

- Administrative Organization: VINALINES
- Background: The construction commenced in 1874 by the French. Before the collapse of the Soviet Union, it was the largest port in Vietnam until the late 1980s. Currently, it is the second largest port in Vietnam.
- Major Port Facilities:
 - (a) Bake District:
 - Wharf: 3 m deep, 314 m long, 3B
 - Loading & Unloading: 5 mobile cranes, and forklifts
 - Warehouse: 3 (unused)

In the hinterland of the port area, there are two steel factories established by Australian and Korean joint venture. Raw minerals for fertilizer production are transported to the port by railways, and transshipped to the Central and South regions.

 - * Raw materials for fertilizer production are shipped by from Lao Kai, and transported by boat.
 - * Annual cargo handling volume is about 350 thousand tons
 - (b) Main Port District:
 - Wharf: 8.4 m deep, 1,722 m long, 11B
 - Loading & Unloading: 25 jib cranes (5-20 t), six mobile cranes, forklifts, three floating cranes (30-100 t)
 - Warehouse: 14

The yard is large, but filled with containers.
 - (c) Doan Xa District
 - Wharf: about 8 m deep, 200 m long, 2B
 - Loading & Unloading: two mobile cranes (10 t)
 - Warehouse: none
 - (d) Chua Ve District
 - Wharf: 8.4 m deep, 830 m long, 2B
 - Loading & Unloading: 2 container cranes (40t), 5 mobile cranes, forklifts
 - Warehouse: none

This district has the newest container handling facilities.
- Cargo Handling Volume:

Table 1.1.40
TREND IN CARGO VOLUME AT HAI PHONG PORT
(Unit: thousand tons)

Year	Amount
1988	2,980
1989	2,720
1990	2,520
1991	2,430
1992	2,380
1993	2,710
1994	3,250
1995	4,520

Table 1.1.40

BREAKDOWN OF CARGO VOLUME BY ITEM AT HAI PHONG PORT

(Unit: thousand tons, 1995)

Items	Amount
1. Export (Foreign trade)	490
Container	390
Agriculture and food products	40
Lumber	20
Others	30
2. Import (Foreign trade)	2,360
Container	610
Machinery, chemical products	610
Construction materials	530
Fertilizer, chemical products	44
Others	120
3. Import (Coastal shipping)	550
Cement	260
Machinery, chemical products	90
Fertilizer	30
Others	130
4. Export (Coastal shipping)	1,150
Rice, food	780
Cement, construction materials	90
Fertilizer	90
Machinery, chemical products	20
Others	160

Note: 7,120 thousand tons

Table 1.1.42

TREND IN CONTAINER VOLUME AT HAI PHONG PORT

(Unit: thousand TEU)

Year	Amount
1990	20
1993	54
1994	100

- **Maximum Ship Size:** In the past, 10,000 dwt class vessels were passable. But because of accumulation of soil, the maximum ship size for entry is now 5,000 - 6,000 dwt.

- In 1993, a JICA study team was sent to conduct the Urgent Rehabilitation Plan Study. The five-year plan from 1994 to 1998 projected that the volume in 1998 will reach 4,700 thousand tons. The team recommended that the port should accommodate 7,000 dwt vessels and be planned to accommodate 10,000 dwt vessels by route planning and dredging works.
- A study is being conducted by the Dutch assistance to prevent deposit accumulation of the port.

57) Saigon Port

- Location: The Saigon river, 85 km away from the zero buoy placed in Bun Tau offshore. There are three districts: from the upstream, they are the Nha Rong district, Khanh Hoi district, Tan Thuan district.
- Province: Ho Chi Minh City
- Administrative Organization: VINALINES
- Background: In January 1996, the administration was changed from VINAMARINE to VINALINES
- Major Port Facilities:
 - (a) Nha Rong District:
 - Wharf: 6-9 m deep, 492 m long, 4B
 - Loading & Unloading: Jib cranes and others
 - Warehouse: 7 constructed from 1920 to 1930
 - The port seems to be handling steel mostly. The yards are well-used. According to the ADB study, the multiple-story warehouses are recommended to replace the yards. The condition of stone pavement is acceptable.
 - (b) Khanh Hoi District:
 - Wharf: 5.5-10.3 m deep, 1,249 m long, 11B
 - Loading & Unloading: Jib cranes (12-25 t), two mobile cranes (50, 130 t), reach stickers
 - Warehouse: 19 constructed in the 1940s
 - The port seems to be handling steel and fertilizer mostly. There was a subsidence seen behind a jib-crane at K8-10.
 - (c) Tan Thuan District
 - Wharf: 9.6-10.8 m deep, 343 m long, 4B
 - Loading & Unloading: two mobile cranes (80t), 11 reach stickers
 - Warehouse: 4 constructed in the 1960s
 - A part of the port is under construction. The yard seemed to be empty. The berths at the Beng port side are the jetty type. There is a newly constructed marina for small vessels upstream. Both ends of the Tan Tua An bridge are wooden which may cause some trouble. The hinterland is large enough to accommodate further expansion.
 - Other than stated berths, there are 16 more mooring locations by the buoy method.

- Cargo Volume:

Table 1.1.43
TREND IN CARGO VOLUME AT SAIGON PORT
(Unit: thousand tons)

Year	Amount
1985	1,930
1990	4,350
1991	4,150
1992	5,000
1993	5,510
1994	5,440
1995	7,210

Table 1.1.44
BREAKDOWN OF CARGO VOLUME BY ITEM AT SAIGON PORT
(Unit: thousand tons, 1995)

Items	Amount
1. Export (Foreign trade)	2,310
Rice	1,440
Agricultural products	80
Others	780
2. Import (Foreign trade)	4,260
Fertilizer	720
Steel	550
Cement	460
Clinker	450
Grain	300
Chemical products	170
Machinery	70
3. Import (Coastal shipping)	550
4. Export (Coastal shipping)	100

Note: 7,120 thousand tons

Table 1.1.45
BREAKDOWN OF CARGO VOLUME BY DISTRICT AT SAIGON PORT
(Unit: thousand tons, 1995)

District	Amount
Nha Rong	1,600
Khanh Hoi	3,000
Tan Thuan	1,400

Note: 6,000 ton base

Table 1.1.46
TREND IN CONTAINER VOLUME AT SAIGON PORT
(Unit: TEU)

Year	Amount
1990	29
1991	37
1992	38
1993	68
1994	69
1995	77

Note: Containers are handled in both Khan Hoi and Tan Thuan districts. Because of the constraints of transport at the Tan Thuan bridge, the main handling district is Khan Hoi.

- Maximum Ship Size: The pamphlet provided by the administration indicates the max as 30,000 dwt; from observation, it seems about 20,000dwt.
- Number of Management Employees: 3,160 full time, 1,000 part-time
- Future Plans:
 - * Nha Rong and Khan Hoi Districts: The total of US\$40 million in three years from 1995 to 1998. (US\$30 million is from ADB.)
 - * Tan Thuan District: US\$ 13 million to upgrade the loading capacity of the k12 wharf and to expand the widths to the both sides to 200 m each.
 - * Construction of new wharf for bulk cargo: Downstream of the Bengé port, behind the Tan Thuan EPZ.
- Issues:
 - (a) The bearing capacity of the Tan Thuan bridge is 25 tons.
 - (b) Heavy trucks are only allowed at night from 8:00 p.m.

58) **Tan Cang Port (Saigon New Port)**

- Location: The right bank of the Saigon river, 6km up-stream from the Saigon port.
- Province: Ho Chi Minh City
- Administrative Organization: Ministry of National Defense
- Background: The commercial operation started in 1990. Since the renovation of the Tan Tu An bridge in 1992, containers have been handled.
- Major Port Facilities:
 - (a) Wharf: 12 m deep, 553 m long, 3-4B
 - (b) Loading & Unloading Equipment: Ships' cranes are used for loading and unloading. In yards, 11 forklifts (20 - 40 ton) and 6 mobile cranes are in operation.
 - (c) Warehouse: 8

- Cargo Volume:

Table 1.1.47
TREND IN CARGO VOLUME AT TAN CANG PORT

Year	Total Amount	Container	
		(000 ton)	TEU
1992	1,180	1,180	78
1993	1,640	1,600	160
1994	2,560	2,500	217
1995	3,270	3,100	287

- Items of Trade:

Table 1.1.48
BREAKDOWN OF CARGO VOLUME AT THI NAI PORT
(Unit: thousand tons, 1995)

Items	
1.	Export (Foreign trade) Clothes, coffee and other agricultural products, frozen products
2.	Import (Foreign trade) Accessories, machinery/equipment, electronic parts, automobile/motorcycle

- Maximum Ship Size: 20,000 dwt is considered to be the maximum, in general. Since most of the vessels carry containers, the 450 TEU class (12,000 dwt) is the actual maximum size.
- Number of Management Employees: about 150 full time; 500 additional workers for loading and unloading works.
- Other Information: Growth as a container port has its background in connection with a French shipping corporation. There is no extra area for expansion. Dredging works has not been conducted for the past 10 years, but there is no risk of shallowing the depth of the port reported.

1.1.3 Port Management

(a) Port Organization

(1) Roles and Functions

Port office has two functions, i.e., administration and service, and it consists of the following sections:

Administration: General and Personnel Affairs, Development Planning, Port Operation, Accounting, Technical Service, etc.

Service : Stevedore Enterprise, Warehousing Enterprise, Machinery Maintenance Enterprise, etc.

Therefore, a port office is responsible for:

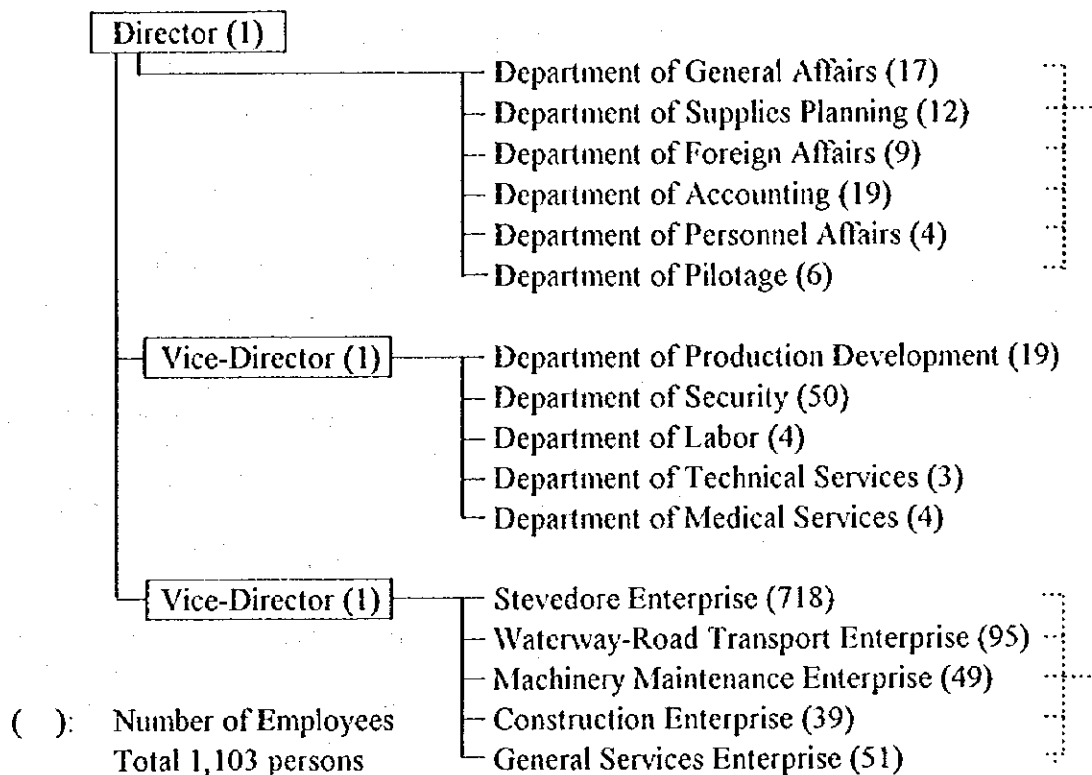
- 1) All undertakings regarding port facility and equipment such as construction, acquisition, transference, maintenance, repair and abandonment;
- 2) Formulation of implementation programs for port development and management;
- 3) Port finance;
- 4) Provision of cargo handling and storage services;
- 5) Determination and collection of port charge;
- 6) Security within port areas; and
- 7) Dredging work under port waters.

In some ports, stevedores are regarded as port staff while the other ports contact with private stevedore enterprises. A large port have a waterway-road transport enterprise, a construction enterprise and other related servicing enterprises such as tallying and weighing cargo, water and fuel supply and garbage disposal.

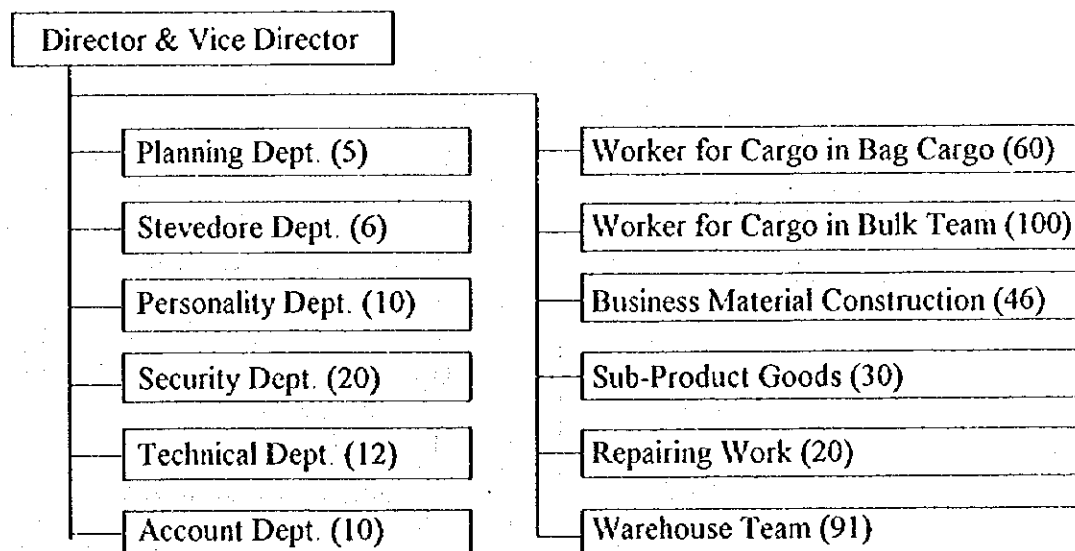
In conclusion, ports in Vietnam rather incline to commercial activities such as cargo handling and warehousing. On the other hand, port authorities and VMS under VINAMARINE are responsible for entry / exit procedures of vessels, management of port access channels and collection of navigational charge.

(b) Port Organization Setup

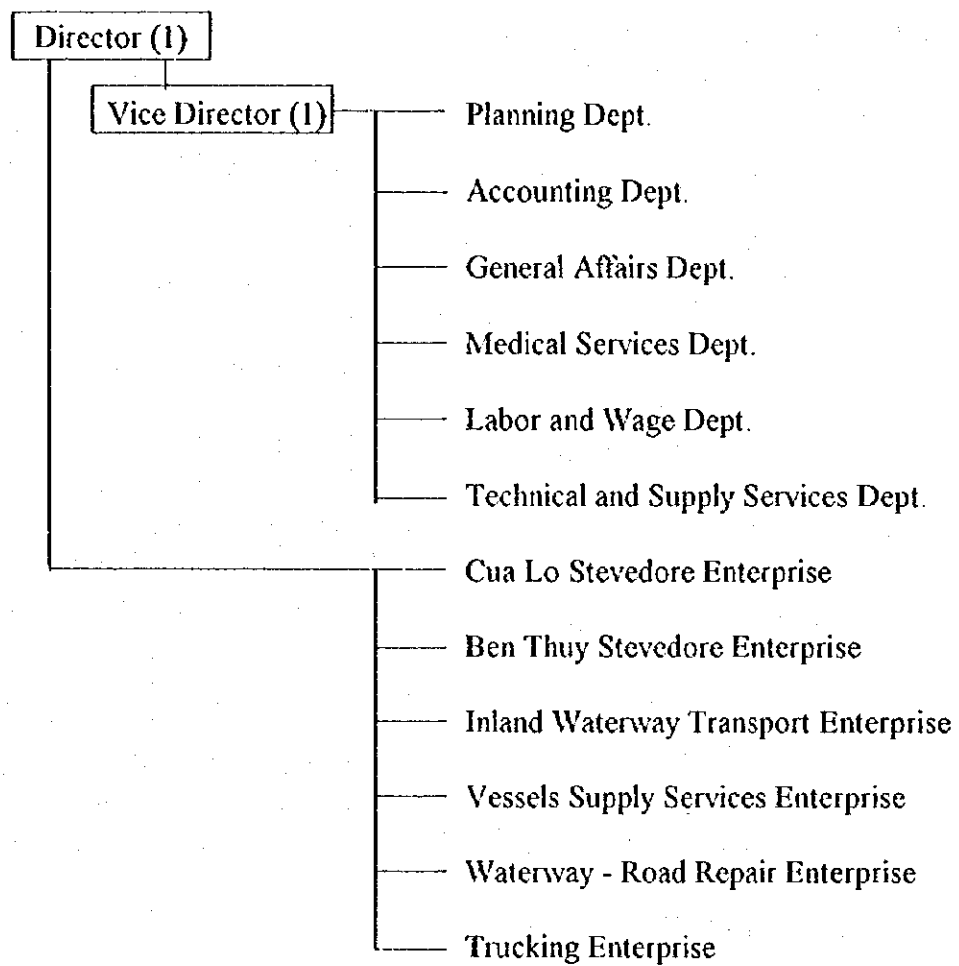
Danang Port (total 1,103 persons)



Hanoi Port (total 400 persons)

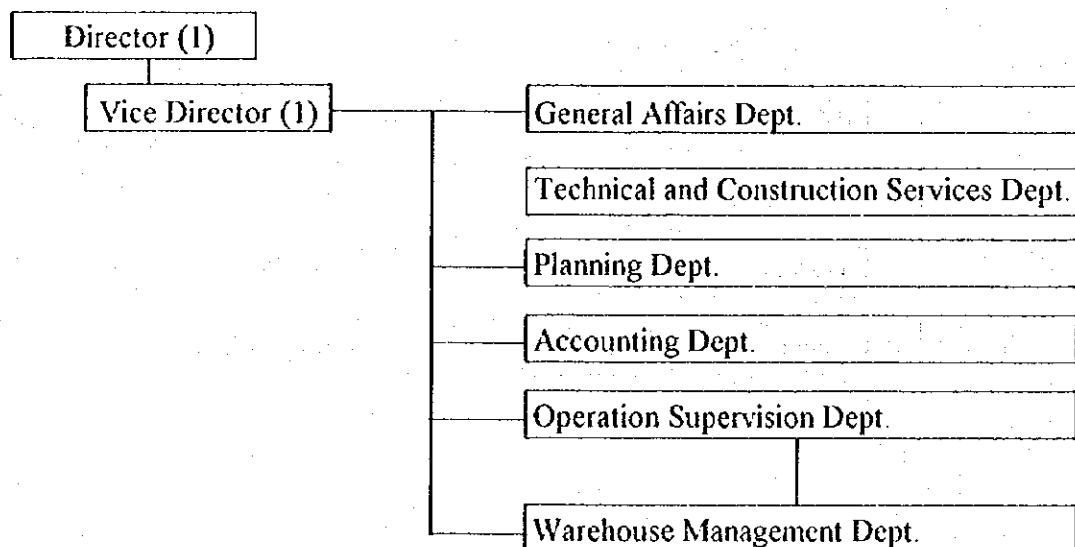


Cua Lo Port (total 500 persons)



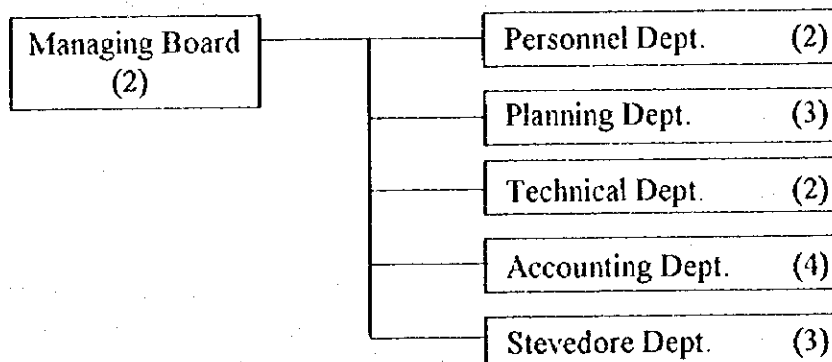
(Note) 68 persons in the 6 departments under Vice Director

Nha Trang (total 176 persons)



Note) Administration officer (28)
Stevedores (72)
Other staff engaged in waterwork, cleaning, food supply, etc. (68)

My Tho (total 16 persons)



Note) The port employs a contract system with a private stevedore company. Only machine operators belong to the port.

In addition to the above common duties in ports, there are other duties regarding ports and waterways as follows:

- (i) Preparation of long-term port development plans
The responsible agencies are VINAMARINE for seaports and IWB for riverports.
- (ii) Dredging under sea ways and inland waterways VINAMARINE is responsible for dredging the routes accessible to seaports while IWB to riverports.

The MOT directly manages territorial waters and port state control. The former means conduct of hydrographic surveys, installation of navigational aids, control of illegal activities and search and rescue operations. There are responsible to VINAMARINE and IWB depending on their water jurisdictions. On the other hand, the latter is enforced by port authorities at seaports. However, no enforcement can be found at riverports.

(3) Identified Issues

The Study identified the following port management problems which should be solved by organizing a clearly defined port organization:

- (i) Port administrators have an insufficient sense of accountability in developing ports. In this connection, much data is not stored and statistics are not utilized even though they are quite important.
- (ii) There is no systematic training to improve staff's capability.

- (iii) Most of ports organize port related enterprises such as stevedoring and keep many permanent staff. The number of staff seems in surplus except busy days. Currently the wage shares a large portion in port finance and it may increase in near future in line with economic growth. The labour force should be rationalized under an adequate personnel management.
- (iv) Since various port operations are monopolized, it is difficult to improve port efficiency as well as its quality.

(b) PORT FINANCE

(1) General

Regarding to port income, there are two categories: main business comes from port charges and other business from interest, disposition of assets, profits from joint venture companies and other related service enterprises. Income tax, profit tax and repayment to the state are the main pumping channels to the state finance. These rates are as follows:

- 1) income tax: 4% of the port charges and 2% of other service income
- 2) profit tax: 25% of the port profit
- 3) repayment of the state: quays and warehouses (5%), machine equipments (7%) and other capital investments (3.6%)

Besides profit tax, the profit would be duly allocated to additional capital investment and staff's welfare and bonus.

Capital investment shall be financed by the port profits, subsidy or loan from the state budget and the borrowing from commercial banks and enterprises.

(2) Actual Financial Situation

The 1994 / 1995 port financial statements under the control of VINAMARINE are shown in Table 1.1.29 summarized as below.

1) Port Income

The eight ports enjoy rapidly increase in port income, nearby 30% between 1994 and 1995 on the average. In particular, Haiphong Port and Nha Trang Port recorded an increase of around 50%.

2) Port Expenditure

All the ports but Haiphong Port reported that personnel expense occupied the biggest share, i.e., 34% on the average in 1995. Of which, the said expense in four ports

recorded more than 40%. It is because the ports organise various port related enterprises which employ many workers.

On the other hand, the personnel expense of Haiphong Port accounted for 6% in 1995. It can be explained by a different accounting method from the others. In Haiphong Port, personnel expense includes only the wages for stevedores while the other workers' wages belong to repairing or other categories.

Beside the workers' wages, bonus and social welfare are disbursed from the port profit. Actual personnel expense seems to be bigger than the wages.

The port financial statement also revealed that depreciation cost, facility repairing cost and material procurement cost summed up considerable amounts. These are the cost for port facility and equipment. It is noted that the following assets are subject to the depreciation cost in the statement:

quay, warehouse, yard, cargo handling equipment, breakwater, office building, other machinery, land outside port compound, etc.

3) Port Profit

All the ports except can Tho in 1994 made some profit. Of which, the financial statement showed highly profitable performance at Haiphong, Saigon, Danang, Qui Nhon and Nha Trang ports. Detail analysis does not make accurate sense due to vague taxation period. As a whole, however, profit increasing rates were 57% and 98% in 1994 and 1995, respectively.

(c) Evaluation

- According to the 1995 port financial statement of the VINAMARINE's eight ports, all port expenditures such as port operation, depreciation, maintenance and repair, general administration and debt repayment were fully offset by port income. They seem to be financially independent. However, aged equipment and facility are likely to sum up small depreciation cost and, consequently, pretend big profit. Therefore, the meaning of port profitability of the VINAMARINE's ports will be further looked into.
- Big port investment is supposed to be financed by the state budget (subsidy or loan), commercial banks, and relevant enterprises in addition to an operator's capital. In fact each port needs considerable funds to expand port capacity and replace old equipment under the tight state financial conditions. It becomes more important to secure necessary resources for port development.
- A port financial statement should clarify the coverage of personnel expense and indicate the bonus and social welfare disbursed from port profit clearly.

(c) Fee System

(1) Present Condition

Port fees are classified into two kinds: port user fees and port entry fees. The port user fees include berthing fee, cargo handling fee, storage fee, assistant service fee, and others. Port entry fees are tonnage fee, formality fee, pilotage fee, maritime safety fee and others.

The rates are set differently on domestic and international freights. Generally, the port user fees for vessels carrying international freight are two to four times higher than those for domestic. The entry fees, excluding the pilotage fee, are five to ten times higher for international trade vessels. Foreign vessels are charged twice as much on the tonnage fee, pilotage fee, and garbage fee than domestic vessels for international freight transport, but with certain conditions. River ports do not charge any international fees, since no direct international freight is handled at the river ports. The maritime safety fee is not charged by the river ports, too.

The port fee system seems to be set by a unit price principle to support improvement and development of a port and other operation costs.

Sea Port User Fees for Domestic Shipping: The sea port user fees for domestic shipping are prepared by a representative port operator, reported to VINAMARINE, and approved by the Commodity Price Committee. The sea ports which have this process of setting user fees are Hai Phong, Saigon, Danang, Qui Nhon, and Nha Trang and others. Other ports use the fee schedule approved for these ports. The fees actually used can be negotiated by port operators and shippers/carriers, under condition that they do not exceed the approved fees. There are a few ports which have their own fee schedule.

Sea Port Entry Fee for Domestic Shipping: The sea port entry fees are prepared by VINAMARINE and approved by the Commodity Price Committee. The fee schedule applies to all the sea ports and is followed as is.

River Port User Fees: The standard river port user fees are based on the fee prepared by IWB on August 15, 1995 as a circular notice for the five ports that it oversees. The General Director of IWB determined the fee tariff (the tariff is not approved by the Commodity Price Committee). The circular notice by the director of IWB states that the fees are to be negotiated by port operators and shippers/carriers within the set fee schedule.

International Freight Fee: The international freight fees applied to sea ports are prepared by VINAMARINE, and approved by the Commodity Price Committee. Based on the international freight fee schedule prepared for

relatively large ports, the fee schedules are prepared for the north, central, and south districts in Vietnam. The fees are set, and applied as they are.

Changes of Fee Schedules: The port user fees for domestic trade can be revised as deemed necessary by a port operator considering financial conditions. The process from the reporting of fee schedule amendment by a port operator to the financial decision, takes about one to two months. The port user fees both for domestic and international are changed by VINAMARINE and the government based on the fluctuation of consumer prices. The process of amending the fee schedule follows the same procedure just described.

The port user fees are collected by a port operator, and generally used for its operation. Tonnage fees and formality fees are collected by a port authority under VINAMARINE from vessels entering and exiting a sea port. At river ports, they are collected by river port operators upon entry/exit of vessels. The collected fees are transferred to the central government. IWB has a plan to establish one to four port authorities. When implemented, those port authorities will collect fees at river ports. The first Port Authority was established on May 2, 1996 in charge of a part of the north, but the fees are not collected by the Authority. The second, third and fourth planned port authorities are at the Ninh Binh, HCM, and Can Tho districts, respectively. The maritime safety fee is collected by the port authorities under VINAMARINE. About 80% of the collected fees is used for VMS's operation; 20% is transferred to the central government. 0.5% is used by the port authorities themselves for necessary expenses. Pilotage fees are collected by private pilotage companies.

Table I.1.49

FINANCIAL STATEMENTS OF PORTS UNDER THE CONTROL OF VINAMARINE (1994/1995)

Income and Expenses of Sea Port (Vinamarine) in 1994										(unit: million VND)	
	Hai Phong (%)	Sai Gpn (%)	Da Nang (%)	Quang Ninh (%)	Nghe Tinh (%)	Qui Nhon (%)	Nha Trang (%)	Can Tho (%)	Total (%)		
(1) Total Income	141,314	279,835	28,597	10,958	13,895	14,775	5,656	2,081	497,111	100	100
Main business	125,935	205,280	23,551	10,747	9,575	12,211	5,611	2,081	394,991	79	79
Other business	15,379	74,555	5,046	211	4,320	2,564	45	-	102,120	21	21
(2) Total Expenditure	119,704	240,136	25,424	9,079	12,385	11,787	4,484	2,487	425,486	99	99
Consumption of fixed assets	14,684	28,524	5,727	944	610	980	632	296	52,397	12	12
Repairing fixed assets	26,102	30,385	1,487	849	2,252	537	400	200	62,212	15	15
Fuel expenditure	4,382	7,342	1,309	982	504	876	174	174	15,743	4	4
Engineering machines operate	13,097	16,898	759	618	1,530	1,063	100	342	34,207	8	8
Material expenditure	2,485	2,606	177	82	140	106	57	57	5,710	1	1
worker's salaries	16,133	96,922	8,747	3,979	4,338	4,884	2,188	558	137,749	32	32
worker's social insurance	2,420	5,084	683	505	278	347	132	82	9,531	2	2
Management	5,501	3,680	2,278	303	930	491	305	124	13,612	3	3
Others	34,900	48,895	4,257	817	1,803	2,503	496	654	94,325	22	22
(3) Income tax	5,286	9,629	1,060	409	431	557	224	83	17,679	3.6	3.6
(4) total Profit = (1) - (2) - (3)	16,324	30,070	2,113	1,470	1,079	2,431	948	-189	53,946	11	11

Income and Expenses of Sea Port (Vinamarine) in 1995										(unit: million VND)	
	Hai Phong (%)	Sai Gpn (%)	Da Nang (%)	Quang Ninh (%)	Nghe Tinh (%)	Qui Nhon (%)	Nha Trang (%)	Can Tho (%)	Total (%)		
(1) Total Income	209,367	333,460	37,043	16,021	12,153	16,723	9,261	2,944	636,972	100	100
Main business	179,766	261,901	30,384	15,960	7,753	14,556	9,261	2,944	522,525	82	82
Other business	29,601	71,559	6,659	61	4,400	2,167	-	-	114,447	18	18
(2) Total Expenditure	170,662	255,260	32,500	14,149	11,667	12,635	7,812	2,678	507,363	98	98
Consumption of fixed assets	19,820	28,131	4,765	828	534	764	1,406	399	56,647	11	11
Repairing fixed assets	12,473	23,026	2,153	753	1,276	457	623	-	42,761	8	8
Fuel expenditure	5,096	10,418	1,784	832	539	1,215	295	160	20,339	4	4
Engineering machines operate	20,044	20,570	1,670	133	384	52	113	-	42,966	8	8
Material expenditure	6,298	14,604	1,043	483	1,713	1,311	171	196	25,819	5	5
worker's salaries	9,475	113,430	11,303	6,399	3,986	5,530	3,017	1,118	154,258	30	30
worker's social insurance	1,424	3,803	670	379	319	343	160	120	7,218	1	1
Management	23,068	3,259	4,500	2,951	1,060	1,667	1,963	502	38,970	8	8
Others	72,964	36,019	4,612	1,391	1,856	1,296	64	183	118,385	23	23
(3) Income tax	7,589	11,839	1,327	559	355	742	367	122	22,900	3.6	3.6
(4) total Profit = (1) - (2) - (3)	31,116	66,361	3,216	1,313	131	3,346	1,082	144	106,709	17	17

Table 1.1.50

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Table 1.1.50
PORT USER FEES (2/3)

PORT	SEA PORT			RIVER PORT		
	Cargo Group	Loading/Unloading at buoy	Cargo Group	Loading/Unloading at buoy	Cargo Group	Barge ~ Barge
(2) Handling at BUOY	1	8,890	1	2.85	1	5,000
	2	11,190	2	3.08	2	6,000
	3	16,230	3	4.19	3	8,600
	4	16,580	4	4.52	4	10,100
	5	20,300	5	4.78	5	12,800
	6	22,370	6	4.91	6	16,900
	7	24,580	7	5.17	7	19,000
	8	30,874	8	5.49		
			9	5.81		
			10	9.70		
			11	35.45/pe		
(3) WAREHOUSE STORAGE AREA ~ TRUCK, TRAILER	Cargo Group	Warehouse, Storage ~ Truck	Cargo Group	Warehouse, Storage ~ Truck	Cargo Group	storage, yard ~
	1	5,090	1	0.73	1	truck 4,300 trailer 5,800
	2	5,740	2	0.79	2	5,200 7,000
	3	6,600	3	1.06	3	7,400 10,000
	4	7,750	4	1.16	4	8,700 11,800
	5	7,930	5	1.23	5	11,050 14,900
	6	8,640	6	1.26	6	14,500 19,600
	7	10,790	7	1.33	7	16,300 22,000
	8	22,020	8	1.41		
			9	1.49		
			10	2.49		
			11	20/pe, 25/pe		

Table 1.1.50
PORT USER FEES (3/3)

PORT		SEA PORT										RIVER PORT					
(4) for CONTAINER	20 feet: Empty 7.2/unit (Cargo Group 4) Min. 7.2/unit (Cargo Group 4) 40 feet: Empty 14/unit (Cargo Group 4) Min. 14/unit (Cargo Group 8) 40 feet (fully) Storage area ~ TRUCK = 14,400/ton	(unit: VND/Unit)										(unit: VND/Unit)					
		ship ~ truck			ship ~ yard, warehouse							ship ~ truck		ship ~ yard		yard ~ truck	
		AREA	1	2	3	1	2	3									
		20 feet															
		full	37	24	30	57	45.6	57	20 feet								
		empty	24	15.5	19.5	37	30	37	full				165,000	250,000	130,000		
(5) for Storing	1) 1-30 days General foodstuffs, agricultural products Fertilizer, chemical in storage area	1,000/t/d 600/t/d 800/t/d 500/t/d	in warehouse		0.2/ton/d		0.1/ton/d		4/pc/d		Storage		200/t/d				
			in open storage		0.1/ton/d		0.1/ton/d		4/pc/d		Yard		100/t/d				
			assembled facilities		4/pc/d		4/pc/d		4/pc/d		truck, train, compartment, bulldozer, etc.		5,500/unit/d				
			container (unit/d)		full		empty		empty								
			20'		2		1		1		Container		20 feet		(full): 2,000/cont/d		
			40'		3		1.5		1.5				(empty): 1,000/cont/d				
4. Other Fees (1) ASSISTANT SERVICE FEES	Tug assistance fees	500HP 500 - 1,000HP 1,000HP	0.34/HP/hour		(170+0.26HP)/h		(300+0.15/HP)/h								2,500/HP/hour (Min: 1hr)		
			Mowing, Unmowing		16.50-83.0/time		50.0-149.0/time										
			AT BERTH		16.50-83.0/time		50.0-149.0/time										
			AT BUOY		50.0-149.0/time												
			0.35 -- 0.70/ton, container: 1/unit														
			1) for Hiring worker and Equipment 2) for Dumping garbage, cleaning 3) for Supplying fresh water, etc.														1) for Hiring worker and Equipment
(2) Mooring, Unmooring	Mowing, Unmowing	AT BERTH 45,000-170,000 AT BUOY 100,000-200,000 600 -- 1,500/ton, car: 15,000/unit	Unmooring		30,000-140,000		170,000-170,000										
(3) Tallying	1) for Hiring workers and Equipment 2) for Dumping garbage 3) for Supplying fresh water, etc.	600 -- 1,500/ton, car: 15,000/unit															
(4) Others	1) for Hiring worker and Equipment 2) for Dumping garbage, cleaning 3) for Supplying fresh water, etc.	600 -- 1,500/ton, car: 15,000/unit															

Table 1.1.51
PORT ENTRY FEES

PORT		SEA PORT		RIVER PORT	
INTERNATIONAL or DOMESTIC	DOMESTIC (UNIT: VND)	EXPORT/IMPORT (UNIT: USD)	DOMESTIC	(UNIT: VND)	
Effective	from January 1, 1995	from January 1, 1995	from August 15, 1995		
(1) Tonnage fee					
1) Entrance	200/GRT	0.10/GRT	150/TPT (*: TPT = registered tonnage)		
2) Exit	200/GRT	0.10/GRT	150/TPT		
		at first port: 100% at subsequent: 50%	at buoy... = *0.70		
(2) Maritime Safety Fee					
1) Entrance - < 2,000GRT: 200/GRT		- Conventional vessel			
- 2,000GRT < 400/GRT		Areas 1&3	2		
2) Exit - < 2,000GRT: 200 GRT		Entrance 0.282	0.22		
- 2,000GRT < 400 GRT		Leaving 0.282	0.22		
* < 50 GRT: No maritime safety charge		- for vessels in transit to Kampuchea = *1.50			
		- Area 1: from Parallel 20 and northward			
		- Area 2: from Parallel 11.5 to Parallel 20			
		- Area 3: from Parallel 11.5 and southward			
(3) Formality					
Entrance & Exit					
< 200 tons : 10,000		< 1,000 GRT = 50/trip	< 50 ton : 5,000		
< 200GRT : 30,000		1,000 GRT < = 100/trip	50 - 200t : 10,000		
200-1,000GRT : 50,000			200 - 500t : 20,000		
1,000 - 5,000 : 100,000			500t < & Sea-cum-river vessel < 200t: 30,000		
5,000GRT < : 200,000			Sea-cum-river vessel 200t : 40,000		
(4) Pilotage					
1)					
Entrance	15/GRT/sea mile	0.003/GRT/sea mile	15/TPT/ton		
Exit	15/GRT/sea mile	0.003/GRT/sea mile	15/TPT/ton		
Minimum	Ent, Exit: 150,000 Intra-port: 100,000 ong Hau Line	100/vessel	100,000/Vessel		
2) Dinh An -					
-Entrance	20/GRT/s-oile	0.0038/GRT/mile			
-Exit	30/GRT/s-oile	0.0038/GRT/mile			
-Minimum	Ent, Exit: 1,000,000 Intra-port: 100,000	300/vessel			

Table 1.1.52
TYPE OF CARGOES CHARGED BY THEIR WEIGHT

		Actual Weight (t, m ³)	Charged Weight (ton)
1	Cotton, Fiber, Aluminum, Products from Rattan and bamboo, Crockerries, products from China	1 ton	2 tons
2	Porous things, fur, wool	1 ton	4
3	Wood, Bamboo, Small Bamboo, Rattan, Big Rattan	1 m ³	1
4	Empty tanks, Tins, Cans, Containers	1 m ³	0.2
5	Buffaloes, Cows, Donkeys, Horses	1 animal	1
6	Pigs, Goats, Sheep	1 animal	0.2
7	Alive animals in cages	1 m ³	1
8	Other big cargoes not being mentioned above	1.5m ³	1

Table 1.1.53
CARGO GROUPS

Group	Sea Port (Domestic)	River Port
1	Bulky cargoes	dust or broken coal, sand, gravel, broken stone, grain size: 2
2	in bags (except agricultural, forestry and native products which are listed in Group 6)	old coal or lump coal with size < 35 mm, coal piece, mud coal or coal cinder
3	Metals (are still not processed), Woods	various kinds of foodstuff in bag such as rice, flour, bean, peanut, potato, etc. All kinds of ores, broken brick, clink, metal waste, detached fertilizer, appatite, etc.
4	Cargoes in tanks, cans such as oil, petroleum, paint, asphalt, calcium, carbide, insecticide, chemicals ..., bamboo, container 20' (empty or full), container 40' (empty)	various kinds of cargo packed in paper, seagrass, straw or plastic bags such as pesticide, chemicals, salt, cement, fertilizer, ore, stone powder packed in bags, various kinds of fossil coal with size > 35 mm, gypsum, rock
5	Machines, Equipments, roofing irons, water pipes..., metallic products	iron steel, wood in form of package, timber or panel, bamboo, tree branches or roots
6	General cargoes: handicraft, agricultural, forestry and native products... Medical instruments/Brick, briquette Crockerries, products from china, glass Western, Eastern, Northern and Southern medicines	the cargo packed in crate such as asphalt, petrol, chemicals..., animals or housekeeping animals. All kinds of sacks, bags for foodstuff, fruit, beer, wine
7	Alive animals, Green fruits and vegetables..., Machines such as televisions, electronic machines, equipments..., Dangerous cargoes that easily burn, explode.	weight > 2,000 kg (excluding container, automobile...) wood log in form of raft, water dipped wood
8	Unwieldy cargoes such as cars, derricks, vehicles, boilers..., weight is over 12T, length over 10m, width over 3m, height over 2.5m, Container 40 feet (full)	

Table 1.1.54

PORT	SAIGON	HAIPHONG	DA NANG	
Effective	from May 1, 1996	from May 1, 1996	from May 1, 1996	
WORKING TIME	8:00 - 16:30	8:00 - 16:30	7:00 - 21:30 3 shifts (8 hours/shift)	
OVERTIME WORK	6:00 - 8:00 = *1.20 16:30 - 18:00 = *1.20 18:00 - 21:30 = *1.30 21:30 - 06:00 = *1.40 Holidays & Sundays (including night) = *1.50	6:00 - 8:00 = *1.20 16:30 - 18:00 = *1.20 18:00 - 21:30 = *1.30 21:30 - 06:00 = *1.40 Holidays & Sundays (including night) = *1.50	21:30 - 07:00 = *1.30 Sunday = *1.30 Holidays = *1.50	
1. BERTHING FEES				
(1) Berthing			Tien Sa port Saig Han port	
1) BERTH	300/GRT/day	12.5/GRT/hour	240/GRT/day (10/GRT/h)	
2) BUOY	100/GRT/day	6.0/GRT/hour, anchor at bays 3.0/GRT/h	120/GRT/day (5/h), at bay: 60/day (2.5h)	
3) MINIMUM	100,000/Vessel/d (for Sea Going Vessel)		100,000/Vessel/d (for Sea Going Vessel)	
(2) for Cargo	unknown	general container at Berth 1,000/ton at Water area 500/ton	1,000/ton ships' holds - ships - barges: 500/ton	
2. CARGO HANDLING				
(1) Handling at berth	(unit: VND/ton)	(unit: USD/ton)	(unit: VND/ton)	
	Ship ~ Warehouse Storage area Port's crane SHIP CRANE Cargo Group 1 15,090 11,570 7,590 2 20,340 14,340 9,790 3 26,050 18,850 14,640 4 31,130 20,330 14,980 5 34,650 25,050 19,520 6 35,790 26,190 19,950 7 40,680 31,090 23,890 8 59,150 47,150 28,720	Ship ~ truck, barge Port's crane SHIP CRANE Cargo Group 1 8,700 12,500 7,000 2 12,600 18,000 10,200 3 15,400 22,000 12,000 4 16,000 23,000 12,300 5 17,500 25,000 13,300 6 20,000 28,500 15,400 7 23,000 31,000 16,800 8 26,000 35,000 18,200 9 38,000 48,000 25,900	Ship ~ Warehouse Storage, Yard Port's crane SHIP CRANE Cargo Group 1 12,070 9,200 2 16,270 11,470 3 22,840 15,080 4 24,900 16,260 5 27,720 20,040 6 28,720 20,950 7 32,540 24,870 8 47,320 37,720	Ship ~ Car Port's crane SHIP CRANE 1 9,200 6,070 2 12,630 7,830 3 16,510 11,710 4 19,660 11,980 5 23,300 15,620 6 23,640 15,960 7 26,970 19,110 8 34,500 22,980

Table 1.1.54
PORT USER FEES FOR DOMESTIC VESSELS AT SAIGON, HAIPHONG AND DANANG PORTS (2/3)

PORT	SAIGON		HAIPHONG		DANANG	
(2) Handling at BUOY	Cargo Group	Loading/Unloading at buoy	Cargo Group	Ship ~ Barge at water area	Cargo Group	at buoy
	1	8,890	1	9,200	1	7,110
	2	11,190	2	11,000	2	8,950
	3	16,230	3	12,500	3	12,980
	4	16,580	4	14,200	4	13,260
	5	20,300	5	15,800	5	16,240
	6	22,370	6	18,200	6	17,900
	7	24,850	7	21,000	7	19,880
	8	30,874	8	24,000	8	24,700
			9	32,000		
(3) WAREHOUSE, STORAGE AREA - TRUCK, TRAILER	Cargo Group	Warehouse, Storage ~ Truck	Cargo Group	Warehouse, Yard ~ Truck	Cargo Group	Warehouse, Yard ~ Truck
	1	5,090	1	6,300	1	4,070
	2	5,740	2	7,800	2	4,590
	3	6,600	3	9,100	3	5,280
	4	7,750	4	10,400	4	6,200
	5	7,930	5	11,600	5	6,340
	6	8,640	6	13,500	6	6,910
	7	10,790	7	15,300	7	8,630
	8	22,020	8	17,600	8	17,620
			9	23,000		
(4) for CONTAINERS and CARS	20 feet: Empty 7.2/unit (Cargo Group 4) Min. 7.2/unit (Cargo Group 4)		(unit: VND/unit)			
	40 feet: Empty 140/unit (Cargo Group 4) Min. 140/unit (Cargo Group 8)		Ship ~ yard warehouse	Ship ~ trucks barge	Yard/Ware- house-truck	
	40 feet (fully)		20 feet			
	Storage area -- TRUCK = 14,400/ton		full	285,000	210,000	190,000
			empty	145,000	105,000	95,000
			40 feet			140,000
			full	450,000	324,000	284,000
			empty	225,000	162,000	142,000
			Car	250,000	200,000	300,000
			4 seats			120,000
			Container handling at stock yard 20': empty: 42,000/cont full: 100,000/cont 40': empty: 80,000/cont fully: 170,000/cont			

Table 1.1.54
PORT USER FEES FOR DOMESTIC VESSELS AT SAIGON, HAIPHONG AND DANANG PORTS (3/3)

PORT	SAIGON	HAIPHONG	DANANG
3. For Storing	1) 30 days	in warehouse	both in yard and warehouse
	General	300 - 900/ton/day	400 - 800/d
	Foodstuffs, agricultural products	200 - 500/ton/day	
	Fertilizer, chemical		5000
	in storage area	empty full	means of transport Container
4. Other Fees		20'	20 feet
		40'	40 feet
		Reef 20'	(full):
		Reef 40'	(empty):
	Delayed Payment: 31D = x 1.30, 46D = x 1.50 61D = x 2.0	35,000	(full): (empty):
(1) ASSISTANT SERVICE FEES		Delayed Payment, no addition	Delayed Payment: 31D = x 1.30, 46D = x 1.5 61D = x 2.0
	Tow-tug: 700/HP/hour	Tug assistance fees 860,000 - 5,283,000/hour	Tug assistance fee : 500 HP = 2,500/HP/hour 500-1,000HP = 2,000 : 1,000 HP = 1,500
(2) Others	1) for Mooring 2) for Hiring worker and Equipment 3) for Dumping garbage, cleaning 4) for supplying fresh water 5) for Delivering and Receiving	1) for Mooring and Unmooring 2) for Hiring working and equipment 3) for Dumping garbage, cleaning 4) for Supplying fresh water 5) for Delivering and Receiving	1) for Mooring and Unmooring 2) for Hiring Workers and Equipment 3) for Dumping garbage, cleaning 4) for Supplying fresh water 5) for Delivering and Receiving

Table 1.1.55
PORT USER FEES AT OTHER PORTS (1/2)

PORT	NHA TRANG	BEN NGHE	Others
Effective	from June 1, 1995		*CAN THO 1) Fees for domestic trade According to the fee schedule of the Saigon Port. Loading/unloading fees are determined in a way to generate 30% profits. 2) Fees for international trade The fees approved by the Government Commodity Price Committee.
WORKING TIME	8:00 - 16:30	the same as condition in Saigon Port	
OVERTIME WORK	16:30 - 21:30 = *1.20 21:30 - 08:00 = *1.40 Holidays and Sundays (including night) = *1.50		*VINH LONG 1) Fees for domestic trade River vessels: the fee schedule by IWB Coastal vessels: the fee schedule by VINAMARINE may be used. 2) Fees for international trade The fees approved by the Government Commodity. The new schedule (1/1/95) has not reached; the old fee schedule is used.
1. BERTHING FEES		application of the same fee at Saigon Port	*MY THO 1) Fees for domestic trade The fee schedule, same as the one in the Saigon port (8/1/1993) was approved by the Government Commodity Price Committee and became effective on 12/1/1993.
(1) Berthing			*DON THAP 1) No fee schedule is available.
(2) BUOY			*TAN GANG 1) The fees for domestic trade are based on the one at the Saigon Port.
(3) MINIMUM			*VEIT TRI 30% discount from the fees set by IWB. 2 to 3 ports in competition Cost savings on management, personnel, and fuel.
(2) for Cargo	1,000/ton		*NINH BINH 5-10% discount from the fees set by IWB. 3 ports in competition (illegal operation)
2. CARGO HANDLING			*HANOI 70 to 80% of the fees set by IWB. About 20 ports in competition (many illegally operated.)
(1) Handling at Berth			
	Ship ~ truck	Ship ~ barge	Ship ~ Transport Means
	Cargo Group	Port's crane	Ship crane
	1	6,700	SHIP CRANE
	2	8,200	6,700
	3	9,600	8,200
	4	11,700	10,000
	5	13,000	11,000
	6	15,300	12,300
	7	17,400	14,800
	8	23,500	20,000
	9	400,000/unit	300,000/unit
	empty	200,000/unit	150,000/unit
	* Port crane use cargo group 1-4: increase by 6,000/t 5-8: 12,000/t		
(2) Handling at BUOY			
	Cargo Group	Shipping/Unloading at buoy	Cargo Group
	1		Ship ~ Barge at water area
	2		
	3		
	4		
	5		

Table 1.1.55
PORT USER FEES AT OTHER PORTS (2/2)

PORT	NIHA TRANG	DIEN NGHE	Others
	6 7 8		*THUAN AN 1) Fees for domestic trade are by negotiation basis; 2) Fees for international trade The fees approved by the Government Commodity Price Committee.
(3) WAREHOUSE, STORAGE AREA TRUCK, TRAILER	Cargo Group Warehouse, Storage - Truck 1 4,000 2 4,500 3 5,000 4 6,000 5 7,000 6 8,000 7 9,000 8 12,000 9 20, 150, 300/UNIT 40: 300,000/UNIT This table does not specify if this is for the port crane use or not.	Cargo Group Storage (Yard) - Truck, etc. 1 5,000 2 5,500 3 6,700 4 7,900 5 9,000 6 22,000	*QUYNHON 1) Fees for domestic trade Berthing fee at berth: 12.5 VND/GRT/hour at buoy: 7.0 at bay: 4.0 for cargo: 1,000 VND/ton Penalty for occupying berth: 20 VND/GRT/hour
(4) for CONTAINERS and CARS			
3. For Storing	1) 1-30 days WAREHOUSE 300/d YARD 1,000/m ² /month if longer than 31, the fees are negotiated.	Ship ~ 20 feet fully 100,000 Minimum charging rate empty 42,000 7 ton 40 feet fully 180,000 Minimum = 14 tons empty 85,000 Car 250,000 4 seats in warehouse 600-1,000/ton/day in open storage 500/ton/day Container (unit/d) 20' full empty 10,000 5,000 40' 15,000 8,000 Reel 20' 20,000 Reel 40' 35,000 Delayed Payment: 3/d=1.30, 5/d=1.50, 6/d=2.0	
4. Other Fees			
(1) ASSISTANT SERVICE FEES	- Tug assistance fee 500 HP = 2,500/HP/hour 500 - 1,000 HP = 2,000 1,000 HP = 1,500		Tug assistance fees are the same as in the fee schedule of the Saigon port.
(2) Others	1) for Mooring and Unmooring 2) for Hiring worker and Equipment 3) for Dumping garbage, cleaning 4) for Delivering and Receiving		1) for Cargo Forwarding 2) for Hiring Workers and Equipment 3) for Repairing - Packaging
	*Issue Delayed collection of marine products, because of a waiting fee of workers, and absence of fee setting and/or lack of collection of the long-term berthing fee.		

(2) Identified Issues

The study identified the following problems related to port charge system. They should be improved or solved.

- (i) A port charge system should reflect its financial condition and service quality. It is therefore not adequate to apply a large port's tariff to a small one.
- (ii) Some ports does not prepare any tariff.
- (iii) Port user fees are basically determined based on the negotiation between ports and shipping operators/shippers in coastal shipping and river transport. Due to severe competition with other land transports and neighbouring ports, the ports which do not deal with international shipping would be in financial difficulty.
- (iv) Due to inadequate notification by the central government, some ports are still operating based on old tariff after its revision.
- (v) Ports often charge users surplus of unlisted items from their tariff. Although it might be some additional expenses, it is an underhanded way. It will result in losing reliance and market of coastal shipping.
- (vi) Cargo handling charge should be determined by commodity, package type and extent and method of cargo handling service.
- (vii) Some ports do not have a specialized tariff for handling and storing containers.
- (viii) Some ports do not segregate provisional yard storage fee from warehouse fee.
- (ix) Some ports do not prepare the tariff of long-time mooring and storage. Even there is such a tariff, some ports do not charge the fee based on it.
- (x) Port charge system for coastal shipping vessels differ from that for international shipping vessels. The difference is two to four-fold in port user fees and five to ten times in port entry fees except pilotage fee. Moreover, non-Vietnamese international shipping vessels must pay 50% higher than Vietnamese international ones in tonnage fee, pilotage fee and garbage fee.

(d) Cargo Handling and Storage

(1) Cargo Handling Equipment

The study observed the following problems commonly in ports. It is therefore necessary to replace outdated equipment and introduce new equipment so as to meet port traffic.

- (i) All ports have aged equipment, 15-20 years old. They are older than the planned durable years and thus they make cargo handling work inefficient outstandingly;
- (ii) Quayside cranes are only available at Saigon and Haiphong ports (jib cranes) and Hanoi and Viet Tri ports (bridge-shaped cranes). They are aged and inefficient. For instance, there are 25 units in Haiphong Port, of which 22 units are more than 15 years old. All the cranes in Hanoi Port are more than 15 years old;
- (iii) Equipment is liable to be out of order and the repairing work takes a long time;
- (iv) A lot of equipments are left alone without proper repair;
- (v) Small forklifts are run short of although they are suitable on yard and in warehouse and as a short-distance transportation.
- (vi) Some ports have many equipments but they are obsolete and resultantly disused;
- (vii) Bagged cargo and boxed cargo are handled by nets, rope springs or bare hands in and around warehouses. Since the present handling work is quite inefficient, cargo handling by small forklift and on pallet should be introduced;
- (viii) Ship gears are rather utilized than port cranes from viewpoints of efficiency, capacity and port charge;
- (ix) Necessary small parts for cargo handling such as wires, shackles, etc. are also short in number or outdated;
- (x) There is no gantry cranes and few big forklifts and toplifters even in the ports which are coping with a considerable amount of containers. Some ports do not possess a container spreader; and

- (xi) The number of forklifts is short in CFSs (Container Freight Stations) where many stevedores must be attached and detached.

(2) Cargo Handling Operation

The following problems make cargo handling operation inefficient. There is a large room for improvement.

- (i) Bare hands work should be transferred to utilization of pallets and forklifts;
- (ii) Various operational problems can be found such as no instruction working space for trucks, equipments and waiting space, work coordination and rest time. They are attributable to lack of supervision;
- (iii) It was observed that stevedores do not wear protection such as overalls, helmets, heavy-duty shoes and gloves completely. Under such circumstances, stevedores can not secure safety and increase work efficiency;
- (iv) Small apron can not provide enough working space;
- (v) Cargoes and handling equipment, sometimes toilets, are put on the yard. It makes working space limited;
- (vi) Some intra-port roads are narrow and unpaved. They hamper smooth traffic flow;
- (vii) Warehouses and yards are far from the quay and dotted. Cargo haulage is time-consuming;
- (viii) The number of stevedores and gauges and their allocation are not adequate; and
- (ix) Monopoly and no competition disregards the effort to shorten cargo handling time, upgrade service and stimulate labor motivation.

(3) Cargo Storage

The following problems make cargo storage inefficient and ineffective:

- (i) Warehouse floor area is not adequately provided. Some ports have too large floor space while some are short of it;

- (ii) There are many old warehouses. Equipments such as lights and ventilations in warehouse are insufficient. Renewal and repair are required;
- (iii) Some warehouses stand on wrong sites such as too much close to wharf, etc.;
- (iv) Work efficiency becomes low on unpaved or badly paved yards;
- (v) Long time storage on yard, storage in dilapidated warehouse, no sheet cover on cargo, unpaved road and poor drainage are liable to damage cargo;
- (vi) Storage of long duration is the factor to decrease port efficiency;
- (vii) Cargo is not stored well in warehouse and kept well on yard is also the factor to decrease port efficiency;
- (viii) Regardless of many burglary cases, countermeasures have not been properly taken. Shippers sometimes watch their properties in port; and
- (ix) Due to no inland warehousing industry and no internal competition, there is no incentive to improve currently poor and aged warehouses in port.

(4) Maintenance and Repair

As aforementioned, many ports suffer from poor equipment. However, a few ports are capable of maintenance and repair work satisfactorily. The following problems can be pointed out for ports to be equipped with an adequate maintenance and repair system:

- (i) Some ports have large workshops which involve a heavy outlay of money in port finance;
- (ii) Other ports which can not inspect and repair their equipment are apprehensive of serious troubles and unpredictable damages;
- (iii) Many ports do not have any record to do periodical or routine maintenance;
- (iv) Workshops lack spare parts, even basic parts out of store. Since many equipments are no longer being manufactured, procurement of their spare parts are also difficult;
- (v) In the case of new equipment, staff may not learn its maintenance techniques and the spare parts may not be domestically available;

- (vi) Instead of procurement, some spare parts are being produced in workshop. But quality and safety problems still remain; and
- (vii) In usual, small repair work takes five to seven days while large work more than three months. It would lead to reduction in operation efficiency.

Table 1.1.56
EXISTING CARGO HANDLING EQUIPMENT AT MAJOR PORTS (1/5)

Port Type	HAI PHONG					CAI LAN					LAN				
	Item	Capacity (t, HP)	Operation Years (No.)					Item	Capacity (t, HP)	Qty	Operation Years (No.)				
			<5	<10	<15	<20	<25				<5	<10	<15	<20	<25
Crane															
Quay Crane	Jib Crane	5 10-12.5 16	7		6	1									
			15	2	5	8									
			3	1		2									
Mobile Crane	Mobil	16-50	16					Crane	16	4	4				
			59												
Forklift	Forklift Toplifter	2.5-32 42	59 1					Forklift	1	1	1				
Others	Floating	80													
Transportation															
Truck	Truck Trailer	5-12	88 78					Truck		1					
Ship	Tug boat Tug Barge	600 3,500 3,000													
Workshop	Available							Unknown							
Remarks	<ul style="list-style-type: none"> • Operation rate: Quay crane (20-30%) Mobil Crane (30%) Floating Crane (30%) • Workshop has 275 staff. • Spare parts are limited and some are homemade. • Quarterly periodical inspection. • The average days for repair work is 71 days (in 1992). 														
	<ul style="list-style-type: none"> • Bridged cranes are installed on rail without engines. • Of which, 3 cranes are out of order. • All equipments are as old as 15 years and more. • Workshop has 20 staff. • Repair works take more than one month. 														

Table 1.1.56

EXISTING CARGO HANDLING EQUIPMENT AT MAJOR PORTS (2/5)

Port Type	VIET TRI					NINH BINH					QUANG LO					
	Item	Capacity (t, HP)	Qty	Operation Years (No.)					Item	Capacity (t, HP)	Qty	Operation Years (No.)				
				<5	<10	<15	<20	>20				<5	<10	<15	<20	>20
Crane	Quay Crane	2	2					2								
	Bridge-shaped crane															
	Tyred Crane	16	1					1								
	Crawler	2 1m3 1.2	1 3 1					1 3 1								
Forklift																
Others																
Bulldozer etc.																
Transportation																
Truck																
Ship																
Workshop																
Remarks																

Table 1.1.56
EXISTING CARGO HANDLING EQUIPMENT AT MAJOR PORTS (3/5)

Port	TUAN AN					DANANG					QUINHON					
	Type	Item	Capacity (t, HP)	Operation Years (No.)					Item	Capacity (t, HP)	Qty	Operation Years (No.)				
				5	10	15	20	20				5	10	15	20	20
Crane																
Quay Crane																
Mobile Crane	Crane	10, 12	2													
		12, 5, 16	2													
Forklift																
Others																
Bulldozer etc.																
Transportation																
Truck																
Ship																
Workshop	Not available															
Remarks	<div>• Tired cranes need repair works of 5-6 times annually. • Monthly equipment survey.</div> <div>• Many of cargo handling equipment was made in the former U.S.S.R. while boats came from the States. • Disordered cranes and forklifts account for 35% of the total.</div>															

Table 1.1.56

EXISTING CARGO HANDLING EQUIPMENT AT MAJOR PORTS (4/5)

Table 1.1.56
EXISTING CARGO HANDLING EQUIPMENT AT MAJOR PORTS (S/S)

Port Type	CAN THO					MY THO					MY THOI															
	Item	Capacity (t, HP)	Qty	Operation Years (No.)					Item	Capacity (t, HP)	Qty	Operation Years (No.)					Item	Capacity (t, HP)	Qty	Operation Years (No.)						
Crane				<5	<10	<15	<20	>20					<5	<10	<15	<20	>20					<5	<10	<15	<20	>20
	Quay Crane																									
Mobile Crane	Mobil Crawler	45, 75 30	2 1				2 1				Mobil	3-10	3								Tyred	7, 12	2			*
	Forklift										Forklift										Forklift	3, 5	2			*
Others																										
Bulldozer etc.	Floating	25	1								Floating										Floating	25-40	3			*
	Transport limited										None										None					
Truck	Truck		5																		Truck		4			
	Tug	150HP	1																		Tractor		4			
Ship	Tug	1,400HP	1																							
Workshop	Available (small)										Available (small)					Available (small)										
Remarks	• All equipments and boats are outdated. • In the case of rice export, 20 forklifts come from rice mills.					• Workshop has only 2 staff. • There are some forklifts in the port which belong to BGI (local brewery).					• Equipment are old but seldom disordered. • Workshop has 10 staff. • Weekly, monthly and semi-annual surveys.															

1.2 Inland Waterways

1.2.1 Administration and Management

Several thousand kilometers of waterways exist in the deltas of Hong and Tai Binh rivers in the north and the Mekong and Dong Nai rivers in the south. The waterways support transport in the area. The major distribution of the waterways are shown in Figure 1.2.1, and the lengths of the major waterways are summarized in Table 1.2.1.

Table 1.2.1
LENGTH OF INLAND WATERWAYS BY CLASS
UNDER CENTRAL MANAGEMENT

Class	LAD	Length in km			
		North	Center	South	Total
I	>2.3	716.0	92.5	167.7	976.2
II	2.0-2.3	344.0	105.0	218.7	667.7
III	1.5-2.0	492.0	221.5	260.2	973.7
IV	1.2-1.5	568.0	312.5	399.8	1,214.1
V	1.0-1.2	341.5	447.9	333.6	1,189.2
VI	>1.0	283.0	1,398.5	85.0	1,766.5
	Total	1,744.5	2,577.9	1,465.0	6,787.4

The characteristics of waterways in the north are as follows:

- Generally, waterways are shallow. Except the segment from the ocean to the Haiphong Port, the transport of freight with 1,000 DWT or more is difficult or impossible navigating the waterways;
- The major waterways are Ocean-Haiphong Port, Viet Tri Port-Hanoi Port-Nam Dinh Port-Ninh Binh Port (the Hong river), the east-west linkage of Thai Binh river and Hong river by the Duong river and Luoc river;
- The water levels change during the dry and rainy seasons. Generally, the level difference between those seasons are six to seven meters. In areas of the Hanoi port and vicinity and the upper rivers, the difference reaches 10 to 15 meters.
- Dredging work is not sufficient.
- The radius of curves of waterways are small. In some section of waterways connected barges must be separated to pass.
- Quality and quantity of transport supporting facilities are poor. Especially, lack of facilities for night-time transport in most areas is an issue on both safety and transport efficiency.

The characteristics of waterways in the south are:

- The depths of the Mekong river (Tien Giang) and the Bassac river (Hau Giang) sufficient for inland water transport; however, other waterways parallel to the coastal lines are generally shallow. The transport of freight with 1,000 DWT or more is difficult or impossible navigating.
- The major routes with substantial quantity of transport are ocean-Saigon area, the east-west routes between the Saigon area and the Mekong Delta, the Mekong river, the Bassac river, some waterways in the south and west area of the Mekong Delta.
- The water level difference in the dry and rainy seasons is relatively small. At most, it is about five meters.
- Like the north, quality and quantity of transport supporting facilities are poor. Especially, lack of The Ministry of Transport is the facilities for night-time transport in most areas is an issue on both safety and transport efficiency.

The Ministry of Transport is the administrative body for development, maintenance, and management. VINAMARINE is in charge of the sections between the ocean and the sea ports. Other sections of waterways are administered by IWB. Still, demarcation of the roles of the administrative bodies is not clear. Since there are some items of definitions on ports and their yet to be clarified, in some section of waterways, a responsible administrative body has not been defined.

Unclear waterway administration, insufficient data on depths of waterways, and insufficient dredging work are major issues of waterway management.

As stated, the waterway management is administered by VINAMARINE or IWB according to certain guideline of delineation; however, there are segments of waterways where such delineation is not clear. Because of the absence of a responsible administrative body, development, maintenance, and management are non-existent. Artificial segmentation of waterways, which is physically continuous, needs due consideration. All the waterways may be administered by one administrative body, or if they were to be segmented, one unit of management should be by a single waterway.

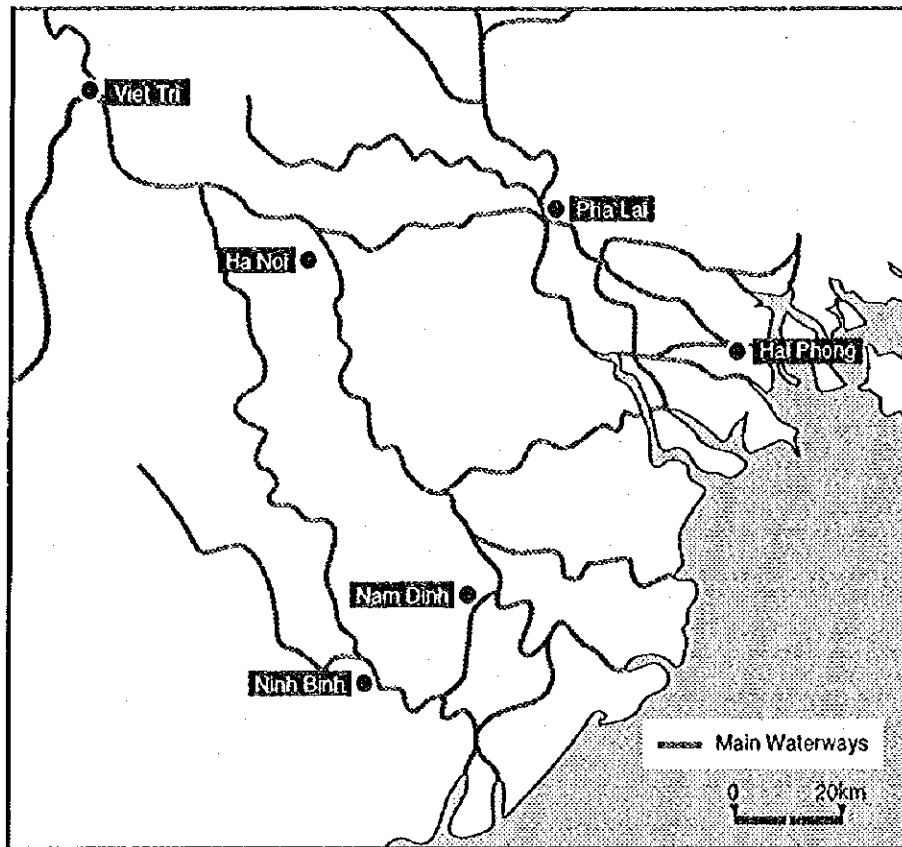
The depths of waterways are not measured regularly. Therefore, data on the depths are not up-dated; current depths of many waterways are unknown in Vietnam. The significance of availability of the data is in dredging work planning and implementation, in permanent facility development in areas where sufficient depths are not maintained, and for the safety of waterway transport. Lack of financial sources is the major reason of not taking the measurements regularly. To make the data available, securing financial sources for the measurements is the issue of waterway management.

Dredging work is not conducting regularly, even though, the work is important to secure required depths. This is also because of lack of funding of the work. While the dredging work for the waterways is urgent, the dredging public corporations are busy

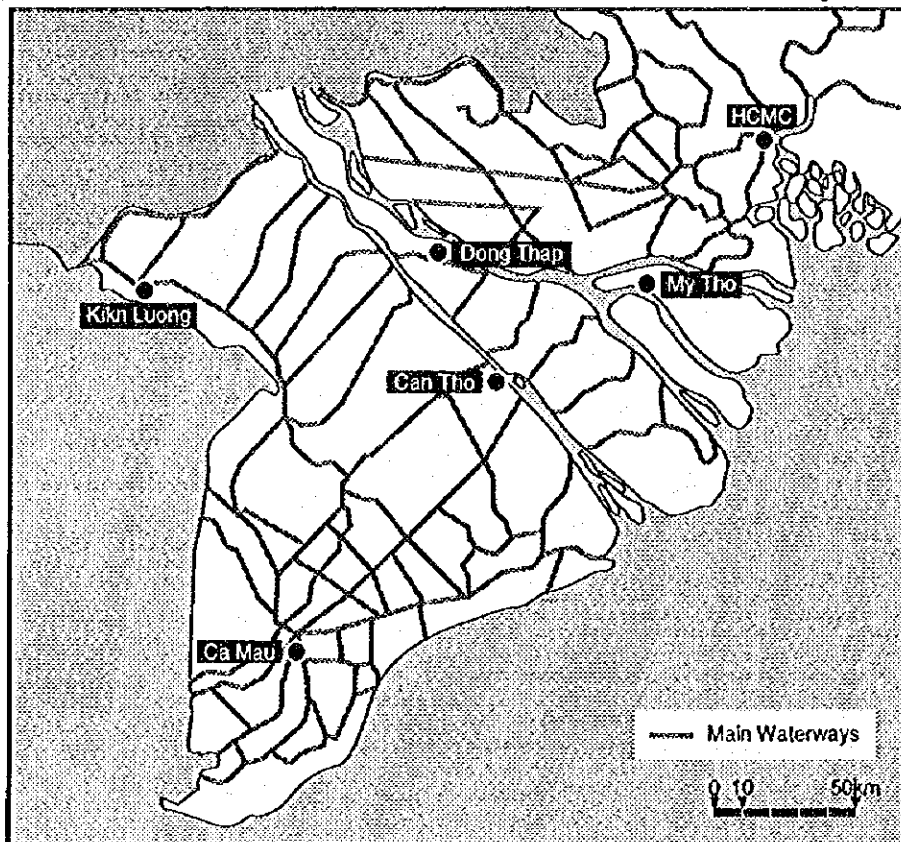
working on more profitable dredging projects on manufacturing and agriculture. Even worse, the efficiency and work methods of dredging ship is not free of problems. It is said that majority of dredging fleets is said to be replaced with more efficient ships.

Figure 1.2.1
INLAND WATERWAYS NETWORK

The Red River Delta



The Mekong Delta



1.2.2 Port Accessibility

(a) Regulations and Limitations on Entry/Exit to/from Ports

The entry/exist to/from ports are regulated or limited by the depths of the ports, the drafts, time of day, and weather.

1) Depths of Ports

In ports and waterways with inadequate depths, large ships unload cargo offshore to lighten the draft. The Cua Lo port has an access pathway (2.3 km); the depth of port is 3.8 meters. Using the 2.5 meter tide, a freight ship with draft of 5 to 5.5 meters enters the port by being pulled by tug boats. Transport of cargo between freight ships are conducted by barges. (3 barges 750 ton x 1,350 ton x 2, 3 tug boats 450 ton x 1,200 tons x 2). The depth of Danang port is 8.5 meters which makes entry of a freight ship with 5,000 DWT possible. Cargos are transported to barges (200 to 500 tons) from a freight ship anchored. In Vung Tau port, since the depth of the access waterway from the buoy "O" is 3.5 meters (LLW), cargoes are unloaded and loaded in offshore at the same buoy "O".

2) Tide

At the river mouth of Day, Lach Giang and shallow areas, entry is limited only at high tide for Hanoi, Ninh Binh, and Nam Dinh port entries. The entry to Mekong Delta area from My Tho, Can Tho, My Thoi (Long Xuyen) ports, the similar entry method is seen. The depth is indirectly limiting the entry/exit to the ports. When the drafts are too deep even at the high tide, ships need to unload to lighten the drafts.

3) Facility

Where there are not enough ATN, generally night entry to ports are prohibited.

4) Weather

In the Danang port, from October to January, the port is closed 45 day in a year.

(b) Inland River Ports

1) North

Ship Type and Fleet

Generally, the tonnage of small ships and barges are from 100 to 300 tons and from 120 tons to 400 tons, respectively. Barges are pushed by a tug boat with a 135 horse power engine. Usually, 120 x 6, 200 x 4, 400 x 2 are the formation of barges and a

tug boat. The formation is based on four to five DWT per horse power. Almost all of them are steel barges. The sizes are as follows:

200 barge x 4 L: 96 m B: 13.6m D: 1.2 (push)

400 T barge (35m/barge) D: 1.4-1.5 m (push)

120 x 6 = L: 100 m (pull)

Issues

During the months of July and August, when the water level is high and the water flows more rapidly, the number of barges connected may be reduced at sections of sharp curves. At Mao Khe, the difficult section to pass, one additional assist tug boat may be added, or a barge passes one by one.

To Viet Tri and Hoa Binh, the upper portion from Hanoi, almost no ships enters because the inadequate clearance at the Long Bien bridge and rapid flow of the river.

Specialized coal ports operate inefficiently with many offshore waiting ships. The ports, however, seem not to improve port operation.

The difference of water levels in rainy and dry seasons become 11 meters in Hanoi. Not only loading and unloading, but reaching piers and wharves become difficult because of the seasonal water level difference. During the dry season, load may be reduced to pass shallow areas.

Major freights are cement, clinker, fertilizers, rice, sand and gravel for construction, and imported clinker for rush barges.

2) South

Ship Type and Fleet

The tonnage of small service boats are 20 to 100 tons. Many of them are wooden ship. Typically, barges are pulled by a tug boat with a 135 horse power engine. Introduction of push type of barge fleets is being considered; however, since the river flow is slow and the alignment of waterways has less sharp curves, they are not employed, yet.

Generally, barge fleets are formed based on the four tons of DWT to one horse power.

120 x 6, 200 x 4 are common formation.

200 barge x 4 L: 96 m B: 13.6m D: 1.2 (push)

120 x 6 = L: 100 m (pull)

The waterways are developed like webs, small boats load/unload cargoes on rivers. In the south, there are many areas where door-to-door services is possible.

Issues

The canal on the routes of Ho Chi Min - the Kanto port and Kienron-the Kamau port, is shallow. The shallow canal make transport inefficient, for ships need to wait for high tide. In all waterways, transport supporting facilities are lacking. Being unable to navigate at night, the inland waterway transport is inefficient.

(c) Ship Types by Port

Region	Port	Maximum Size
North	Cam Pha	30,000
	Hong Gai	Coal and others
	B-12	20,000 (Oil Port)
	Quang Ninh	18,000
	Cai Lan	
	Haiphong	5,000 (Offshore transshipment)
	Ching Phong	3,000
	Hoang Thach	300 (Cement Factory)
	Pha Lai	400 Coal for a power plant
	Ha Bac	200
	Hanoi	300
	Viet Tri	400
	Hoa Binh	200
	Bich Ha	100 (Hoa Binh Dam)
	Nam Dinh	400
	Ninh Binh	600
	Thanh Hoa	600
	Cua Lo	3,000
	Ben Thuy	600
	Xuan Hai	3,000
	Vung Ang	10,000 (under planned)
Central	Hon La	(under planned)
	Cua Viet	3,000
	Da Nang	27,000 (Tien Sa)
	Da Nang	5,000 (song Han -- domestic cargo)
	Lien Chieu	(under planned)
	Dung Quat	300,000-500,000 planning for oil refinery
	Qui Nhon	10,000
	Hon Khoi	600
	(Van Phong)	21.5 draft ("Ship to ship" oil transportation)
	Ba Ngoi	15,000

Region	Port	Maximum Size
South	Vung Tau	5,000 (Oil reserve facilities, agricultural products)
	Thi Vai	5,000-30,000 under construction
	Saigon	20,000-30,000
	Ben Nghe	20,000
	Tan Cang	20,000
	Nha Ve C.P.	10,000
	Nha Be Oil	28,000
	My tho	3,000
	Ving Long	2,500
	Dong Thap	3,000
	Can Tho	5,000
	Long Xuyen	5,000 (8,000 DWT ship is possible/Cua Dinh An Regulation)
	Hon Chong	2,000
	Kien Luong	600 Cement factory (coal/clinker)
	Ca Mau	unknown
	Nam Can	3,000

(d) Measures

Since the volume of cargo will increase in the future, following measures will be required:

- Development and improvement of navigation supporting facilities and dredging works in access ways and berths for smooth entry.
- Loading/unloading facilities need to be developed and improved and custom and distribution systems including inland waterways should be established. Large-scale ships will be required for more efficient loading and unloading.
- The size of barges needs to be increased. For coal transport, the tonnage of a barge should be 400 tons, and two barges are transported by the push style. This would minimize the time loss of barges changed for loading and unloading. A tug boat will need a engine with 200 or more horse power.
- The waterways to the ports of Haiphong and Saigon are crowded with vessels. A vessel traffic control system will be necessary.
- An information system for cargo and vessels will be required for smooth transport within and out of a port. Such navigation facility support system is preferably developed within the sea-cum-river project.

1.2.3 Intra-Port Cargo Movement

(a) Current Conditions and Issues

1) Current Conditions

Movement of cargo within ports and offshore is categorised into four types:

- (i) A mother vessel docks; freight is moved on land; freight is stored; from the storage, freight is delivered.
- (ii) Freight is transported from a mother vessel directly to barges and smaller service vessels and delivered.
- (iii) Freight is stored in storage, and then, transported to barges for delivery.
- (iv) A mother ship moored at a buoy offshore, and freight is directly transported to barges and smaller service vessels for delivery.

Land transport by trucks is being improved recently; however, compared with land transport, river transport has been more developed over the years, especially in the south. With loading and unloading facilities equipped on a mother vessel, often, freight is transported directly to barges and smaller service vessels. At the Haiphong, Vinh, and Tan Cang (Saigon New Port) ports, availability of container berths,

2) Movement of Freight

Coal: Coal is transported to factories by way of inland waterways by barge fleets (120-200 t x 6-4, total 700 - 800 ton) or small freight vessels (100 - 300 tons), since coal consumption is high in factories in inland areas, except for the coal transport by vessels with 1,000 to 3,000 DWT originated in Quang Ninh and Hong Gai ports and by railways.

Generally, coal for export is transported by railways. Sometimes, barge fleets transport coal to the Hong Gai coal port, and then transhipped to larger vessels.

Rice: Small vessels and trucks are major means of rice transport to areas where storage and processing machines are available from the south. From the south to other areas of rice consumption, small vessels (600 1,500 DWT) are used. Most of rice for export is transported to the Saigon port, transhipped, and exported overseas. The quantity of rice for export directly from areas of production is minimal. Rice transported to the north is further transhipped to barges and small vessels, and transported to river ports, or temporarily stored. Most of rice is transported in bags but pallets are not used.

Cement: Imported cement is landed or transported in small vessels at the Haiphong, Saigon ports. Trucks, railways, and smaller vessels deliver the rice to other areas of consumption. Cement domestically produced is transported by small vessels and

barges inland to river ports. Since the cement is bagged; pallets are not used; loading and unloading are inefficient. The reasons for not using pallets are that there is shortage of lumber and abundance of labourers. The Chinh Phong port (a cement factory, across the shore of Haiphong, soon to be operated) was improved to accommodate 6,000 ton of cement bulk vessels. There are similar expansion plans at Bim Son, Nghi Son, Ha Tien-2 ports.

Clinker: Clinker is shipped from power plants and fertilisers factories to cement factories by barge fleets. 600,000 tons of clinker is shipped from the Kien Lung port to the Saigon port by barge fleets; however, the inland waterways including canals are shallow without adequate navigation supporting facilities. Because of the limitation, transport is inefficient and not possible during certain hours of day. The volume of cargo transport in this route is large, the cost of transport is compared with the shipment by another route by way of ocean by larger barge fleet with 7,000 DWT. It would be necessary to consider impact to irrigation facilities; however, inland waterways, which has various purposes of usage, should be preferably used. Another major route of clinker transport of 50,000 tons is from Viet Tri (fertilisers processing plant) to Hoang Thach.

Container: Ports which has container facilities are limited. Cranes on land and mother vessels are used to load and unload containers directly. A transport by trailers have been developed (since there is no other way of transporting containers), but there are problems associated with traffic regulation due to congestion, weight limitation on roads and bridges, lack of weight bearing capacity on ferry ramps (the south), and outworn trailers (mostly Russian made).

In order to deliver containers directly to customers, the containers' load may be lightened or transported at night. Since the load limitation is a direct loss to shippers, they are searching for ways of making shipment more profitable.

Availability of different modes of shipment (road, railways, waterways) is desirable, but as far as inland waterway transport is concerned, only available method of container transport is by four flat barges carrying total of 24 containers pulled by a tug boat. The containers need to be further transhipped to final destinations. Availability of container handling facilities are limited in inland waterway transport, also. On freights which does not require fast delivery, inland waterway transport has advantage over land transport to avoid road congestion. Routes of cargo transport by shippers' should be improved by increasing joint venture projects.

Oil: Refined oil is transported by tankers of 100 to 300 tonnage, except the cases by large tankers to B12, Cua Lo, Danang, Nha Be ports then shipped to pipeline tank-lorry. In the south, despite the availability of fine waterways and cost effective small vessels, tank lorries are used because there is not enough tankers available. To Kien Luong, 150,000 tons of oil is transported by tankers with 300 to 600 tonnage. The

shift to transport by tankers should be considered rather than considering the cost of shipment itself.

3) Movements of Freight at Selected Ports

Haiphong Port (Refer to Appendix 1)

All unloaded general cargoes are once kept in storage. Then 90 % of them are shipped by trucks, and 10 % is shipped by railways. Out of 480,000 tons of chemical fertiliser in bags, both domestic and international: 10 % (48,000 t) is stored; 30 % (144,000 t) is shipped by barge; 55 % (263,000 t) is shipped by truck; and 5 % is shipped by railways. The 610,000 ton or 76,000 TEU of containers handled at the port. 98% (600,000 t or 74,500 TEU) of them are once unloaded to the land. Out of the 98%, 28 % of the total (170,000 t or 22,500 TEU) is directly shipped, and the rest (70%, 420,000 t or 52,000 TEU) is kept in container yards. The 95 % (4000,000 t or 46,800 TEU) of the containers at the yards is shipped by trucks, and 5% (20,000 t or 5,200 TEU) of them is transported by railways. Only 2 % of the total containers is directly transhipped from the vessels to railways.

60% (230,000 t or 29,000 TEU) of containers being loaded come from the container yards; 40% (160,000 or 19400 TEU) is directly brought by shippers. 80% of general cargoes unloaded are directly shipped to consignees, and other 20% is kept in warehouses. Out of 264,000 tons of cement produced at the Haiphong port, 95% is transported by trucks, and 5% is once kept in storage and loaded to vessels (100 to 150 DWT self-propelled, and 120 to 200 T barge, 600 t vessels) to domestic markets by trucks and fork lifts.

Saigon Port

Mooring buoys are available offshore of the port. Cargoes are directly transhipped to barges and smaller vessels, and shipped to the My Thoi, Can Tho, Kien Long, Ca Mau and Phnom Penh ports. The method of loading and unloading from freight vessels to smaller vessels or barges is "Ship to Ship/Barge" which has less handling times and is very efficient. When barges are not continuously arriving, the mother vessels need wait till their arrival, requiring more trips and keeping scheduling difficult. The problem is resolved by transporting cargo from wharves with storage being developed to mother vessels by barges. This would be extra cost by increase in number of handling time, however.

4) Cargo to be transported by way of inland waterways in the future

Quantity of raw materials to processing factories and plants and products produced from those factories is expected to rise. If it is a joint venture project with international partners, quality shipping services need to carefully provided to satisfy

customers. Volume of cement, fertiliser, products from steel factories and imported clinker for cement factories and quartz sand to glass factories are also expected rise.

A policy is needed to invest on inland waterways. Fees may be charged at certain sections of waterways when traffic demand becomes higher. Also tax on fuels for vessels may be charged.

5) Transshipment

Transshipment is conducted at the following ports:

70,000 tons of logs from Laos to Taiwan is transported by fleets of barges of 400 to 500 DWT (total of 3,000 DWT) at the Xuan Hai port (Ha Tinh Province). At Qui Nhon (Binh Dinh Province), 20,000 tons of logs and stones are transhipped by two barges with 200 DWT. Since January 1996, oil is transhipped from VLCC to small to medium scale tankers at Van Phong Bay. Loading ports are neighbouring countries and other areas in Vietnam. Offshore of the Hai Phong port, cargoes are transhipped from vessels with deep drafts to barges and smaller vessels. It would be better if cargoes are directly unloaded at wharves without being affected by weather; however, until the dredging work is finished, the method effective to allow large vessels to entry to the Hai Phong port. At Nha Trang port, six barges and nine small vessels are used for transshipment from larger vessels. At the Vung Tau port, transshipment is conducted at the "O" buoy area. Barges, small to medium size vessels are used for transshipment from larger vessels moored at the Saigon port. At the My Tho, Can Tho, Vinh Long and Dong Thap ports, cargo imported and loaded at the Saigon port is transhipped to barges and small vessels heading for inland river ports. Cargo to be exported at the Saigon port is transhipped the same way except for agricultural products which are directly shipped by small vessels with 10 to 100 DWT. At the Can Tho port, 70% of cargo is transhipped by way of inland waterways; shipment by trucks shares other 30%. At My Thoi port, rice brought from neighbouring areas is transhipped by floating cranes to freight vessels with 400 to 3,500 DWT, then, transported to the Hai Phong port. The rice is for export, and its volume is 90,000 ton/yr.

(b) Assessment

1) Port entry information is very important to shippers to arranging trucks barges and to conduct other preparatory works. The information should be provided not only for the safety for vessels.

2) To reduce time for loading and unloading, utilization of press-ring and pallets, and containerization are effective. In order to reduce congestion at a port, development of these methods should be necessary (referred to the port management section).

3) Cranes and fork lifts will be needed to prevent damages for freight, such as steel products which are transported to barges and stored in yards and on trucks and trailers, and to make loading and unloading works more efficient (referred to the port management section).

4) Since more than half of cargo (fertilizer and others) are shipped to My Tho, Can Tho, and the southward from the Saigon port, it would be more efficient, if international freight vessels with 3,000 to 5,000 ton were to reach as close as to the final destination. It is feasible at present, but the volume of freight is not enough to fill a larger freight vessel constantly.

5) Transport operators demand inland waterway development which allows 24 hour navigation and entry of larger vessels. Such development is beneficial to the growth of the national economy under the condition that countermeasures to impacts to irrigation facilities and flooding are carefully considered.

1.2.4 Characteristics of Inland Waterway Transport

(a) General

Inland waterway transport has its long history. But recent development of freight haulage by railways and trucks changed some of the means of shipping freight. The increase in cargo volume is more than apparent. The Vietnam government is planning for diversity of modal choice for shippers and at the same time for smooth freight shipment.

1) Road Transport

In the Hai Phong - Hanoi area in the north, road improvement and expansion projects are being implemented. When they are completed, freight except bulk, long, and heavy cargo will be transferred using the Rout 5. Currently, because of low bearing capacity of roads and bridges and congestion, truck operation is limited at night time operation with limited loads. In the north, since roads along rivers and bridges have been built, the share of freight haulage by trucks is relatively high except in the area of fuel. In the south, a road network has been expanded, but bridges may not be available. Ferries may be used to cross rivers in the south.

Availability of ferries satisfy current demands; however, the bearing capacity of road, bridges, ramp-way of ferries is not sufficient to containers and large trucks with full loads. Being unable to load up to the maximum capacity, road transport is inefficient.

2) Railway Transport

Very few ports are directly connected to railways. In the Hai Phong port, there are tracks of railways, but the contribution of the operation is not substantial because of limited frequency. Out of the total containers transhipped, only 2% (1,500 TEU/yr)

uses the railways. In the north, there is a plan to build railway facilities in the Nam Dinh and Ninh Binh ports. If initial costs are not considered, shipping costs becomes low by development of direct tracks in coal ports and factories, since maintenance costs are lower than other modes.

3) Inland Waterway Transport

Coal, limestone, cement, clinker, construction materials (steel, sand and gravel) are shipped by way of inland waterways. The operation will be continued, since cargo volumes are expected to rise. 90% of coal transported through inland waterway represents the use of waterways. Containers are handled only at sea ports. It would depend on actions now how the shares would become in the years 2000 and 2010; however, inland waterways should be balanced with other modes of shipment. In the Red River Delta, oil, coal and construction materials should be shipped through waterways. One exception is

(b) Inland Waterway Transport

1) General

As stated, in the north, coal is shipped from the Quang Ninh and Hong Gai ports to the Hanoi, Viet Tri and Hoa Binh ports through Thai Binh and Duong rivers. In the south, the share of inland waterway transport is large as in the past. The efficiency of waterway transport depends on the advantages and disadvantages of the mode at the large scale waterway network which includes the Mekong and Bassac areas. The energy and labour efficient mode of shipment important for Vietnam which has abundant agricultural products and mineral deposits. However, due to development of railways and roads, budget to improve efficiency of waterways transport tends to be short.

2) Major Commodities and Routes

Cement, rice and general cargo are shipped by barges with covers. Generally, loading to vessels for coastal shipment from barges and smaller vessels are transhipped at wharves and mooring buoys offshore. Unloading from larger vessels are usually done directly to barges.

At the Saigon port, cargo is directly shipped to barges and small vessels, and transported to the My Thoi, Can Tho, Kien Long, Ca Mau and Phom Penh ports. Large vessels are moored at buoy in rivers to tranship cargo directly to small vessels and barges. This method of transhipment "Ship to ship/barge" is considered to be very efficient.

Despite the world-wide trend of containerisation of general cargo, very few container handling facilities are available at river ports. The advantage of using containers is in

utilisation of empty containers for shipping final products after parts or materials are shipped to factories. Generally, containers are shipped through road and railways. When volume of shipment exceed the capacity of road and railway transport, inland waterway shall be considered. In order to meet the required container handling facilities in rivers, the following should be considered:

- Cost and benefit should be studied prior to developing container ships and container handling facilities. Water transport is considered to be a cost effective method of transport, but the volume may be limited because of the river configuration especially in the Red River Delta area.
- A possible fleet of six barges would carry 24 containers which is about 240 tons. Compared with a European fleet which carry 200 to 300 containers (2,000 to 3,000 tons), the capacity is low.
- A shipper generally demand a container to be delivered to the final destination--at the door. Containers could function as storage space for shippers, and they protect products from damage and thefts.
- Days of shipment from sea ports - river ports, and river ports - final destinations and days of shipment by trailers from sea ports should be compared. The comparison should include physical and economic loss, road congestion, safety should be considered.
- The only advantage of waterway transport is that there is no load limit like road transport. Its impact to the costs are large.

(c) Characteristics of Waterways

1) Low water level during the dry season (an example in the north)

Regulation of the least navigational draft and decrease in the water level reduce loads on vessels. It is said that 50% of loads to the maximum loading capacity is the minimum for a boat operator to break even on a trip. When travelled along the Duong river, Hoang Thach (cement) to Hanoi/Viet Tri, Hoa Binh, a four class vessel is supposed to carry up to 1.2 to 1.5 draft, but during the dry season the draft needs to be lighter. The shipment efficiency drops.

2) Suspended Navigation

During summer, when water level is high, the clearance underneath the Long Bien bridge is becomes too low to pass. A liner operation becomes impossible, and the volume of general cargo becomes low. The costs of shipment depend on the class of rivers. However, when 40 to 60 days in a year is not operational, effective fleet

operation becomes difficult. How to raise revenue during these days would become challenges to carriers. In fact, they process sand and gravel or work on dredging work these days to raise revenue as much as possible. Repair and maintenance of their ships are usually done during this period. Since many factories are located and construction materials are transported in the Red River Delta area, development and improvement of the waterways becomes necessary.

3) Navigation Supporting Facility

Absence of lack of navigation supporting facilities limit night time navigation. Vessels and workers are not effectively deployed. Current operation is based on the past custom of not navigating at night. When 24 hour navigation becomes possible, safety and economic efficiency should be considered, and maritime laws need to be amended to regulate the number of crews on ship.

(d) Fleet

1) Current Condition

The total horse power and tonnage in the north is 100,000 hp, and 420,000 ton. And for the south, they are 270,000 hp and 310,000 tons. The totals in the area are 127,000 hp and 720,000 tons. The current condition of fleets in the north and the south are assumed to be the same as the fleet in 1991. About 88% of the total fleets are considered to be operational.

The ton x km per 1 DWT was calculated as follows:

	Volume (mil ton/yr)	Average trip length	tonnage	ton x km/DWT
North	2.3	227	125,000	5,000
South	5.7	163	310,000	3,000

The result for the north (5,000 t km/DWT) shows relatively high efficiency of cargo transport per DWT. This is because of the regular coal transport by barges. In the south, the figure (3,000 t km/DWT) is low. Considering the impacts from seasonal changes of weather, the figure seems satisfactory.

The capacity of barge transport in the Hochi Minh City in 1995 is 10,000 ton for the public sector and 30,000 ton for the private sector. In the city, already 30,000 ton (equivalent of 100 barges of 300 ton) of barges are demand. In order to meet the demand, 10 million U.S. dollars need to be invested.

In the south, dominant fleets are composed of wooden small boats. The pull method of barge transport is still prevailing. The fleets are to be up-graded to steel boats and

push tug boats as wooden boats provide "door-to-door" services. It requires further studies to figure out exactly how many barges are needed because of factors such as inadequate navigation supporting facilities and absence of large vessels which navigate from ocean to rivers.

Compared to the north, rivers in the south flows less rapidly and are deeper. To achieve economic efficiency waterway transport, following should be considered, and fleet should be improved: Increase in meeting at corners of meandering sections and temporal mooring at river ports may cause accident; Pushing barges are safer than pulling; power of tug boat engines need to up-graded; and larger barges are more beneficial.

2) Northern Fleet Improvement

For coal shipment, larger barges are more effective. Current 120Tx 6 by 1 tow tug formation should be up-graded to 400tx3 by pusher tug. The operation will be easier; change works of barges at wharves will be easier; loading and unloading will be more efficient and result in shipment efficiency; and effective in case of labour cost increase in the future.

The engines of tug boats should be up-graded from current 135 hp to 200 hp or higher. However, since barges last about 30 years, decisions on barge replacement should carefully made.

3) Southern Fleet Improvement

In the south, coal is transported less than that in the north. Major commodities of shipment are clinker (bulk) and rice (bags). For general cargo, hatch type of fleet is necessary. For bulk cargo, deck-type of fleets are preferred. Increase in size of tankers and vessels with refrigeration facilities have scale merits, but may not be effective for "door-to-door" services. When large barge fleet operation and sea-cum-riverways are in operation, navigation supporting facilities, such as telecommunication facilities and lighting, should be developed for 24 hour-navigation. Researches of waterways and waterway maps are urgently needed.

(e) Shipping Operation and Management

IWB under MOT manages 14 rivers with 101 stations and five river ports through Union of Water Transport No. 1 in the north and Union of Water Transport No. 2 in the south. In the north, Union of Water Transport No. 1 manages four shipping companies, five river ports, three ship building docks, one ship repair factory, and one maritime training centre. In the south, Union of Water Transport No. 2 manages one shipping company, five one ports, three ship building docks, one ship repair factory, and one maritime training centre.

1) State Water Shipping Co.

Under IWB, four state water shipping companies in the north and one in the south are in operation. Most of them handle freight. In the north, coal, cement, sand and gravel, and bricks; in the south, agricultural products are shipped. By the Doimoi Policy in Vietnam, four companies in the north operate in a competitive market. All these state companies are profitable so far, being used to acquire their own capital. One of the problems is the replacement of old boats. Financing measures are not yet known. The freight market on sand and gravel and other construction materials is becoming very competitive among state, provincial and private companies, and the prices of shipping are coming down.

2) Provincial WB Shipping Co.

At least one Provincial WB Shipping Company exist in one province.

3) Private Shipping Company

In the north, there are about 20 private shipping companies collecting, loading/unloading and carrying pebbles. In the south, about 90% shipping companies are privately operated. The scale of operation is small. Its business operation, loading and unloading, takes place in various locations. For example, in My Tho and Can Tho area along the Mekong and Bassac rivers, there are numerous waterway networks. The waterways are accessible from backyards of residences.

4) Shipping Operations in Waterways

The fees charged is set by the Government Commodity Price Committee, but the competition is becoming sever among the public and private shipping companies. Because of the competition, the shipping charges has dropped so much that companies cannot neither afford to upgrade their fleet nor train their crews. Since the waterways public role is important, the appropriate fees need to be charged to ensure maritime safety.

In order to operate more efficiently, better management of fleets and reduction of offshore waiting time would be necessary. Waiting days regulated by UKC, loading level, and decisions on deployment of ships need to be grasped. On the average, days for one round trip is about 15 days, but waiting days are usually 10 days. Even counting two days of loading and unloading, more than half is wasted just for waiting.

5) Privatisation of State Shipping Companies

Under the current condition, privatisation of state shipping companies is not urgent. The public role of shipping for coal and cement is high, and profitability is low due to seasonal water level changes and accumulation of silt from runoff's upstream.

(f) Crews for Inland Waterway Transport

Navigation Technical School No. 1 and No. 2 provide lectures and training. The budget is inadequate. The demand of crews for inland waterways is high. Every year, until the year 2000, 1,040 graduates are needed. To 10,000 individuals, the third and fourth class licenses for small boat operation will be granted.

(g) Laws of Inland Waterway Transport

Laws on shipping operation and river/river port management are absent or inadequate. Therefore, IWB's authority to make decisions on the operation and management is weak. A legal system which meet the international standard inclusive of the Mekong river, is necessary.

(h) Navigation Support System

Signs along waterways are sufficiently placed. Even placed, the indicative signs are weathered. Replacement and improvement of signs which meet the international standard are required, since Sea-Cum-River boats would operated in the waterways.

An information system on maritime accidents, signs, weather, and locations of ships is necessary for waterway management. The system should be established in a way to communicate with VINAMARINE on the Hanoi route as well. In the Ho Chi Minh City area, navigation guiding support system would be introduced.

(i) Ship Building, Repair and Maintenance

Modernisation and strengthening of ship-building facilities is necessary. At following locations, improvement and development of ship-building docks are requested. Before being implemented, the roles of ship-building for coastal and international boats need to be co-ordinated. New ship-building docks to be developed are the Hoa Binh Water Reservoir and the Can Tho port. The Hoa Binh Water Reservoir is necessary to ship construction materials for a new dam to be developed at the upper part of Son La. At the Can Tho port, a new ship-building yard is necessary to build Sea-Cum-River ships. Locations of ship yards which need improvement are: the Hanoi Shipyard, River Ship Repair 2, Song Lo Shipyard Viet Tri, Ha Nam Hnh, Hochi Minh City, and Vung Tau.

(j) Improvement and Development of Technical Fleet

The list shows the ships to be purchased to upgrade and modernise the fleet. Since the budget is limited, VINAMARINE should co-ordinate with other agencies or the roles need to be reviewed and revised.

Table 1.2.2
TECHNICAL FLEET DEVELOPMENT PLAN

Kind of Vessel	Salvage-Lift VSL	Survey VSL	Dredgers 100m ³ /h	Patrol vessels	Light boat	Buoy-boat (Coastal)
QTY by 1995	0	0	1	1	144	0
Demand up to 2000	10	10	4	10	164	4
Demand up to 2010	15	10	4	20	200	6

(k) Development of Information and Communication Systems

Development of modern information and communication system is necessary. The information and communication system should be used for managing waterways by collecting and providing information on operations of boats, maritime accident, loading/unloading information, freight information and others. Upon introducing such a system, close co-ordination with related agencies would be necessary.