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Ministry of Transport, Socialist Republic of Vietnam (MOT)  
Transport Development and Strategy Institute (TDSI)

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**THE STUDY ON THE  
NATIONAL TRANSPORT DEVELOPMENT STRATEGY  
IN THE SOCIALIST REPUBLIC OF VIETNAM  
(VITRANSS)**

**Technical Report No. 7  
INLAND WATERWAY**

July 2000

**ALMEC CORPORATION  
PACIFIC CONSULTANTS INTERNATIONAL**

## PREFACE

During the period of the Study on the National Transport Development Strategy in Vietnam (VITRANSS), various technical papers have been prepared by different Study Team members in various occasions to facilitate the discussions with counterpart team, concerning subsector agencies and to document major findings and outputs produced in the process of the Study. These papers have been organized into a series of technical reports (See Table A below) which intend to provide more detailed background information for descriptions and discussions made on key study components and issues. These technical reports are working documents of the Study which, however, will be useful for further reference, by the counterpart team and related subsector agencies.

Table A  
List of Technical Reports

No. 1	Transport Surveys and Database
No. 2	Main Commodities Analysis and Freight Transport
No. 3	Transport Cost and Pricing in Vietnam
No. 4	Transport Sector Institutions
No. 5	Road and Road Transport
No. 6	Railway
No. 7	Inland Waterway
No. 8	Port and Shipping
No. 9	Air Transport
No. 10	Rural Transport and Cross Border Transport
No. 11	Environment
No. 12	Transport Sector Funding

# Technical Report No. 7 INLAND WATERWAY

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## Glossary

<b>ADB</b>	Asian Development Bank
<b>ATN</b>	Aids To Navigation
<b>CIDA</b>	Canadian International Development Agency
<b>JICA</b>	Japan International Cooperation Agency
<b>LAD</b>	Least Available Depth
<b>MOT</b>	Ministry of Transport
<b>NOWATRANCO</b>	Northern Waterway Transport Corporation
<b>TDSI</b>	Transport Development and Strategy Institute
<b>UNDP</b>	United Nations Development Program
<b>VINAMARINE</b>	Vietnam National Maritime Bureau
<b>VISERITRANS</b>	Vietnam Sea-River Transport Enterprise
<b>VITRANSS</b>	Vietnam Transport Strategy Study
<b>VIWA</b>	Vietnam Inland Waterway Administration
<b>WB</b>	World Bank

## 1 INTRODUCTION

In Vietnam, there are 2,360 rivers and channels with a total length of 41,900 km, of which 11,226 km have sufficient depth for waterway transportation.

In the north, there are four main river systems: Bang Giang-Ky Cung, Red River, Thai Binh, and Ma River. Red River and Thai Binh River are the two major river systems and are mainly linked together by Duong and Luoc rivers. Both make a convenient waterway network.

In the central area, there are three main river systems: Lam, Thu Bon and Ba River in the provinces of Nghe An, Quang Nam and Phu Yen, respectively. However, these rivers are all small, short, high-sloping, and not linked together.

In the south, there are two main river systems: Dong Nai and Mekong River, which are connected and have numerous canals, making them a very convenient waterway network for local transportation.

Table 1.1  
 Main River Systems in Vietnam

	River System	Length	Basin Area
North (18,000km)	Bang Giang- Ky Cung	(Data unavailable)	(Data unavailable)
	Red River	1161km (Total) 541km (Vietnam portion)	61,400km <sup>2</sup>
	Thai Binh	185km	12,000km <sup>2</sup>
	Ma	415km (Vietnam portion)	17,600km <sup>2</sup>
Central (14,000km)	Lam	500km	(Data unavailable)
	Thu Bon	97km	(Data unavailable)
	Ba	317km	(Data unavailable)
South (10,000km)	Dong Nai	(Data unavailable)	(Data unavailable)
	Mekong River	4500km (Total)	810,000km <sup>2</sup>

For the inland waterway sector, many studies have been conducted by various organizations in the past. Here, the Study Team first tried to identify the problems and issues concerning inland waterway by reviewing studies and data over the past years. Then, it examined the sector's future development direction.

## **2 REVIEW OF RELATED STUDIES, PLANS and PROJECTS**

### **2.1 Past Studies and Recommendations**

The Study Team reviewed recommendations and programs proposed in past studies.

#### 1) National Transportation Sector Review (1992, UNDP)

##### Recommendations

- Development strategy:
  - (1) Modernizing the transport fleet
  - (2) Improving waterways
  - (3) Enhancing efficiency of loading/unloading operations
  - (4) Combining inland transport with sea transport
  - (5) Opening new areas for waterway transport
  
- Needed studies:
  - (1) Siltation study of the entrance of Bassac and Mekong rivers
  - (2) F/S of the development scheme of the Duong River
  - (3) Optimization study of navigation in the Red River and Thai Binh River Systems
  - (4) Study on the development of the navigation in mountainous areas Particularly on the Red River up to the Chinese province of Yunnan
  - (5) Development of navigation on the Hoa Binh reservoir
  - (6) F/S of sea-cum-river transport in North Vietnam
  - (7) Improvement of navigation on rivers of central Vietnam
  - (8) Master plan for navigational aids system
  - (9) Master plan for the Saigon-Cholon port
  - (10) Study of river port development in Vietnam
  - (11) Study of ship design and river transport operation
  
- Others: Fuel taxes should be imposed to recover waterway infrastructure costs.

##### Development Programs

- Investment Program 1991-1995
  - (1) Upgrading existing infrastructure and facilities (Viet Tri, Khuyen Luong: VND 10 billion)
  - (2) Improving the most heavily trafficked channels (VND 50 billion)
  - (3) Rehabilitating and gradually modernizing the navigational aids for ocean-going vessels (VND 14 billion)
  - (4) Investing on transport facilities and equipment (Barges, pushers: VND 285 billion)

- Investment Requirements until the year 2000
    - (1) Investment for transport and dredging fleet
    - (2) Investment for waterways, including hydrographic surveys to assess present conditions; simulation studies to determine where capital dredging is justified; hydrographic studies to locate and size training works.
  
  - Investment Requirements beyond the year 2000
    - (1) Upgrading the network including reducing operating costs by means of increasing the LAD, cutting sharp bends, renewing fleet, etc.
    - (2) Integrating inland waterway transport and coastal shipping including dredging inland channels and bar channels to increase the size of sea-cum-river ships which can reach inland sites, and expanding and upgrading ports to accommodate larger vessels
- 2) Mekong Delta M/P, F/S on Rehabilitation and Improvement of the Main Waterways in the Mekong Delta (May 1993, UNDP)

#### Recommendations

- In a five-year time frame, the capacity of the waterway transport system will need extension. An option wherein no capacity increase is considered is inconsistent with the Mekong Delta development strategy.
- To achieve a timely capacity increase, measures are to be initiated right away. Postponement may lead to transport capacity constraints that will have negative impact on the economy.
- Capacity improvement of the waterway transportation system could be achieved by improving the following components of the systems:
  - (1) Improvement of waterways
  - (2) Fleet construction
  - (3) Improvement of cargo handling and port efficiency

#### Development programs

- Improvement of waterways (US\$ 40 million)
  - (1) Can Tho-HCMC route: Full improvement<sup>1</sup> of existing waterway including the provision of navigational aids for day and night navigation.

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<sup>1</sup> Full improvement means a sufficient 26-m wide channel allowing normal two-lane traffic.



- (2) Can Tho-Kien Luong route: Full improvement of existing waterway, including the provision of navigational aids for day and night navigation, plus the construction of a bypass canal at Rach Gia.
- (3) Can Tho-Ca Mau route: First phase, medium level improvement<sup>2</sup> of the Can Tho-Xa No-Ca Mau stretch as a new trunk waterway followed by full improvement, including the provision of navigational aids for day and night navigation.  
 Rehabilitation of the existing waterway between Can Tho and Bac Lieu.
- (4) HCMC-Kien Luong route (by-passes Can Tho): Full improvement of the Lap Vo-Sa Dec stretch, including the provision of navigational aids for day and night navigation.

- Fleet construction (US\$ 7million): Fleet construction of some 20,000DWT before the year 2000.
- Improvement of cargo handling and port efficiency: Developing landing stages for cargo handling and storage in districts along the trunk waterways.

Others: Cargo forecasts in the Mekong Delta are the following:

Table 2.1.1  
 Cargo Forecast in the Mekong Delta

Commodity	2000	2015
Rice, Agricultural Products	5.03	6.35
Construction Materials	3.79	8.90
Timber	0.85	1.85
Fertilizer	1.54	1.98
Others	2.87	7.26
<b>TOTAL</b>	<b>14.08</b>	<b>26.34</b>
Inland Waterway Transport (average annual growth rate)	9.20 (5.4%) (-2000)	15.60 (3.6%) (2000-2015)

- 3) M/P Study on Transport Development in the Northern Part of Vietnam (June 1994, JICA)

Recommendations

- Specialization of river ports in handling bulk cargo (coal and construction materials)
- Modernization of river port facilities and inland waterway fleet
- Development of construction material-related industries in the vicinity of river ports
- Rehabilitation of dredging and navigational aids systems

<sup>2</sup> Medium-level improvement means provision of an 18-m wide channel to allow medium traffic density (less than 5,000 passages per year)

- Priority routes for rehabilitation: Quang Ninh-Pha Lai and Quang Ninh-Ninh Binh
- Priority ports for rehabilitation: Hanoi, Ninh Binh and Viet Tri

Development programs

- Proposed projects are as follows.

Table 2.1.2  
 List of Projects

(US\$ million)

N o.	Project Item	by 2000	2001-2005	2006-2010	Total
1	Ninh Binh Port Rehabilitation and Extension	17.6	8.5	8.5	34.6
2	Hanoi and Viet Tri Port Improvement	30	10	10	50
3	The main Waterway Dredging and Rearrangement	7.6	1.5	1.5	10.6
4	Groyne Test Construction and Hydrologic Survey	0.18	0.46	0.46	1.1
5	Navigation Aids System Rearrangement	0.77			0.77
	TOTAL	56.15	20.46	20.46	97.07

Others

- Cargo forecasts for northern Vietnam are as follows.

Table 2.1.3  
 Cargo forecast in Northern Vietnam (Inland waterway Transport)

(mil. ton)

Commodity	2000	2010
Coal & Peat	5	8-10
Construction Materials	3.5	5-7
Cement	4	5-7
Others	1	4
TOTAL	13.5	22-28

4) Red River Delta M/P (June 1995, UNDP)

Recommendations

- Increase of the least available depth of principal waterways to 1.8m (90% of the time)
- Improvement of bends until the radius of curves is greater than 600 m
- Increase of bridge clearances for bridges across Duong River and Thuong Ly and Dao channels in Haiphong
- Investigation regarding the feasibility of installing retro-reflecting material on beacons and sealed narrow beam searchlights on vessels to extend navigation time

- Improvement of river ports by improving road and railway access, mooring and transit facilities and handling equipment
- Fleet upgrading by replacing old and smaller barges with barges with a loaded draft of 1.5 m and replacement of old tugs with new, shallow draft pushers
- Development of the north-south sea traffic using modern, shallow draft coasters with a weight of more than 1,000 tons
- Development of tourist services in rivers, coastal water and upstream reservoirs (for example, Hoa Binh)
- Development of a management information system for optimum multimode planning of cargo flows
- Conduct of related feasibility studies

#### Development programs

- Short-term plans (the period up to 2005, US\$ 95million)
    - (1) Improvement of waterways
      - a) Quang Ninh-Haiphong-Pha Lai-Hanoi-Viet Tri route
      - b) Haiphong-Nam Dinh-Ninh Binh route
      - c) Ninh Binh –the mouth of Day river route
    - (2) Improvement of river port facilities : Ninh Binh, Hanoi and Viet Tri port
  - Medium-term plans (the period from 2005 up to 2025)
    - (1) Improvement of waterways.
    - (2) Implementation of river training works to assist in maintaining the required least available depth (LAD) while minimizing dredging requirements, based on detailed studies.
    - (3) Raising of bridges studied in the short term.
    - (4) Improvement of river port facilities
  - Long-term plans (the period beyond 2025): Continued maintenance and upgrading of the waterways, provision of suitable navigation aids, and encouraging the upgrading of port facilities
- 5) M/P Study on Coastal Shipping Rehabilitation and Development Project (March 1997, JICA)

#### Recommendations

- Improvement of ports, waterways, navigational aids facilities, etc.
- Priority inland waterway ports as key general coastal shipping ports (excluding the main sea ports of Haiphong, Cai Lan Saigon):
  - (1) North: Hanoi, Viet Tri, Ninh Binh
  - (2) South: Dong Nai, My Tho, Dong Thap, Can Tho, My Tho
- Priority inland waterway route as key sea-cum-riverways (excluding the main sea channels of Cua Nam Trieu-Haiphong, Vung Ganh Rai-Saigon):

- (1) North: Lach Giang-Hanoi, Hanoi-Viet Tri, Cua Day-Ninh Binh, Quan Lien Canal route
  - (2) South: Cua Dinh An-Can Tho, Can Tho-Cho Moi, Cua Tieu-My Tho, My Tho-Cho Moi, Cat Lai-Dong Nai route
- Improvement in pricing of waterways to encourage efficiency and adequate cost recovery
  - Resolution of overlapping responsibilities of Vietnam National Maritime Bureau (VINAMARINE) and Vietnam Inland Waterway Administration (VIWA)

#### Development Programs (Short-term Priority Projects)

- Improvement of inland waterway ports: Hanoi (in the north) and Dong Nai and Can Tho (in the south)
- Improvement of inland waterway routes: Lach Giang-Hanoi (in the north); Cua Dinh An-Can Tho and Cat Lai-Dong Nai (in the south)
- Deployment of visual ATN and maritime safety fleet around the above-mentioned ports and routes

#### 6) Red River Waterways Project (January 1998, ADB)

##### Recommendations

- Improvement of navigation conditions by constructing river training works in combination with capital dredging
- Increase of fleet in the short term and fleet modernization in the medium and long term
- Establishment of an environmental monitoring program to monitor sediment quality in waterways and ports during and after construction activities (dredging, river groynes, slope protection, bridges, etc.)
- Installation of shipwaste-receiving facilities at ports
- Implementation of a pilot project to restructure VIWA river management
- Enhancement of private sector involvement

##### Development programs

- Navigation improvements
  - (1) Quang Ninh-Haiphong-Hanoi-Viet Tri route
  - (2) Cua Day/Lach Giang-Hanoi-Viet Tri route
  - (3) Quang Ninh-Haiphong-Nam Dinh-Ninh Binh route
    - a) Dredging to a 2-m LAD and 55-m wide bottom (in the short term)
    - b) Bend correction (dredging) in seven locations
    - c) Improvement of existing navigational aids system
- Port improvement : Ninh Binh, Hanoi and Viet Tri ports
- Bridge construction

- (1) Rehabilitation of the Duong bridge.
  - (2) Construction of a bridge spanning the Day-Ninh Co canal.
  - Canal and bank protection
    - (1) Bank protection for a total of 15 km of waterway
    - (2) Construction of a canal linking the Day and Ninh Co rivers
- 7) Transport Sector Report 1998 (January 1999, WB)

Recommendation

- Access and affordability: The basic interurban transport networks, in particular roads and inland waterways, must be completed and linked with the feeder networks, as well as with national and international distribution centers, including ports, airports, and local distribution centers.

**2.2 Ongoing and Committed Projects**

Ongoing and committed projects are shown in the table below.

Table 2.2.1  
 Ongoing and Committed Projects

Name of Project	Amount (VND billion)	Summary	Remarks (starting)
1. National Budget - Ninh Phuc port - Waterway route in Dong Thap Muoi Long Xuyen quadrangle	126 76	Expanding port berth and construction facilities Rehabilitating, improving and upgrading the waterway route	VIWA ('95) VIWA ('96)
2. World Bank loan - Inland Waterway and Port Rehabilitation Project	73	Rehabilitating and upgrading 600 km of primary inland waterways and ancillary facilities in the Mekong Delta and rehabilitating Can Tho Port.	VIWA ('97)
3. ADB loan - Red River Waterways Improvement	0.6	Assessing improvements on navigable waterways	VIWA ('94)
4. CIDA loan - Vietnam Inland Waterways Project	4.3	Strengthening VIWA's capacity to efficiently and effectively manage and develop waterways as a safe, accessible, economically viable, and environmentally sustainable transport mode	VIWA ('98)
5. Netherlands loan - Upgrading of Inland Waterway School No.1	2.4	Upgrading School No.1 of vocational techniques for river navigation	MOT ('97)
6. Belgium loan - F/S for the improvement of the access channel to Bassac River (Dinh An mouth)	1.6	Conducting technical and economic studies on the improvement of the access channel to Bassac River (Dinh An mouth)	MOT ('97)

## 2.3 Government Plans and Policies

Based on the “Draft Master Plan for Inland Waterway Transport of Vietnam toward the Year 2020”, now being prepared by the Transport Development and Strategy Institute (TDSI) and VIWA, government’s plans to develop waterway routes and port hubs are shown in Table 2.3.1-2.3.3. In addition, government policies for the development of inland waterway transport are summarized as follows:

- 1) Creation of investment capital
  - To source domestic and foreign sources of capital.
- 2) Development of inland waterways transportation
  - To take full advantage of the superiority of inland waterways transportation.
  - To allow all economic sectors to participate in inland waterway transport business.
- 3) Management of inland waterways transportation
  - To undertake management by way of laws and institutions
  - To build a suitable system of organization and management.
  - To identify responsibilities of each level of management.
- 4) Creation of equitable and competitive environment
  - To ensure technical criteria of transportation safety and environmental protection.
  - To fulfill obligations toward the State (different fees and charges)
  - To abolish monopoly in transportation so that all participants to inland waterway transportation can compete through quality of service and price rationalization.
- 5) Protection of the environment
  - To impose tax on polluters.
  - To provide incentives to businesses using materials causing less pollution.
  - To protect and manage environment.
- 6) Promotion of inland waterways transportation safety
  - To standardize safety management from central to local level.
  - To make laws, decrees and ordinances relating to safety.
  - To disseminate information on regulations on inland waterways safety.
  - To improve inland waterways infrastructure.
  - To strictly implement all regulations on registry and exercise technical control over construction, from building to repair, and operation
  - To widen the scope of state management
  - To organize a system for prompt information of rescue and collecting, processing and storing data on inland waterways safety

- 7) Application of advanced technology
- To formulate special standards, norms, procedures.
  - To encourage application of new technology.
  - To encourage purchase of new and advanced equipment and machinery.
  - To enhance capability in research and experiment.
- 8) Development of human resource
- To provide training and retraining programs.
  - To utilize human resources.

Table 2.3.1  
 Government Plans for Development of Waterway Routes

Area	Route	Period	Plan
North	Quang Ninh-Ninh Binh (via Luoc River) (Total length: 322.5 km)	-2020 1998-2005  2006-2010 2011-2020	- Upgrade to Class II (B=50m, H=2.5m) - Complete navigational aids system and dredging of river channel - Construct river bank, widen the bend - Modernize navigational aids system, maintain river channel
	Quang Ninh-Pha Lai (via Chanh, Da Bach, Kinh Thay rivers) (Total length: 172 km)	-2020 1998-2005  2006-2020	- Upgrade to Class II (B=50m, H=2.5m) - Complete navigational aids system and dredging of river channel - Widen the bend, modernize navigational aids system, maintain river channel
	Hai Phong-Hanoi (via Duong River) (Total length: 150.5 km)	-2020 1998-2000  2001-2010 2011-2020	- Upgrade to Class II (B=50m, H=2.5m) - Complete navigational aids system, maintain river channel - Dredge at shallow section - Modernize navigational aids system, maintain river channel
	Viet Tri-Tuyen Quang (Total length: 105 km)	-2020 1998-2005  2006-2020	- Upgrade to Class III (B=30m, H=1.5m) - Dredge at shallow section, complete navigational aids system - Construct river bank, modernize navigational aids system, maintain river channel
	Cua Day-Ninh Binh (Total length: 72 km)	-2020 -2020	- Upgrade to Class I (B=60m, H=3.6m) - Dredge at shallow section
	Lach Giang-Hanoi (via Ninh Co River, Red River) (Total length: 187 km)	-2020 1998-2005 2006-2020	- Upgrade to Class I (B=50m, H=3.6m) - Maintain river channel - Dredge at shallow section, modernize navigational aids system
	International route: Lach Giang-Hanoi-Lao Cai (Total length: 446.5 km)	-2020  1998-2005  2006-2020	Lach Giang-Hanoi - Upgrade to Class I (B=50m, H=3.6m) Viet Tri-Lao Cai - Upgrade to Class III (B=30m, H=1.5m) Hanoi-Viet Tri - Dredging and maintenance of river channel, modernization of navigational aids system Viet Tri-Lao Cai - Sufficient installation of marks Viet Tri-Lao Cai - Upgrading the route based on stone breaking, etc.
	Da River (Total length: 269 km)	1999-2005  2006-2020	Da River junction-Ta Bu port - Maintenance of river channel, modernization of navigational aids system - 150 km extension of the route for Son La power plant
	Other routes in the North	2001-2005	- Some new routes will be open Ha Giang-Lo Gam junction: 160 km, Nang River-Ba Be Lake: 45 km, etc.

(Table 2.3.1 continued)

Area	Route	Period	Plan
South	Sai Gon-Kien Luong (via Cho Gao Canal, Tien River, Lap Vo Canal, Hau River and Rach Soi Canal) (Total length: 320 km)	-2020 -2020	- Upgrade to Class III (B=30m, H=3m) - Dredge, remove obstacles, instal navigational aids
	Sai Gon-Ca Mau (via Cho Gao Canal, Tien River, Mang Thit River, Hau River, Xa No River) (Total length: 332 km)	-2020 1998-2005 2006-2020	- Upgrade to Class III (B=30m, H=3m) - Dredge, remove obstacles, instal navigational aids, equipment - Renovate some low-clearance bridges
	Sai Gon-Kien Luong (via Dong Thap Muoi) (Total length: 288 km)	-2020 1998-2020	- Upgrade to Class III (B=20m, H=3m) - Instal navigational aids system, dredge, construct stations, remove obstacles
	Sai Gon-Moc Hoa (from Binh Phuoc to Moc Hoa mainly on Vam Co River and Vam Co Tay River) (Total length: 129 km)	1998-2005 1998-2005 2006-2020	- Upgrade to Class III (B=30m, H=2m) - Instal navigational aids system, station - Maintain, modernize navigational aids system
	Sai Gon-Ben Keo (from Binh Phuoc to Go Dau, Ben Keo, mainly on Vam Co Dong River) (Total length: 156 km)	1998-2005 2006-2020	- Upgrade to Class III (B=30m, H=2m) - Maintain, modernize navigational aids system
	Ho Chi Minh City-Ben Suc (Total length: 101.5 km)	1998-2005 2006-2020	- Upgrade to Class III (B=40m, H=3.2m) - Maintain, modernize navigational aids system
	Cua Dinh An-Tan Chau (Hau River)	-2020	- Maintain to meet Class I (B=100m, H=7m)
	International route: Cua Tieu-Hong Ngu-Cambodia (Total length: 227 km)	-2020	- Maintain to meet Class I (B=100m, H=6m)
Central	Rivers of the provinces from Thanh Hoa to Quang Nam	-2020	- Maintain river routes, instal navigational aids system

Source: Draft Master Plan for Inland Waterway Transport of Vietnam toward the Year 2020



Table 2.3.2  
Government Plans for Development of Port Hubs in the North

Port	Location	Function	Size of projects of in-phase planning					
			Y2000		Y2010		Y2020	
			Commodity 10 <sup>3</sup> T	Length of berth (m)	Commodity 10 <sup>3</sup> T	Length of berth (m)	Commodity 10 <sup>3</sup> T	Length of berth (m)
1. Commodity								
- Hanoi	Red River, Hanoi	General port	909	303	1200	400	1300	400
- Khuyen Luong	Red River, south Hanoi	Maritime-river port	458	200	710	285	1225	400
- Viet Tri	Lo River, Viet Tri City	General port	370	150	735	245	1250	300
- Ninh Binh port system	Day River, Ninh Binh Township	Ninh Phuc general port, Ninh Binh coal terminal	1080	200	1900	350	2500	490
- Hoa Binh	Da River, Hoa Binh Township	General port	350	175	400	200	550	200
- Da Phuc	Cong River, Thai Nguyen	General port	120	70	200	100	200	100
2. Passenger								
- Hanoi	Hanoi	10 <sup>3</sup> person	170	1 wharf	322	1 wharf	540	1 wharf
- Hai Phong	Hai Phong	10 <sup>3</sup> person	200	1 wharf	350	1 wharf	600	1 wharf
- Nam Dinh	Nam Dinh	10 <sup>3</sup> person	150	1 wharf	200	1 wharf	300	1 wharf

Source: Draft Master Plan for Inland Waterway Transport of Vietnam towards the year 2020

Table 2.3.3  
Government Plans for Development of Port Hubs in the South

Port	Location	Function	Size of projects of in-phase planning					
			Y2000		Y2010		Y2020	
			Commodity 10 <sup>3</sup> T	Length of berth (m)	Commodity 10 <sup>3</sup> T	Length of berth (m)	Commodity 10 <sup>3</sup> T	Length of berth (m)
1. Commodity								
- My Tho	Tien River	General port	453	152	658	210	882	280
- Vinh Long	Tien River	General port	332	152	705	280	945	250
- My Thoi	Hau River	General port	635	210	843	280	1400	350
- Cao Lanh	Hau River	General port	509	210	692	210	1150	280
- Ca Mau	Ganh Hao River	General port	305	76	390	152	472	172
2. Passenger								
- HCM City		10 <sup>3</sup> person	700	1 wharf	1500	1 wharf	2400	1 wharf
- Can Tho		10 <sup>3</sup> person	400	1 wharf	1250	1 wharf	1700	1 wharf
- Long Xuyen		10 <sup>3</sup> person	300	1 wharf	1000	1 wharf	1500	1 wharf
- Ca Mau		10 <sup>3</sup> person	400	1 wharf	1200	1 wharf	1500	1 wharf

Source: Draft Master Plan for Inland Waterway Transport of Vietnam toward the Year 2020

### 3 CURRENT SITUATION

#### 3.1 Administrative Framework

##### Organizations and Responsibilities

VIWA under the Ministry of Transport (MOT) is responsible for the administration of inland waterway transport in Vietnam. Since it was established on 30 January 1993 by Decree No. 08/CP, some parts of VIWA have been reorganized. Currently, there are 10 departments, one inland waterway branch in the south, 15 waterway management sections and three port authorities. VIWA's organizational chart is shown in Figure 3.1.1.

Inland waterways are managed by nine waterway management sections (No. 1-No. 9) in the north and six (No. 10-No. 15) in the south. Inland waterway ports are managed by three port authorities, as follows:

- 1) Port Authority No.1: Ports in Haiphong, Quang Ninh province
- 2) Port Authority No.2: Ports in Hanoi, Ninh Binh and 11 surrounding provinces
- 3) Port Authority No.3: Ports in HCMC and 11 surrounding provinces

In the near future, Port Authority No. 4 will be established to manage ports in Can Tho and surrounding provinces.

Inland waterway transport is classified into three forms as follows:

- 1) State-owned transport: State-owned transport is undertaken by waterway transport companies belonging to the Northern Waterway Transport Corporation and the Southern Waterway Transport Corporation. For reference, the organizational chart of Northern Waterway Transport Corporation is shown in Figure 3.1.2.
- 2) Specialized transport: For the transport of specialized material to big factories, such as cement plants, paper mills and construction material enterprises, specialized ports are not only built but specialized transport sections as well are organized under other ministries. Typical examples of these are found in Bai Bang Paper Mill, Ha Tien Cement Plant, Sand and Cobble Company (under the Ministry of Construction), etc.
- 3) Private transport: Private transport has been developing rapidly in recent years and has played a great role in the local transport of the branch routes.

Figure 3.1.1  
Organization Chart of VIWA

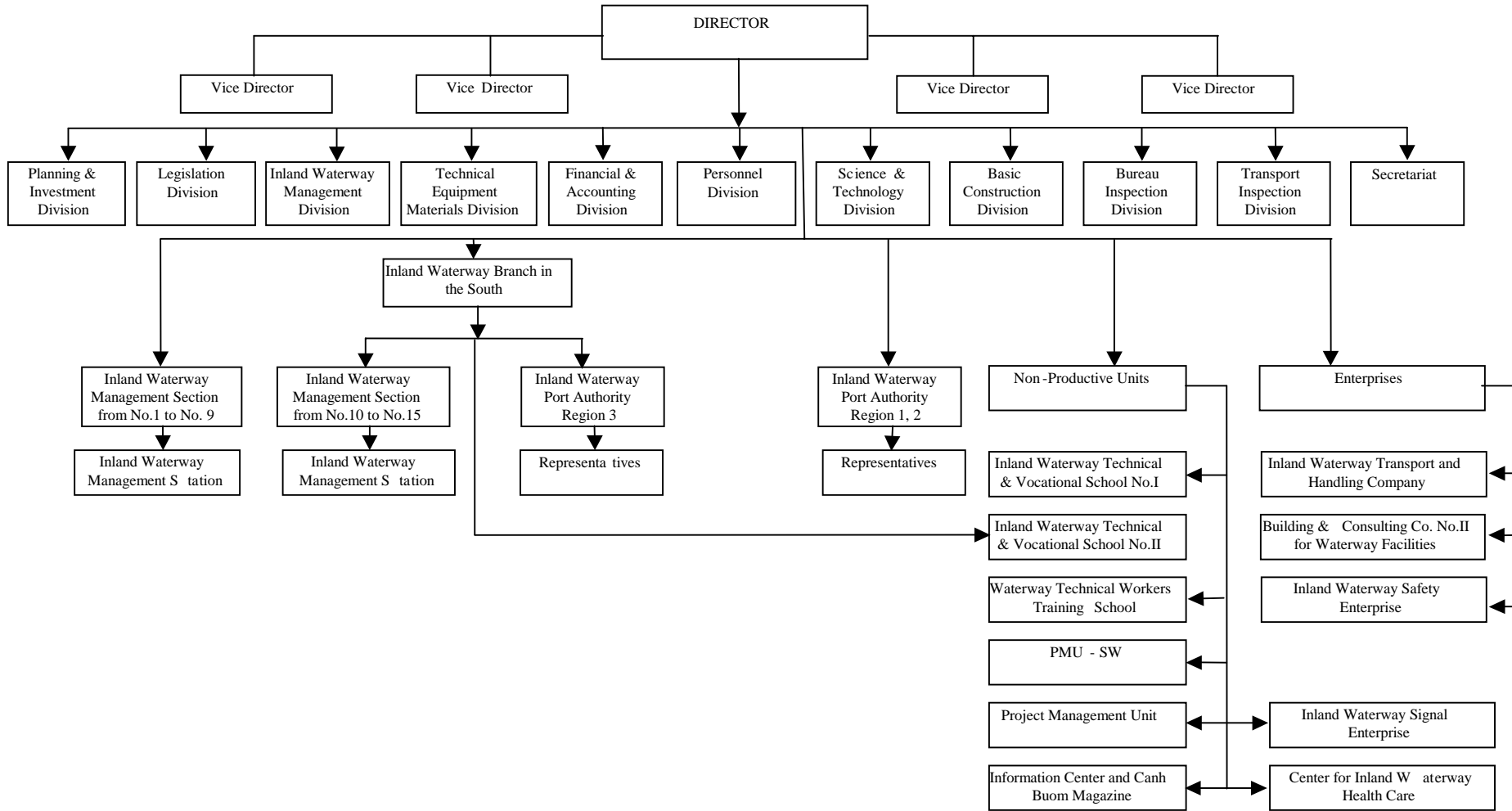
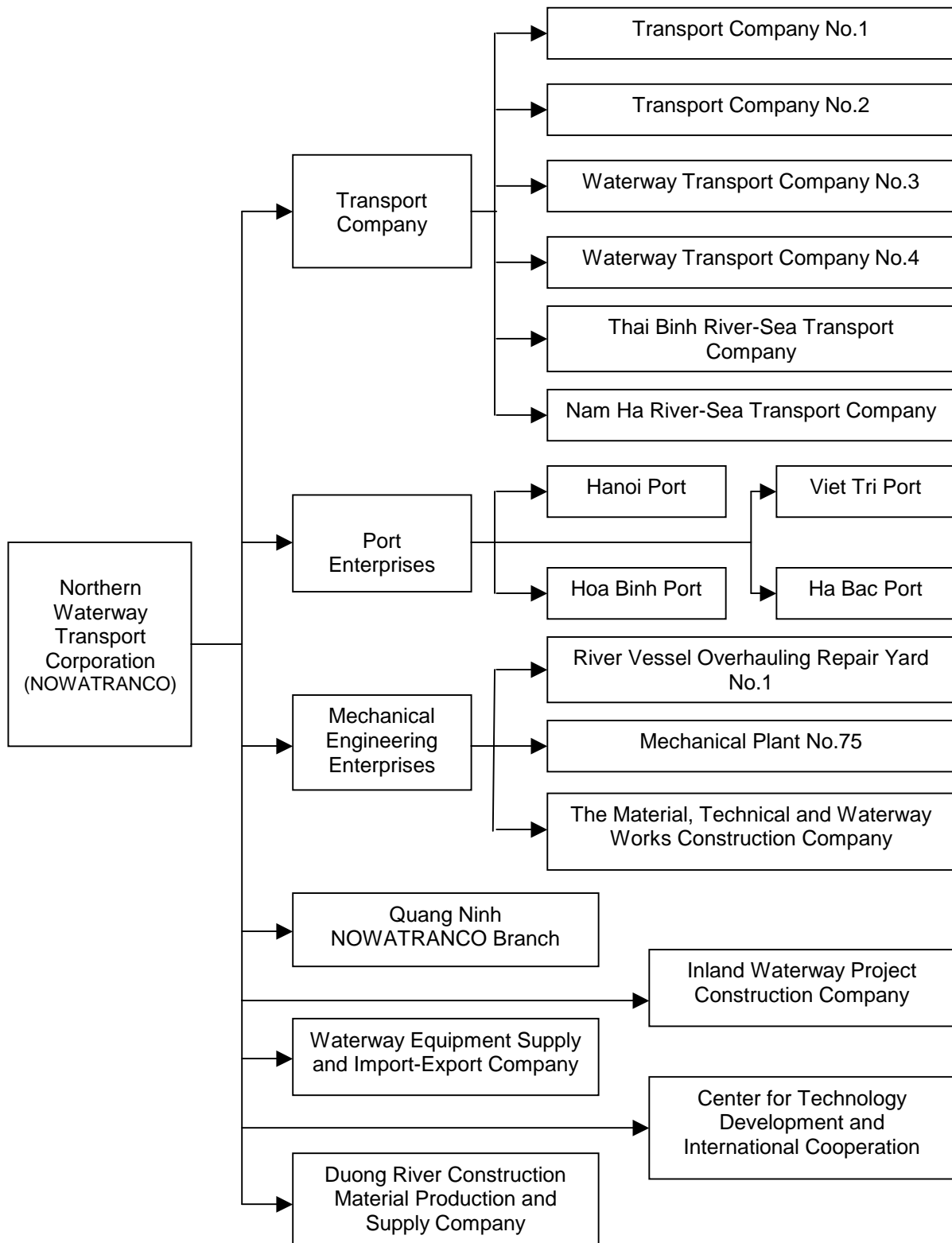


Figure 3.1.2  
 Organization Chart of Northern Waterway Transport Corporation



### Related Rules and Regulations

Rules and regulations related to inland waterway sector are shown in Table 3.1.1.

Table 3.1.1  
 Rules and Regulations in Inland Waterway Sector

Item	Rule/Regulation No.	Contents
Organization	Decree No.08/CP	Establishment of VIWA
	Decision No.3619/1999	Regulation of organization and activities of VIWA promulgated by the MOT
	Decree No.80/CP	Regulation of organization and activities of transportation inspection
	Decision No.2873/1997	Temporary regulation of organization and operation of inland waterway port authorities
	Decision No.3253/1997	Delegation to establish local port authority representatives promulgated by the MOT
Management	Decision No.343/PC-VT	Regulation on duties, power, badge of transport inspectors
	Decision No.1138/QD-PCVT	Management and granting license to open wharves
	Decision No.2056/QD-PC	Registration on inland waterway facilities
	Decision No.914/QD-TCCB-LD	Regulation on granting professional certificate and job status responsibility for inland waterway facilities
	Decision No.1035/QD-VT	Regulation on freight (cargo) transport, loading and unloading of inland waterways
	Decision No.1036/QD-VT	Regulation on passenger transport of inland waterways
Finance	Decision No.36/VGCP-CNTDDV	Fee for cargo transportation by river
	Decision No.567/1198-QD-CDS	Fee for pilot ship on Cua Day - Ninh Phuc route
	Decision No.709/PC-VT	River port fee
	Decision No.1653/QD-GTVT	Fee for loading, unloading and transport of oversized and excess freight (cargo)
Others	Decision No.1286/QD-GTVT	Regulation on inland waterways protection

## 3.2 Inland Waterway Network

### Characteristics of Waterways

Inland waterway transportation has been regarded as an important part of the national transport system for a long time, due to the following advantages:

- Dense river network system formed in Red River Delta and Mekong Delta. The average river density is 0.127km/km<sup>2</sup> in the entire country and 0.2-0.4 km per sq km in Red River Delta and Mekong Delta.
- It is cheaper compared with other transportation modes, especially for transport over long distances and of heavy cargo, like bulk commodities, where speed is not so important.

The characteristics of waterways in each part of Vietnam are as follows:

#### 1) North

- (1) There are two large natural river systems: Red (Hong) River and Thai Binh River.
- (2) River systems are mostly natural and greatly affected by hydro-meteorological elements.
- (3) The minimum width of waterways is 30-60 m.
- (4) The minimum depth of waterways is 1.5-2 m.
- (5) The difference in water level between dry and rainy seasons is 5-7 m (over 10 m in some parts)
- (6) During rainy season, the water current is strong.
- (7) During dry season, navigable depth and curving radius of channel for ships are limited.
- (8) Sandbanks often form (their position depends on the annual flood), which make navigation on inland waterway routes difficult.

#### 2) South

- (1) There are two large natural river systems: Mekong River and Dong Nai River.
- (2) River systems are linked with dense canal systems, forming a favorable and remarkable waterway transport network.
- (3) The minimum width of waterways is 30-100 m.
- (4) The minimum depth of waterways is 2.5-3 m.
- (5) The difference in water level between dry and rainy seasons is 2-5 m.
- (6) The system experiences semi-diurnal tide.
- (7) Unexpected sandbanks form less frequently.

### 3) Center

- (1) There are three main river systems: Lam, Thu Bon and Ba rivers in the provinces of Nghe An, Quang Nam and Phu Yen, respectively.
- (2) River systems are greatly affected by hydro-meteorological elements.
- (3) River systems are all small, short, high-sloping, with lots of water falls and cascades, and not connected.
- (4) During rainy season, the water current is strong.
- (5) During dry season, the navigable draft is very shallow.
- (6) Transport is limited due to the existence of bridges on National Road No.1. Only a total of 10-15 km from the national road to the estuary can be exploited as waterway route.

### Classification of Waterways

Waterways are categorized into six classes as shown in Table 3.2.1.

Table 3.2.1  
 Classification of Inland Waterways (TCVN 5664-1992)

Class	Dimension of Waterways					Dimension of Works			
	River		Canal		Radius (R)	Bridge		Electric Wire	
	Depth	Width	Depth	Width		Span		Clearance	Clearance
						River	Canal		
I	>3.0	>90	>4.0	>50	>700	80	50	10	12
II	2.0-3.0	70-90	3.0-4.0	40-50	500-700	60	40	9	11
III	1.5-2.0	50-70	2.5-3.0	30-40	300-500	50	30	7	9
IV	1.2-1.5	30-50	2.0-2.5	20-30	200-300	40	25	6(5)	8
V	1.0-1.2	20-30	1.2-2.0	10-20	150-200	25	20	3.5	8
VI	<1.0	10-20	<1.2	10	60-150	15	10	2.5	8

Note: The value ( ) is used with the agreement of juridical office.  
 Source: VIWA

The total length of managed waterways (with investment for maintenance, provided with signboards, etc.) is 8,013 km, 6,231 km of which is managed by central government and 1,782 km by local governments. Since 1993, the length of waterways which central government manages has increased from 3,772 km to 6,231 km.

The length of waterways of each class is as follows:

- Class I : 1,797 km
- Class II : 1,206 km
- Class III : 3,228 km
- Class IV-VI : 1,782 km

The classification maps of inland waterways are shown in Figure 3.2.1 and Figure 3.2.2.



Figure 3.2.1  
 Inland Waterways Classification in Northern Vietnam

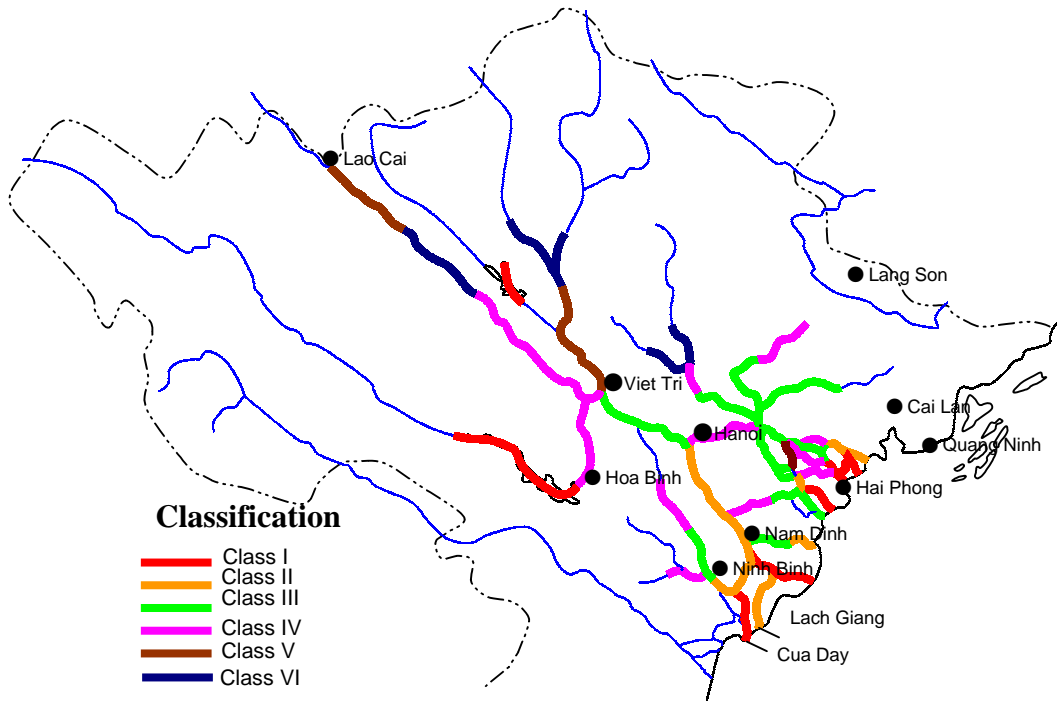
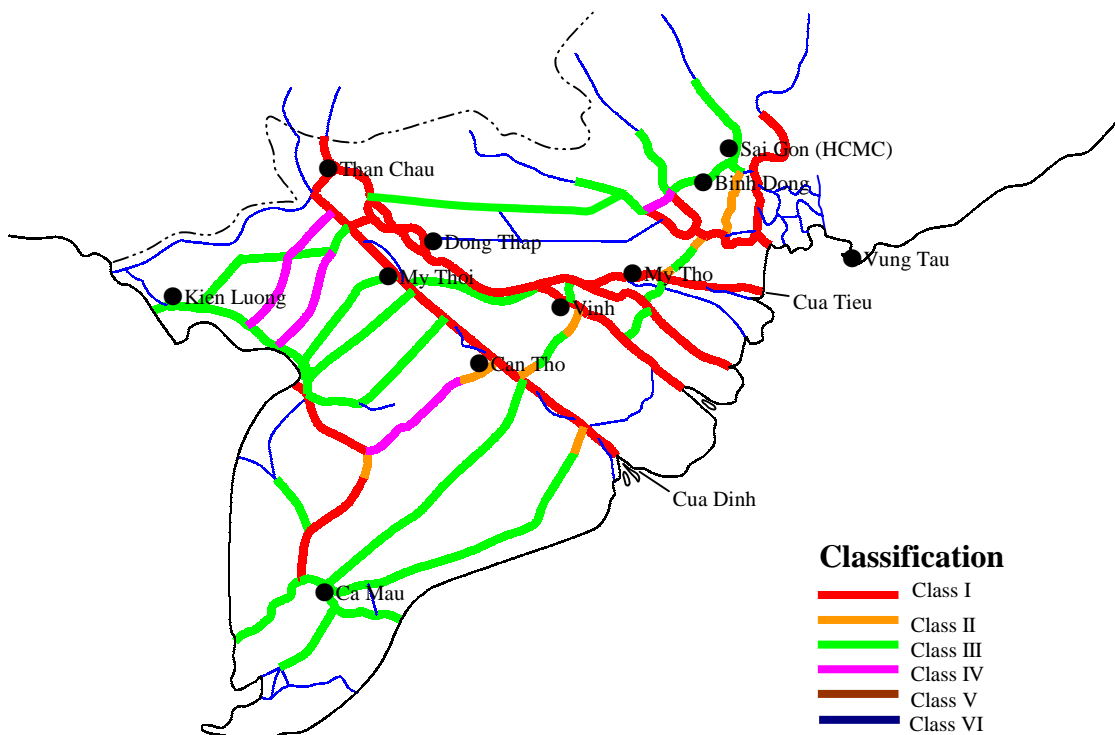


Figure 3.2.2  
 Inland Waterways Classification in Southern Vietnam



Main Routes

Though there are many transport routes by inland waterway in Vietnam, the following nine routes are considered particularly important and indispensable to transportation:

Table 3.2.2  
 Main Inland Waterway Routes

Area	No.	Route	Main River, Channel	Length (km)	Minimum Water Depth (m)	Maximum Vessel Size (DWT)
North	1	Quang Ninh-Ninh Binh	Luoc, Dao, Day	323	1.8	Barge use
	2	Quang Ninh-Hanoi, Hanoi-Viet Tri	Kinh Thay, Duong, Hong	313 79	1.5	Barge use
	3	Lach Giang-Nam Dinh-Hanoi	Ninh Co, Hong	181	1.5	600
	4	Cua Day-Ninh Binh	Day	72	0.8	300-1,000
South	1	HCMC-Kien Luong (1)	Dong Tien Lagrange, Van Nao, Mac Can Dung	288	1.5	Barge use
	2	HCMC-Kien Luong (2)	Cho Gao, Rach Soi-Hau Giang, Rach Gia-Ha Tien	319	1.5	Barge use
	3	HCMC-Ca Mau	Cho Gao, Ni Co Lai, Xa No	341	1.5	Barge use
	4	Cua Tieu-Tan Chau	Tien Giang	227	2.1	2,000
	5	Cua Dinh An-Tan Chau	Hau Giang	235	2.6	3,000-5,000 (Cua Dinh An-My Thoi)

Route maps are shown in Figure 3.2.3 and Figure 3.2.4.

Figure 3.2.3  
 Main Routes of Inland Waterway Transport in Northern

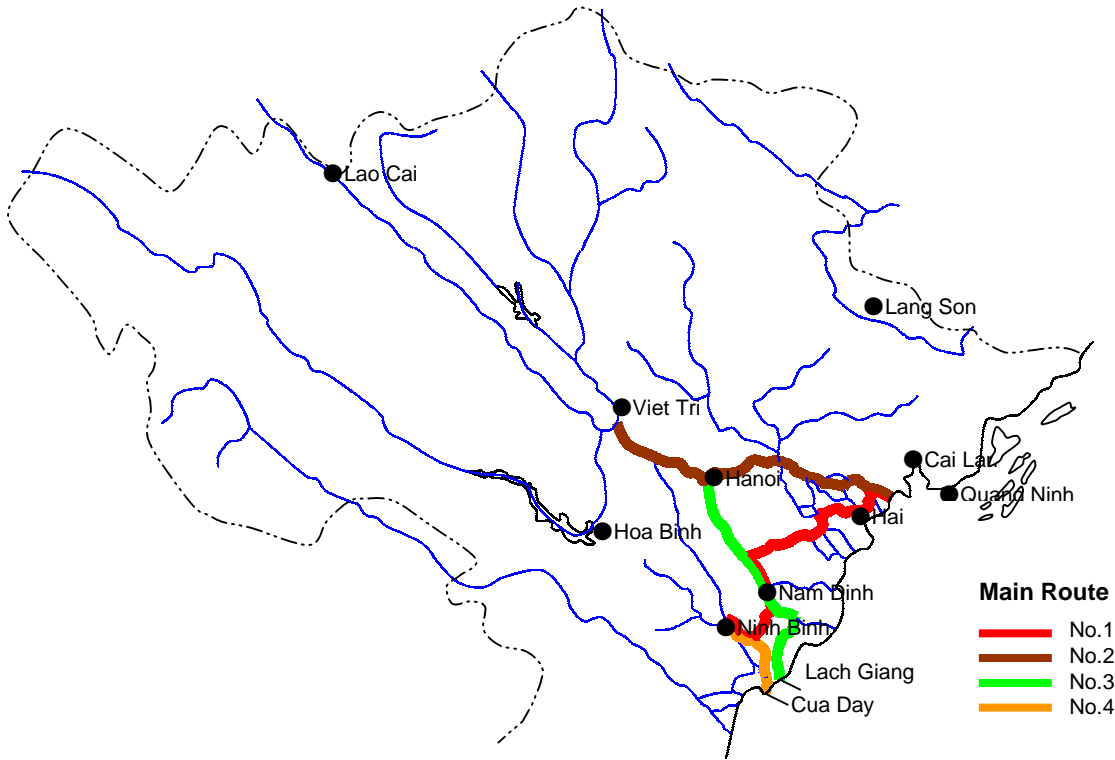
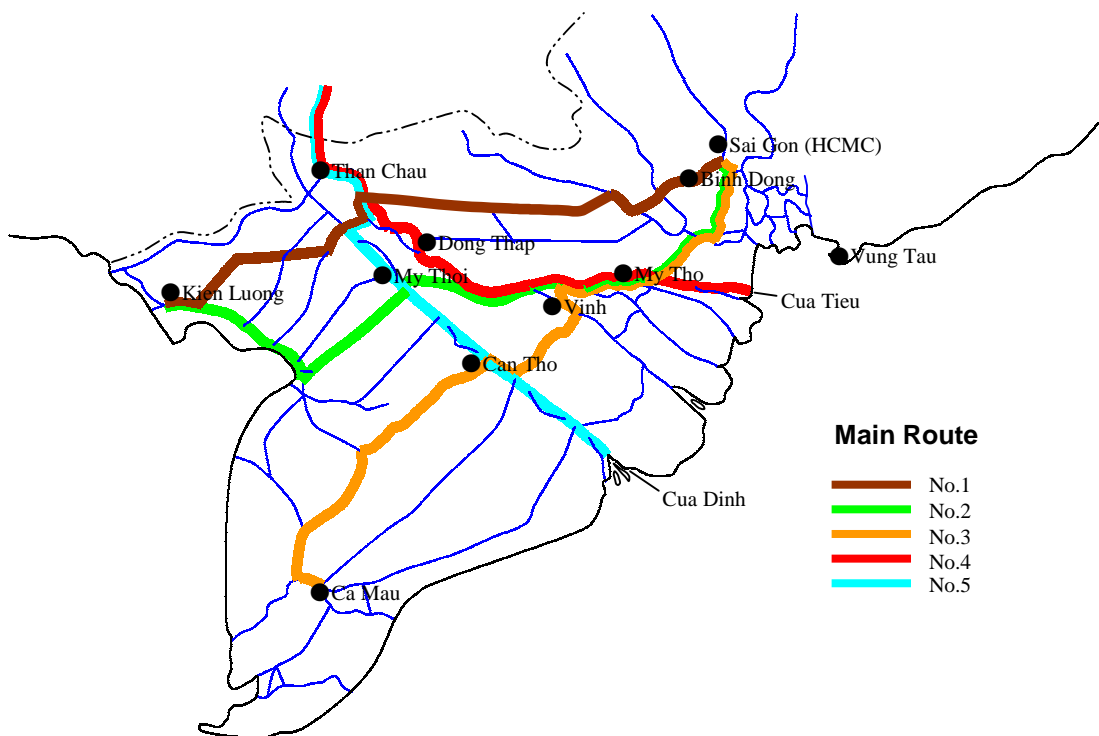


Figure 3.2.4  
 Main Routes of Inland Waterway Transport in Southern Vietnam



### 3.3 Inland Waterway Ports

In Vietnam, there are hundreds of inland waterway ports, and these ports are classified into three according to management, as follows:

1) Ports managed at central level

- North: Hanoi, Viet Tri, Hoa Binh, Ninh Binh, and Ha Bac
- South: Tan Thuan, Thu Duc I

2) Ports managed at local level

Majority of provinces, which have their own economic centers, also have their own ports and quays to promote economic development and to serve as a contact place to supply goods. Major ports managed at local level are as follows:

- North: Tuyen Quang, Son Tay, Hong Chau, Cong Cau, Ta Hoc, An Duong, etc.
- South: Cao Lanh, Long Xuyen, My Tho, Tan An, etc.
- Center: Ho Do, Dong Ha, etc.

3) Special ports

These ports are for responsible in handling specific items only such as thermal power plants, cement, food grains, and chemicals, papers, building glass, etc.. These are directly managed by various ministries and sectors. Typical examples are the following:

- North: Pha Lai, Ninh Binh (thermal power plants), Chinfon, Hoang Thach (cement), Bai Bang (paper), Dap Cau (glass), Chem (construction material), etc.
- South: Kien Luong, Thu Duc, Hon Chong (cement), Tra Noc, Binh Dong, Cao Lanh (cereals)

Port facilities and equipment are shown in Table 3.3.1.

The general characteristics of inland waterway ports are as follows:

- Ports are generally small, and their average capacity is not so large.
- There are few ports equipped with proper loading/unloading facilities. Mechanization is still at a low level.
- Facilities are mostly outdated and incomplete, except in some special ports, and their performance is low. The capacity of warehouses is insufficient.
- Most small ports are poorly connected to the national transportation network due to insufficient road access.

Table 3.3.1  
 Port Facilities and Equipment

Area	Ports	Berth Length (m)	Water Depth (m)	Yard Area (m <sup>2</sup> )	Warehouse Area (m <sup>2</sup> )	Cargo Handling Equipment
North	Hanoi	525	3.5	55,500	6,210	1 mobile crane, 6 floating cranes, 5 mobile loaders, 1 forklift, 6 trucks
	Khuyen Luong	106	5-6	6,000	4,620	6 cranes
	Viet Tri	180	3.5	23,400	2,400	7 cranes, 2 forklifts, 10 trucks
	Hoa Binh	120	1-2.5	15,000	320	1 cranes
	Ninh Binh	40	3-5	34,000	920	17 cranes, 310 m belt conveyor, 60 trucks (10t)
	Ninh Phuc	117	6	(-)	(-)	2 cranes
	Nam Dinh	345	10	17,870	4,200	10 cranes, 1 forklift, 2 trucks
	A Lu	(-)	(-)	3,000	720	3 cranes
	Dap Cau	(-)	(-)	17,000	(-)	1 crane, 10 trucks
	Cong Cau	(-)	(-)	(-)	(-)	(-)
	Son Tay	160	3-3.5	1,200	2,500	(-)
	Hong Van (Hong Chau)	60	3-4	1,500	5,000	5 trucks, 105 m belt conveyor
	Thuy Loi	(-)	(-)	(-)	(-)	(-)
	Thai Binh	(-)	(-)	(-)	(-)	(-)
	Pha Lai	261	1.2	(-)	(-)	4 cranes
	Hoang Thach	(-)	(-)	(-)	(-)	(-)
Dien Cong	120	(-)	6,000	(-)	2 belt conveyors	
Chinh Pong	(-)	(-)	(-)	(-)	(-)	
South	My Thoi	76	4.5-6.5	3,000	3,625	2 mobile cranes (7-10t), 3 floating cranes (2.5-16t), 2 forklifts (3-5t), 4 trailers (5t)
	Cao Lanh (Dong Thap)	70	(-)	1,500	1,810	(-)
	My Tho	62 135	7 5	25,478	1,440	3 cranes (13-25t), 19 trucks, 4 trailers
	Vinh Thai (Vinh Long)	80	7	6,700	6,100	4 cranes, 4 forklifts
	Hong Chong	65	4.6-5.7	8,000	3,600	1 crane, 4 trucks
	Ca Mau	70	(-)	6,400	1,240	2 cranes
	Thu Duc	200	(-)	(-)	800	2 cranes
	Dong Nai	(-)	(-)	(-)	(-)	(-)
	Kien Luong	300	3-4	(-)	1,600	1 crane, 1 belt conveyor
Center	Ho Do	(-)	(-)	(-)	(-)	(-)
	Dong Ha	(-)	(-)	(-)	(-)	(-)

Note: (-) Data unavailable

### 3.4 Fleet and Operation

Inland waterway transport services are provided by public operators, several cooperatives in transport and handling services and numerous small and independent private operators. Services are mainly provided by public operators in the north and private operators in the south. This is because the fleet capacity in the north is mainly owned by central government or provinces, whereas that in the south is mainly owned by private operators. The total fleet capacity of inland waterway transport is shown in Table 3.4.1.

Table 3.4.1  
 Fleet Capacity of Inland Waterway Transport

Vessels	Unit	1991	1992	1993	1994	1995	1996
Pusher and tugboats	Vessels HP	854 70,900	975 111,500	915 111,500	864 105,600	784 96,000	709 87,500
Cargo ships	Vessels Tonnage	12,306 229,000	11,764 180,500	11,923 188,600	11,996 191,800	21,014 380,600	20,778 396,200
Barges	Vessels Tonnage	1,757 287,800	1,558 268,100	1,663 287,000	1,763 269,800	1,877 268,500	1,996 324,700
Cargo boats	Vessels Tonnage	(-) (-)	(-) (-)	31,000 68,000	27,000 58,300	21,000 37,880	(-) (-)
Non-motorized boats	Vessels Tonnage	(-) (-)	(-) (-)	1,500 9,700	1,300 8,100	1,200 7,540	(-) (-)

Note: (-) Statistical data unavailable

Source: TDSI, and Statistical Yearbook 1997

Public operators use iron-hulled vessels, but private operators mainly use self-propelled wood-hulled, oval-shaped vessels, etc. In general, the majority of vessels were built in the 1980s. Vessels in the south were built prior to 1975 and due to the lack of capital, they are not sufficiently repaired and maintained.

General characteristics of vessels and operation in the north and south are, as follows:

- 1) Convoy (400 tons x 2 barges) + tug/pusher 135-150cv
- 2) Convoy (200 tons x 4 barges) + tug/pusher 135-150cv
- 3) Convoy (100 tons x 6 barges) + tug/pusher 135-150cv
- 4) Self-propelled ship of 100-300 tons
- 5) River and sea-going ships with 600-1000 DWT on routes between Cua Day and Ninh Binh
- 6) River and sea-going ships with 2000-5000 DWT on Tien and Hau rivers

In the central region, almost all vessels for transportation are below 50 tons, a number of which are below 20 tons. Regarding sea and river transportation service, the Vietnam Sea-River Transport Enterprise (VISERITRANS) has a sea-

cum-river ship with a capacity of 400 tons. However, the company is hardly operating this service now due to low profitability. It mainly provides coastal shipping and river-to-river services.

### 3.5 Traffic Demand Characteristics

#### Traffic Volume

Traffic volume data of inland waterway are shown in Table 3.5.1 to Table 3.5.5. Due to insufficient statistics, it is difficult to collect detailed data. Moreover, historical transport statistics are considered unreliable due to unclear methodology in compiling data.

Table 3.5.1  
Cargo Volume

Items	Volume of Freight (thousand tons)			Volume of Freight Traffic (million tons km)		
	All Modes	Waterways	(%)	All Modes	Waterways	(%)
1990	53,889	16,295	30	12,544	1,749	14
1991	56,431	15,566	28	17,210	1,765	10
1992	64,903	16,894	26	17,002	1,817	11
1993	70,464	16,797	24	18,419	2,335	13
1994	76,455	17,533	23	21,127	1,971	9
1995	87,220	20,051	23	21,858	2,248	10
1996	100,140	23,395	23	29,142	2,487	9
1997	104,709	24,144	23	35,297	2,821	8

Source: Statistical Yearbook, 1997

Table 3.5.2  
Cargo Volume by Areas and Sectors

	1993		1994		1995	
	Thousand tons	Million tons km	Thousand tons	Million tons km	Thousand tons	Million tons km
North	6,955	1,114	7,229	941	8,205	1,044
- Central	2,317	428	2,538	496	2,843	524
- Local	4,638	686	4,691	445	5,362	520
Center	1,388	54	1,697	121	1,971	108
- Central	-	-	-	-	-	-
- Local	1,388	54	1,697	121	1,971	108
South	8,454	1,167	8,627	909	9,875	1,096
- Central	498	461	16	52	138	114
- Local	7,956	706	8,611	857	9,737	982

Source: TDSI

Table 3.5.3  
 Cargo Volume of Main Inland Waterway Ports

(1000 t)

Area	Ports	1993	1994	1995	1996	1997
North	Hanoi	718	745	723	540	650
	Khuyen Luong	38	126	219	384	492
	Viet Tri	215	298	150	120	150
	Hoa Binh	40	153	185	(-)	70
	Ninh Binh	415	413	484	500	512
	Ninh Phuc	(-)	(-)	(-)	(-)	100
	Nam Dinh	203	200	130	84	71
	A Lu	41	90	103	(-)	130
	Dap Cau	16	26	27	(-)	250
	Cong Cau	(-)	(-)	(-)	(-)	(-)
	Son Tay	38	126	219	200	150
	Hong Van	25	32	61	47	55
	Thuy Loi	(-)	(-)	(-)	(-)	100
	Thai Binh	(-)	(-)	(-)	(-)	(-)
	Pha Lai	(-)	(-)	1,013	(-)	(-)
	Hoang Thach	(-)	(-)	212	(-)	(-)
	Dien Cong	(-)	350	400	(-)	(-)
Chinh Pong	(-)	(-)	(-)	(-)	(-)	
South	My Thoi	83	104	153	159	169
	Cao Lanh (Dong Thap)	(-)	(-)	40	140	(-)
	My Tho	(-)	182	203	126	349
	Vinh Thai (Vinh Long)	(-)	(-)	120	100	120
	Hong Chong	(-)	(-)	4	(-)	(-)
	Ca Mau	(-)	(-)	(-)	(-)	50
	Thu Duc	(-)	(-)	200	(-)	(-)
	Dong Nai	(-)	(-)	140	207	(-)
	Kien Luong	200	180	400	450	310
Central	Ho Do	(-)	(-)	(-)	(-)	60
	Dong Ha	(-)	(-)	(-)	(-)	70

Note: (-) Statistical data unavailable



Table 3.5.4  
 Traffic Volume of Main Inland Waterway Routes

(1000 t)

North			South		
River	Route	1995	River	Route	1995
Hai Phong	Hai Phong-Cau Xi Mang	4300	Vam Co Tay	N3 Vam Co-Tan An	1470
Cam	Hai Phong-Nga Ba Nong	400		Cay Kho-Cho Gao	9270
Han	N3 Nong-N3 Trai Son	400	Tien	Cua Tieu-My Tho	(-)
Thai Binh	N3 Keo-Cong Cau	(-)		My Tho-N3 Sa Dec	7350
Mao Khe	Pha Dun-N3 Trieu	(-)		N3 Sa Dec-Cao Lanh	(-)
Phi Liet	Phu Dun-N3 Trai Son	(-)		Kenh Sa Dec-Lap Vo	6150
Kinh Thay	N3 Trai Son-N3 Trieu	2500		Rach Soi-Hau Giang	1820
	N3 Trieu-N3 Lau Khe	(-)		Rach Gia-Ha Tien	(-)
Da Bach	N3 S.Chanh-Pha Dun	2000		Mang Thit	3530
Ven Bien	H.Gai-N3 S.Chanh	4000		Quan Lo-Phung Hiep	1180
Da	N3 H.Ha-Cang H.Binh	450		Xa No	1160
	Ho Hoa Binh	(-)		Phu Hua Bai Xau	1100
Thuong	N3-My Loc-Pha Lai	(-)	Hau	Cua Dinh An-Can Tho	(-)
	Pha Lai-A Lu	800		Can Tho-Long Xuyen	(-)
Cau	Dap Cau-Pha Lai	(-)	Kenh	Dong Tien-Lagrange	(-)
Tra Ly	N3 Pham Lo-Yhai Binh	(-)			
Luoc	N3 Phuong Tra-Qui Cao	2000			
Nam Dinh	N3 Hung Long-N3 Doc Bo	2000			
Day	N3 Doc Bo-Cang Ninh Binh	1200			
	Cua Day	(-)			
Hong	Yen Bai-Viet Tri	150			
	Viet Tri-Hanoi	1500			
	Hanoi-Hong Chau	400			
	Hong Chau-Phuong Tra	400			
	Phuong Tra-Pham Lo	1200			
	Pham Lo-Hung Long	1200			
	Cua Lach Giang	(-)			
Duong	Cua Dau-My Loc	1200			
Lo	Viet Tri-Bai Bang	1500			
	Bai Bang-Tuyen Quang	(-)			

Note: (-) Statistical data unavailable

Source: TDSI

Table 3.5.5  
 Passenger Traffic

Items	Volume of Passengers (million persons)			Volume of Passenger Traffic (million persons km)		
	All Modes	Waterways	(%)	All Modes	Waterways	(%)
1990	326.8	43.6	13	11,830.0	1,014.0	9
1991	436.5	92.6	21	12,861.0	1,186.0	9
1992	493.0	92.5	19	14,600.0	1,145.0	8
1993	516.4	86.4	17	15,272.0	1,310.0	9
1994	555.5	104.1	19	16,757.0	1,412.0	8
1995	593.8	109.8	18	20,431.6	1,432.0	7
1996	639.2	117.9	18	22,133.9	1,605.6	7
1997	699.9	129.8	19	24,258.0	1,784.0	7

Source: Statistical Yearbook 1997

### Traffic Characteristics

According to Table 3.5.1 and Table 3.5.2, cargo volume of inland waterway transport has been increasing since 1990. However, its share among all transport modes has been gradually decreasing; it is 23% by ton base and 8% by ton-km base in 1997. Cargo volume transported by local sector is bigger than that by central sector. In the central region, average transport distance is shorter compared with that in the north and south.

Table 3.5.4 shows that in the south large traffic volume passes through Cho Gao canal.

The general characteristics of transported cargo are as follows:

- 1) In the north, the main cargoes transported are:
  - Coal for power plants, industry and consumption
  - Construction materials
  - Cement and cement products
  - Equipment, iron, steel, general cargoes, and fertilizer
- 2) In the south, main cargoes transported include:
  - Agricultural products
  - Construction materials
  - Materials for cement and cement products
  - Fertilizer, wood

As statistics are largely unavailable, it is difficult to obtain details of cargo handled in each port. During the field survey, only data on total cargo and main cargoes handled were obtained from some ports as shown in the next table.

Table 3.5.6  
 Cargo Details by Port

<b>1. Hanoi Port</b>		
Total cargo volume in 1998		: 766,022 tons
Main cargo	Sand, gravel, stone	: 465,151 tons
	Coal	: 190,000 tons
	Cement	: 82,625 tons
<b>2. Khuyen Luong Port</b>		
Total cargo volume in 1998		: 364,351 tons
Main cargo		
- In	Black sand exploitation	: 176,406 tons
	Cement	: 84,903 tons
	Coal	: 44,973 tons
	White sand/gravel	: 33,324 tons
	Food for livestock	: 16,123 tons
	Others	: 5,724 tons
- Out	Phosphate	: 2,520 tons
	Others	: 378 tons
<b>3. Viet Tri Port</b>		
Total cargo volume in 1998		: 220,000 tons
Total cargo volume in 1999		: 250,000 tons (estimate)
Main cargo		
- In	Coal	: 70,000 tons (by barge of 100t*6 or 200t*4 from Quang Ninh)
	Bagged cargo (cement, rice, fertilizer)	: 20,000 tons
	Sand, stone	: 40,000 tons
- Out	Fertilizer	: 25,000 tons (transshipment)
	Ore(materials for cement)	: 25,000 tons
	Sand, stone	: 50,000-60,000 tons
	White stone	: 20,000 tons (from Yen Bai to Japan)
<b>4. Ninh Binh Port</b>		
Total cargo volume in 1998		: 600,000 tons
Main cargo	Coal	: 400,000 tons
	Clinker	: 100,000 tons (from Haiphong)
	Steel	: 22,000 tons
	Cement	: 20,000 tons
	Fertilizer	: 20,000 tons
	Sand, gravel, stone	: 18,000 tons
<b>5. My Thoi Port</b>		
Total cargo volume in 1998		: 234,266 tons
- In	: 122,997 tons (main cargo: clinker - 74,771 tons)	
- Out	: 111,269 tons (main cargo: cereals - 111,269 tons)	
- Container	: 0 TEU	
Number of Ship calls in 1998		: 141 ships, 128,642 GRT
Allowable max draught		: < 5.7m, max size < 90m
<b>6. My Tho Port</b>		
Total cargo volume in 1998		: 163,504 tons
- In	International	: 28,149 tons (main cargo: liquid tar - 28,149 tons)
	Domestic	: 83,911 tons
- Out	International	: 2,207 tons (main cargo: coal - 1,456 tons, coconut oil - 751 tons)
	Domestic	: 49,237 tons
Main domestic cargo	Beer	: 40,000-50,000 tons
	Construction materials, Bagged rice, etc	:
Number of Ship calls in 1998		: 38 ships

The Study team has not yet collected the data on container cargo volume by inland waterway transport, but during the field survey in the south, the team observed many containers in Vinh Long port, which means that in routes where sea-cum-river vessels can enter, container cargoes are more or less transported by inland waterways.

### **3.6 Finance and Management**

#### General

Generally, capital sources for the transport sector are composed of State budget, credit loans and foreign aid, cooperation and joint venture capital, income from transport activities, etc.

For inland waterway sector, VIWA collects fees from shippers/carriers involved in transport activities. These activities include port operation, waterway transport, ship repair services, dredging, and so on – handled by public operators, several cooperatives and numerous small and independent private operators.

#### Tariff Structure

The tariff for inland waterway transport is stipulated by the Government Price Committee and arrived at by taking into account the distance, commodity value and type of waterway through which cargoes are transported.

For transport operators, VIWA charges the following: tonnage fee, formality fee, river vessels support fee, and fines.

Individual port operators levy a handling charge, storage fee and berthing fee on cargoes. Cargo handling charge is based on cargo category and handling procedures.

#### Financial Viability of Operation

Besides the fact that port operators and shippers/carriers negotiate tariff rates within government-stipulated rates, they may also change depending on the season.

The business environment in the sector is severe due to strong competition. In addition, due to poor lighting and navigational aids, available productive time for transport is reduced, and cost effectiveness for investment is not high.

### 3.7 Identified Problems and Issues

#### Waterways

- 1) Insufficient survey on waterway: The survey on waterway depth and width has not been completed. Data are old and not updated regularly, or survey has not yet been conducted. Moreover, there is no publication of the latest chart for waterway navigation safety.
- 2) Insufficient dredging work: Dredging work is not implemented sufficiently, although it is regularly required to maintain navigable drafts, especially in some river estuaries such as Lach Giang in the north and Cua Tieu and Cua Dinh An in the south, all important sections of the main waterway route. Dredging fleet is old and inefficient and needs to be replaced if dredging work is to be fully implemented.
- 3) Poor navigation safety: Because of the lack of navigational aids, it is difficult to navigate safely. Nighttime navigation is impossible in most parts of waterways.
- 4) Limited passage volume: Due to insufficient width and depth of some waterways, the passage volume may be limited in some waterways and will worsen when volume increases in future, for example, Cho Gao canal in the south, where the passage volume is concentrated at present.
- 5) Others: Sharp bends along waterways and low bridge clearance hinder navigation. There is also a need to survey the magnitude of siltation in main waterways to optimize dredging work.

#### Ports

- 1) Insufficient port facility: Some river port facilities (e.g., fender system, etc.) are damaged or lacking. Even the yard is not paved.
- 2) Outdated port equipment: Cranes and forklifts are old – some are over 30 years – and liable to be out of order, resulting in grossly inefficient cargo handling work.

#### Institutional and Management Aspects

- 1) Lack of clear policy: There is a particular lack of clarity in transport policy on inland water subsector. Relatively little investment has been allocated to the subsector, especially in the Red River Delta where navigation is constrained by seasonal factors. A clear definition of the expected role of inland water

transport, based on the recommendations of this study, would help to plan and develop the subsector.

- 2) Inadequate legal framework: There is no inland waterway law or act and transport activities are governed by a variety of rules and regulations. Some of these regulations are obstacles to efficient operation. For example, transport licenses can specify particular routes that vessels can operate on to avoid using unsuitable channels. Such a regulation would also limit use on other suitable routes, reduce utilization and increase costs.

There is concern about the many unregistered small vessels, including many home-made, which are involved in river accidents. Operators also complain that unregistered boat operators undermine their businesses.

Other licensing problems include the short validity of transport licenses and the minimum financial requirement which increases entry costs into the business.

There is no clear legal definition of the extent of responsibility and authority of VIWA because of overlap with the maritime responsibilities of VINAMARINE. However, the MOT is fully aware of this difficulty and is drafting a decree to clarify the division of responsibilities.

- 3) Weak market mechanisms: There are still many state-owned transport operators, especially in the provision of services using large vessels over 100 DWT. Traditional customer/transporter relations continue and so competition is not fully developed. The private sector is mainly small-scale, operating vessels below 100 DWT in most cases. According to the VITRANSS survey, it carries large proportions of traffic, not only in the Mekong Delta but also in the Red River Delta (where it seems to be carrying the majority of traffic).

There are reportedly few, if any, large private ship repair or construction yards at least in the north, and there is no significant private construction industry. (Question: To what extent is there a small-scale boat construction and repair industry in the country?) More rapid development of the private sector is hampered by the slow rate of progress in equitizing transport operations and difficulties in obtaining credit.

- 4) Poor port management and weak incentives: Ports offer poor service and are considered by operators to be a major problem. Facilities are dirty and there are frequent delays in getting service. Stevedoring and other services are not provided on a contractual basis and so there is little competition to provide such services.

- 5) Inadequate mechanism for financing infrastructure and enforcement: VIWA has, in general, poorly developed management systems, including budgetary and financial planning systems. Waterway development and maintenance are constrained by insufficient financial allocations from the state budget. There is no mechanism for improving efficiency in maintenance and construction, such as through contracting. Revenues from waterway users (mainly fuel tax receipts, but also the waterway fee for vessels) are reported roughly to cover maintenance costs in the north, but there has been no detailed study to confirm this. To develop the network would require increased user charges.

Waterway inspectors have no adequate financial support. Instead of receiving budgeted funds they have to rely, in practice, on revenue from fines. This does not encourage inspectors to develop measures to increase compliance with the law.

- 6) Inadequate capability of PTAs: Provinces are responsible for providing the rural water network and play an important role in monitoring the subsector and implementing plans. However, they lack basic management tools and training.
- 7) Inadequate capability of VIWA: The organization is still split into two parts due to past conditions, which leads to inefficient administration. VIWA lacks modern management systems of all kinds - for example, for budgeting/financial planning, managing computer database, maintenance of infrastructure, and business planning. Safety is considered an important issue: Many accidents occur at night due to the lack of navigation lights, the proliferation of home-made boats that have not gone through the proper registration process, breaking of rules, and excessive speed of small vessels using high-powered engines. Despite these, safety programs are poorly developed.

#### Operational Aspects

- 1) Old and broken-down fleet: Majority of existing vessels are old. In addition, due to the lack of capital, vessels are not sufficiently repaired and maintained, so that they are easily prone to trouble. If appropriate measures are not taken, fleet capacity will gradually decrease.
- 2) Low productivity: Due to the poor lighting and navigation aids, available operating time for transportation is mostly limited to daytime, reducing productivity. In most small river ports under local jurisdiction, cargo is handled manually, resulting in low productivity.
- 3) Unsafe travel: Most inland waterway pilots, especially those of small boats, are guided only by their experience and not by navigational aids. Accidents

regularly occur because pilots do not comply with traffic rules (in overtaking, meeting, anchoring, etc.) and have no pilot certificate and sufficient channel experience. Others major reasons are overloading and lack of navigational aids which would make it difficult for pilots to steer vessels toward the right channel, thus causing accidents and stranding.

#### Intermodal Relations

- 1) Limited integration with coastal shipping: Integrated network of inland waterway transport and coastal shipping achieves more effective waterway transportation. However, due to insufficient dredging work in river estuaries, the number of sea-cum-river ships, which can reach inland ports, is currently limited.
- 2) Poor connection to national transport network: Most small ports are poorly connected to the national transportation network due to insufficient road access. Only some major ports have good connection with road and/or rail. Moreover, because of insufficient planning coordination in the past, bottlenecks still remain even in major waterways, such as Duong Bridge in the Duong river, due to small air clearance which hinders navigation during flood season.