization and Modernization" emphasizes the following themes:
  - the long-term development of the country depends critically on an efficient transport system--one in which capital, labor, equipment and materials are used in the most economically productive way;
  - development of transport infrastructure is a key to overall economic development;
  - Vietnam's geographical location offers favorable conditions for offering international transport services such as transit and transshipment; and
  - low investment in the transport system in the past has been an impediment to economic development.

To tackle these themes, emphasis should be made on the following: 1) active involvement of the private sector, 2) an economically justifiable infrastructure development, 3) regulatory framework to encourage investment, 4) cost recovery from user charges, 5) healthy modal competition, 6) maintaining the roles of certain state-owned transport enterprises in shipping and other sub-sectors under a disciplined environment, 7) deployment of investment resources from foreign sources for transport infrastructure and certain operational assets such as ships, and 8) human resource development through training and re-training to keep pace with technological development.

- Government policy towards coastal shipping is not yet clear, not only because the overall transport policy has not yet been finalized but also because there is no clear distinction among the three forms of water-based transport, including international shipping, by either coastal services to/from neighboring countries or by ocean-going routes, domestic coastal shipping and inland waterways. All these three types of transport may use the same ports and coastal or inland waterways and the same vessel may perform more than one of these forms of transport either in succession or even simultaneously.
- However, to meet the government's goal for coastal shipping, it is anticipated that institutional measures would have to be considered which would:
  - make a clear distinction between government's regulatory role and its transport operations role;
  - separate more clearly the roles and activities of state and provincial governments in planning and managing infrastructure;

- take steps such as guaranteeing foreign loans to set up suitable operating or administrative organizations where public sector organizations could perform more effectively than private ones;
  - develop any necessary laws to enable infrastructure users to be charged for the services provided, and to define quality control standards for maritime transport works.
- In order to accelerate coastal shipping development, a number of interactive issues which need to be addressed, have been identified as follows:
    - (a) To establish a "level playing field" for the maritime transport industry: A clear and stable policy and regulatory framework should be worked out to provide existing and potential investors/operators with equitable rules for entry and operation without benefiting specific groups or bodies.
    - (b) To encourage foreign participation and investment: Abrupt changes caused by drastic economic reforms have created serious difficulties for existing management to adapt to market conditions. One of the quickest and most effective ways to overcome the situation is to make use of the experience and abilities of foreign shipping companies or investors in terms of mobilizing capital, technology, marketing expertise, and meeting human resource development needs.
    - (c) To reform State enterprises: A clear plan has yet to be worked out to reorganize or privatize the large number of government-owned shipping operators and shipping- industry-related organizations, which still dominate. The lack of such a plan creates uncertainty which adversely affects the private sector and discourages investment.
    - (d) To strengthen regulatory institutions: Transforming VINAMARINE from a shipping management body to a regulatory agency is still far from complete. It lacks human, technical as well as financial resources to perform the expected role effectively. A similar situation is faced by VMS and other regulatory agencies.
    - (e) To increase coordination between VINAMARINE and IWB on administration of sea-cum-river transport services: Sea-cum-river transport service is an important element of the overall coastal shipping system wherein clear division of responsibilities in planning, and development and maintenance of riverways, enforcement of rules and regulations, etc. has yet to be worked out.
    - (f) To delineate clearly the responsibilities in port operation: Up to now in Vietnam, port administration and port operation have not been clearly separated. It is therefore necessary to identify desirable responsible bodies in port operation. Options include creation of a new port agency under the central government, shipowners and operators such as VINALINES for the sake of port users, provincial government from an area management

viewpoint or the privatization or lease of certain facilities to the private sector for facilitation of port efficiency. The main issue here is what is the most effective option to improve the port operation.

- (g) To develop the Vietnamese shipbuilding industry: The supply of an adequate coastal shipping fleet is important for efficient and safe operation. However, due consideration must be given to determine the most promising markets for Vietnamese shipyards to cover both new construction and repair, to determine the role of the public sector, if necessary, and to establish a policy and economic basis to encourage investment in shipyards.

### **Cost Competitiveness of Coastal Shipping**

- The transportation cost of coastal shipping has been analyzed in relation to other competing modes. The analysis has been based on current tariffs for three typical routes; namely, Hanoi-Haiphong for short distance (100-140 km), Haiphong-Danang for medium distance (600-900 km), and Hanoi-Ho Chi Minh City (1,500-1,700 km). Feeder services at both ends of coastal shipping and railway services have been considered, while truck transport provides direct door-to-door services. The results are summarized as follows:
  - For high volume bulk cargo shipments and general cargo movements over long distance, especially when secondary transport is unnecessary or minimized, coastal shipping is highly advantageous
  - For transporting goods roughly over 600 km, coastal shipping offers substantial cost-savings. For the Haiphong-Danang route, the coastal shipping cost per ton is approximately half of the trucking cost and 70% of the rail cost, while for the Hanoi-HCMC route, the coastal shipping cost is only a quarter of trucking and half of railway costs.
- The current basis for taxation in coastal shipping is different from that for other inland modes and imposes lower profit and turnover taxes. Port charges for coastal shipping may also be cross-subsidized from international shipping. These factors make coastal shipping costs appear cheaper than they really are in economic terms. However, the distortion is probably even greater for road and railway. For roads, fuel and other vehicle taxes are set at low levels in Vietnam so that costs of infrastructure provision, traffic congestion, noise, air pollution and accidents are not fully paid by road freight users. These effects should ideally be taken into account when developing transport policy (particularly as regards setting user charges for infrastructure). In the near future, more competitive forms of coastal transport, such as Ro-Ro and container ships, may provide regular liner services on main routes, allowing this mode to play a much larger role in the transport of domestic cargo.

## Public Investment in the Water Transport Sector

- Public investment in coastal shipping is difficult to define in precise terms because this subsector is inextricably part of international shipping and inland water transport. It is therefore necessary to define public investment in coastal shipping in the context of the water transport sector as a whole. The water transport sector has been defined to include both inland waterway and the seaports sub-sectors.
- The public investment resources for the transport sector generally come from the central budget and it is the Ministry of Planning and Investment (MPI) that allocates the required funding of each government ministry or agency involved with the transportation sector. Other sources used by the Ministry of Transport include the state-owned Development Investment Bank, Official Development Assistance (ODA), a depreciation administered by MPI, and other sources. MOT used to distribute the capital or profits from port authorities to other transport modes, but this practice was suspended in 1993 (refer to Table 4.1).

Table 4.1  
Sources of Public Investment in the Transport Sector, 1991-1995  
(in billion VND)

Source	1991	1992	1993	1994	1995
1. State Budget	510	949	1,549	1,907	2,220
2. Credit Investment (MOT)	29	5	2	31	-
3. Depreciation Fund	26	35	-	20	30
4. Capital from Port Authority (MOT)	35	18	-	-	-
5. Other Sources	52	120	244	97	90
Total	652	1,127	1,795	2,055	2,340

Source: Ministry of Planning and Investment, 1996

- Most expenditure for repair and maintenance is controlled by the Ministry of Finance which makes allocations to a number of government ministries/agencies that are responsible for specific aspects of transport.
- MOT's share of total public investment in the transport sector has increased from 44.7% in 1991 to 63.3% in 1995, following a decrease during 1992 and 1993 to around 35%. The provinces' share has been declining which implies that investment in transport has been increasingly concentrated at the national level. This partly reflects government policy of financing large-scale infrastructure to support international trade.
- Public investment in the transport sector amounted to 2,340 billion VND (US\$ 213 million) in 1995. The water transport sector (ports and inland waterways) receives only about 15% of this amount (US\$ 32 million), implying low priority being given to the water transport sector. Over the years, the small

budget allowance for the water transport sector has resulted in inefficiency and very low productivity of this sector (in terms of cargo volumes transported). (Refer to Table 4.2).

Table 4.2  
Allocation of Public Investment to Transport Sub-sectors

Sub-sector	1991	1993	1995	1995/1991
	Bil. VND (%)	Bil. VND (%)	Bil. VND (%)	
Railway	66 ( 10.1)	139 ( 7.8)	190 ( 8.1)	3.4
Road	438 ( 67.0)	1,243 ( 69.6)	1,560 ( 66.7)	3.6
Inland Waterway	19 ( 2.9)	51 ( 2.8)	111 ( 4.7)	5.8
Seaports	89 ( 13.6)	159 ( 8.9)	242 ( 10.4)	2.7
Pipeline	2 ( 0.3)	-	-	-
Airway	40 ( 6.1)	194 ( 10.9)	235 ( 10.1)	5.9
<b>Total</b>	<b>654 (100.0)</b>	<b>1,786 (100.0)</b>	<b>2,338 (100.0)</b>	<b>3.6</b>

Source: MPI, 1996

- A summary of the investment requirements in the water transport sector has been estimated based on existing plans of MOT, which currently anticipates total transport investment from 1995 to 2010 (by public and private sources) to be US\$ 28.0 billion, including US\$ 3.0 billion in sea transport and US\$ 1.3 billion in inland water transport. Based on international experience, investment in water transport would be about US\$ 3.0 billion. According to MOT, the necessary investment funds in the transport sector could be mobilized between 1995 and 2010, as follows:
  - 22-25% from the state budget;
  - 50-60% from ODA funds, including any form of joint venture with foreign sources, such as BOT forms;
  - 15-17% from credit source and the self balancing fund from all transport-related services; and
  - 5-7% from the contribution of people in the form of labor, materials or money.
- Provided that 22-25% of the total investment is allocated through the state budget, the water transport sector would have to receive from the state budget US\$ 0.66 - 0.75 billion. If the State budget allocation continued to be US\$ 0.03 billion as found in 1995, then the total amount allocated between 1995 and 2010 would be only US\$ 0.45 billion, which is significantly below that required. However, provided the budget allocation increases at 10% per year in proportion to GDP, then the state budget would be able to make the required contribution. Provided the expected ODA and other funds are available, then the planned public investment program could be implemented.

## Coastal Shipping Experience of Other Countries

- In countries such as Japan, the Philippines, and Indonesia, coastal shipping plays an important role in national transport system. Even in Japan, with its highly developed railway and road network, about 44% of the total inland traffic (in ton-km) is transported by coastal shipping. The policy trend in the Philippines, Indonesia, and other countries is increasingly towards the promotion of investments in coastal shipping by deregulating entry to the industry as well as price setting in order to increase service level and safety standards while lowering costs. The experience of these countries is considered highly applicable to Vietnam.

## 5. DEMAND FORECAST FOR COASTAL SHIPPING

### Forecast Method

- Coastal shipping traffic demand has been forecast for cargo and passenger traffic in 2000 and 2010. Cargo type has been classified into six categories considering the consignment and package sizes, which affect ship type. They are agricultural products, construction materials/mining products, oil bulk cargo, cement and other cargoes. The traffic demand by commodity type has been estimated in the form of origin and destination (OD) matrices, based on subdividing the entire country into 20 zones.
- “Master Plan for Development of Transport Infrastructure to the Year 2010” prepared by MOT in 1995 provides a useful basis for the traffic demand forecasts. In this document, the future traffic demand is estimated based on assumed values of GDP elasticity; 1.1 - 1.2% for freight traffic by all modes, 1.2-1.5% for freight traffic by sea and coastal shipping, 1.3-1.4% for passenger traffic by all modes and 0.4 -0.6% for passenger traffic by waterway. Revisions were made to take into account the following two aspects (refer to Table 5.1):
  - (a) Impact of Dung Quat project: When the project starts operation, it will provide 5 million tons and 12 million tons of oil products by the year 2000 and 2010, respectively. This will alter the movement of crude oil and oil products within the country significantly, with coastal shipping meeting much of the expected domestic transportation demand.
  - (b) Actual coastal shipping traffic volume for the base year (1995): There has been no accurate data in the past on existing coastal shipping traffic volume. A port traffic survey conducted in this Study has revealed, for the first time, that the actual coastal shipping traffic volume is about 2.7 million tons.



Table 5 1  
Forecast of Overall Traffic Demand for 2000 and 2010

Mode	2000	2010
Freight: mil tons		
(1) all modes	122 - 140	388 - 576
(2) sea transport	50 - 60	167 - 258
- foreign	36 - 46	135 - 223
- domestic	14.2 - 14.4	32 - 35
Passenger: million		
(1) all modes	1,084 - 1,258	4,978 - 5,827
(2) sea transport	1.7	3.7

Source: JICA Study Team based on MOT data

Note: Except for domestic sea transport, all other figures are MOT projections.

- In forecasting coastal shipping traffic for 2000 and 2010, demand and supply of major commodities, as well as their movements in the country, were analyzed. With regard to the future commodity flow, the Study Team considered the results of NTSR's work and the existing coastal shipping traffic movement, and estimated traffic movements resulting from the implementation of strategic national industrial projects in accordance with the government's development plans. Features of the forecasts are summarized as follows:
  - (a) Mineral resources such as coal, limestone, iron ore, etc. are abundantly available in the north which will be transported across the country for industrial, power generation, and construction purposes.
  - (b) Mineral-resource-based factories, such as cement, iron, phosphate fertilizer, etc., will be constructed in the north, from which the products will be transported across the country. Vietnam will be self-sufficient in cement by 2000 which implies that the international movement will cease and domestic movement will increase.
  - (c) A refinery project being promoted for Dung Quat will be implemented.
  - (d) The north will continuously rely on the surplus agricultural products of the south.
  - (e) Diversified industrial products are expected to produce substantial traffic as the economy grows, and coastal shipping will carry part of the long distance traffic.

#### Existing Traffic Demand

- On the basis of extensive traffic surveys conducted by the Study Team at major ports, eight types of OD tables have been prepared including those of each commodity group, of total cargo, and of passenger traffic. Analysis has been made of domestic seaborne traffic, overseas traffic, and passenger traffic flow.

- Domestic seaborne traffic was further divided into three types, in terms of geographical location, movements within the Red River Delta and within the Mekong River Delta, and coastal movement. The total domestic seaborne traffic was estimated at 5.3 million tons, comprising 2.7 million tons or 51% of coastal movement, 1.3 million tons or 25% for each of the two delta areas, respectively (refer to Table 5.2).

Table 5.2  
Summary of Domestic Seaborne Traffic in 1995

Commodity Group	Coastal Shipping		Red River Delta		Mekong River Delta		Domestic Total	
	000 tons	(%)	000 tons	(%)	000 tons	(%)	000 tons	(%)
Agricultural Products	725	(26.5)	0	(0.0)	142	(11.1)	867	(16.6)
Construction Materials & Mining Products	398	(14.6)	798	(60.2)	676	(53.0)	1,873	(37.1)
Wet Cargo	360	(13.2)	18	(1.4)	150	(11.7)	529	(11.3)
Bulk Cargo	482	(17.6)	163	(12.3)	0	(0.0)	644	(12.1)
Cement	404	(14.8)	187	(14.1)	151	(11.8)	742	(10.2)
Other Cargoes	364	(13.3)	159	(12.0)	158	(12.4)	681	(12.7)
Total	2,733	(100)	1,325	(100)	1,277	(100)	5,336	(100)
	(51.2)	-	(24.9)	-	(23.9)	-	(100)	-

Source: JICA Study Team

- Overseas traffic through Vietnamese ports in 1995 was estimated based on foreign trade statistics and the results of port traffic surveys conducted by the Study Team. Total volume was about 33.7 million tons of which 18 million tons and 15.6 million tons were export and import, respectively (refer to Table 5.3).

Table 5.3  
Summary of Overseas Traffic Through Vietnamese Ports in 1995

Commodity Group	Export		Import		Total	
	000 tons	(%)	000 tons	(%)	000 tons	(%)
Agricultural Products	2,067	(11.5)	357	(2.3)	2,424	(10.5)
Construction Materials & Mining Products	4,241	(27.5)	1,461	(9.3)	5,703	(17.0)
Wet Cargo	8,260	(45.9)	4,896	(31.3)	13,156	(39.1)
Bulky Cargo	189	(1.1)	2,433	(15.6)	2,623	(7.8)
Cement	41	(0.2)	1,006	(6.4)	1,047	(3.1)
Other Cargoes	3,216	(17.9)	5,483	(35.1)	8,699	(25.9)
Total	18,016	(100)	15,639	(100)	33,655	(100)
	(53.5)	-	(46.5)	-	(100)	-

Source: JICA Study Team

- Inter-provincial passenger movement via coastal shipping is still insignificant, although there are 31 inhabited islands with population of between 50 and 26,000.

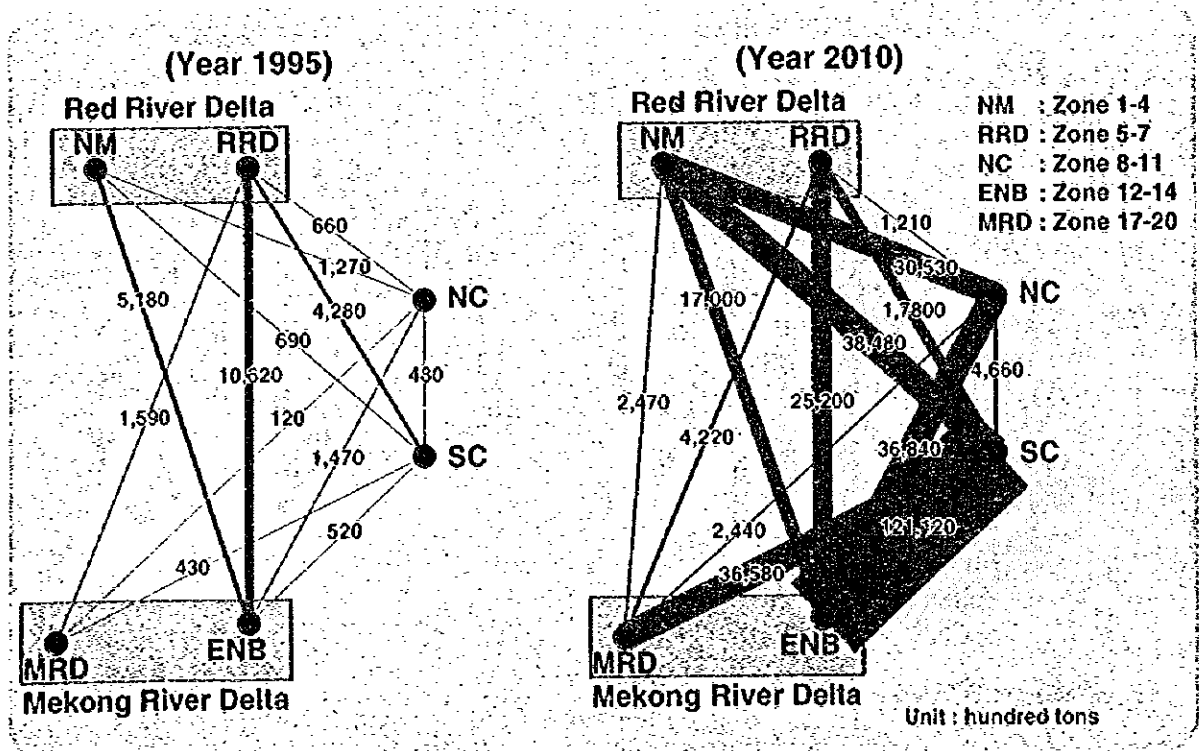
### **Future Traffic Demand**

- The total coastal shipping traffic volume is estimated at 14.4 million tons and 34.3 million tons by 2000 and 2010, respectively, wherein oil and oil products will have a significant contribution (refer to Table 5.4). The distribution pattern of coastal shipping will become much more complex due to the diversification of commodities and the planned development of various key industries (refer to Figure 5.1). The characteristics of future coastal shipping traffic are as follows:
  - Although much of the growth of the coastal shipping traffic is due to increased oil and cement haulage, other commodities will also increase about four times between 1995 and 2010.
  - Average trip length will reduce by 400 km to about 880 km in 2010. The current north-south movement will become diversified and a more balanced directional flow is expected in the future.
  - The largest movement between Haiphong and Saigon will double in the long term, but its share in the total traffic will decrease to about 6%.
- Foreign trade traffic volume through Vietnamese ports was estimated based on the analysis of production and consumption by region. The total export traffic will be 29 million tons and 90 million tons in 2000 and 2010, respectively. Import traffic will be 17 million tons and 63 million tons in the respective years. Key assumptions and prospects made in the analysis are as follows: The country will become self-sufficient in agricultural products and much will be exported. Mineral resources will be developed and become a major export item. Development of oil fields will be further intensified and Dung Quat Refinery will become operational. Wood chip production is expected to contribute to exports, while iron/steel as well as fertilizer will be major import items. Self-sufficiency in cement will be achieved by 2000. Import and export of various industrial products will rapidly increase (refer to Table 5.5).

**Table 5.4**  
**Future Coastal Shipping Traffic Demand by Commodity Group**

Commodity Group		1995	2000	2010
1. Agricultural Products	: 000 tons	725	670	880
	: mil. ton-mile	588	543	714
	: ave. mile	811	810	811
2. Construction Materials & Mining Products	: 000 tons	398	851	4,941
	: mil. ton-mile	278	497	1,804
	: ave. mile	698	584	365
3. Wet Cargo	: 000 tons	360	9,694	19,422
	: mil. ton-mile	293	3,684	7,611
	: ave. mile	812	380	392
4. Bulky Cargoes	: 000 tons	482	695	1,871
	: mil. ton-mile	326	454	1,014
	: ave. mile	676	653	542
5. Cement	: 000 tons	404	1,314	4,919
	: mil. ton-mile	204	952	3,631
	: ave. mile	505	725	738
6. Other Cargoes	: 000 tons	363	1,174	2,246
	: mil. ton-mile	251	784	1,474
	: ave. mile	691	668	656
Total	: 000 tons	2,734	14,398	34,279
	: mil. ton-mile	1,889	6,913	16,249
	: ave. mile	691	480	474

**Figure 5.1**  
**Traffic Demand Distribution of Future Coastal Shipping**



**Table 5.5**  
**Projected Foreign Trade Through Vietnamese Ports**

Commodity Group	Export: mil. tons		Import: mil. tons	
	2000	2010	2000	2010
1) Agricultural Products	3.6	4.9	0	0
2) Construction Materials/ Mining Products	1.5	14.0	0	0
3) Crude/Petroleum Oil	15.0	30.0	3.0	7.0
4) Bulky Cargo	5.6	11.0	2.0	7.3
5) Cement	0	0	0	0
6) Other Cargo	3.3	30.3	12.0	49.0
<b>Total</b>	<b>29.0</b>	<b>90.2</b>	<b>17.0</b>	<b>63.3</b>

Source: JICA Study Team, TESI

- Transit cargo to/from adjoining countries including Laos, Thailand, and Cambodia has been estimated based on available data. Approximately 2.2 million tons of transit cargo traffic will be generated by 2000, which will further grow to 6.6 million tons by 2010. Thailand will become the largest partner (refer to Table 5.6). The movement was further studied and assigned to Vietnamese ports. Danang and Cua Lo will be the main transit ports followed by Qui Nhon and Mui Ron (refer to Table 5.7).

**Table 5.6**  
**Estimated Transit Cargo Traffic To/From Laos, Thailand and Cambodia**

To/From	2000	2010
Laos : Export	360	1,025
	225	499
	585	1,524
Thailand	1,300	4,500
Cambodia	300	600

000 tons

Source: JICA Study Team, TESI

**Table 5.7**  
**Summary of Transit Cargo by Port**

Year	Cua Lo	Mui Ron (Vung Ang)	Danang	Qui Nhon	Total
2000	815	0	1,070	300	2,185
2010	1,650	312	2,562	600	5,124

000 tons

Source: JICA Study Team, TESI

## 6. FORMULATION OF MASTER PLAN

### Development Objectives and Direction

- While the existing coastal shipping system has been inadequately built and its services poorly provided, it has been found that there is a great demand and there are many development opportunities for coastal shipping when it is properly developed as part of the national transport system. This can contribute to the socioeconomic development of the country, particularly in the coastal areas.
- Since coastal shipping transport in Vietnam is, in some respects, still at the infancy stage, development directions should be carefully defined, in terms of the following objectives:
  - (a) Coastal shipping should be developed in accordance with demand. Since the current level of traffic demand is low and industry structure is weak, realistic ways of development should be found.
  - (b) Coastal shipping should be competitive in the market economy. Coastal shipping should no longer be subsidized in principle. It should find its own market by providing attractive alternative transport means compared to other modes.
  - (c) Coastal shipping should be developed in such a way as to strengthen its complementary function with international shipping and vice-versa. Although the current government policy in shipping transport is heavily directed towards strengthening international transport, the potential complementary role of coastal shipping should not be overlooked. Strengthening the interactive complementary role between international and domestic shipping would contribute greatly to rationalizing public investment in both areas, since they share infrastructure and facilities, and domestic shipping can function as an effective distributor.
  - (d) Coastal shipping must be safe and environmentally sustainable. Coastal shipping normally brings about less environmental impact compared to road transport. However, it has its own safety and environmental threats, such as pollution due to oil spills and high risks during typhoons and other hazardous weather conditions. Unless coastal shipping can overcome these issues, it will not become a competitive mode of transport.

### Key Elements Considered in Coastal Shipping Planning

- Planning coastal shipping is complex, especially in Vietnam where coastal shipping infrastructure and operation overlap with those of international shipping and inland water transport. A number of key areas considered in the planning include the following:
  - (a) Classification of Ports: On the basis of traffic demand analysis and geographic characteristics of the areas, a total of 17 general ports have

been identified which function as key coastal shipping ports (refer to Table 6.1). Dedicated ports, only handle selected commodities, to maximize the use of port capacity and industrial efficiency. They are usually controlled by the Ministry of Industry, Ministry of Trade or other ministerial organizations rather than by MOT (refer to Table 6.2).

Table 6.1  
Future Port System for Development of Coastal Shipping

Region	National Seaport	Major General Seaport for Coastal Shipping	Other General Seaport	Dedicated Seaport
NORTH	Cai Lan	Viet Tri		
		Cai Lan	Quang Ninh (Floating Trans-shipment)	B12, Hong Gai, Cua Ong, Dien Cong, Quang Ninh (Steel)
		Hanoi		
	Haiphong	Haiphong	Ha Bach	Hoang Thach, Pha Lai, Chinh Phong
		Ninh Binh	Nam Dinh, Diem Dien, Hai Thinh	
CENTRAL	Danang	Cua Lo	Ben Thuy, Xuan Hai, Thanh Hoa	Nghi Son
		Ha Tinh- Quang Binh	Nhat Le	
		Thuan An	Cua Viet	Hue Oil
		Danang	Lien Chieu	My Khe
		Quy Nhon	Sa Ky, Thi, Nai	Dung Quat
		Nha Trang	Ba Ngoi, Hon Khoi	Mui Chut
SOUTH	Saigon (Vung Tau- Thi Vai)	Saigon	Ben Nghe, Tan Cang, Tan Thuan	Nha Be (Oil) Nha Be (Vegetable)
		Dong Nai	Vung Tau (Cat Lo)	Thi Vai (Phu My, Go Dau) Thu Duc, Chinh Phong
		My Tho		
		Dong Thap	Vinh Long	
		My Thoi	Hon Chong	
		Can Tho	Nam Cau Ca Mau	Kien Luong

Table 6.2  
Major Dedicated Ports

Commodity	Port
Oil	B12 (moving to Hon Ac in Bai Chay Bay), My Khe (moving to the mouth of Phu Loc River), Nha Be, Hue (new construction) and Dung Quat (new Construction)
Coal	Hong Gai (moving to new area), Cam Pha, Dien Cong
Cement	Hoang Thach, Nghi Son (new construction), Chinh Phong (new construction), Kien Luong
Steel	Quang Ninh Steel Port (new construction)

- (b) Specification of Waterways System: Waterways to be utilized by coastal shipping have been specifically identified. Coastal shipping waterways are composed of coastal seaways, being the water area within 50 miles from the coastline as defined by VINAMARINE, and sea-cum-riverways specified by IWB. "Strategy and Plan for Development of Inland Waterways Transportation" envisages that the existing 710 km of sea-cum-riverways will be expanded to 850 km and 1,500 km by 2000 and 2010, respectively. However, in this Study only sea-cum-riverways which can accommodate self-propelled vessels with more than 1,000 GRT have been included. A total of 832 km comprising 370 km in the Red River Delta and 462 km in the Mekong River Delta have been identified and studied.
- (c) Provision of adequate type of vessels: At present, the types of coastal shipping vessels are rather limited to bulk and general cargo ships used for tramp services. However future demand is expected to grow, not only in quantity, but also in the range of services offered. To meet the demand effectively, the following need to be duly considered:
- introduction of specialized ships such as tankers and cement carriers;
  - introduction of container and semi-container ships in association with improved cargo handling;
  - introduction of efficiently navigable ships along sea-cum-riverways; and
  - introduction of Ro-Ro ships to promote intermodal connections with roads.
- (d) Further improvement of the policy and regulatory environment relative to coastal shipping:

Once basic infrastructure is provided, supply of coastal shipping services should satisfy demand without significant intervention by government. This is a consequence of the economic characteristics of the industry. There is no significant economy of scale in the industry; most of the assets are neither fixed nor specialized and entry costs are not prohibitively high. Therefore, under free market conditions, monopolies are unlikely to occur, and government regulation should be directed at ensuring free entry/exit to/from the market, while strictly implementing control on safety and environmental aspects. Review of pricing, conditions for competition from the "level playing field" viewpoint, reorganization and privatization of state-owned operators, safety and environmental control measures, etc. require due attention of the government. Strengthening of the institutional environment is also important, especially the key regulatory organizations, VINAMARINE, IWB, and VMS.

- (e) Human Resources Development: Because the introduction of modern vessels and operating concepts, appropriate to the new market situation, requires new skills, the need for training and the capacity of training institutions should be carefully considered. In particular, ways for Vietnamese managers to gain practical training in marketing and financial



matters are of importance to the maritime transport industry. Furthermore, staff of regulatory institutions need training in market regulation concepts (especially regarding safety standards).

### Master Plan on Coastal Shipping Development

- The Master Plan has been structured from seven components. By way of the coastal shipping network development program, the remaining components or subsectors have been integrated in such a way that projects or a combination of projects can be implemented effectively and in a coordinated manner (Figure 6.1).

Figure 6.1  
Overall Structure of the Master Plan

Coastal Shipping Network Development Program		<ul style="list-style-type: none"> <li>• Route Classification</li> <li>• Institutional Framework for Shipping Operation</li> </ul>
Coastal Shipping Fleet Expansion and Modernization Program	<ul style="list-style-type: none"> <li>• Fleet Procurement</li> <li>• Fleet Replacement and Procurement Support</li> <li>• Introduction of Standardized Cargo Vessel</li> <li>• Improvement of Shipyards for Building New Vessels including Standardized Vessel</li> <li>• Improvement of Shipyards for Repairing Coastal Shipping Vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Coastal Shipping Ports Development Plan</li> <li>• Management Improvement for Coastal Shipping Ports</li> <li>• Sea-Cum-Riverways Development Plan</li> <li>• Management Plan for Coastal Ways and Sea-Cum-Riverways</li> </ul>
Coastal Shipping Management Modernization Program	<ul style="list-style-type: none"> <li>• Improvement of Existing Operations and Management</li> <li>• Introduction of New Services</li> <li>• Development of Specialized Vessel Operations</li> <li>• Fostering of Small to Medium-scale Operations</li> </ul>	<ul style="list-style-type: none"> <li>• Improvement of Inland Waterway Transportation</li> <li>• Strengthening of Secondary Transport Serving Coastal Shipping Ports</li> <li>• Development of Ancillary Service Industries</li> </ul>
Maritime Human Resource Development Program	<ul style="list-style-type: none"> <li>• Supply of Seafarers</li> <li>• Improvement of VIMARU and MITS</li> <li>• Training of Seafarers for Tanker Operations</li> <li>• Training of Landsmen of Shipping Companies / Operators</li> <li>• Training of Marine Safety Personnel</li> <li>• Training of Port Related Personnel</li> <li>• Training of Shipbuilding Engineers</li> <li>• Training of Ship Inspectors</li> </ul>	<ul style="list-style-type: none"> <li>• Improvement of Ship Inspection of Vessels in Operation</li> <li>• Improvement of Ship Inspection of Vessel Construction</li> <li>• Development of Visual and Electronic ATN</li> <li>• ATN Supporting Equipment / Facility</li> <li>• SAR System Development Plan</li> <li>• Establishment of National Oil Spill Protection System</li> </ul>
		<ul style="list-style-type: none"> <li>• Maritime Safety Enhancement and Environmental Protection Program</li> </ul>

## **Coastal Shipping Network Development Program**

- The coastal shipping network development program provides the overall institutional framework to administer coastal shipping operation, covering licensing, operation control and monitoring, fares and subsidy policy, etc., to ensure an economically and financially sustainable operating environment for shipping companies/operators. Major coastal shipping routes have been identified based on the demand pattern, and an analysis has been made of vessel operating costs by size which indicates that 3,000 to 5,000 DWT vessels under Vietnamese condition will be the most economical (refer to Figure 6.2 and Figure 6.3). Movements for specialized commodities, such as oil, construction materials/mining products and cement, have also been studied (refer to Figure 6.4).
- Scheduled liner operations by container, semi-container and Ro-Ro ship have significant development potential on the main north-south corridor. Liner operation would be a completely new type of business in Vietnamese coastal shipping and so use of a semi-container vessel is most likely.

## **Fleet Expansion and Modernization Program**

- Operators are bound to react in different ways to meet the future coastal shipping business environment wherein vessel choice and fleet development will become major concerns. In choosing the type of cargo vessel, factors such as package style, demand variation in a year, consignment size, etc. are critical. In the case of fleet development, the type and design of the vessel, method of vessel acquisition, age and capacity of the vessel will have to be considered
- Six types of ships have been identified to meet the estimated future traffic demand. They are general cargo/bulk ships which can carry most types of traffic, bulk ships which carry break-bulk cargo only, oil tanker/chemical tankers, container ships, semi-container ships which carry both container and general cargo, and Ro-Ro ships. Specialized barge and LASH (Lighter Aboard Ship) systems will not be suitable for coastal shipping in Vietnam because barges are not particularly seaworthy and other forms of shipping would be more economical in Vietnam.
- For the expansion and modernization of the coastal shipping fleet to meet future demand and changing operating environment effectively, alternative scenarios have been compared. Under the most feasible scenario, average fleet size will increase from the existing 1,000 DWT in 1995 to 1,300 DWT in 2000 and 1,500 DWT in 2010, and new vessel types will be introduced. The total acquisition cost will be about US\$ 986 million of which US\$ 226 million is required by 2000 (refer to Table 6.3).

Figure 6.2  
**FUTURE COASTAL SHIPPING NETWORK  
 IN CONJUNCTION WITH GENERAL SHIPPING PORTS (Year 2010)**

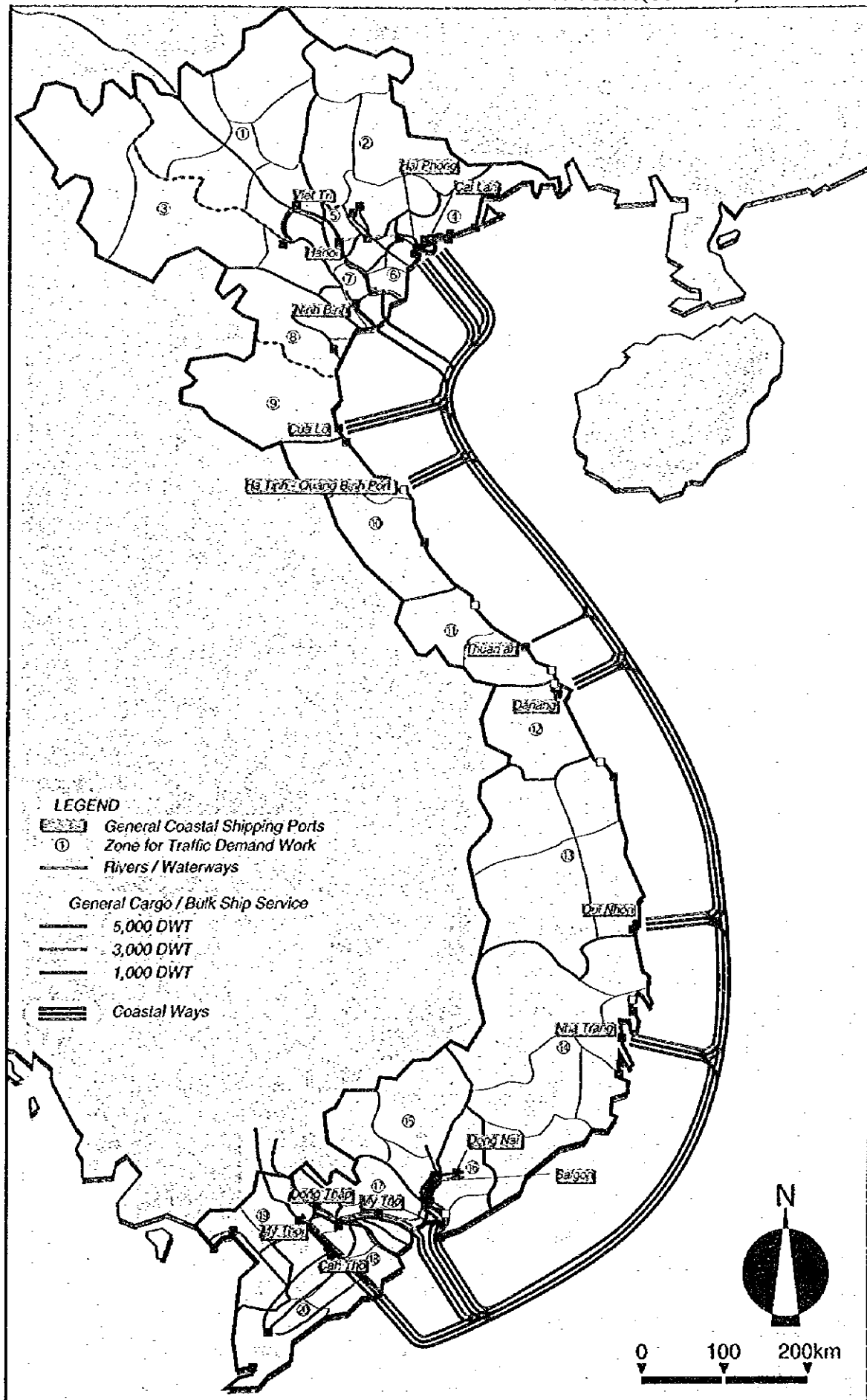


Figure 6.3

COASTAL SHIPPING ROUTES FOR MEDIUM - SIZE VESSELES OPERATION (Year 2010)

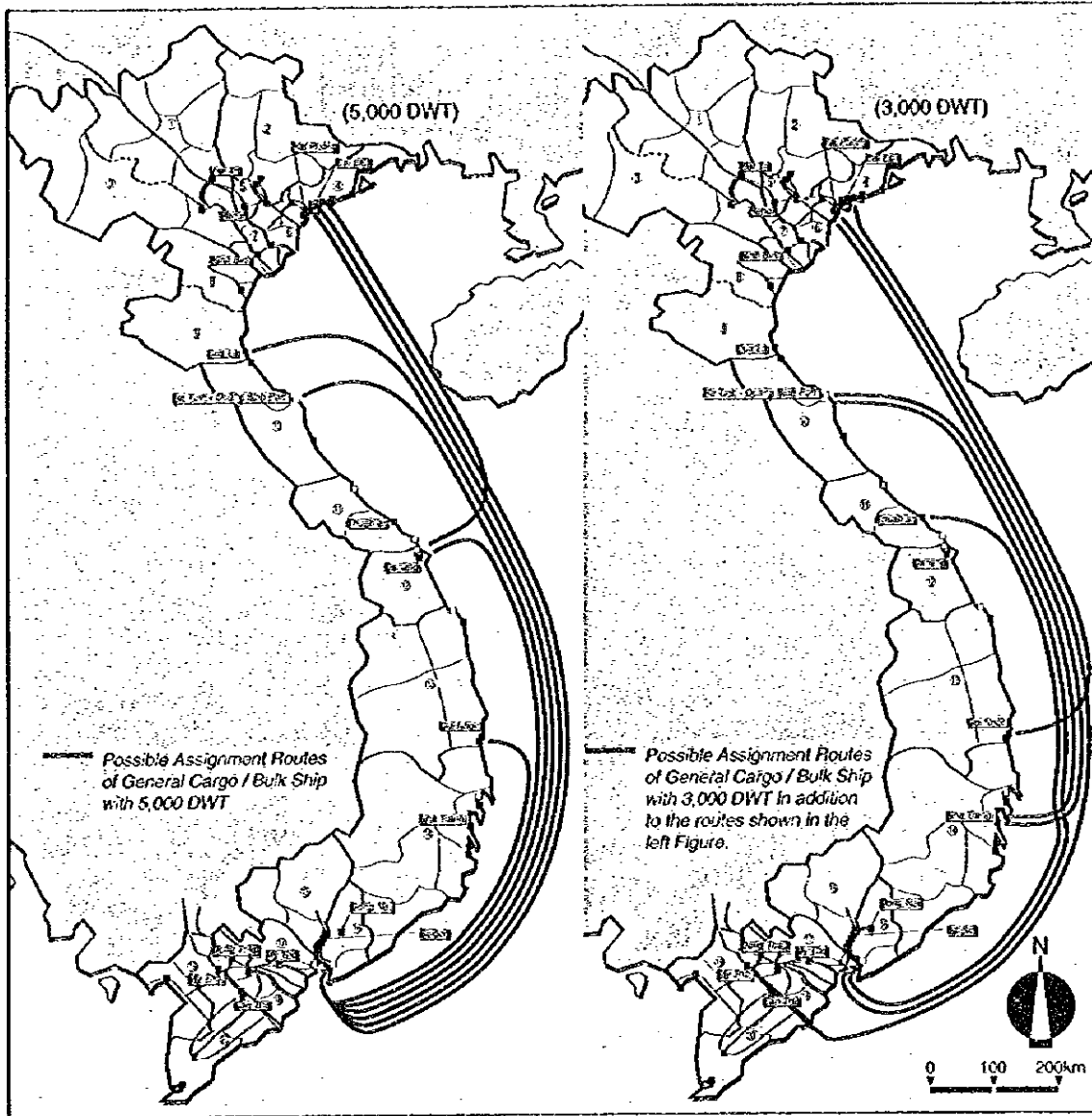
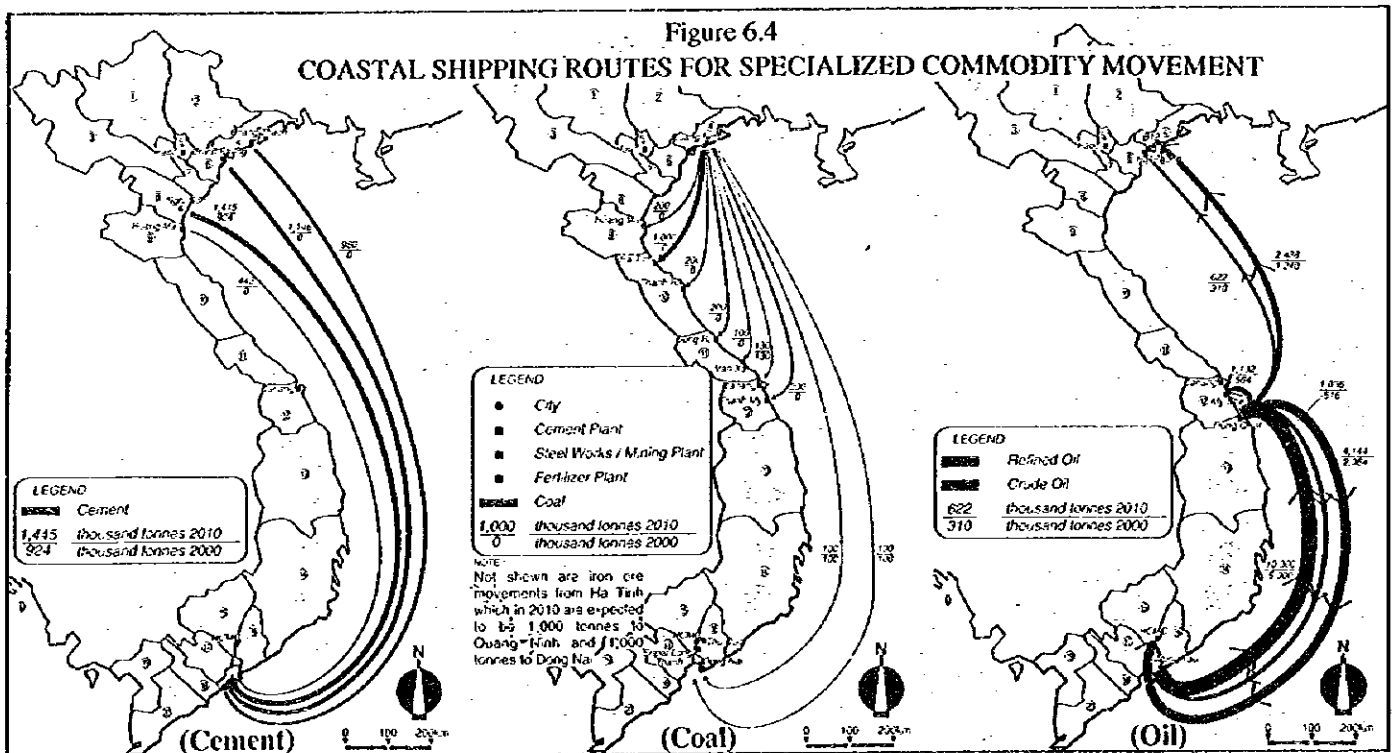


Figure 6.4

COASTAL SHIPPING ROUTES FOR SPECIALIZED COMMODITY MOVEMENT



**Table 6.3  
Coastal Shipping Fleet Development Program**

Ship Type		New Acquisition up to 2000	Existing in 2000	New Acquisition 2001 - 2010	Existing in 2010
C A R G O	General Cargo/Bulk				
	- 300 DWT	41	87	115	161
	- 1,000 DWT	0	50	120	118
	- 3,000 DWT	19	19	23	42
	- 5,000 DWT	10	12	30	28
	- 10,000 DWT	2	2	4	4
	Cement Carrier				
	- 5,000 DWT	4	4	14	14
	- 7,000 DWT	0	0	2	2
	Semi - Container Ship				
- 2,000 DWT	2	2	2	2	
Ro-Ro Ship					
- 5,000 DWT	0	0	2	2	
Oil Tanker					
- 2,300 DWT	2	2	4	4	
- 20,000 DWT	3	3	6	6	
- 80,000 DWT	1	1	2	2	
Sub - Total		84	182 (381,700 DWT)	324	385 (859,500 DWT)
P A X	- 490 GRT (1,400 seat)	2		4	
	- 95 GRT (200 seat)	1		1	
	- 60 GRT (90 seat)	5		22	
	Sub - Total	8		27	
Acquisition Costs: US \$ mil	Cargo Ships	212.0		711.0	
	Pax Ships	14.2		49.4	
	Total	226.2		760.4	

- In light of the fact that there will be increased need for modern vessels, the introduction of standardized cargo vessels manufactured in Vietnam has been studied. The appropriate types of standardized vessel are multi-purpose cargo vessels with 1,000 DWT and 3,000 DWT which could be built economically with much locally available technology if shipyards were to be upgraded.
- Shipyards suffer from basic technical weaknesses as well as sluggish shipbuilding activities in recent years. Improvements are urgently required in welding work, design of shipyards, quality control, etc. Improvement plans have been worked out for three selected shipyards, Bach Dang, Ha Long and Ben Kien Shipyards.
- The strengthening of capabilities for repair work is urgently needed. The current repairing capacity is estimated at 220 ships (above 1,000 DWT) per year (90, 20

and 110 ships in the north, central and south, respectively). However the future repair needs, including those of international shipping, are far larger than this. In order to meet the demand, six shipyards have been selected to improve their repair work capability (refer to Table 6.4)

Table 6.4  
Selected Shipyards for Improvement of Ship Repair Capability

Region	Improvement Period	
	1997-2000	2001-2010
Northern Region	Nam Trieu Shipyard, Haiphong (up to 3,000 DWT)	Nam Ha Shipyard, Nam Dinh (up to 3,000 DWT)
Central Region	Song Han Shipyard, Danang (up to 3,000 DWT)	Ben Thuy Shipyard, Vinh (up to 1,000 DWT)
Southern Region	CK-76 Shipyard, HCM City (up to 3,000 DWT)	Bin Trieu Shipyard, HCM City (up to 1,000 DWT)
Improvement Cost: US\$ million	8.6	8.2

- It is strongly felt that effective quality control system for local shipyards should be introduced. For this purpose, it is recommended that VINASHIN form a new department for quality control of shipyards in Vietnam. Regional offices of the proposed department will be located in the North, Central and South for safety control at work, control of instrument calibration and material testing and welding quality. The estimated cost is about US\$ 0.6 million.

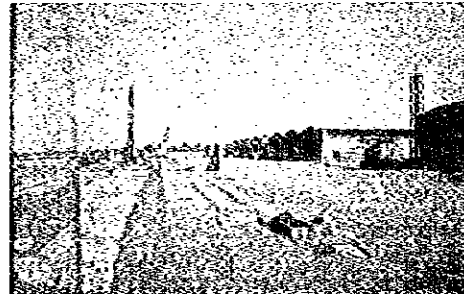
#### Ports and Waterway Development Program

- Ports and waterways are key infrastructure required by coastal shipping. Improvement of relevant general ports require a total of US\$ 240.5 million, including civil works and equipment procurement (refer to Table 6.5). An additional US\$ 61.4 million is roughly estimated to be needed for specialized ports used by coastal shipping.
- Management improvement is important for coastal shipping ports to offer economical and efficient services for port users as well as to compete with other transportation modes. Autonomy, self-financing, responsibility and accountability and entrepreneurship are basic principles in management improvement. Specific areas of improvement include (i) restructuring of port charges, (ii) provision of qualified port operators, and (iii) re-alignment of government intervention.
- Associated with the coastal shipping ports, a total of 832 km of sea-cum-riverways will be developed to connect the ports. The existing bottlenecks will be improved to accommodate 1,000 DWT to 5,000 DWT coastal shipping vessels (refer to Table 6.6). Required cost is roughly US\$ 26 million excluding access channels to the ports of Haiphong, Saigon, and Dong Nai (which do not need any improvement to serve coastal shipping).

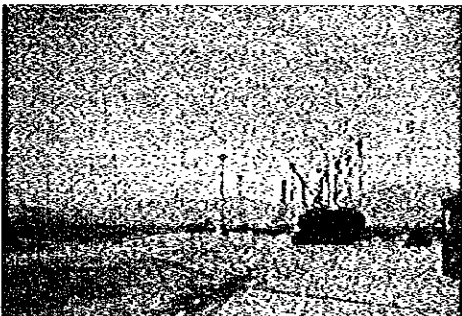
- Management of the sea-cum-riverways should also be improved. The work includes periodical hydrographic survey, strict implementation of dredging work, removal of obstacles, installation of navigational aids, preventive measures against sedimentation, etc. To establish maintenance/management system, administrative improvements, including clarification of administrative responsibility between VINAMARINE and IWB, and public information, should also be considered. The estimated total cost of the above maintenance/management work for 832 km sea-cum-riverways is approximately US\$ 1.7 million and US\$ 2.2 million in 2000 and 2010, respectively



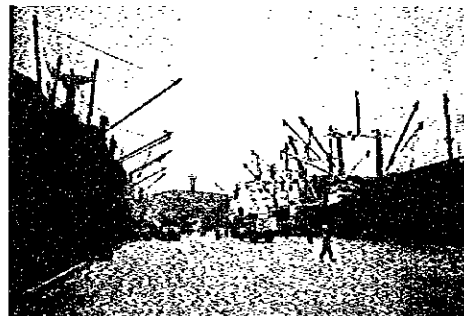
Hanoi Port



Cua Lo Port



Danang Port (Tien Sa Dist.)



Qui Nhon Port



Nha Trang Port



Saigon Port (Nha Rong Dist.)

**Table 6.5**  
**Coastal Shipping Ports Improvement Plan**

Region	Port	Work Item
North	Haiphong	<ul style="list-style-type: none"> <li>• Implementation of the proposed project in the JICA/Haiphong Port Urgent Rehabilitation Study</li> <li>• In addition, the Study identified the following measures to be taken urgently: Main Port: acquisition of adequate cargo handling equipment Doan Xa: acquisition of adequate cargo handling equipment/ building of new warehouses/pavement of yards</li> <li>• Conducting a further study regarding both foreign and domestic trade and subsequent implementation after 2000</li> </ul>
	Cai Lan	<ul style="list-style-type: none"> <li>• Implementation of the proposed projects in the JICA feasibility study on Cai Lan Port Construction Project on schedule</li> </ul>
	Hanoi	<ul style="list-style-type: none"> <li>• Construction of a new berth for coastal shipping (2,000 DWT)</li> <li>• Acquisition of adequate cargo handling equipment</li> <li>• Building of a new warehouse and pavement of yards</li> </ul>
	Viet Tri	<ul style="list-style-type: none"> <li>• Construction of a new berth for coastal shipping (1,000 DWT)</li> <li>• Building of a new warehouse and purchase of new cargo handling equipment</li> <li>• Pavement of yards</li> </ul>
	Ninh Binh	<ul style="list-style-type: none"> <li>• Construction of Ninh Phuc area and designation of two coastal shipping berths within the area (existing one and another under construction, both 2,000 DWT)</li> <li>• Creation of additional apron space by covering vacant sections with concrete surface</li> <li>• Building of two warehouses (Ninh Phuc area)</li> <li>• Acquisition of adequate cargo handling equipment</li> </ul>
Central	Cua Lo	<ul style="list-style-type: none"> <li>• Construction of three new berths for coastal shipping (5,000 DWT)</li> <li>• Construction of a mole against siltation (approx. 1km)</li> <li>• Execution of dredging work at waterway and basin</li> <li>• Expansion of the port compound by means of reclamation</li> <li>• Pavement of yards</li> <li>• Construction of several new warehouses and installation of cargo handling equipment</li> <li>• Conducting a long-term port development study taking account of foreign trade and transshipment with Laos, etc.</li> </ul>
	Ha Tinh- Quang Binh	<ul style="list-style-type: none"> <li>• Conducting a further study on port development taking account of regional socioeconomic development</li> </ul>
	Thuan An	<ul style="list-style-type: none"> <li>• Pavement of yards</li> <li>• Construction of a warehouse</li> <li>• Purchase of new cargo handling equipment</li> </ul>
	Danang	<ul style="list-style-type: none"> <li>• Construction of a breakwater at Tien Sa area</li> <li>• Execution of dredging work at basin of Tien Sa (270,000 m<sup>3</sup>)</li> <li>• Construction of two new berths for coastal shipping as well as oceangoing shipping at Tien Sa (jetty type 20,000 DWT)</li> </ul>



Cont. Table 6.5

Region	Port	Work Item
Central, cont.	Danang, cont.	<ul style="list-style-type: none"> <li>• Removal of three old warehouses and construction of a two-storey warehouse in the Song Han area</li> <li>• Renewal of one old warehouse at Tien Sa</li> <li>• Yard pavement at Song Han</li> <li>• Conducting a long-term port development study in connection with possible deep seaport areas such as Chan May, Lien Chieu and Dung Quat.</li> </ul>
	Qui Nhon	<ul style="list-style-type: none"> <li>• Removal of existing warehouses and construction of two warehouses</li> <li>• Acquisition of adequate cargo handling equipment</li> <li>• Construction of a wide-paved yard</li> <li>• Change in port road configuration</li> </ul>
	Nha Trang	<ul style="list-style-type: none"> <li>• Construction of two new berths for coastal shipping (jetty type, 5,000 DWT)</li> <li>• Expansion of yard and other land area by reclamation</li> <li>• Construction of paved yards and a warehouse</li> <li>• Acquisition of adequate cargo handling equipment</li> </ul>
South	Saigon	<ul style="list-style-type: none"> <li>• Installation of adequate cargo handling equipment (mobile cranes, forklifts, etc.) at Nha Rong</li> <li>• Removal of seven small, old warehouses and office buildings, and development of two large warehouses instead at Nha Rong</li> <li>• Conducting a long-term regional port development study for both foreign and domestic transport in connection with Vung Tau and Thi Vai ports</li> </ul>
	Dong Nai	<ul style="list-style-type: none"> <li>• Construction of two new berths for coastal shipping (2,000 DWT)</li> <li>• Installation of cargo handling equipment (mobile cranes and forklifts)</li> <li>• Construction of paved yards and two warehouses</li> </ul>
	My Tho	<ul style="list-style-type: none"> <li>• Acquisition of adequate cargo handling equipment</li> <li>• Construction of paved yards and a warehouse</li> <li>• Extension of existing wharf and creation of additional apron space by covering vacant sections with concrete surface</li> </ul>
	Dong Thap	<ul style="list-style-type: none"> <li>• Creation of additional apron space by covering vacant sections with concrete surface and extension of existing wharf</li> <li>• Pavement of yards</li> <li>• Installation of cargo handling equipment (mobile cranes and forklifts)</li> </ul>
	Can Tho	<ul style="list-style-type: none"> <li>• Restructuring an old warehouse</li> <li>• Overlay of yard pavement</li> <li>• Acquisition of adequate cargo handling equipment</li> </ul>
	My Thoi	<ul style="list-style-type: none"> <li>• Extension of existing wharves</li> <li>• Installation of cargo handling equipment (mobile cranes and forklifts)</li> </ul>

**Table 6 6**  
**Condition of Sea-cum-Riverways Before and After the Proposed Improvements**

	Section	Existing Condition	Proposed Condition
R e d  R i v e r  D e l t a	Lach Giang - Hanoi Port (199 km)	1) Barge 4 x 200 tons 2) 1.80 m 3) 30 m	1) 1,000 DWT 2) 3.5 m 3) 44 m
	Hanoi Port - Viet Tri Port (75 km)	1) Barge 4 x 200 tons 2) 1.80 m 3) 30 m	1) 1,000 DWT 2) 2.90 m 3) 35 m
	Cua Day - Ninh Binh Port (57 km)	1) Barge 4 x 200 tons 2) 1.80 m 3) 30 m	1) 1,000 DWT 2) 3.50 m 3) 44 m
	Quan Lien Canal (3 km)	(not developed)	1) 1,000 DWT 2) 3.50 m 3) 44 m
	Cua Nam Trieu - Haiphong Port (36 km)	1) 5,000 DWT 2) 7.85 m 3) 80 m	1) at least 5,000 DWT 2) 7.85 m 3) 80 m
M e k o n g  D e l t a	Cua Dinh An - Can Tho Port (80 km)	1) 3,000 DWT 2) 6.55 m 3) 100 m	1) 5,000 DWT 2) 7.0 m 3) 100 m
	Can Tho Port - Cho Moi (95 km)	1) 2,000 DWT 2) 4.5 m 3) unknown	1) 3,000 DWT 2) 5.5 m 3) 100 m
	Cua Tien - My Tho Port (55 km)	1) 1,000 DWT 2) 3.8 m 3) unknown	1) 3,000 DWT 2) 5.5 m 3) 100 m
	My Tho Port - Cho Moi (137 km)	1) 3,000 DWT 2) 5.7 m 3) unknown	1) 3,000 DWT 2) 5.7 m 3) 100 m
	Vung Ganh Rai - Saigon Port (65 km)	1) less than 20,000 DWT 2) 6 - 11.5 m 3) 150 - 200 m	1) 10,000 DWT 2) 10 m 3) 125 m
	Cat Lai - Dong Nai Port (30 km)	1) unknown 2) unknown 3) unknown	1) 2,000 DWT 2) 4 m 3) 50 m

Note: 1) Allowable Ship Size  
2) Designed Water Depth  
3) Bottom Width

### **Coastal Shipping Management Modernization Program**

- Management skills of shipping operators should be improved with particular regard to strengthening marketing and customer relations and improvement of management know-how in modern business and ship operation methods. Computerization, internal communication improvement, risk management, diversification of services, introduction of specialized vessel operation, acquisition of new vessels and related equipment, environmental protection, etc are also areas to be considered
- Particular attention should be given to small and medium scale operators who face difficulties in obtaining adequate finance and various regulatory obstacles. The rules and regulations should be clearly stated and simplified. Discriminatory finance or assistance in favor of state operators should be removed; easy access to necessary shipping information should be facilitated, and organization of voluntary shipping associations should be promoted.

### **Secondary Transportation Improvement Program**

- Efficiency of secondary transport may greatly affect the efficiency of coastal shipping transport operation and services. Secondary transport is composed of road, rail and inland waterway modes. Inland waterway is expected to play a particular role in the delta areas. IWB estimated that traffic demand will increase from 25 million tons to 100 million tons between 1995 and 2010. However, inland waterways also involve a number of areas to be improved such as modernization and enlargement of river crafts, containerization, fostering of private operators, improvement of river ports, improvement of riverways for safety and for night time operation, etc. Rail and road are also to be improved depending on local traffic needs.
- Ancillary service industries are also to be strengthened in order to modernize the distribution system. This can be achieved by improving logistics techniques, establishing subsidiary forwarding agents, instituting regulatory/policy measures to encourage foreign participation in freight forwarding, and establishing a forum to exchange views between the government and the forwarding industry. Warehousing businesses should also be encouraged to expand and modernize.

### **Maritime Human Resource Development Program**

- Development of maritime human resources is particularly important for the management of shipping companies; administrative personnel in shipping, operation staff in ports and waterways, engineering services in shipyards, etc. Knowledge on safety and environmental matters is becoming increasingly important.
- An adequate supply of competent seafarers is required, especially for those who operate modern vessels requiring advanced technology. The training needs to meet

international conventions, such as STCW-78/95, SOLAS and MARPOL, should also be considered.

- The 1996 records show that there are 8,000 seafarers including 1,800 officers and 6,200 ratings who are engaged in either Vietnamese vessels or foreign vessels. However, future demand will increase to 13,200 and 17,400 in 2000 and 2005, respectively. A study made of supply and demand indicates that there will be a shortage of seafarers whose services can be engaged on modern ships, while there will be an oversupply for small vessels. Retraining can rectify the imbalance.
- Improvement of VIMARU and MTTS is necessary by upgrading both equipment and training personnel. Short-term improvement for VIMARU would require installation of basic training/education equipment and certain advanced equipment such as the ARPA (automated radar plotting aid) simulation system, GMDSS training set and diesel engine plant, etc., retraining of instructors, and revision of training programs, syllabi and curricula. MTTS also needs to be improved in accordance with its training programs.
- Training of seafarers for tanker operation, in compliance with international conventions, is an important area to be investigated in order to cope with the possible danger and risk to the environment, and life at sea, caused by accidents and oil spills. Although VIMARU provides training courses related to tanker operation, they are mostly theoretical and lack practical training, owing to unavailability of training tools.
- Training of maritime personnel is also needed both for managerial level and staff in other areas, including landsmen of shipping companies, port-related personnel, maritime safety personnel, shipbuilding engineers, and ship inspectors.

#### **Maritime Safety Enhancement and Environmental Protection Program**

- It is expected that shipping movements both by coastal and international operations will increase significantly in a more complex manner in the future, especially in the areas around Haiphong and HCMC. If no action is taken, operational efficiency will decrease and accidents increase. With the implementation of the Dung Quat project, yet another serious potential threat to the environment will arise. In order to enhance safety and improve environmental protection, a wide range of aspects should be investigated. They are as follows:
  - (a) Improvement of ship inspection both during shipbuilding and while in operation;
  - (b) Development of visual ATN including lighthouses, light beacons, and lighted buoys, and visual aids for sea-cum-riverways;
  - (c) Development of electronic ATN including Racon, DGPS (Differential Global Positioning System) and Loran-C;

- (d) Provision of ATN support equipment and facilities, including support ships such as buoy tenders, boats, communication facilities, light monitoring systems, quay and mooring facilities, workshop and factories;
- (e) Development of SAR system, comprising rescue coordination centers, rescue fleet, and sea communication system;
- (f) Other improvements related to maritime safety including preparation of maritime accident statistics, ship reporting, etc.;
- (g) Establishment of a national oil spill protection system. This requires the following: a hierarchical organization to deal with marine oil pollution, preparation of an oil spill contingency plan, preparedness of oil distributors to acquire equipment for treating oil spills, preparation of liability and insurance schemes to cover marine oil spill incidents, participation of international convention (OPRC), and regional convention (OSRAP).

### **Estimated Cost of Master Plan**

- The capital cost of the Master Plan has been estimated based on various available sources and surveys by subsector (refer to Table 6.7). The total cost is US\$ 1.76 billion excluding certain costs for oil transport and for secondary transport improvement, which could be required irrespective of coastal shipping improvements. Management modernization and most routine training costs are regarded as operating costs and not included in the table. The largest expenditure will be incurred in vessel acquisition by ship operators, while infrastructure development, including ports and waterways and safety measures require US\$ 712 million, which is approximately 40% of the total cost.

### **Evaluation**

- The Master Plan has been evaluated from the economic viewpoint by comparing the expected costs of transportation and accidents, with and without implementing the Master Plan. This means that the costs and benefits of the Master Plan are considered as the difference in operating and accident costs between “with” and “without” situations. Without the Master Plan, coastal shipping demand has to be met by other more costly transportation modes such as road and railway. The investment in coastal shipping can be saved but additional investments in road and railway become necessary. The additional capital cost incurred with the Master Plan amount to US\$ 135.2 million between 1997 and 2010. In addition, maintenance costs of sea-cum-riverways is assumed to increase to US\$ 1.1 million in 2000 and 1.5 million in 2010. In addition to the transport cost savings of coastal shipping, benefits also arise from service level improvement, passenger time savings and reductions in maritime as well as road accidents. The net benefits of the Master Plan are estimated over the period from 1997 to 2010 assuming that benefits increase annually, at a constant rate, from zero in 1997 to the total figure estimate of US\$ 53.7 million (refer to Table 6.8). Additional investment costs attributable to the Master Plan are assumed to be split in the ratio 33.67 over the short and long terms (up to 2000 and between 2001 and 2010). This results in Net Present Values (at

12% discount rate) of costs and benefits of US\$ 72.5 and 129.6 million, respectively, giving net benefits of US\$ 57.1 million. The internal rate of return of the net benefit stream is 34%.

Table 6.7  
Summary of Expenditure Proposed in the Master Plan

Subsector/Category	Mainly Incurred by:	Estimated Cost	
		US\$ M	%
<b>Fleet Expansion and Modernization</b>			
-Vessel Acquisition <sup>1</sup>	Ship Operators	986.5	56.2
-Improvement of Ship Construction Yards	Ship Yards	14.3	0.8
-Improvement of Ship Repair Yards	Ship Yards	16.8	1.0
-Shipyard Quality Management Center	Ship Yards	0.6	0.03
<b>Ports and Waterways Development<sup>2/</sup></b>			
-Coastal Shipping General Ports Infrastructure	Port Operators	240.5	13.7
-Coastal Shipping Specialized Ports Infrastructure	Port Operators	61.4	3.5
-Sea-Cum -Riverway Infrastructure Improvement	VINAMARINE/IWB	26.0	1.5
<b>Coastal Shipping Management Modernization</b>			
-Training in Modern Operating Methods	Ship Operators	N/A	-
<b>Secondary Transport Improvement Programme</b>			
-Improvement of River and Road Infrastructure	IWB/VRA	N/A	-
<b>Maritime Human Resources Development Programme</b>			
-Improvement of VIMARU and MITTS	VINAMARINE/VIMARU	22.7	1.3
-Training Equipment for Tanker Operation	VIMARU	2.7	0.2
<b>Maritime Safety Enhancement and Environment Protection Programme</b>			
-Establishing Testing Laboratories	VIRES	1.3	0.1
-Aids to Navigation Equipment	VMS	173.0	9.9
-Maritime Safety Vessels (for ATN and SAR)	VINAMARINE/VMS etc.	169.4	9.6
-Sea Communication Equipment	VISPHEL/Ship Operators	40.4	2.3
<b>Total</b>		<b>1,755.6</b>	<b>100.0</b>

NOTE: (1) Including oil tankers (assuming the Dung Quat project is implemented)  
(2) Oil facilities excluded

Table 6.8  
Benefits of Coastal Shipping Master Plan in 2010

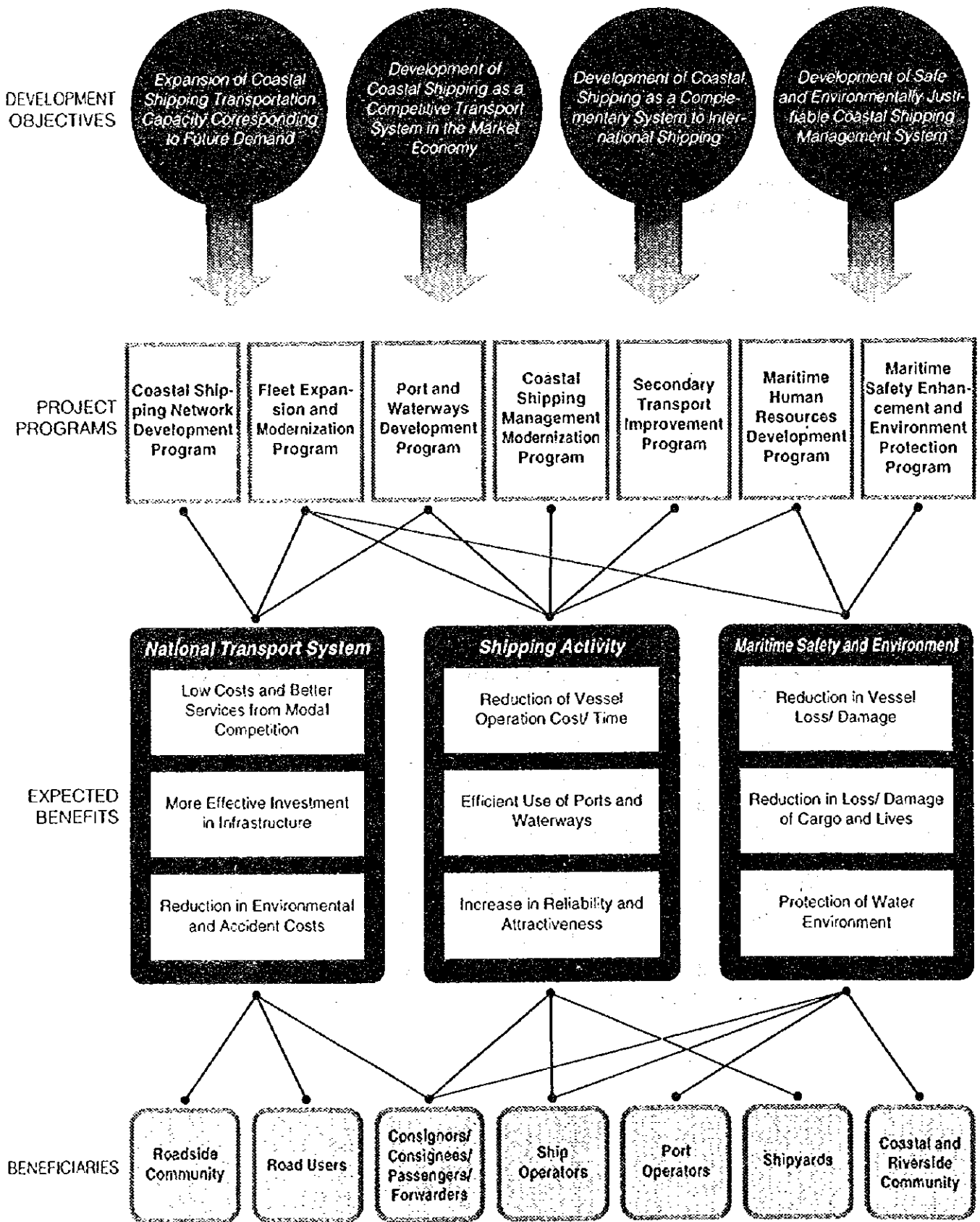
Area	Benefit	Benefits (US\$ mil.)
Freight Traffic	Cost Saving to Existing Traffic	30.4
	Level of Service Improvement	4.6
	Consumer Surplus of Traffic Transferring to Coastal Shipping	6.4
Passenger Traffic	Cost Saving	5.1
	Passenger Time Saving	1.8
Accidents and Environment	Reduction in Maritime Accident Costs	1.2
	Reduction in Road/Rail Accidents	4.2
<b>Total</b>		<b>53.7</b>

- The benefits of the coastal shipping development will not be limited to the above direct benefits but also include a wide range of intangible benefits. They include, among others, rationalization of modal split among road, rail, and water transport, contribution to socioeconomic activities in the coastal areas and islands, and promotion of coastal shipping related industries and services and so on. Thus, it is explicit that the coastal shipping development in Vietnam will bring about great economic effects, which are highly justifiable from the national and regional economic viewpoints (refer to Figure 6.5).
- The Master Plan has also been evaluated from the financial viewpoint. According to the MOT, US\$ 9.0 billion investment will be allocated to transport development between 1996 and 2000 of which sea transport (both international and domestic shipping) will utilize US\$ 0.8 million. Taking committed projects and possible international shipping projects into account, the Master Plan (US\$ 0.57 billion up to 2000) will have to be implemented under serious financial constraints.

Under current policies, the finance available for coastal shipping is completely inadequate and does not take account of the relative needs of coastal shipping compared to other modes. In general terms, this requires the following:

- (a) an increase in the allocation of public finance to the shipping sector, especially in the short term,
- (b) which is achievable mainly by reallocating funds from road, rail and international shipping projects which are less justifiable than the ones proposed for coastal shipping in the Master Plan,
- (c) seeking ODA support for key infrastructure, training and safety projects in the Master Plan,
- (d) setting user charges for infrastructure to cover investment costs,
- (e) reassigning vessels currently used in international shipping to use in coastal shipping,
- (f) continued careful scrutiny of all investments in the transport sector to identify those yielding the most benefit with limited resources, and
- (g) last but not least, encouraging domestic and foreign investment in the maritime transport industry through market-oriented policy reforms.

Figure 6.5  
Expected Benefits and Beneficiaries of Master Plan





- The initial environmental examination (IEE) has been undertaken for the Master Plan with particular regard to some areas which may cause environmental problems. These are related to shipyards, ports, oil and cement transportation and increased coastal shipping traffic in general.

Shipyards: Possible adverse impact of shipyards include: (i) dust and water pollution caused by scraping, cleaning and painting, (ii) noise and vibration caused by chipping, scraping hulls, etc., (iii) treatment of oil sludge, residue, garbage and other waste. Possible adverse impacts from these pollution sources can be prevented or minimized through (i) net fencing to control dust and especially paint spray, (ii) shore tanks to segregate residues such as oil and waste paint from water, (iii) incinerators), and (iv) onshore garbage collection.

Coastal Shipping Ports: The selected 17 coastal shipping ports have been initially assessed from the environmental viewpoint and the results are outlined as follows:

- (i) Port wharf expansion will be mostly done on piling work requiring neither dredging nor reclamation. No negative impact is foreseen. However, Cua Lo and Nha Tran ports need reclamation for which adequate geological and environmental surveys are necessary prior to reclamation
- (ii) Construction of additional apron space would not generate any environmental threats.
- (iii) Construction of breakwaters at Cua Lo and Danang ports would require current flow surveys and EIA studies.

Sea-cum-Riverways. Sea-cum-riverways involve dredging which, however, do not generate any significant adverse impact.

Oil, Cement and Coal Transport: For oil, a nationwide oil spill protection system should be established. The most serious pollution due to cement transport is dust emission in factories and ports during cargo handling. In factories, the installation of mechanical air filters would be effective, while covered conveyors and hatched decks are necessary at ports. An effective countermeasure for coal dust is to sprinkle water over stacked coal and covered conveyors in ships. In addition, dirty water from coal should be treated in bilge tanks.

Increase in Coastal Shipping Traffic: A substantial increase in coastal shipping traffic may cause deterioration of the marine environment unless a comprehensive approach is taken, including upgrading of seafarers awareness, strict enforcement of ship inspection, installation of navigational aids, effective vessel traffic control, establishment of SAR system, etc.

## 7. PREPARATION OF PRIORITY PROJECT PACKAGES

### Selection of Priority Project Packages

- While the proposed Master Plan has been found to be viable, particularly from the economic viewpoint, it is important to determine how to initiate actions to implement it effectively. Although a large number of projects of different subsectors in the Master Plan have been identified, it does not necessarily mean they can be implemented effectively on an individual basis.

In implementing the proposed coastal shipping development, the identified projects have to be adequately packaged so that, as a whole, they meet policy objectives and mobilize relevant resources effectively. This approach is of particular importance in the proposed development of coastal shipping because it involves many linkages between projects. Priority project packages in coastal shipping development have been considered in terms of the following two basic aspects:

- whether or not the priority project package can contribute to the urgent needs of expanding and strengthening the national transportation system; and
  - whether or not the priority project package can meet short-term demands of coastal shipping and contribute to its sustainable development.
- Improvement of the north-south transport system is a priority issue in Vietnam. The development of coastal shipping will not only help relieve excess transport load on road and rail, which have limited capacities. It has also been found that there will be a significant traffic demand along the north-south coast, which can be far more economically transported by ship. While the north-south route of coastal shipping can meet short-term demands effectively, its sustainable operation needs to be supported, first, to meet a number of requirements specified in international conventions, and second, to strengthen the stable supply of competent manpower in different areas related to improved coastal shipping. Accordingly, the following priority project packages have been identified at a total cost of US\$502.9million:
    - (1) “Development of North-South Trunk Coastal Shipping Route” to establish a stable and regular coastal shipping operation along the most heavily-trafficked route. Once the trunk route is established, secondary routes will be developed more effectively and easily.
    - (2) “Program to Meet International Requirements” to operate and manage coastal shipping at a sustainable level.
    - (3) “Development of Maritime Human Resources” to upgrade the existing maritime personnel to provide enough qualified staff, to be able to offer the higher standards of coastal shipping operation and management needed on an increasing scale in the future.

## Development of North - South Trunk Coastal Shipping Route

- This project package costing US\$471.4million is composed of ports, sea-cum-riverways, visual ATN, fleet, and shipping operation components, as follows:
  - (a) Nine general coastal shipping ports (Haiphong, Hanoi, Cua Lo, Danang, Qui Nhon, Nha Trang, Saigon, Dong Nai and Can Tho);
  - (b) Five sea-cum-riverways serving the selected coastal shipping ports (Cua Nam Trieu - Haiphong, Lach Giang - Hanoi, Vung Ganh Rai - Saigon, Cat Lai - Dong Nai, and Cua Dinh An - Can Tho);
  - (c) Visual ATN and maritime safety fleet deployed around the above ports and routes and their necessary workshops;
  - (d) Fleet development program and related ship repair yards; and
  - (e) Other shipping operation related improvement.
- The port improvement plan intends to avoid excessive investment and improve port operation effectively to meet the coastal shipping demands as directly as possible. The plan is outlined as follows:
  - (a) Anti-siltation mole construction at Cua Lo Port and breakwater construction at Danang Port are proposed. Seaports in the central region usually suffer from rough seas and high waves during the monsoon season. For instance, Danang port must close about 45 days between October and January. With a breakwater, the port can operate continuously and thus contribute a great deal to stabilize coastal shipping operation. The construction cost is estimated at US\$ 49.2 million excluding an additional 8% for design and supervision.
  - (b) Development of additional berths is proposed at the ports of Hanoi, Cua Lo, Nha Trang and Dong Nai while the ports of Haiphong, Danang, Qui Nhon, Saigon and Can Tho will utilize existing berths until the year 2000. Cua Lo Port will become a representative coastal shipping port with a new berth. The improvement plan proposes a total of five berths which require US\$ 23.1 million.
  - (c) To secure enough cargo handling space, yards and aprons will be expanded and/or paved at all priority ports. The cost is calculated at US\$ 11.8 million.
  - (d) For sufficient and efficient cargo storage, new warehouses will be built at all priority ports and some dilapidated ones will be removed. The plan proposes to supply 63,000 m<sup>2</sup> of new covered storage area for port users. In particular, cargo storage facilities will be substantially improved at Qui Nhon and Saigon ports. This will account for 25% of the total financial requirement or US\$ 29.5 million.

- (e) In the short-term, the plan promotes procurement of mobile cranes and forklifts, and acquisition of more pallets. As a result, 15 mobile cranes, 167 forklifts, and 54,400 pallets are required. The total development cost of equipment is about US\$ 11.8 million excluding 3% engineering service cost.
- A study conducted by the Study Team indicates that the sea-cum-riverways to Haiphong, Dong Nai and Saigon are likely to accommodate designed vessel sizes of 5,000 DWT, 2,000 DWT, and 5,000 DWT, respectively, while the route to Hanoi port is not able to accept a 1,000 DWT vessel recommended in the Master Plan.
  - According to TEDI in 1996, the engineering analysis indicates that the number of unnavigable locations vary by ship size: none for 400 DWT (designed draft of 1.8m), 10 locations for 600 DWT (2.3m), 16 locations for 1,000 DWT (2.9m), and 25 locations for 2,000 DWT (3.9m). To improve these sections, initial dredging and annual maintenance dredging work are necessary. To accommodate 1,000 DWT vessel size, about 1.1 million m<sup>3</sup> needs to be dredged initially and 320 thousand m<sup>3</sup> annually, for which the estimated costs are VND 12 billion and VND 3.6 billion, respectively. Since the project provides very attractive benefits for coastal shipping operation, by connecting the two largest centers of the country directly with coastal shipping vessels, at relatively little cost compared to road or rail, it is strongly recommended that this sea-cum-riverway route be improved. This matter should be duly considered in the scheduled feasibility study under ADB.
  - The river mouth section is a critical pass for smooth navigation on Cua Dinh An - Can Tho Port route. The engineering survey conducted in 1991 indicated that the shallowest section was only 4.5 meters in depth. Currently, dredging work is being undertaken with financial assistance by World Bank.
  - Improvement of safety facilities includes rehabilitation, reconstruction, and new construction of lighthouses (24, 11, and 26 units, respectively). Nine beacons need rehabilitation and 156 buoys have to be installed around large ports and heavily trafficked waterways. The cost is estimated at US\$ 21.5 million. A maritime safety fleet should be provided, comprising one medium size (400 ton), multi-purpose ship, eight small (80 ton) multi-purpose ships and eight small boats. The cost is estimated at US\$ 41.2 million. Improvements to ATN workshop facilities are also required, by replacing outdated equipment at the four existing workshops. The estimated cost is US\$ 2.9 million.
  - The estimated fleet requirement along the north-south route in 2000 is 92 vessels of different types and sizes. If all the vessels are to be purchased, it will cost approximately US\$ 226 million, although this figure could be reduced if some vessels are chartered and if aged vessels currently used in international shipping could be used in coastal shipping.
  - All likely available resources should be thoroughly analyzed to meet the capital demand for coastal shipping development. The following six resources are subject to the analysis:

(i) bank credit, (ii) reinvestment of accumulated capital, (iii) the Vietnamese stock market, if available, (iv) direct foreign investment (DFI) from particular foreign organizations and individuals, (v) ODA investments, and (vi) leasing arrangements (either financial leasing or operational leasing)

- Fleet development is the most costly program but it can make various financial arrangements. In order to minimize the initial investment costs and to encourage the supply of funds from potential sources, it is recommended that 20 existing medium-size vessels used mainly on international routes by VINALINES be sold to coastal shipping operators, that direct foreign investment be encouraged (especially in new services), and that leasing facilities for foreign ships be encouraged.
- Shipyards should also be improved to meet maintenance and repair needs of coastal shipping. Three shipyards will be improved: namely, Nam Trieu Shipyard in Haiphong, Song Han Shipyard in Danang, and CK-76 Shipyard in HCM City. The estimated cost is about US\$ 8.7 million.
- In association with the development of the trunk route, shipping operation should be further upgraded, particularly to meet increasing demand for present services as well as for new types of services. Operation of liner services is one of the important areas to develop. In order to encourage active operation and competition in this field, a clear regulatory framework should be provided which avoids discriminatory practices. Training for seafarers and landsmen are also necessary to meet the changing situation, and government should monitor the needs of the shipping industry to remove obstacles to innovation (such as poor facilities and bureaucratic regulatory procedures).

#### **Program to Meet International Requirements**

- Areas where international requirements are to be met urgently include sea communication, seafarers education and ship inspection. This package is anticipated to cost US\$ 42.6 million, as detailed below:
- The International Maritime Organization (IMO) has been promoting the introduction of GMDSS. As a member of the SOLAS Convention, Vietnam is required to establish GMDSS by February 1, 1999. However, the effectiveness of GMDSS will depend on the development of land facilities and the installation of related communication equipment on-board vessels as well as development of SAR system.

Land Facilities: GMDSS, in general, utilizes some form of communication between coastal radio stations and vessels, for which upgrading or new construction of 25-30 stations is necessary. The estimated cost is US\$ 33.8 million. VISHIPEL will be the implementing and operating body.

Communication Equipment on Vessels: The SOLAS Convention stipulates only international shipping vessels more than 300 GRT. In Vietnam, however, coastal shipping vessels are also required to be equipped with necessary communication

equipment. The estimated cost of related devices is relatively low at US\$ 15,000 per ship giving a total cost of US\$ 3.0 million.

- Only VIMARU provides seafarers education at university level, and this institution has difficulties in supplying the shipping industry with competent seafarers. In order to meet international requirements such as GMDSS and STCW-95, VIMARU needs to be upgraded through the following measures costing US\$ 4.5 million:
  - (i) Installation of practical training equipment for seafarers;
  - (ii) Retraining of instructors; and
  - (iii) Improvement of training program, syllabi and curricula.
- Ship inspection has to be upgraded. Provision of two testing laboratories is necessary which will cost approximately US\$ 1.3 million.

### **Maritime Human Resource Development**

- Training for maritime human resource should cover both basic training and practical training. With regard to the former, priority is given to the improvement of equipment and retraining of instructors at VIMARU, while for the latter, general training should be conducted for management in various aspects of business undertaking, and specific training should be given for personnel who are involved in marketing, computer services, technical and accounting activities. No significant additional cost is incurred by this package assuming that the training equipment for VIMARU proposed under the previous package is acquired (costing US\$ 4.5 million).
- Practical on-the-job training is vital. But while large shipping operators may be able to set up their own training programs, small shipping operators may not be able to do so. For this VIMARU may offer retraining courses as proposed.
- For maritime safety personnel, such as managers of shipping companies, port managers, ship captains, harbor masters, pilots, mechanical engineers, deck officers, naval architects, ship inspectors, etc., overseas and domestic training courses need to be provided

Table 7.1  
Estimated Cost of the Priority Project Packages

PRIORITY PROJECT PACKAGE	COST (US\$ million)
<b>PACKAGE A</b>	471.4 <sup>(1)</sup>
- General Coastal Shipping Ports and Sea-cum-riverways	171.0
- Safety Equipment	65.8
- Acquisition of Ships	225.9 <sup>(1)</sup>
- Ship Repair Yards	8.7
<b>PACKAGE B</b>	42.6
- Sea Communication System complying with GMDSS	36.8
- VIMARU Training Equipment	4.5
- Testing Laboratories in VIRES	1.3
<b>PACKAGE C</b>	
- On-the-job Training, Seminars and other Measures (not requiring additional expenditure apart from the VIMARU training equipment)	
<b>TOTAL</b>	<b>514.0</b>

NOTE: (1) If ships are reassigned from international routes and chartered, then ship acquisition cost could be only about US\$ 103.6 million, and total cost would be only US\$ 349.1 million.

## 8. CONCLUSION AND RECOMMENDATIONS

### Conclusion

- Coastal shipping in Vietnam has a great development potential. There is a growing demand which can be economically and effectively handled by coastal shipping as planned industrial developments are implemented and regional economies in the north and south become more integrated. The economic benefits of coastal shipping development are significant as indicated by the estimated EIRR of 34%. Additional benefits of coastal shipping development include the rationalization of modal split in the national/interregional transport system, promotion of socioeconomic development in areas on the mainland and islands which will be covered by coastal shipping, and inducement of related industry development.
- While the development potential of coastal shipping is significant, there are a number of conditions to be met to realize the expected effects of coastal shipping improvement. They include, among others, the following:
  - (a) Incorporation of coastal shipping into the overall transportation policy framework: At present coastal shipping has not been properly incorporated in the national transportation policy framework, while international shipping, as well as inland waterway transport, are specifically dealt with. For this, coastal shipping should be given equal importance with other modes of transport and be adequately incorporated in the official planning and budgeting systems.
  - (b) Improvement of relevant infrastructures: Infrastructure development, covering ports, waterways, aids to navigation facilities, etc., need to be

adequately developed as planned in this Study to meet the specific requirements of coastal shipping.

- (c) Improvement of management of shipping operators: Management capacities of shipping operators should be improved considerably to meet the specific needs of the market covering the introduction of new services, strengthening of planning and marketing function, training of personnel, etc.
- (d) Improvement of regulatory environment: This is one of the most important aspects for effective coastal shipping development since there is a large number of potential investors who may enter the industry when the institutional framework is more explicitly and equitably provided. The existing regulatory framework needs to be further reviewed from the point of view of ensuring that the private sector, including foreign operators, may participate on an equal footing as existing state operators. This requires urgent reform of the state shipping sector and promotion of entrepreneurship.

### **Recommendations**

- Since the proposed development of coastal shipping system covers the whole country, it is recommended that three specific areas selected for short-term priority projects be implemented at the earliest possible time. They are:
  - (1) Program on north-south coastal shipping trunk route development;**
  - (2) Program to meet international requirements; and**
  - (3) Program on maritime human resources development.**
- In addition, to provide an appropriate policy environment for development of coastal shipping, the following recommendations are made for government:
  - (1) To provide a clear policy statement and introduce more transparent regulations for coastal shipping which provide a level playing field for competing shipping operators;
  - (2) To implement a program of equity and privatization of state and provincial-owned ship operators;
  - (3) To allow reasonable government intervention at the minimum level in port management while the introduction of orderly competition in port services such as stevedoring and warehousing;
  - (4) To improve pricing of ports and waterways to encourage efficiency and adequate cost recovery;
  - (5) To strengthen VINAMARINE as the key regulatory organization for coastal shipping by ensuring adequate finance and removing its remaining commercial functions, as well as resolving the overlapping responsibilities of VINAMARINE and IWB; and
  - (6) To implement the required legal changes to introduce the improved regulatory framework regarding import and registration of ships, inspection standards of ships, quality standards for shipbuilding and repair, etc.



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