Chapter 3

SUMMARY OF WATER TRANSPORT SECTOR IN VIETNAM

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3.1 Institutional and Regulatory Framework

3.1.1 Roles of VINAMARINE and Related Agencies

(a) Role of VINAMARINE

Until 1 January 1996, VINAMARINE was responsible not only for regulatory functions in the maritime sector but also for many ship, port and shipyard operational management functions. It had a staff of 30,000 working at its head office in Haiphong (now transferred to Hanoi) and at subsidiary companies and enterprises. VINAMARINE acted as coordinator of maritime enterprises and assumed governmental responsibility for managing Vietnamese shipping activities including seaports, merchant fleets, shipyards, ship servicing companies and registration of ships. Now almost all these commercial functions have been transferred to VINALINES (ship and port management) or VINASHIN (a similar organization in shipyard management), leaving VINAMARINE mainly to concentrate on its important regulatory function (no organization chart has yet been produced to describe the new organization of VINAMARINE). This is performed through its head office, three branch offices, 17 port authorities and other agencies such as the Vietnam Maritime Safety Agency (VMS) directly under its control (see Figure 3.1.1).

The port authorities are delegated to monitor enforcement of maritime rules and regulations, including those covering maritime safety, environmental pollution and maritime sanitation in all Vietnamese seaways and seaports. VMS is an implementation agency responsible for providing Aids to Navigation (ATN) services along the coast and along rivers connecting inland ports designated by MOT as sea ports. Remaining non-regulatory functions of VINAMARINE include operations management of

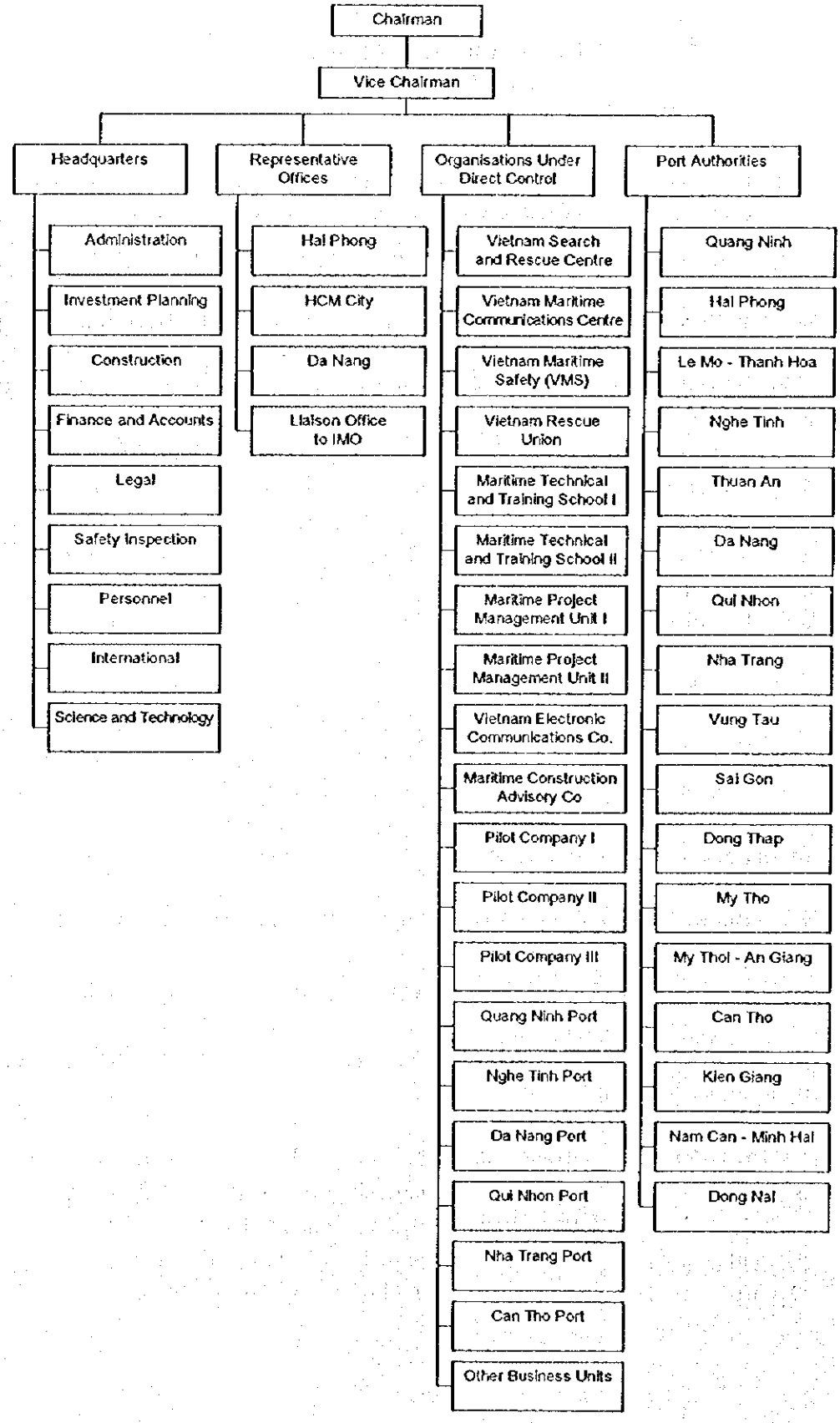
- the ports in and around Qang Ninh, Nghe Tinh, Danang, Quy Nhon, Nha Trang and Can Tho, and
- the Vietnam Maritime Commercial Stock Bank (Maritime Bank).

It is understood that it is the government's intention, eventually, to divest these operational functions.

VINAMARINE is currently not well equipped to perform its role because certain departments have not yet been systematically organized and staffed with people with the necessary skills. Following transfer of management and staff to VINALINES there are particular weaknesses in the Investment Planning, Legal and Safety Inspection Departments. The following two examples indicate this problem.

Figure 3.1.1

ORGANIZATION CHART OF VINAMARINE



1) The Maritime Safety Inspectorate (VMSI) in the Maritime Safety Inspection Department is responsible for safety inspections of all sea-going ships and crews in Vietnamese waters) but administrative procedures for the organization have still to be set up and most staff appointments are still to be made.

2) Although Vietnam has agreed in the Memorandum of Understanding on Port State Control in the Asia-Pacific Region, signed on 1 December 1993, to increase ship inspection activities in its territory, the inspectors who are to enforce this undertaking in Vietnam have not been properly prepared to carry out this task.

(b) Coordination between Coastal Shipping and Inland Waterways

The Inland Waterway Bureau (IWB) was established on 30th January 1993 and is responsible for administration of inland waterways transport in Vietnam. IWB is mandated mainly to supervise waterborne transport along rivers, lakes and river ports. In the past it was also mandated directly to manage inland waterway transport and river port services. However it is expected that these functions will be divested to allow the IWB to concentrate on its regulatory function.

Although IWB is given responsibility (in Government Decree No. 08-CP, dated 30 January 1993) for providing infrastructure in all river waters, VMS under the control of VINAMARINE still manages ATN and dredging along five rivers serving inland sea ports. Therefore the physical demarcation between IWB and VINAMARINE is unclear. A similar problem arises over ports which are classified as either sea ports (under VINAMARINE as defined through MOT decisions) or river ports (under IWB). There are no consistent criteria applied to distinguish these two types of ports, resulting in both types of ports coexisting along the same stretch of river. Furthermore inland ports such as Hanoi, which are potentially important for coastal shipping in the north, are still administered by the IWB, while most similar inland ports in the south are administered by VINAMARINE.

Responsibility for regulating vessels is generally clear - with VINAMARINE being responsible for larger or sea-going vessels. However small inland waterway vessels regulated by IWB are permitted to operate in coastal waters within 12 miles of the coast, and this results in most coastal passenger services being regulated by the IWB even though these are of particular safety concern.

It is clear that since sea-going and inland water vessels often use the same waterways and ports, either along rivers or along coastal waters, monitoring and enforcement functions could involve unnecessary duplication of effort by the IWB and VINAMARINE, and there is a danger that, through lack of coordination, monitoring and control is ineffective. For the same reasons, there is a danger of inadequate planning of infrastructure and maintenance resulting from poor coordination between the two bodies.

(c) Role of Other Agencies

The Vietnam Register of Shipping (VIRES) was founded in 1964. It employs 380 technical staff, including 200 sea-going ship surveyors, located in its head office in Haiphong and 22 branch offices.

As described below, Vietnam has recently had to comply with the requirements of the new Chapter IX of SOLAS as embodied in the International Safety Management (ISM) Code. Accordingly, VIRES is designated as a ship registration body with responsibilities that include technical supervision, classification, tonnage measurement and issuance of ship certificates. VIRES is required to inspect ships and issue technical certificates in compliance with the international conventions in which the Vietnamese Government participated. This means that VIRES functions not only as a governmental body but also as an internationally recognized authorized classification society in Vietnam.

Implementing these new responsibilities places institutional demands on VIRES that are difficult to meet because of the lack of trained personnel. At the same time there is a need to implement new registration procedures. The existing ones were prepared based on an internal regulation in 1964 based on the former USSR Register of Shipping, but this has become outdated and now needs to be amended. VIRES recently started the revision work.

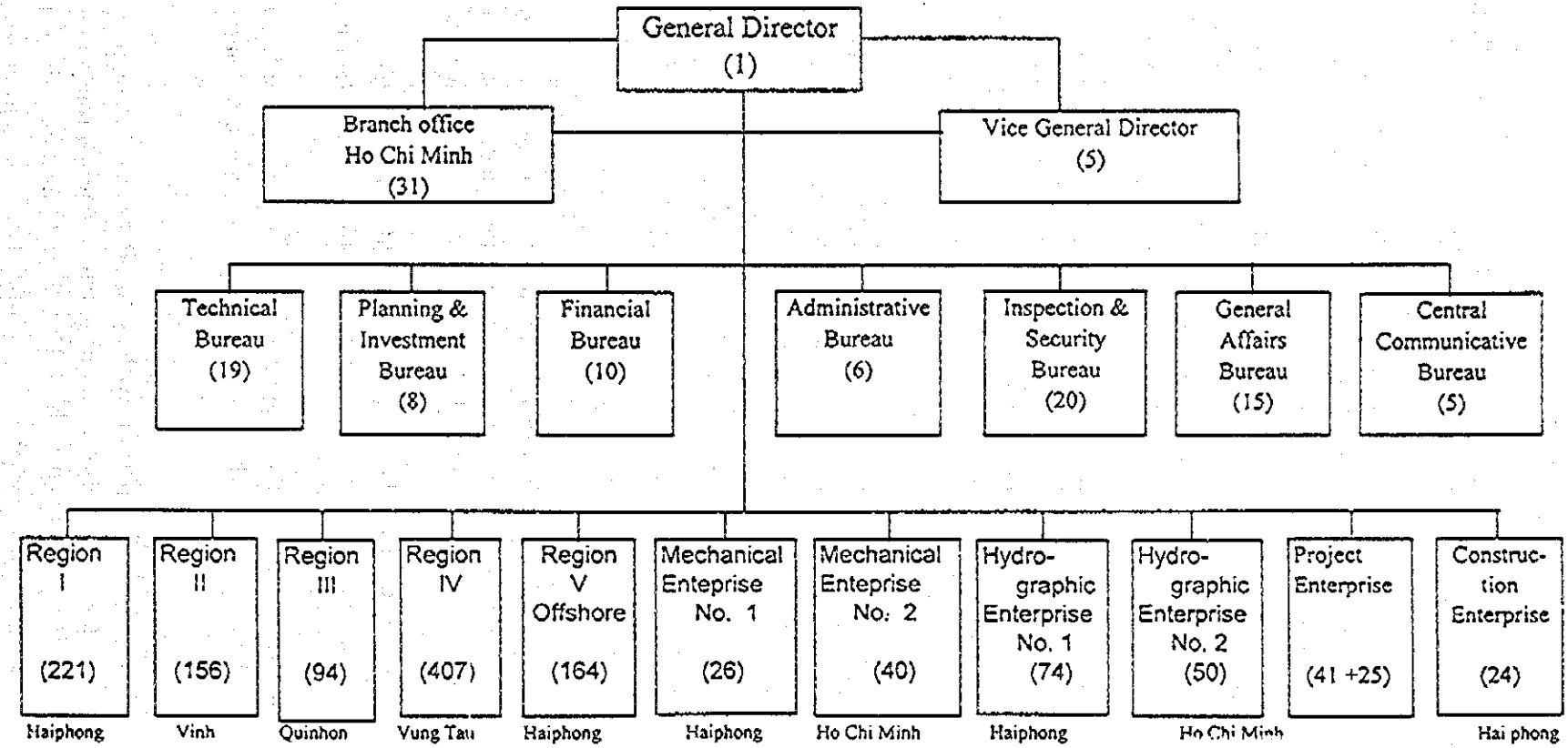
The Vietnam Maritime Safety Agency (VMS) was formed on 1 January 1995 with responsibility not only for conventional aid to navigation services but also supposedly for new services such as search and rescue, vessel safety, protection of maritime environment and hydrography. Until this date, maritime safety services were carried out by the Office of Maritime Safety (OMS) in the north, and by the Service of Maritime Safety (SMS) in the south. The total number of VMS staff in 1995 was 1,560. However it has insufficient staff and facilities for performing its new functions. The VMS organization chart is shown in Figure 3.1.2.

The responsibility for administration of maritime communications was transferred from the Ministry of Posts and Telecommunications to MOT in 1994. The Vietnam Ship Communications and Electronic Company (VISHIPEL), under VINAMARINE, is charged with operating and maintaining the communication system, with a total personnel of 160, including about 60 each in Haiphong and HCMC coastal stations. There are plans to increase the number of staff.

3.1.2 Rules and Regulations

The legal basis for regulating maritime shipping activities, including coastal shipping, is defined in State Council Decree No. 42-LCT/HDNN8 dated 12 July 1990, and is referred to as the Maritime Code. This code specifies the general conditions under which maritime activities take place and assigns responsibilities for regulation.

Figure 3.1.2
ORGANIZATION CHART OF VIETNAMESE MARITIME SAFETY



( )': Number of personnel

(a) Ship Registration and Inspection

The Maritime Code requires all Vietnamese sea-going vessels to fly the Vietnamese flag and register in the Vietnam registry of ships (VIRES).

The government can determine the scope of activities of Vietnamese vessels owned by individuals and, in practice, this means that any private operator wishing to carry foreign traffic to or from Vietnam has to obtain permission from the Prime Minister. By contrast government-owned operators are apparently free to carry international traffic. Only three private operators are reported by VINAMARINE to have obtained this permission so far. There are no clear conditions defined for giving permission for operators to carry foreign traffic and so there is a risk of unequal treatment between operators.

The precise principles of registering sea-going vessels (and crew) in Vietnam and permitting Vietnamese sea-going vessels to enter foreign countries are given in Prime Minister Decree No. 14/CP dated 25 February 1994. For this purpose sea-going vessels are defined as

- sea-going vessels with engines of power ratings over 75 CV,
- non-propelled vessels over 50 GRT or 100 DWT or 20m in length, and
- sea-going vessels smaller than defined above which operate more than 12 miles from the coast or in international sea lanes.

According to Article 10 of this decree the conditions for registration of a sea-going vessel are:

- that the ship should not have any other registration,
- that it should have been issued with a certificate confirming its technical specifications by VIRES or its foreign equivalent and, if imported second-hand, should not be more than 15 years old (although separate import regulations complicate matters by restricting import of major components such as engines over 10 years),
- that the owner should have a long term address or registered place of business in Vietnam, and be able to satisfy the business requirements specified under Vietnamese Law, and
- that the owner submits an application for registration in the required form and undertakes not to use the vessel contrary to the law or the interests or prestige of the state.

In practice any domestic operator wishing to offer coastal shipping services may do so freely, although a high level of paid up capital is required (one potential new operator reported that it was required to have US$ 91,000, including the value of any already purchased vessel). However it is very difficult for most foreign operators, or joint foreign-Vietnamese operators to operate because of restrictive laws on setting up of sea transport companies wishing to engage in domestic transport.

Investments by such companies must be made according to the Law on Foreign Investment in Vietnam dated 29 December 1987 (amended on 30 June 1990 and 23 December 1992), under which foreign investment can take place only through:

- contractual business cooperation,
- joint ventures, and
- enterprises with 100% foreign owned capital

Applications for foreign shipping ventures are handled by VINAMARINE in accordance with policy guidelines defined by MPI (which do not explicitly encourage foreign investment in Vietnamese shipping companies). Conditions for carrying domestic cargo are particularly strict: under powers given to VINAMARINE in Article 11 of Decree No 14/CP and in Ministry of Transport Decision No. 2788/QD-PC dated 17 May 1995, foreign companies are only given permission in emergencies or if domestic carriers cannot meet the demand. Applications must be made in writing, describing traffic to be moved. Vietnamese registered ships owned by joint ventures with more than 50% of legal capital owned by Vietnamese, or registered under a bareboat charter party or a hire purchase agreement with a Vietnamese charterer or purchaser, appear to be exempt from the restrictions on domestic shipping. However any shipping company jointly owned by a Vietnamese and foreign partner would be regarded as having 100% foreign invested capital according to the Law of Foreign Investment and would be unable to carry domestic traffic even if the proportion of legal capital owned by Vietnamese was over 50%. This particular obstacle could be resolved under forthcoming changes to the foreign investment law which may allow more flexible foreign participation. However there are proposals by VINAMARINE to tighten the restrictions on use of foreign vessels in coastal shipping still further, which would counter this.

(b) International Conventions

Although Vietnam has been regarded as the 126th member of the International Maritime Organization (IMO) for about 12 years, Vietnam has ratified in only six out of the 78 IMO conventions. All these six conventions are in the field of maritime safety as follows:

1) International Convention for the Safety of Life at Sea (1960, 1974, Protocol 1978, with amendments in 1981-1983, 1994), regarding technical safety conditions related to ship structure, equipment and operations, responsibilities for issuing technical safety certificates, and mutual recognition of ship inspections.

2) International Convention for the Prevention of Pollution from Ships 1973 as Modified by Protocol, 1978, regarding standards for ship structure and pollution-prevention equipment (only partly ratified by the Vietnamese government).

3) International Convention on Load Lines of Ships, 1966, concerning limitations on cargo loads in terms of season and the area of operation.

4) International Convention on Tonnage Measurement of Ships, 1969, defining tonnage measurement methods for ships and the principles for issuing certificates.

5) International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, regarding standards of training and issuing of certificates for seafarers working on different types of ships.

6) International Regulations for Preventing Collisions at Sea, 1972, agreeing regulations for preventing collisions at sea. This convention used to be part of SOLAS but is now separate. It is the first international convention that Vietnam has applied in practice by reforming Vietnamese law.

Besides the IMO conventions, Vietnam has only engaged in one multilateral convention related to the maritime sector. That is the United Nations Laws of Sea 1982 (UNLOS/1982).

(c) Regulation of Tariffs

In most cases shipping operators are able to negotiate charges with their customers freely. However foodstuffs transported by the Ministry of Agriculture from south to north of the country are subject to price ceilings, both for sea and rail transport (from Ho Chi Minh to Haiphong the maximum rates are VND 180,000 / ton and 330,000 / ton respectively).

Price ceilings are also set for sea port charges by the Government Pricing Committee (GPC) in GPC Decision No. 60, separately for import/export and domestic traffic. The charges for imports/exports are loosely based on costs and, in some cases, are varied between three main regions. However Vietnamese vessels carrying imports/exports enjoy 50% lower rates for the tonnage, maritime safety, pilotage and handling charges. Consequently there is a significant cross-subsidy between foreign and Vietnamese ships.

The port charges for domestic shipping determined by GPC Decision No. 60 apply to all sea ports and refer only to tonnage, maritime safety, pilotage and formality charges. Cargo handling charges are determined by separate decisions for each port. These charges are also supposed to be based on costs. However they are generally only 50% or less of the charges set for imports/exports (at an exchange rate of US$ 1 = VND 11,000). Therefore there is a possibility that the charges for domestic traffic are less than the costs incurred.

3.1.3 Identified Issues and Problems

The above review of regulatory institutions and framework indicates that there are significant deficiencies that need to be improved in order to establish an effective regulatory system for coastal shipping. The main deficiencies are as follows.

- The development of VINAMARINE from a shipping management body into a regulatory agency is far from complete, and this organization does not have the human, technical, or financial resources needed to perform its regulatory role, especially considering its new obligations arising from international agreements.
- VINAMARINE retains important commercial activities such as port management, which are inconsistent with its role as independent regulator.
- There is a lack of a clear and logical division of responsibilities between VINAMARINE and IWB making it difficult to establish uniform regulatory standards and enforcement systems along rivers.
- Possibly for the same reason, there is an inadequate financing system for navigational aids and maintenance of sea-cum-riverways.
- VMS has insufficient human, technical or financial resources to perform its many responsibilities for maritime safety.
- Many implementing regulations in maritime transport have not yet been introduced, especially regarding access by Vietnamese shipping operators to foreign routes and incorporating international agreements into international law.
- There are unjustifiable rules which are inconsistent with market principles such as tariff limits on rice and other commodities, restrictions on import of old vessels, and charges for use of infrastructure which discriminate between operator type and service rather than being based on provision cost. There are also over-restrictive rules concerning foreign investment.

Such regulatory problems are important to solve if coastal shipping services are to be improved. It should be noted that these regulatory deficiencies are common to other forms of competing transport and that this upsets the balance of resources between transport modes. For example road user charges are not yet based on road provision costs and so trucks do not pay the full cost of road maintenance.

3.2 Shipping Operation and Operating Bodies

3.2.1 Types of Organization

There were 674 ships registered under the Vietnamese flag by VIRES and other associations during 1994-95 of which 463 were general cargo, refrigerated or oil tanker vessels mainly used for commercial transport and the balance are mainly tugs, unpropelled barges, fishing and service vehicles not normally used for transport. These 463 merchant vessels were owned by 175 organizations shown in Table 3.2.1, most of which were primarily engaged in the merchant shipping business as owner-operators.

Table 3.2.1

CHARACTERISTICS OF SHIPPING FLEET BY TYPE OF OWNERSHIP

Owner Type	Number of Owners	Number of Cargo Ships by DWT								Total DWT	Average DWT
		<200	200-499	500-999	1000-1999	2000-4999	5000-9999	>10000	All		
Mainly Ocean-going or Foreign Sea-going Shipping											
State	67	26	64	19	44	12	11	16	192	445,295	2,319
Joint Venture	12	2	3	2	1	7	3	4	22	278,216	12,646
Foreign	2				1	1			2	4,792	2,396
Total	81	28	67	21	46	20	14	20	216	728,303	3,372
Mainly Coastal Shipping											
Local Government	60	29	83	11	26	11	3	1	164	141,678	864
Cooperative	6	5	13	0	0	0	0	0	18	3,480	193
Private	28	9	46	7	1	1	1	0	65	29,582	455
Total	94	43	142	18	27	12	4	1	247	174,740	707
All	175	71	209	39	73	32	18	21	463	903,043	1,950

NOTE (1) Includes vessels in Ships Register classified as general cargo, refrigerated or tanker (including one tanker owned by the joint venture Vietsovpetro with 155,505 DWT). Five cargo vessels flying other flags are owned by VITRANSCHART and are not included in the above statistics. Also not included are the only four passenger vessels registered under the Vietnamese flag which provide coastal shipping services.

(2) Includes all owners of such vessels (not only those used in commercial shipping but also several central or local government ports, military, safety and training institutions). VINAMARINE estimates that there were 93 owners of ships engaged in commercial shipping, 18 of which were central government, 6 were joint ventures and 28 were provincial owners.

SOURCE: Ships Register 1994-1995 (representing fleet characteristics in 1995)

The ships used mainly for coastal shipping are indicated in Table 3.2.1 to be those owned by local government, cooperative or private organizations. However in practice many state (or central government) and joint venture owners use their vessels partly for coastal shipping, and it is estimated that these carry about 70% and 10% of coastal shipping traffic respectively. Since foreign ships also carry about 10% of traffic (because of shortages of suitable Vietnamese ships), this leaves only about 10% carried by provincial operators and 5% by private and other operators. Therefore the capacity devoted to coastal shipping is much higher than that indicated in Table 3.2.1.

(a) State-Owned and Joint Venture Shipping Operators

Included in the 67 state owned ship owners in Table 3.2.1 are 18 owners with 120 ships, including five ships registered under foreign flags, with total DWT of about 506,000 or 66% of the total Vietnamese shipping capacity. Included in these 18 are several industrial carriers and three large general carriers, VOSCO, VITRANSCHART and VINASHIP, which had 40 vessels (including the five registered outside Vietnam) with 411,902 DWT.

These three carriers form a major part of the VINALINES organization which is one of about 20 general corporations that were established in all sectors of the economy to assume responsibility for the state-owned enterprises formerly responsible to various ministries. These corporations are required to be profit-making but may receive capital on advantageous terms in accordance with government policy. Although financially independent, in theory, they are responsible ultimately to VINALINES, who therefore has a substantial level of control over the market. According to figures obtained in early 1996 (Table 3.2.2 below), the fleet of these dominant general carriers has reduced slightly in the last year or so to 39 ships (389,000 DWT), including 34 ships with 327,081 DWT registered in Vietnam. However both VOSCO and VITRANSCHART are purchasing two more ships during 1996. VINALINES itself has purchased two container ships for services provided by its member organizations.

One joint venture partner of VINALINES, GEMADEPT, has been equitised. Another similar organization, SALFES, is also applying for transformation. Plans for converting other member organizations have not yet been made but many of the VINALINES enterprises are seeking foreign joint venture partners. Consideration is being given by the government to encouraging each member of VINALINES to specialize:

- VOSCO in international liner trade,
- VINASHIP in domestic service,
- VITRANSCHART in bulk shipping (tramper), and
- FALCON in crude oil.

If implemented, such a plan would increase concentration of supply in coastal shipping and make monopoly situations even more likely than at present.

Table 3.2.2
PROFILE OF MAJOR SHIPPING COMPANIES IN VIETNAM

Name	Head Office	Year Established	No. of Employees	Branches/ Rep. Office	No.of Vessels	DWT
VOSCO	Haiphong	1970	2,000 (including 1,500 seafarers)	Hanoi HCMC Danang Nha Trang Quang Ninh	20	209,098
VITRANSCHART	HCMC	1976	1,250 (1,000 seafarers)	Haiphong Hanoi Danang	9[1]	87,315[1]
VINASHIP	Haiphong	1984	980 (900 seafarers)	HCMC Danang	5	30,668
SAIGON SHIPPING	HCMC	1981	580 (470 seafarers)	Haiphong Can Tho Vung Tau	6	12,634
DAMATCOSCO	Danang	1978	220 (188 seafarers)	HCMC Haiphong	5	6,105

Note: (1) Excluding five foreign flag ships with 61,919 DWT
Source: JICA Study Team

The main joint venture organizations carrying out shipping operations in Vietnam involve foreign partners from the former Soviet Union (although sometimes formed after the collapse of the Union). By far the largest in terms of carrying capacity is VIETSOVPETRO which operated one large Vietnamese oil tanker, one large oil tanker barge (which is not included in the merchant shipping fleet statistics in Table 3.2.1) and 24 related vessels in 1995 with a total DWT of 336,265. Overall these operators play little role in coastal shipping except for occasional shipments of rice.

(b) Provincial Shipping Companies

Many provincial shipping companies have developed from the former cooperatives established in earlier years to provide local inland waterway services. Soon after the economic reform program commenced these cooperatives were given the freedom to participate in domestic trade between any province. Several provincial organizations responded by establishing coastal shipping or, even, international shipping fleets (often, though, with obsolete vessels).

The main provincial government owners of ships include DAMATCOSCO, Saigon Shipping Company and HAMATCO which operate general cargo ships over 2,000 DWT. Other owners solely operate general cargo vessels below 1,000 DWT (up to about six ships). Even operators with only small ships below 1,000 DWT operate on

international routes. The larger operators provide both domestic and international services.

Many of the provincial shipping organizations are finding it increasingly difficult to compete in coastal shipping and some, like the central government-owned South Water Transport Company which provides both river and sea transport services, are planning to withdraw from coastal shipping to concentrate on their core activities in inland waterway transport. Even if profitable, as certain provincial operators on international services are reported to be, there has been little investment by these operators in new ships since 1990. Some have reduced their fleets and others are planning to do so in the near future, especially those providing coastal shipping services. Although these operators currently play a significant role in coastal shipping, continued decline seems possible.

(c) Private and Other Shipping Operators

There were 28 private owners of ships in 1995 and six cooperatives. Before economic reforms were introduced, private ship owners could only operate within cooperatives. Many of the private operators have developed from parts of these cooperatives which they left in order to attain greater autonomy. Consequently the role of the cooperatives has declined. Other private companies have been newly established, sometimes with capital derived from related trading activities. Private and cooperative coastal shipping operators sometimes also offer inland waterway services.

Most private operators still operate on a small scale, the main exceptions being Tan Tien Tanker Company, Seagull Shipping Company, Mekong Shipping Company and Hoang Ngan Company (now dissolved) which each had one vessel over 1,000 DWT. Only a further five had fleets of more than three vessels of about 500 DWT. Despite the limited capacity of most privately owned vessels they compete even on the longer coastal shipping routes, despite the higher costs per ton which they would inevitably incur compared with large ships. Freight brokers report that despite higher charges in some cases, the private operators may offer a better service, for example through better supervision of cargo loading and unloading.

Investment in new ships has been increasingly concentrated in this sector as shown in Table 3.2.3. So far most new ships have been of small capacity (as described in more detail in the Supplementary Report on shipping fleet development), reflecting the uncertain market and policy environment in coastal shipping, restrictions on entry by private operators into international shipping and the difficulties obtaining capital. This also reflects the fact that larger vessels are usually acquired second-hand.

There are investment proposals by new private operators which would utilize foreign investment funds to introduce new coastal shipping services using (second-hand) larger vessels. This confirms that the role of the private sector in coastal shipping will probably grow in future years.

(d) Other Organizations

Following the abolition of the state monopoly in freight forwarding in 1984, many new freight forwarding organizations have been established both in the public and private sectors. However the main interest of these organizations so far has been to offer services related to foreign trade. Some joint ventures have been proposed or are being established such as the Vietnam Freight Forwarding Corporation's venture with the Sumitomo Corporation. However joint ventures are not encouraged through regulations which

- are unclear (the conditions for entering the business and for receiving foreign investment approval are not clearly defined),
- prevent majority foreign-owned ventures being established, and
- do not allow bonded warehouses to be operated by ventures with foreign participation.

Table 3.2.3
NUMBER AND CAPACITY OF NEW CARGO VESSELS BUILT BETWEEN 1992 - 1995 BY TYPE OF OWNERSHIP IN 1995

	1992		1993		1994		1995	
	Ships	DWT	Ships	DWT	Ships	DWT	Ships	DWT
Mainly Ocean-going Shipping								
State Government	5	2,400	4	3,614	11	4,694	1	250
Joint Venture	0	0	0	0	0	0	0	0
Total	5	2,400	4	3,614	11	4,694	1	250
(% of fleet)		(0.4)		(0.6)		(0.7)		(0.0)
Mainly Coastal Shipping								
Local Government	1	450	2	500	2	400	1	600
Cooperative	0	0	5	980	0	0	1	300
Private	2	600	5	1,250	21	6,178	11	3,910
Total	3	1,050	12	2,730	23	6,578	13	4,810
(% of fleet)		(0.8)		(2.0)		(4.7)		(3.5)

NOTE (1) Includes vessels in Ships Register classified as general cargo, refrigerated or tanker.
(2) Includes all owners of such vessels (including several state ports, military, safety and training institutions)

SOURCE: Ships Register 1994-1995 (representing fleet characteristics at end of 1995)

VIETRANS (under VINALINES) and some smaller private organizations offer intermodal services for imports and exports but there is currently limited interest among freight forwarders in offering such services in the domestic market despite the market opportunities that exist. However some companies are offering cargo consolidation services to maximize capacity utilization of ships. In addition freight brokers are used to take care of coastal shipping transport requirements on a contractual basis for major customers such as cement producers. Probably the main reason for the lack of interest in domestic freight forwarding is the limited role played traditionally by coastal shipping in general cargo transport in Vietnam because of the lack of trade in consumer goods between north and south.

However the production of goods in either north or south which are intended for domestic consumption is expected to rise very strongly in the short term. There is considerable interest within industry in obtaining appropriate low cost transport services, because failure to secure such transport is likely to mean that imported goods are consumed instead. Therefore the role of freight forwarders in domestic distribution can be expected to increase.

Other services such as ships agent, bunkering, chandler and watering are performed in Vietnam by many ship operators, in addition to specialist agencies such as VOSA. Ship agency services provide a useful additional source of revenue and profit to many operators and are used by small and big operators alike. Various services to foreign ship operators are a valuable business to many Vietnamese operators. However according to Article 1(3) of Prime Minister Decree No. 159/TB dated 15 March 1996 it is government's intention to reduce the freedom of state enterprises offering such services, and establish VINALINES as the dominant organization offering agency services. This will undermine the independence of state operators and make it more difficult for them to compete on the same terms as other operators.

3.2.2 Coastal Shipping Service Characteristics

(a) Service Patterns

As examined in more detail in Chapter 5, coastal shipping carries about 2.7 million tons of domestic cargo traffic per year, with average hauling distance of 691 miles (673 miles for dry cargo). The flow of coastal shipping traffic is rather unbalanced. The main north to south flow involves the movement of cement, coal, steel and other bulk or bulky cargoes, while agricultural products (mainly rice) are mainly carried from the south to the north of the country. Other dry cargo is shipped out from both Haiphong and Saigon Ports to various destinations, while refined oil products are moved from Nha Be in the south to B12 in the north. The movement of rice takes place from time to time in large amounts in accordance with the food security requirements of government and requires the use of large ships. Demand for cement transport tends to be higher between October and February, outside of the rainy season. During the typhoon months of September and

October navigation is particularly difficult, especially for smaller ships, requiring vessels to shelter for several days at a time.

Coastal shipping plays only a small role in passenger movement in Vietnam on

- interprovincial routes such as Haiphong - Quang Ninh and HCMC - Vung Tau (505 thousand passenger in 1995),
- routes to remote islands (of which Vietnam has 31) such as Ly Son, Phu Quy, Con Dao and Phu Quoc (85 thousand passenger in 1995), and
- tourist services, including inter-island routes, such as those based on Haiphong (about 400 thousand passengers)

The route pattern is shown in Chapter 5 (Figure 5.3.2). Many of the passenger vessels are licensed as inland waterway vessels because they are of limited capacity and remain close to the coastline. There are only four sea-going vessels registered with VIRES and all are small vessels below 200 GRT, less than 40m in length, owned by local government organizations.

Present coastal shipping services often provide poor level of service. This is not surprising considering the reluctance of many state and provincial government operators to provide service because of alternative more profitable forms of business. It probably also reflects a lack of management concern for customer service caused partly by years of carrying traffic for large government customers in accordance with government commands. This is especially noticeable for transport of general cargo rather than bulk or bulky cargoes. For example if a customer wants to transport a container of general cargo by coastal shipping the customer may have to book up to three months ahead and then make direct contact with the captain to finalize arrangements. Even then shipping times are not predictable and the cargo can be untraceable for several days.

All coastal shipping services are unscheduled tramper services and little use is made of specialized vessels. Many operators operate on coastal routes only when international traffic is not available or when ships have to be repositioned. A range of consignments can be carried in accordance with ship size and availability of spare capacity not utilized by international traffic. In many cases, a single commodity is transported in one shipment: this can range from 3,000 to 5,000 tons in the case of the main route between Haiphong and Ho Chi Minh City (HCMC), whereas many small operators serving intermediate ports carry only about 500 tons. Because most vessels are general purpose vessels a range of cargoes can be carried: for example 5,000 tons of coal or cement may be carried from Haiphong to HCMC before washing and cleaning the hold, after which it loads 3,000 tons of rice for Haiphong.

(b) Operating Efficiency

Because of the present pattern of traffic movement about 30% of domestic ship movements are empty. Allowing for the fact that on the remaining 70% of movements, ships are not completely full, it is estimated that the average load factor is about 50 - 60%. As shown in Table 3.2.1, the majority of general cargo, tanker and passenger ships (which make up almost all the commercial sea-going fleet) are less than 500 DWT (even though they make up less than 15% of total capacity). Such vessels use diesel engines, have low speeds, are susceptible to inclement weather and have high operating costs. Even though some of these vessels are new, they are fitted with second-hand engines not designed for maritime purposes and consume excessive fuel.

Despite the difficulties using old vessels, most operators report that vessels are in use for about 300 days per year on average, with idle time equally attributable to maintenance/repairs and to lack of work. Operators deploy rather high numbers of staff in comparison with international practice (about double, especially for state-owned operators) but this is partly due to the lower cost of labor in Vietnam and because of the obsolete designs of ships. Such high numbers of staff can cause severe loss of productivity through ships having to make additional port calls in order to replenish water and food supplies; a problem which is reported to occur occasionally with some operators using smaller vessels which encounter delays due to adverse weather conditions. High numbers of administrative staff by many operators are partly attributable to agency activities.

(c) Profitability

Conflicting opinions have been expressed to the Study Team concerning profits from coastal shipping, and the issue could not be clarified because of lack of reliable published data. According to interviews with major state companies, shipping activities as a whole are profitable but that coastal shipping is subsidized from agency and other activities. This is confirmed by VINALINES, who (presumably based on transport costs and revenues only) estimate that most shipping companies were in the red, by a total of nearly US$ 5 million in 1994. The circumstances of the ship operation business are getting severe due to strong competition among carriers and the increase in operating costs such as port charges, especially in international trade, and this has reduced profitability year by year. Most operators agree that coastal shipping is less profitable than international shipping so this analysis suggests that, for these larger operators, coastal shipping is certainly not profitable. This is confirmed by the lack of investment made in recent years in vessels intended for domestic shipping, and the absence of any plans for such investments in the future (except for reassigning vessels from international routes, to operate on domestic routes).

Most reports from provincial government operators suggest that, like large state operators, they find the coastal shipping business unattractive. Operators with smaller

vessels, of about 500 DWT, appear to find it particularly difficult to find profitable business and some are planning to sell their smaller vessels and use the capital to acquire additional inland waterway vessels. Provincial operators have made little if any investment in new vessels in recent years: the disposal of their sea-going vessels supports the contention that their coastal shipping activities are unprofitable.

By contrast, private operators tend to regard coastal shipping as profitable. In further contrast to the provincial operators they seem to prefer, under present circumstances, operating small ships of about 500 DWT rather than larger ships. The potential for profitable coastal shipping operation with such vessels is confirmed by the increasing investment in new ships, summarized in Table 3.2.3. Even in the case of private operators it could be argued that current profits from coastal shipping are fairly small - rates have fallen in the last twelve months as competition has intensified. There is thought to be a significant amount of illegal international operation (perhaps with contraband) which could constitute an important source of profits for some small shipping companies. Even these small companies pursue ship agency activities to augment profits. However despite their high operating costs (per ton mile) resulting from using small vessels it seems that their potential for profitable operation is enhanced by the superior level of service offered, which both attracts customers and enables them to charge premium freight rates.

3.2.3 Identified Issues and Problems

The analysis of coastal shipping performance described above identifies a number of key problems in the Maritime Transport Industry that need to be addressed in order to implement improvements under the Master Plan. These can be summarized as follows.

(a) Economic and Business Environment

Economic reforms are creating new challenges and opportunities for transport customers, businesses and government. However uncertainty has been created by

- the difficulty, under a market economy, in estimating future expected traffic,
- unclear government policy itself which, although evolving rapidly to meet the needs of reform, is still far from clear, especially regarding the role of foreign investment in coastal shipping and the role of the state sector,
- the continual development of new laws and regulations which often makes it difficult to know exactly what the business rules are.

One serious consequence of uncertainty is that it discourages business activity, especially badly needed investment.

(b) Concentration of Ownership of Shipping

The majority of capacity used on coastal shipping services is owned by VINALINES and so there is a serious risk of monopoly situations arising in the industry, which undermines the "level playing field" competition principle. The problem is made worse by the prospect of VINALINES receiving state support for developing its international shipping fleet which could allow it to cross-subsidize coastal shipping services and thus compete unfairly with other operators.

(c) Inadequate Management of Shipping and Port Operators

The rapid changes caused by economic reform are causing acute difficulties for existing management who have insufficient experience or expertise in the new ways of carrying out business. Like similar managers in other sectors, operators in government-owned enterprises have insufficient experience of marketing, providing customer service, financing investments in new vessels and other equipment, and accounting. In addition managers in maritime organizations have little or no experience of operating specialized vessels (container or semi-container, Ro-Ro and bulk ships), or developing scheduled liner services.

(d) Inadequate Finance

This problem affects all operators but is especially important for the private sector, which has no possibility of obtaining credit from government institutions at preferential rates. There are a growing number of private operators, not all of which may have experience in the industry, who lack the capital base and proven record to secure credit on reasonable terms. The lack of shipping experience and access to finance are major constraints on the development of the coastal shipping industry which can be expected to rely heavily on the private sector in future years to provide the necessary management and finance.

(e) Lack of Marketing Agents and Know-how

The lack of freight forwarders with experience of providing intermodal services is a further impediment to developing new door-to-door coastal shipping services, which are required if coastal shipping is to play its full role. Furthermore the general lack of adequately trained staff is a constraint on developing improved management methods and meeting international safety standards for shipping.

(f) Equipment

The maritime fleet is old, obsolete and in extremely poor condition. Many vessels are completely unsuitable to modern operating methods. Operating and maintenance costs are high because of the low level of technology used and because no use is made of efficiently operated specialized vessels.

Utilization is constrained by the lack of even basic modern cargo handling equipment such as forklifts and pallets and the lack of competition among cargo handling organizations which have no experience of modern cargo handling methods. Poor lighting and navigational aids reduce available productive time of ships and increase costs and fleet requirements still further.

(g) Infrastructure

The poor condition of dredgers and lack of funds for maintenance has resulted in substantial sections of rivers becoming inaccessible to larger coastal shipping vessels. Other vessels have extreme difficulty using the rivers because of the lack of navigational aids and information. With growing demand, port capacity is certain to be exceeded soon unless productivity is improved and, in some cases, capacity increased. Port services are also poor and there is limited competition in port services which would act as a spur to improvement. This particularly deters investment in specialized vessels.

3.3 Shipbuilding and Ship Repair

The study of shipbuilding and ship repair has been carried out for all shipyards and related industries needed not only for coastal shipping but also for overseas shipping. Data relating to this field of study were obtained from various sources, including field surveys conducted by the Study Team. However, it should be noted that these various sources use different items and categories of data. Therefore, in order to carry out this study effectively, the Study Team has adjusted these data taking into account the observations from field surveys conducted, discussions held with relevant agencies and the consultants' work experience.

3.3.1 Shipbuilding and Ship Repair Industries

(a) Fleet Structure and Age Distribution

The total number of ships classified by ship size is shown in Table 3.3.1. This number includes all types of ships and barges under the classification of the Vietnam Register of Shipping (VIRES). There are in total 591 ships with a gross tonnage (GT) of 623,061; however, most ships are small with not more than 500 GT. Table 3.3.2 shows ship sizes classified by ship type, including general cargo ships, tankers, and passenger ships. For cargo ships, the ship sizes of not more than 500 GT account for the highest share (68%), followed by ship sizes of 501 GT - 1,000 GT (13%), and 1,001 GT - 2,000 GT (7%), respectively. At present, there are a few tankers which are mainly less than 1,000 GT; however, it is expected that the number of tankers would increase rapidly upon the completion of the oil refinery-chemical factory in Dung Quat Industrial Estate. Only four passenger ships are presently available, all of which are less than 500 GT.

Quite a large number of old ships of over 16 years are being utilized, including 28% of general cargo ships, 67% of tankers, and 50% of passenger ships as shown in Table 3.3.3. Based on considerations of maritime safety and maintenance costs, it is strongly suggested that effective countermeasures for rehabilitation of fleet, such as adopting a Scrap and Build policy and strengthening ship inspections, should be immediately implemented.

New ships built over the period from 1990 to 1995 were 142, excluding miscellaneous ships, as detailed in Table 3.3.4. Most of these newly-built ships were small with not more than 500 GT, particularly tankers and passenger ships which are all less than 500 GT. There are five new tankers. The smallest one is 150 DWT (Dead Weight Tonnage) and the largest is 700 DWT. If, in the future, larger sizes of ships, for example 1,000 - 3,000 GT, are to be used for coastal services, shipbuilding needs would have to be reconsidered.

Table 3.3.1
SIZE AND GROSS TONNAGE OF VIETNAMESE FLEET REGISTERED WITH VIRES
(As of January 1996)

Ship Size (GT)	Number		Gross Tonnage (GT)	Average Gross Tonnage (GT)
500 and below	418	(70.7%)	103,854	249
501 - 1,000	81	(13.7%)	66,040	815
1,001 - 2,000	37	(6.3%)	47,014	1,217
2,001 - 3,000	19	(3.2%)	50,519	2,659
3,001 and above	36	(6.1%)	355,634	-
Total	591		632,061	

Source: Register of Ships 1994-1995, VIRES
Classified List of Ship and their Main Particular, January 1996. VIRES
Note: Average Gross Tonnage for ship size 3,000 GT and above is meaningless and not shown.

Table 3.3.2
VIETNAMESE FLEET SIZE BY TYPE OF SHIP
(As of January 1996)

Ship Size	General Cargo Ship		Tanker		Passenger ship
500 and below	298	(67.6%)	11	(45.8%)	4 (100%)
501 - 1,000	55	(12.5%)	9	(37.6%)	-
1,001 - 2,000	32	(7.3%)	2	(8.3%)	-
2,001 - 3,000	20	(4.5%)	-		-
3,001 - 4,000	9	(2.0%)	-		-
4,001 - 5,000	5	(1.1%)	-		-
5,001 and above	22	(5.0%)	2	(8.3%)	-
Total	441		24		4

Source: Register of Ships 1994 - 1995, VIRES
Noted: Classified List of Ship and their Main Particulars, January 1996, VIRES

Table 3.3.3
SHIP AGE OF VIETNAMESE SHIPS REGISTERED WITH VIRES
(As of January 1996)

Ship Size (years)	General Cargo Ship	Tanker	Passenger Ship
Less than 5	79 (17.9%)	3 (12.5%)	-
5 - 10	180 (40.8%)	4 (16.7%)	2 (50.0%)
11 - 15	60 (13.6%)	1 (4.2%)	-
16 - 20	49 (11.1%)	6 (25.0%)	1 (25.0%)
21 - 25	22 (5.0%)	5 (20.8%)	-
More than 25	51 (11.6%)	5 (20.8%)	1 (25.0%)
Total	441	24	4

Source: Register of Ships 1994-1995, VIRES
Classified List of Ships and their Main Particulars, January 1996. VIRES

Table 3.3.4
NEW SHIP BY TYPE DURING 1990 - 1995 REGISTERED TO VIRES
(As of January 1996)

Ship Size	Gen. Cargo Ship	Tanker	Passenger Ship
500 GT and below	118	5	3
501 GT - 1,000 GT	9	-	-
1,001 GT - 2,000 GT	6	-	-
2,001 GT - 3,000 GT	1	-	-
Total	134	5	3

Source: List of New Ship Construction During 1990-1995, VIRES
Note: Miscellaneous ships other than above 142 ships total 14: 1 floating crane, 2 supply boat, 1 barge, 5 tug boats, 2 pontoons and 3 unidentified ones.

(b) Shipyard Information

Table 3.3.5 shows information about all shipyards, including name, location, building and repairing capacities. Taking their new-building and/or repairing capacities into account, the study selected seven major shipyards in Vietnam as follows:

	New-building Capacity	Repairing Capacity
i) Bach Dang Shipyard	6,000 DWT	8,000 DWT
ii) Ha Long Shipyard	5,000 DWT	3,500 DWT
iii) Ben Kien Shipyard	1,500 DWT	2,000 DWT
iv) Pha Rung Shipyard	-	16,000 DWT
v) Bason Shipyard	-	15,000 DWT
vi) Saigon Shipping Company	1,000 DWT	4,000 DWT
vii) Ship-Oil Platform Repairing Yard (SHIPPLACOM)	-	10,000 DWT

Of these, four shipyards are located in the north while three are in HCM City

Table 3.3.5

LIST OF SHIPBUILDING AND REPAIRING YARDS IN VIETNAM

No.	Name of shipyard	Location	New-building capacity	Repairing capacity
1	An Phu Shipbuilding Co.	HCM City	1,500 DWT	1,500 DWT
2	Bason Shipyard	HCM City	-	15,000 DWT
3	Binh Chanh Ship-repairing Service Enterprise	HCM City	-	1,000 DWT
4	CARIC Enterprise	HCM City	300 DWT	600 DWT
5	Constructional Engineering Works	HCM City	1,000 DWT	1,000 DWT
6	Dong Tam Mechanical Factory	HCM City	250 DWT	400 DWT
7	Dong Tien Shipyard	HCM City	400 DWT	650 DWT
8	Hiep Thanh Enterprise	HCM City	400 DWT	300 DWT
9	Hoang Liem Ship-repairing Yard	HCM City	300 DWT	300 DWT
10	Mechanical Communication Enterprise Dis. 4	HCM City	600 DWT	600 DWT
11	Mechanical Factory No. 76 (CK76)	HCM City	600 DWT	10,000 DWT
12	Nha Be Shipyard	HCM City	300 DWT	400 DWT
13	Rang Dong Yard	HCM City	250 DWT	250 DWT
14	Saigon Ship-building Co.	HCM City	1,000 DWT	4,000 DWT
15	Saigon Shipyard	HCM City	200 DWT	200 DWT
16	SHIPPLACOM	HCM City	-	10,000 DWT
17	Thanh Da Shipyard Co.	HCM City	800 DWT	2,000 DWT
18	Thong Nhat Cooperative	HCM City	400 DWT	600 DWT
19	Thong Nhat - Nha Be Mechanical Factory	HCM City	Ship 400 DWT (Barge 800 DWT)	
20	Bach Dang Shipyard	Haiphong	6,000 DWT	8,000 DWT
21	Ben Kien Shipyard	Haiphong	1,500 DWT	2,000 DWT
22	Cam River Shipyard	Haiphong	650 DWT	650 DWT
23	Fishing Ship-repairing and Building Enterprise	Haiphong	400 DWT	200 DWT
24	Haiphong Shipyard	Haiphong	400 DWT	600 DWT
25	Ha Long Engineering Factory	Haiphong	200 DWT	200 DWT
26	Ha Long FISCOM	Haiphong	200 DWT	400 DWT
27	Nam Trieu Shipyard	Haiphong	500 DWT	5,000 DWT
28	Ship-repairing Service Enterprise No. 1	Haiphong	400 DWT	600 DWT
29	Pha Rung Shipyard	Haiphong	-	16,000 DWT
30	Technical and Professional College of Transport No. 2	Haiphong	500 DWT	300 DWT
31	Tam Bac Shipyard	Haiphong	600 DWT	300 DWT
32	Ben Thuy Shipbuilding Factory	Nghe Tinh	1,000 DWT	750 DWT
33	Nghe Tinh Repairing Works	Hghe Tinh	Ship 100 DWT (Barge 250 DWT)	Ship 400 DWT (Barge 600 DWT)
34	Fish Mechanic Co.	Danang		
35	Hoa Sen Shipyard	Danang	30 DWT	30 DWT
36	SEATECCO	Danang	120 DWT	300 DWT
37	Song Han Shipyard	Danang	600 DWT	600 DWT

No.	Name of shipyard	Location	New-building capacity	Repairing capacity
38	Song Thu Co.	Danang	400 DWT	2,000 DWT
39	Ha Long Shipbuilding Enterprise	Quang Ninh	1,000 DWT	1,000 DWT
40	Ha Long shipyard	Quang Ninh	5,000 DWT	3,500 DWT
41	Khanh Noa Shipbuilding and Repairing Works	Nha Trang	600 DWT	600 DWT
42	Hanoi Shipyard	Hanoi	1,500 DWT	200 DWT
43	Nhat Thanh Shipyard	Thai Binh	100 DWT	100 DWT
44	The Enterprise of Salvage and Ship Repair	Vung Tau	-	3,000 DWT
45	Vung Tau Shipyard	Vung Tau	-	200 DWT
46	Ship-repairing Enterprise No. 81	Haiphong		
47	Works No. 69	Haiphong		
48	Works No. 173	Haiphong		
49	X-46 Shipyard	Haiphong		
50	X-48 Shipyard	Haiphong		
51	X-50 Shipyard	Danang	500 DWT	4,500 DWT
52	X-51 Shipyard	HCM City	1,000 DWT	1,100 DWT
53	X-500 Shipyard	Haiphong		
54	Nam Ha Shipyard	Nam Ha	600 DWT	600 DWT
55	Song Dao - Nam Na Shipyard	Ham Ha	600 DWT	300 DWT
56	Song Lo shipyard	Vinh Phu	600 DWT	400 DWT
57	Mechanical Enterprise No. 721	Can Tho	500 DWT	500 DWT
58	Shipbuilding and Repairing Enterprise No. 627	Kien Giang	400 DWT	400 DWT
59	1-89 Enterprise	Haiphong	500 DWT	400 DWT

Note:

(1) No. 34 :New-building and Repairing capacity are unknown.

(2) No. 46 ~ 50, 53 :New-building and Repairing capacity are not disclosed because these shipyards belong to the Navy.

Source: List of Vietnam's Shipbuilding and Repairing Yards, 1996.
VIRES Brochures of Shipyards, and Replies to Questionnaires, field survey.

(c) Shipyard Production

As discussed earlier, 142 new ships were built over the past six years (1990-1995). The number of new ships which was built in each year over this period is shown in Table 3.3.6. This includes miscellaneous ships (barges, floating cranes, tug boats, etc.), totaling 156 ships. Many general cargo ships were built in 1994-1995, whereas tankers and miscellaneous ships were built in rather even numbers, each year since 1990. Two passenger ships were built in 1990 and another one in 1992.

Table 3.3.6
SHIPS CONSTRUCTED DURING 1990-1995 REGISTERED WITH VIRES
(As of January 1996)

Ship Size (DWT)	1990	1991	1992	1993	1994	1995
(1) General cargo ship						
3,820	-	1	-	-	-	-
1,200 - 1,400	2	1	-	1	1	-
1,000 - 1,199	2	2	1	-	1	-
500 - 700	1	3	1	1	-	3
300 - 499	8	3	1	3	14	19
200 - 299	7	2	3	9	15	9
150 - 199	6	2	1	2	4	-
Unidentified	-	-	1	2	2	-
Total	26	14	8	18	37	31
(1) Total						134
(2) Tanker						
700	-	1	-	-	-	-
250 - 300	-	-	-	1	2	-
150	1	-	-	-	-	-
(2) Total						5
(3) Passenger ship						
160 - 200 GT	2	-	1	-	-	-
(3) Total						3
(4) Miscellaneous ships						
Floating crane	-	-	-	1	-	-
Supply boat	-	1	-	-	-	1
Tug boat	1	-	1	1	1	1
Barge	-	-	-	-	-	1
Pontoon	-	1	-	-	-	1
Unidentified	-	-	-	-	3	-
(4) Total						14
New ship construction during 1990 - 1995 in total						156

Source: List of New Ship Construction During 1990-1995, VIRES

3.3.2 Shipbuilding Technologies

(a) Present Technical Capabilities

As indicated by the dimensions of recently built ships of over 1,000 DWT (or about 990 GT), shown in Table 3.3.7, experience of building ships over 1,000 DWT is limited. At present, Vietnam has a maximum shipbuilding capacity of 6,000 DWT or approximately 5,500 GT while most of the ships domestically built are less than 1,000 DWT. It takes about 15 months for a shipyard to build a new ship of 1,000 DWT with a length of about 65m.

The technical backwardness, in terms of production efficiency and quality control, was frequently found in the field survey. Although these are not serious problems to be solved urgently under the existing inactive shipbuilding market, careful attention should be paid to this matter if Vietnam wants to be competitive in the international markets of shipbuilding and ship repair industries.

Other significant technical features which have been observed are as follows:

- Ship inspections during construction by VIRES are not strict enough.
- Most machinery, equipment and materials are imported. This results in diversity of quality.
- We hardly found any difference in ship price among shipyards, due possibly to the lack of adequate costing on a ship-by-ship basis.
- Ship guarantee period after construction is as short as six months.

Table 3.3.7
BUILDING RECORD OF GENERAL CARGO SHIPS ABOVE 1,000 DWT
Registered with VIRES (As of January 1996)

Year Built	Dimension (L x B x D)	DWT
1990	66.40 x 11.64 x 4.80	1,400
1990	70.81 x 9.50 x 5.00	1,200
1990	65.00 x 11.80 x 4.82	1,120
1990	64.00 x 11.60 x 4.80	1,000
1991	64.00 x 11.64 x 4.80	1,000
1991	64.00 x 11.64 x 4.80	1,000
1991	65.00 x 11.80 x 4.82	1,364
1991	83.68 x 14.50 x 8.00	3,820
1992	64.00 x 11.20 x 5.20	1,000
1993	65.00 x 11.80 x 4.82	1,364
1994	65.00 x 11.80 x 4.82	1,364
1994	65.00 x 11.80 x 4.82	1,000

Source: List of Ships constructed during 1990 - 1995, January 1996, VIRES

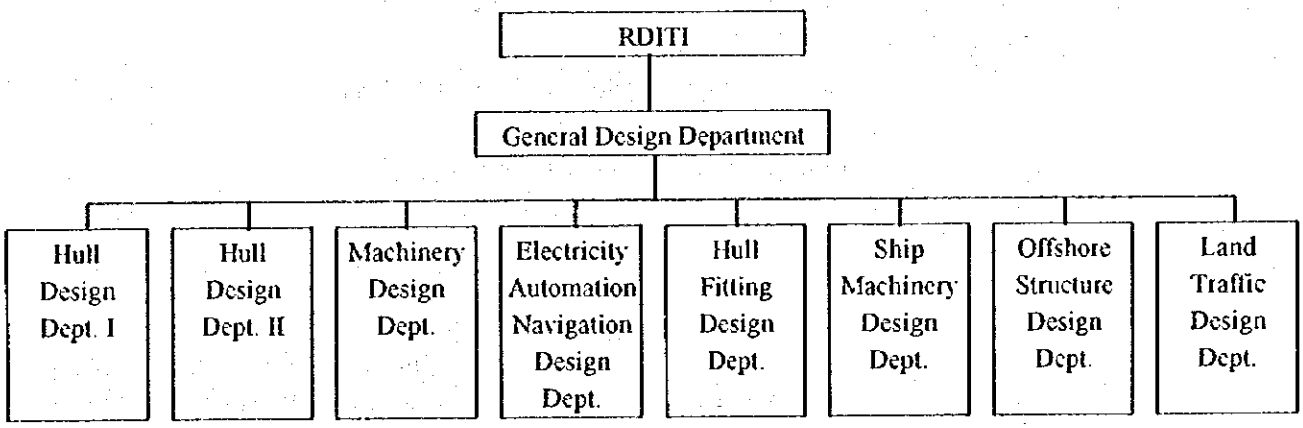
(b) Research and Design Institute of Transport Industry (RDITI)

RDITI, which has as one of its duties, designing ships, was recently transferred to the Vietnam Shipbuilding Industry Corporation (VINASHIN). RDITI has currently over 200 engineers and technicians.

Over 100 ship designs are available for future uses/references. The RDITI's activity ranges from supply of drawings, modification of drawings on request, consultation with shipyards and negotiation with clients on shipyards' behalf. To strengthen its capability, RDITI has recently constructed a towing test tank in Hanoi.

The General Design Department of RDITI, shown in Figure 3.3.1, has enough capacity at present to meet the current depressed demand for designing ships. However, augmentation of this organization is needed to serve the increasing shipbuilding demand, particularly for modernized ships with more sophisticated equipment.

Figure 3.3.1
ORGANIZATION OF RDITI GENERAL DESIGN DEPARTMENT



(c) Naval Architecture Courses

Naval architecture courses are provided by the Naval Architecture Department of Vietnam Maritime University (VIMARU). VIMARU has eight departments and a total of 2,140 students divided into: Nautical (500), Mechanical Engineering (400), Marine Electronics and Radio (200), Communications (200), Sea Transport Economics (400), Naval Architecture (300), Port Hydro Engineering (100), and Computer Center (40). All departments offer 5-year courses. Educational facilities, including text books are not at a satisfactory level. For this reason, some workshops and training courses are conducted utilizing facilities of other organizations.

The Naval Architecture Department requires a minimum of 3,920 class hours to complete all needed subjects. This department produces in each year about 60 graduates who later work in one of the following places: at the Maritime University, Naval Academy, Waterway College, civil and naval ship design institutes, maritime transport companies, shipyards, at the Register of Shipping Companies, petroleum exploration companies, engineering factories, and sea and river ports and harbors.

3.4 Ports

(a) Port System in Vietnam

A variety of ports can be found in Vietnam in terms of operation, management, size, location, etc. Due to a long coastal line and many rivers, it is said that there are several hundred ports in Vietnam. However, the Study identified that only about 100 ports are worth considering in the Master Plan.

Management of the ports is grouped into the following five categories:

(1) a line ministry in the central government (MOT)
(2) local government (provinces, cities)
(3) a general company in the shipping industry (VINALINES)
(4) state-owned enterprises under other ministries
(5) publicly-owned enterprises under provinces and cities

1) A line ministry in the central government

MOT is the responsible ministry in Vietnam for management of 13 general ports. The MOT delegates this task to VINAMARINE for eight sea ports (Quang Ninh Transshipment, Cai Lan, Cua Lo, Ben Thuy, Danang, Qui Nhon, Nha Trang, Can Tho) and to IWB for five river ports (Ha Bac, Viet Tri, Hoa Binh, Hanoi and Ninh Binh).

2) Local government

Around 25 general ports are managed by local government. Of these, cities manage three ports (Cua Cam Port by Haiphong; Ben Nghe and Binh Dong ports by HCM City). Some provincial ports are dealing with considerable cargo, such as Nam Dinh Port (Nam Ha Province), Ba Ngoi Port (Khanh Hoa Province), My Tho Port (Tien Giang Province), Vinh Long Port (Vinh Long Province) and My Thoi Port (An Giong Province).

3) A general company in the shipping industry

VINALINES was established in January 1996 as the general company which assumes responsibility for the state-owned enterprises in the shipping industry. When

VINALINES was formed, the management of Haiphong and Saigon ports was transferred to VINALINES from VINAMARINE. There was no significant change in management after the transfer.

4) State-owned enterprises under other ministries

State-owned enterprises under other ministries have many specialized ports for efficient shipment. The representative ports are listed in Table 3.4.1.

Table 3.4.1
SPECIALIZED PORTS UNDER OTHER MINISTRIES

Responsible Ministry	Ports	Operational Characteristics
Ministry of Industry	Cam Pha Port Hong Gai Port Dien Cong Port	Export and domestic loading of coal from Hong Gai mine
	Phai Lai Port	Import and domestic unloading of coal and oil for power plants
Ministry of Trade	B 12 Port My Khe Port Nha Be Oil Port	Import of refined oil and its domestic distribution
Ministry of Agriculture & Rural Development	Nha Be Vegetable Port	Domestic export of main agricultural products such as rice, etc.
Ministry of Construction	Chinh Phong Port Hoang Thach Port Nghi Son Port Kien Luong Port	Handling of construction materials, i.e. cement, sand, and gravel

5) Publicly-owned enterprises under provinces and cities

Like state-owned enterprises, some publicly-owned enterprises under the control of provinces and cities have their specialized ports, e.g., Hong Khoi Port managed by a salt company under the control of Khanh Hoa Province.

It should be noted that Tan Cang Port or New Saigon Port does not belong to any of the above categories since the port functions as a general port even though the management body is the Ministry of Defense.

(b) Port Management

1) Roles and Functions

The port office has two functions, i.e., administration and service, requiring 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:

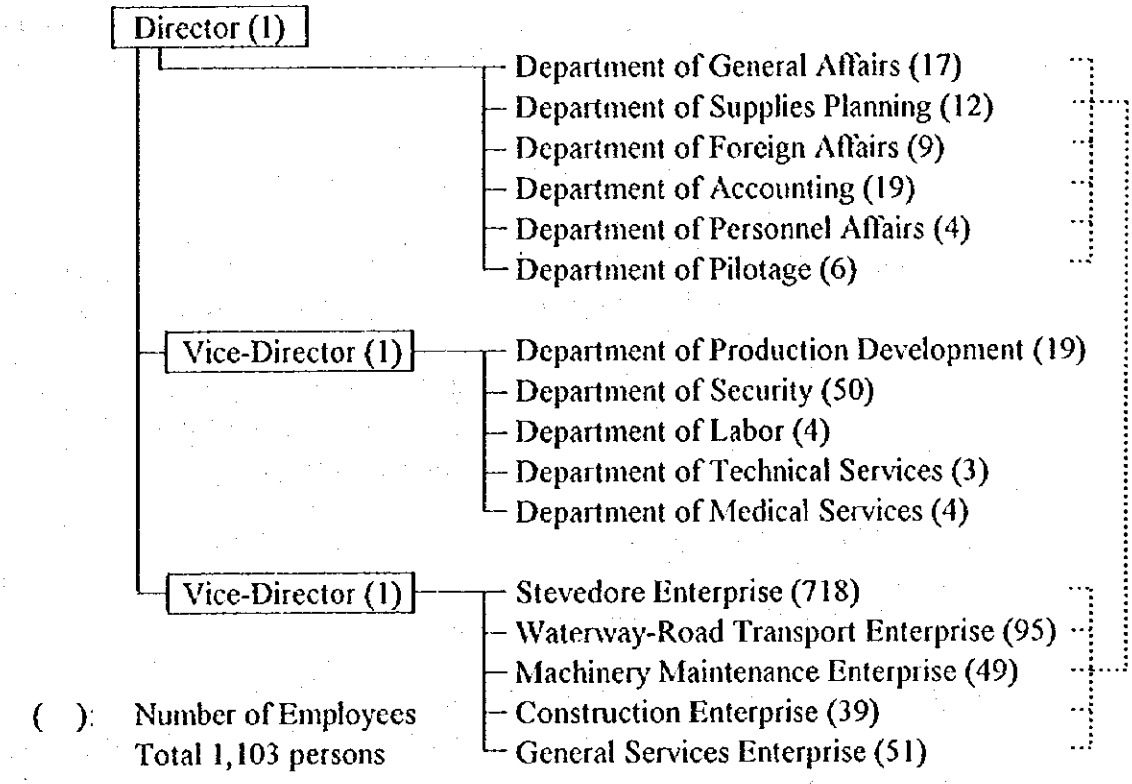
1) All undertakings regarding port facilities and equipment, covering activities such as construction, purchasing, maintenance and repair;
2) Formulation of implementation programs for port development and management;
3) Port finance;
4) Provision of cargo handling and storage services;
5) Determination and collection of port charges;
6) Security within port areas; and
7) Dredging work in the port.

In some ports, stevedores are regarded as port staff. In other ports, private stevedore enterprises are contracted instead. A large port may 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.

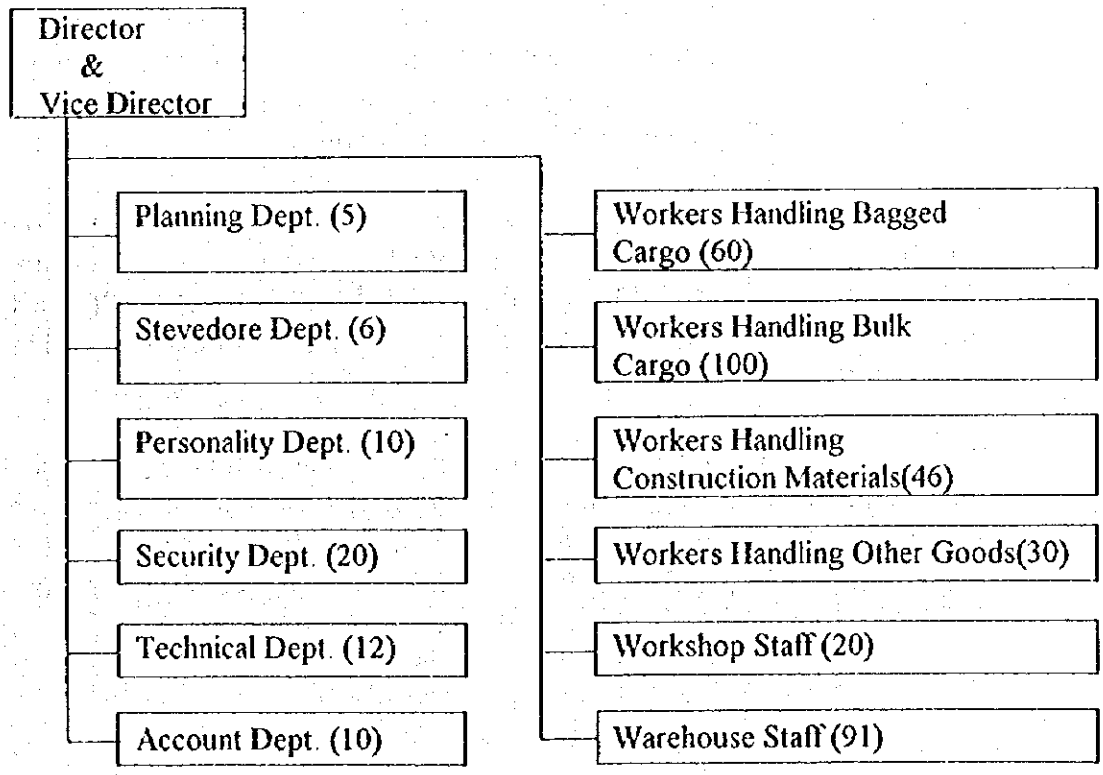
In conclusion, ports in Vietnam tend to concentrate on commercial activities such as cargo handling and warehousing. On the other hand, port authorities and VMS under VINAMARINE are responsible for entry / exit procedures of vessels, management of port access channels and collection of navigational charges.

Figure 3.4.1
PORT ORGANIZATION

Danang Port (total 1,103 persons)



Hanoi Port (total 400 persons)



2) Port Finance

General

There are two categories of port income. Most income comes from port charges and the rest comes from interest, disposition of assets, profits from joint venture companies and other related service enterprises. Ports pay the following charges to the central government:

- income tax: 4% of the port charges and 2% of other service income
- profit tax: 25% of the port profit
- capital charges to the state (based on original value): quays and warehouses (5%), machine and equipment (7%) and other capital investments (3.6%)

The remaining profit would be used for additional capital investment and staff's welfare and bonus. Capital investment has to be financed by the port profits, subsidy or loan from the state budget and borrowing from commercial banks and enterprises.

Actual Financial Situation

The 1994 / 1995 port financial statement for ports, listed in Table 3.4.2 under the control of VINAMARINE, are summarized below.

Port Income: Eight ports enjoy rapidly increasing port income, nearly 30% between 1994 and 1995 on average. In particular, Haiphong Port and Nha Trang Port recorded an increase of around 50%.

Port Expenditure: For all ports except Haiphong Port, personnel expenses occupied the biggest share, i.e., 34% on the average in 1995. Four ports recorded a proportion of more than 40%. This is because the ports organize various port related enterprises which employ many workers. Total personnel expenses are even bigger than basic wages because of significant bonus and social welfare payments.

Port Profit: All the ports except Can Tho in 1994 made some profit. The financial statements showed particularly highly profitable performances at Haiphong, Saigon, Danang, Qui Nhon and Nha Trang ports. Detailed analysis is not worthwhile because of uncertainties in the taxation period. As a whole, however, profits increased by 57% and 98% in 1994 and 1995, respectively.

The port financial statements also revealed that depreciation costs, repair costs and material procurement costs constituted considerable amounts. These are the costs for port facilities and equipment. It is noted that the following assets are included in depreciation costs: quay, warehouse, yard, cargo handling equipment, breakwater, office buildings, other machinery, land outside port compound, etc.

(c) Cargo Handling Operation

All ports have aged equipment, about 15-20 years old or more, and therefore beyond normal lifetime. They make cargo handling work very inefficient.

Quayside cranes are only available at Saigon and Haiphong Ports (jib cranes), and at 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, and all the cranes in Hanoi Port are more than 15 years old. (Refer to Table 3.4.3).

There is no gantry crane and few big forklifts, even in the ports which are coping with a considerable amount of containers.

According to observations by the Study Team, the following are important factors which reduce the efficiency of cargo handling equipment:

- Equipment is liable to be out of order and repairs take a long time;
- A lot of equipment continues in use without proper repair;
- Equipment suitable for warehousing work, such as small forklifts, are in short supply;
- Ship gear is used rather than port cranes to avoid using the inadequate port equipment; and
- Miscellaneous small parts for cargo handling works such as wires and shackles are also in short supply.

Because of the inadequate equipment, it sometimes takes five to seven days to do minor repairs, while three months or more are required for major repairs. Nevertheless, ports have not made enough provision preparation for maintaining major equipment, except at large ports. It is also noted that newly purchased equipment cannot be well maintained due to lack of knowledge and spares.

Table 3.4.2

CARGO HANDLING OPERATION IN MAJOR GENERAL PORTS

Port Name	Daily Capability		Major Equipment		Maintenance
Haiphong	bagged	: 800t	27 jib cranes	(5-16t)	large
	general cargo	: 450t	6 mobile cranes	(25-28t)	workshop
	steel	: 1,000-1,200t	39 forklifts	(1-32t)	with 275 staff
			68 trucks	(5-12t)	
			89 trailers		
Cai Lan	unknown		4 cranes	(16t)	unknown
			1 forklift	(1t)	
			1 truck		
Hanoi	cement	: 200t	8 bridge-shaped cranes	(5t)	small
	coal	: 300t	6 mobile cranes		workshop
	sand/stone	: 300t	1 forklift	(5t)	with 20 staff
			3 bulldozers		
			6 trucks		
Viet Tri	coal	: 800t	2 bridge-shaped cranes	(2t)	small
	cement	: 180t	2 tyred mobile cranes	(2-16t)	workshop
	apatite	: 200t	4 crawler cranes	(1.2t)	with 10 staff
	fertilizer	: 200t	2 bulldozers	(1.2t)	
	sand/stone	: 800t	10 trucks	(8-10t)	
Ninh Binh	clinker	: 400t	2 mobile cranes	(25t)	large
	coal	: 500t	9 cranes for bulk cargo	(0.6-4t)	workshop
	fertilizer	: 250t	5 bulldozers		with 60 staff
			1 loader		
			50 trucks	(8-13t)	
Cuo Lo	wood	: 360t	4 crawler cranes	(5-60t)	small
	coal	: 300t	6 truck cranes	(5-25t)	workshop
	fertilizer	:240t	3 forklifts	(5t)	
	iron ore	: 300t	32 trucks		
	container per gang	: 1,200t	7 trailers		
Thuan An	more than 500t		4 mobile cranes	(10-16t)	no workshop
Danang	wooden tip	: 10,000t in 3 days	15 cranes	(5-80t)	large and
			21 forklifts	(1.5-41t)	small
			3 back hoe excavator	(0.4-0.6t)	workshops
			7 trucks	(4.5-8t)	with 49 staff
			19 trailers	(8-40t)	

Port Name	Daily Capability	Major Equipment	Maintenance
Qui Nhon	cement, fertilizer : 1,600t other bagged cargo : 1,200t bulk cargo : 1,000t general cargo : 500t machines : 600t container : 120 TEU per day per vessel	6 mobile cranes (13-16t) 1 crawler crane (20t) 4 forklifts (4-6t) 1 bulldozer (0.25t) 13 trucks (5-15t)	one workshop
Nha Trang	150+/6h or 600t/gang bagged cargo : 1,000t bulk cargo : 800t	5 truck cranes (8-16t)	small workshop
Saigon	unknown	2 jib cranes (16-25t) 5 mobile cranes (150t) 5 cranes for container (60-130t) 12 stackers (2.5-4.2t) many forklifts, bulldozers, trucks and trailers	large workshop
Dong Nai	unknown	2 tyred cranes (25-45t)	unknown
My Tho	rice : 800t coal : 400t vegetable oil : 400t	3 mobile cranes(3-10t)	small workshop with 2 staff
Dong Thap	400t/8h	2 tyred cranes (15-25t) 1 forklift (2.5t) 2 tractors	no workshop
Can Tho	unknown	2 truck cranes (45, 75t) 1 crawler crane (30t) 2 forklifts (5t) 1 floating crane (25t) 5 trucks	small workshop
My Thoi	300t/8h	2 tyred cranes (7.12t) 2 forklifts (3.5t) 3 floating cranes (2.5-4.0t) 4 trucks 4 trailers	small workshop with 10 staff

3.5 Intra-Port Transport and Inland Waterways

3.5.1 Intra-Port Transport

(a) Port Accessibility

It is observed that various types of ships require access to Vietnamese ports such as general cargo ships, coal ships, oil tankers, container ships and barges. However, many of the ports are located inland on rivers, and even sea ports may suffer from siltation and shallow depth. In addition, typhoons and lack of navigational aids prevent all-year or 24 hours navigation. Generally, accessibility to Vietnamese ports is not adequate. (Refer to Table 3.5.1) To compensate for such problems, ships usually employ the following countermeasures.

1) Offshore transshipment

When a ship is forced to moor at anchorage area or outside a port due to depth limitation or fully occupied berths, cargo would be transshipped onto other small ships and barges. This is a daily occurrence at Haiphong and Saigon ports. On international routes, the LASH system is used sometimes to allow offshore transshipment by barges carried on the ship.

2) Selective access on high water

Seasonal variation in river depth is quite substantial in Vietnam. For instance, they say that the depth can become 10 m in the Red River and 5 m in the Mekong River at some times of year. Tidal change is also significant. The changeable water condition forces ships to wait before entering ports. This is common practice for ships destined for the inland ports of Haiphong, Hanoi, Ninh Binh, Cua Lo, Can Tho, etc.

3) Offshore transshipment and direct access

This method combines measures (1) and (2). For example, ship becomes lighter by means of partial offshore transshipment and then directly proceeds to her destination.

4) Daytime navigation

Ships are not allowed to enter or exit from Saigon Port during night time (from 15:00 to 6:00) due to poor navigational aids. This restriction is also applied to other congested waterways.

5) Suspended navigation on hazardous water

Danang Port is obliged to close on 45 days on average from October to January due to rough sea caused by monsoons. Other sea ports are also vulnerable to rough waves.

Table 3.5.1
PORT ACCESSIBILITY

Region	Port	Management	Maximum Ship Size (DWT)	Restrictive Factor
North	Haiphong	VINALINES	7,000	S.N.
	Quang Ninh Transshipment	VINAMARINE	18,000	(only offshore transshipment)
	Cai Lan	VINAMARINE	18,000	N
	Hong Gai	Ministry of Industry	12,500	N
	Cam Pha	Ministry of Industry	30,000	N
	Pha Lai	Ministry of Industry	400	D
	BIZ	Ministry of Trade	20,000	
	Hoang Thach	Ministry of Construction	6,000	D
	Viet Tri	IWB	400	D
	Ha Bac	IWB	400	D
	Hoa Binh	IWB	200	D
	Hanoi	IWB	600	D, S
	Ninh Binh	IWB	600	D, S
	Dien Cong	Province	5,000	
Central	Cua Lo	VINAMARINE	5,000	R,
	Ben Thuy	VINAMARINE	600	D,
	Danang	VINAMARINE	28,000	R,
	Qui Nhon	VINAMARINE	10,000	R,
	Nha Trang	VINAMARINE	10,000	R,
	Thanh Hoa	Province	600	D,
	Xuan Hai	Province	3,000	R,
	Thuan An	Province	1,000	S, D
	Cua Viet	unknown	2,000	S, R,
	Ba Ngoi	Province	15,000	R,
South	Saigon	VINALINES	20,000	N
	Can Tho	VINAMARINE	5,000	S, N
	Tan Cang	Ministry of Defense	20,000	N
	Nha Be Oil	Ministry of Trade	30,000	N
	Nha Be Vegetable	Ministry of Agri. & Rural Development	15,000	N
	Kien Luong	Ministry of Construction	600	D
	Ben Nghe	HCM City	20,000	N
	Vung Tau (Cat Lo)	Province	10,000	N, R
	My Tho	Province	3,000	S
	Dong Thap	Province	3,000	S
	Vinh Long	Province	2,500	S
	My Thoi	Province	3,000	S
	Hon Chong	Province	3,500	S
	Nam Can	Province	3,000	S

Note Restrictive Factor

S : Siltation at Port Entrance or River Mouth
D : Shallow Depth
N : Navigational Aids
R : Rough Sea

(b) Intra-Port Cargo Movement

Intra-port movement of cargo is essential to maximize port efficiency with limited port facilities and navigational constraints. In Vietnam, this can be divided broadly into three forms.

(i) A ship berths at a quay and cargo is unloaded on a quay. Cargo is then directly delivered by truck or rail, or temporarily stored.
(ii) A ship berths at a quay and cargo is transshipped to small ships and barges for delivery.
(iii) A ship anchors at an anchorage area or outside a port. Cargo is then transshipped to small vessels and barges which are destined for a quay or premises of consignees.

Figure 3.5.1 shows, conceptually, the loading and unloading process while Figure 3.5.2 introduces the actual intra-port movement at selected ports (Haiphong, Danang, and My Tho).

Figure 3.5.1
LOADING AND UNLOADING PROCESS

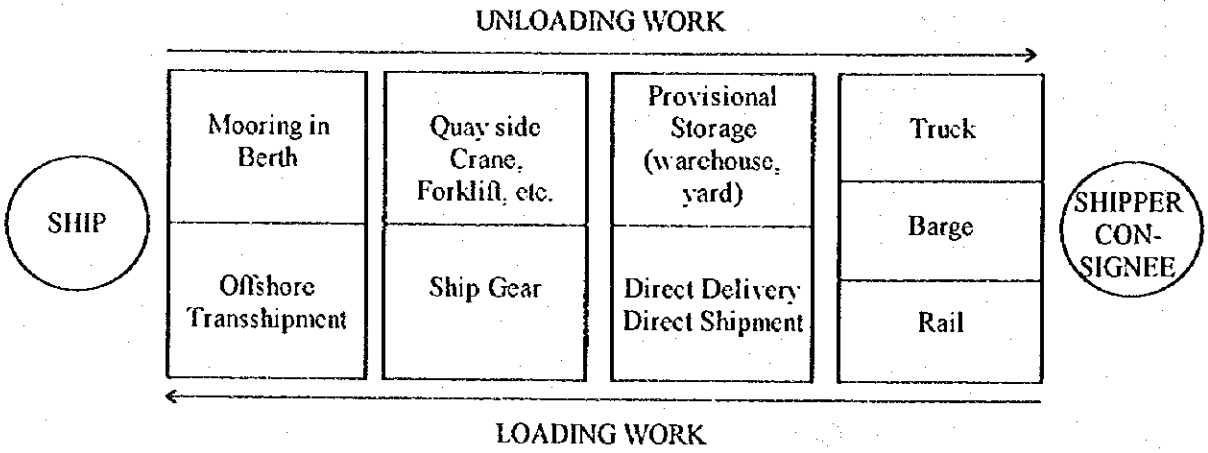
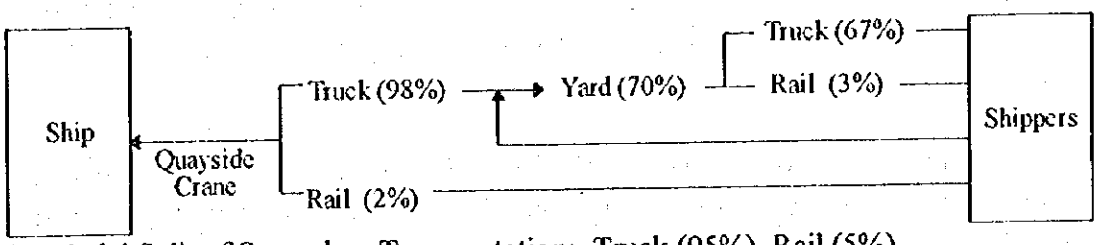


Figure 3.5.2
INTRA-PORT CARGO MOVEMENT AT SELECTED PORTS

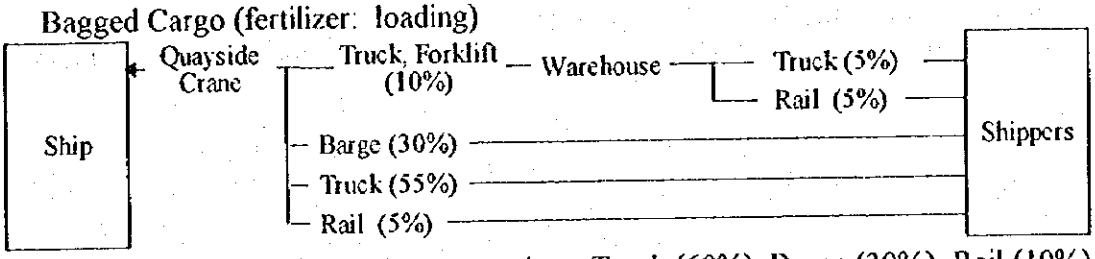
HAIPHONG PORT

1. Containerized Cargo (loading)



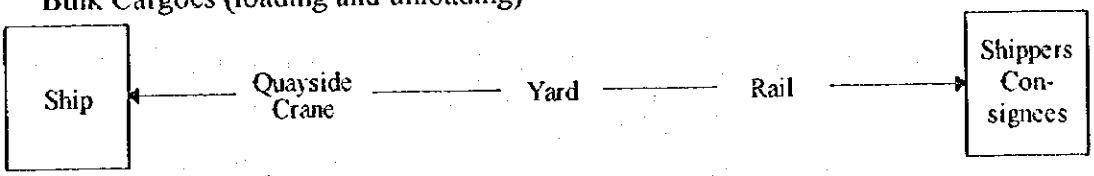
Note) Modal Split of Secondary Transportation: Truck (95%), Rail (5%)

2. Bagged Cargo (fertilizer: loading)



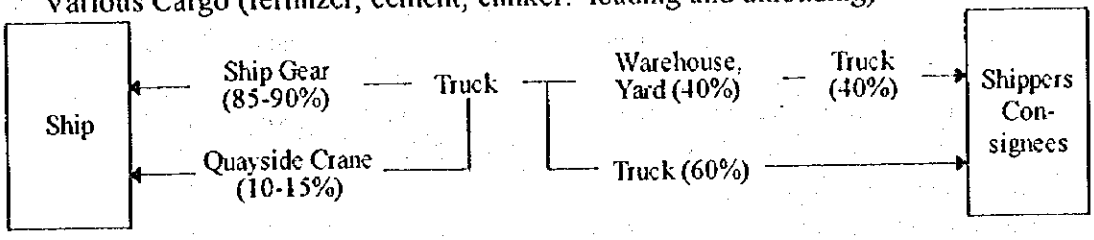
Note) Modal Split of Secondary Transportation: Truck (60%), Barge (30%), Rail (10%)

3. Bulk Cargoes (loading and unloading)



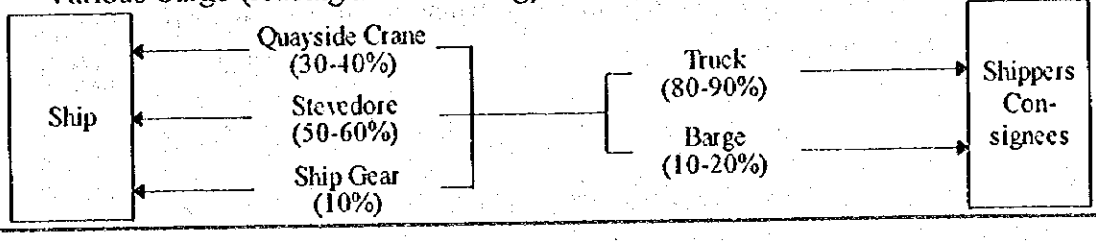
DANANG PORT

1. Various Cargo (fertilizer, cement, clinker: loading and unloading)



MY THO PORT

1. Various Cargo (loading and unloading)



3.5.2 Inland Waterways

(a) Profile of Inland Waterways in Vietnam

1) Network

Vietnam has a large network of inland waterways totaling about 41,900 km, of which 11,400 km are of sufficient depth for waterborne transportation. The network extends to almost all populated areas and industrial zones.

In the northern and western parts of Vietnam is found the southward continuation of the Yunnan Plateau, varying in altitude between 900 m and 1,500 m. Cutting into the plateau are the valleys of the Song Cam, Song Lo, Song Hong (Red River), Song Ma and Song Chu rivers which converge in the great delta of the Red River and Song Ma, before discharging into the Gulf of Tonkin. In the south, the Mekong River splits into nine arms through the Mekong Delta, formed over the centuries by siltation of the Mekong River.

Vietnam's inland waterway system is composed of 2,360 rivers and channels and 112 river mouths, of which five are managed by VMS. The navigational waterways under central management total 6,787 km, and can be categorized into six classes. Table 3.5.2 indicates the definition of each class while Table 3.5.3 shows the actual lengths by region. In classifying inland waterways, the Least Available Depth (LAD) is employed.

Table 3.5.2
STANDARD FOR CLASSIFICATION OF INLAND WATERWAYS IN VIETNAM
(TCVN-5664-1992)

Class	Dimension of Waterways				Dimension of Works					
	Natural River		Canal			Bridge			Clearance (m)	
	Depth	Width	Depth	Width	Radius (R)	Span River	Span Channel	Clearance (m)	(*)	(**)
I	>3.0	>90	>4.0	>50	>700	80	50	10	25	12
II	2.0-3.0	70-90	3.0-4.0	40-50	500-700	60	40	9	12	11
III	1.5-2.0	50-70	2.5-3.0	30-40	300-500	50	30	7	12	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

(*) Above sea-cum-river current
(**) Above river current

2) Traffic demand

Rapid economic development has intensified river traffic considerably. Cargo demand in 1995 was 164% greater than that in 1990, while the increase in passenger traffic was 331% in the same period.

Table 3.5.3
LENGTH OF INLAND WATERWAYS BY CLASS UNDER CENTRAL MANAGEMENT

Class	LAD	Allowable DWT	Length in km			
			North	Center	South	Total
I	>2.3	>2,000	716.0	92.5	167.7	976.2
II	2.0-2.3	1,000-2,000	344.0	105.0	218.7	667.7
III	1.5-2.0	600-1,500	492.0	221.5	260.2	973.7
IV	1.2-1.5	300-720 (TOW)	568.0	312.5	399.8	1,214.1
V	1.0-1.2	100-400 (TOW)	341.5	447.9	333.6	1,189.2
VI	>1.0	40-100 (TOW)	283.0	1,398.5	85.0	1,766.5
	Total		1,744.5	2,577.9	1,465.0	6,787.4

Table 3.5.4
TRAFFIC DEMAND ON INLAND WATERWAYS

Year	Cargo		Passengers	
	(thousand ton)	(million ton km)	(thousand passengers)	(million passenger km)
1990	15,700	2,041	43,600	741
1995	25,800	3,096	144,300	2,165

Source: IWB

3) Fleet

Although the available statistics are inadequate, the inland waterway fleet is estimated to be about one million tons in capacity. In the Red River Delta, over 60% of the fleet capacity is owned by the central government or provinces and most of the ships are made of steel; in the Mekong Delta, almost the same proportion is owned by the private sector or cooperatives, and most are made of wood. Vessels are considerably smaller and older in the South than in the North. (Refer to Table 3.5.5)

4) Sounding and charts

Because river beds in the two deltas are unstable, and banks and water depths vary from year to year, hydrographic surveys are needed to estimate requirements and quantities for dredging and to prepare navigation charts. The need is particularly great in the south, where charts would improve safety, allow vessels to be loaded more efficiently, and assist night navigation.

Table 3.5.5
1990 INLAND WATERWAY FLEET BY OWNERSHIP

Ownership	Towing (1000 CV)	%	Loading (1000 T)	%
North Total	99.7	78.6	416.3	57.5
Central	35.9	28.3	143.6	19.8
Provincial	30.6	24.1	103.6	14.3
Private, Coop	26	20.5	142	19.6
Special	7.2	5.7	27.1	3.8
South Total	27.2	21.4	308.1	42.5
Central	8.4	6.6	32.8	4.5
Provincial	9.1	7.1	89.1	12.3
Private, Coop	4.5	3.6	165.4	22.8
Special	5.1	4	20.6	2.8
Total	126.86		724.4	

Source: MOT

5) Dredging

Annual dredging is probably required to maintain navigable drafts: About 1 million m^3 are annually dredged in the Red River basin to remove siltation, and 1.8 million m^3 are dredged in the south, mainly to deepen some passages. The dredging fleet is old and needs to be replaced; its annual capacity is rated at 15 million m^3, but is in practice only 4 million m^3. Inadequate funding means that only 70% of the capacity is actually used.

(b) Features of Inland Waterway Transport in Both Deltas

The main characteristics of inland waterway networks in the two delta areas are as follows:

1) The Red River Delta

- Ships of 1,000 DWT or more are barely navigable except along the access channel to Haiphong.
- A considerable traffic volume has been recorded on several routes such as the access channel to Haiphong, Red (Hong) River (the river mouth to Viet Tri) and Duong and Luoc rivers which connect Thai Binh and Red Rivers.
- There are six major river ports in the north (Hanoi, Ninh Binh, Nam Dinh, Viet Tri, Hoa Binh and Ha Bac) with a total throughput of 1.7 million tons in 1995. In addition, there are seven provincial river ports and numerous specialized ports.
- Seasonal changes in water level are quite notable, e.g., 6-7m generally and 10-15m around Hanoi and further upstream.
- The implementation of dredging work is insufficient to maintain necessary water depth.

- Many river sections are sharply curved, which thus hampers navigation by a group of barges.
- Poor navigational aids make nighttime navigation difficult, resulting in reduced traffic capacity.

2) The Mekong Delta

- The main rivers in the area such as Saigon River, Mekong River (Tien Giang) and Bassac River (Hau Giang) have enough depth for transport purposes. Other rivers and canals, however, hardly accommodate ships of 1,000 DWT.
- Busy routes are the three main rivers and some access channels connecting these main rivers.
- Many inland ports belong to port authorities under the jurisdiction of VINAMARINE and they deal with three kinds of shipping, ocean-going, coastal and river. However, three ports (Binh Dong, Thu Due and Tan Thuan) are located in HCM City and serve inland waterway traffic, with a total throughput of more than 2 million tons in 1995.
- Seasonal change in water level is comparatively stable, e.g., 5 m at most.
- The waterways are not equipped for night navigation. Of 400 navigational aids, only 100 have lanterns. A few are solar powered, but most need frequent refilling with kerosene. Thus, a proper system of navigational aids is needed not only for safety but also for efficiency.

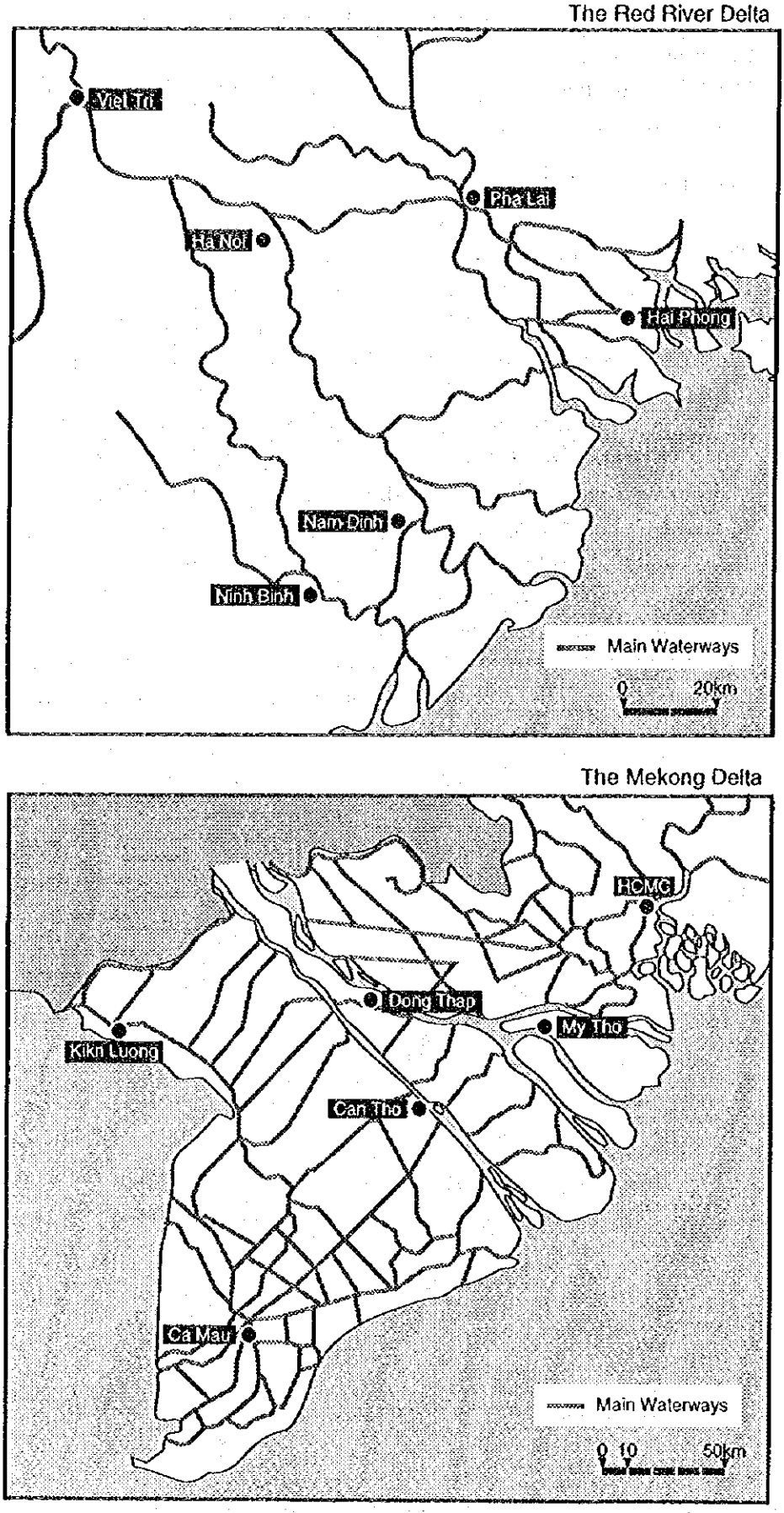


Figure 3.5.3 **INLAND WATERWAYS NETWORK**

(c) Management and Operation

River transport services are provided mainly by the Union of Water Transport Enterprise I in the north, Union of Water Transport Enterprise II in the south and by provincial and private operators. Their main characteristics are as follows:

Union of Water Transport Enterprise I
The union has five member-operators and the union allocates freight to these. The operators are financially independent. Table 3.5.6 shows the operators' fleet inventory.

Union of Water Transport Enterprise II
The union in the south has 100 barges (30,000 DWT in total), 50 tug boats, some Push and Tow Boats (10,000 HP in total) and 2 coasters (400 DWT in total). Compared with the union in the north, the fleet size in small due to numerous private operators in the south.

Table 3.5.6
FLEET UNDER THE UNION OF WATER TRANSPORT ENTERPRISE I

No. 1 Hanoi	200 barges (35,000 DWT), 60 Push & Tow boats, 20 tug boats (11,000 HP) 3 x 400 DWT river coasters
No. 2 Ha Nam Ninh	170 barges (30,000 DWT), 40 Push & Tow boats, tug boats
No. 3 Haiphong (South)	100 barges (25,000 DWT), 20 self-propelled cargo boats, 35 Push & Tow boats, tug boats and 6 river coasters
No. 4 Haiphong (Quang Ninh, Pha Lai)	160 barges (35,000 DWT), 40 Push & Tow tug boats
No. 5	Unknown

3) Provincial Operator
In most of the provinces, there is at least one provincial transport unit, one river port and several cooperatives for transportation and handling services.

(4) Private Operator
The Mekong Delta has historically witnessed activities by numerous small river transport-related businesses, often on an informal basis. They usually own one old towing barge and carry agricultural products, construction materials, etc.

Since they can offer efficient service, the transport cost in the south is always lower than in the north where state-run operators dominate the market.

3.6 Maritime Safety

3.6.1 Analysis of Maritime Accidents

(a) Statistics of Marine Accidents (1987 - 1992)

According to the statistics of VINAMARINE, the number of accidents at sea over six years (1987 - 1992), involving ships over 100 tons, is as follows:

Table 3.6.1
TREND IN MARITIME ACCIDENTS BY TYPE

Type of Accident	1987	1988	1989	1990	1991	1992	Total
Collision	3	12	7	9	5	8	44
Stranding	0	2	3	1	0	1	7
Fire	1	1	2	3	3	1	11
Inundation	0	3	1	1	0	3	8
Capsizing	0	3	4	2	1	6	16
Engine Trouble	5	3	10	0	7	5	30
Loss of Lives and Injury	0	2	16	1	9	1	29
Others	5	8	1	5	5	5	29
Total	14	34	44	22	30	30	174

Tables 3.6.2 to 3.6.4 show the causes of accidents and the extent of damage and of injury to passengers.

According to the public relations materials of Vietnam Salvage Corporation (VISAL), there are about 8,000 vessels with Vietnamese flag. The breakdown is as follows: 7,300 fishing boats with engines (5 to 300 tons) and 700 cargo vessels (15 to 15,000 tons).

Most maritime accidents involve fishing boats and are concentrated in the Gulf of Bacbo, off the shore of Danang, east Nam Bo Sea and Thailand Bay.

Table 3.6.2
NUMBER OF MARITIME ACCIDENTS IN 1993

Cause of Accident	Extent of Accident				Human Lives	
	Serious	Heavy	Light	Others	Dead	Hurt
Operational Errors	3	5	20	15	1	
Technical Deficiencies	2	9	17	5	2	3
Deficiencies of Channel	-	-	2	-	-	-
Bad Weather	-	1	3	-	2	-
Objective Reasons	-	2	3	-	-	-
Others	-	-	1	-	-	-
Total	5	17	46	20	5	3

Table 3.6.3
NUMBER OF MARITIME ACCIDENTS IN 1994

Cause of Accident	Extent of Accident				Human Lives	
	Serious	Heavy	Light	Others	Dead	Hurt
Operational Errors	5	6	43	6	13	2
Technical Deficiencies	2	4	2	2	5	1
Deficiencies of Channel	-	-	3	3	-	-
Bad Weather	3	4	4	4	6	-
Objective Reasons	-	2	2	3	-	-
Others	-	7	2	6	1	1
Total	10	23	56	24	25	4

Table 3.6.4
NUMBER OF MARITIME ACCIDENTS IN 1995

Cause of Accident	Extent of Accident				Human Lives	
	Serious	Heavy	Light	Others	Dead	Hurt
Operational Errors	5	16	15	36	2	-
Technical Deficiencies	2	12	28	42	31	9
Deficiencies of Channel	-	-	-	-	-	-
Bad Weather	-	11	1	12	-	-
Objective Reasons	-	7	23	30	-	1
Total	7	46	67	120	33	10

Source: public relations materials published by VISAL.

(b) Evaluation of the Statistics of Marine Accidents

The number of accidents has been increasing year by year, especially from 1993 to 1995. It is anticipated that, without preventive measures, this tendency will continue in 1996 and in the years to come, along with increasing sea traffic.

Search and rescue services have been extremely limited in Vietnamese waters. Among 29 rescue cases between 1989 and 1992, 23 cases (nearly 80%) were rescued by salvage ships of VISAL and five cases were by local authorities. VISAL remains the major force in SAR activity today. Under present circumstances, most accidents must have been left unreported, with no rescue action involved.

According to a report in the magazine issued by MOT, 81% of accidents have occurred within 12 miles of the coast. These are mainly collisions and groundings. Many accidents have taken place in stormy weather. In order to reduce such accidents, it is necessary to establish vessel traffic systems and regulations, weather forecasting and effective communication systems, especially in areas where traffic is very busy. Aids to navigation should be properly installed.

Judging from the statistics on maritime accidents in Vietnam, there is a considerable shortage of detailed information about accidents such as place, cause and rescue activity. The potential safety improvements from thorough investigation of particular accidents and analysis of accident statistics, are considerable.

3.6.2 Search and Rescue (SAR)

(a) Present Situation

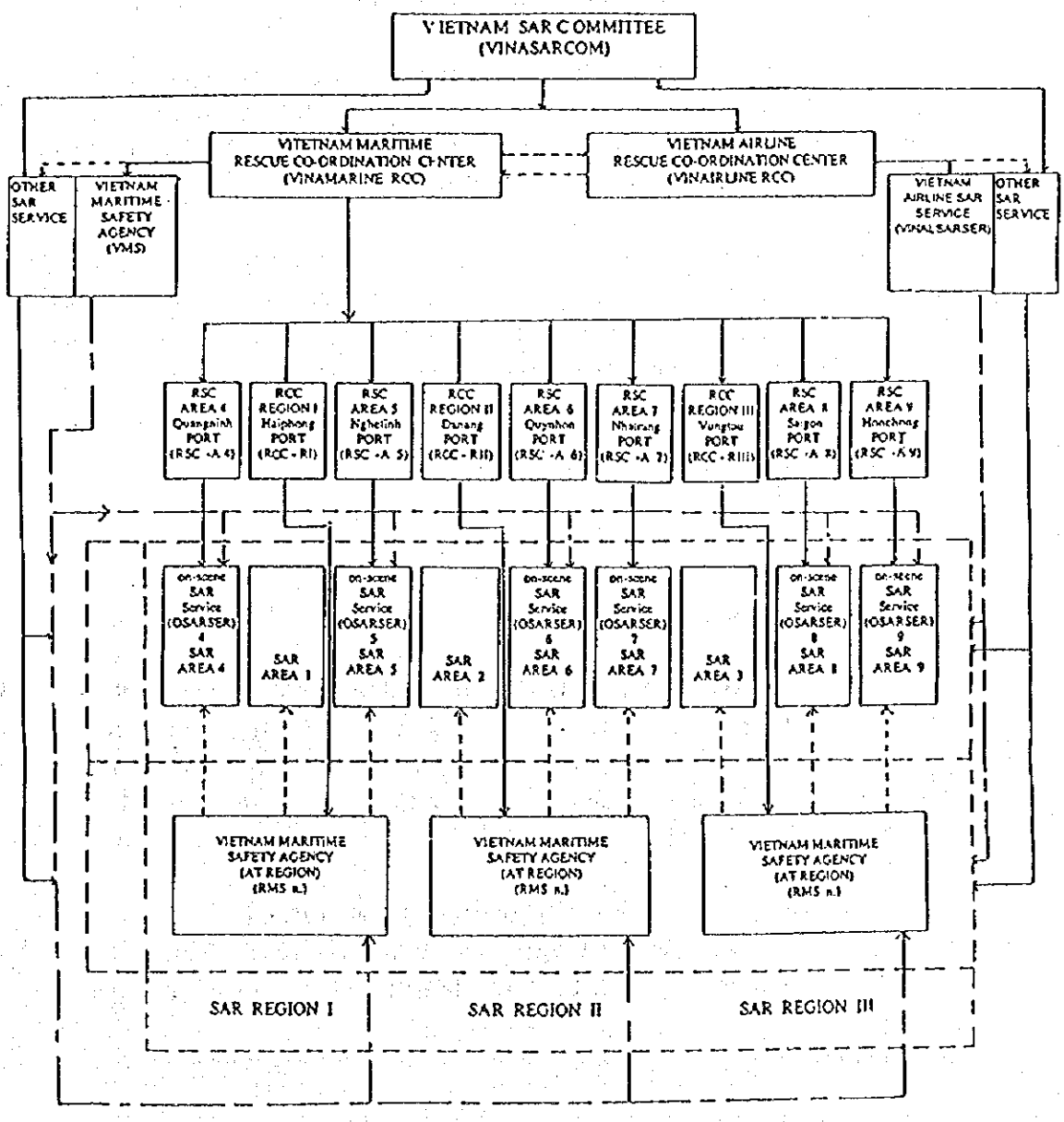
An SAR system in Vietnam has not yet been established. There is no organization primarily responsible for SAR. An SAR command and coordination diagram was prepared as shown in Figure 3.6.1. It is systematically organized but, in practice , there are no such command and coordination chains, nor SAR resources such as rescue boats and communication means, to provide the SAR service.

VMS (Vietnam Maritime Safety Agency), under VINAMARINE, is responsible not only for the conventional Aids To Navigation (ATN) service but also for supposedly new duties such as SAR, marine environment protection, maritime traffic safety and hydrographic services. However, VMS has too few staff and inadequate facilities for the new duties. In particular, it has no resources at all for SAR. VMS is still at the starting line in this field.

Whether or not an SAR system is available or not, many accidents are taking place in and around the waters of Vietnam. When a distress signal is received by a coastal radio station or transferred from an overseas authority, such as in Hong Kong, it is reported to the Maritime Safety Inspectorate and port authorities under VINAMARINE. The

Maritime Safety Inspectorate orders a responsible port authority to take action. Since port authorities have no ship and rescue staff of their own, they ask any ship with rescue capability within the ports, even ships of foreign flag, to go out on rescue. Salvage ships are particularly likely to go out because of their related business interests. If necessary, VINAMARINE requests assistance from military ships and aircraft through an official channel.

Figure 3.6.1
VIETNAM SEARCH AND RESCUE ORGANIZATION



Note : the above organization has not been fully developed and is now in progress, so has not functioned yet.

SAR : Search and Rescue
RCC : Rescue Coordination Center
RSC : Rescue sub-center
RMS n. : Maritime Safety Region
n. : number of Region

(b) Identified Problems and Issues

It is an urgent necessity for Vietnam to establish a unified government organization primarily responsible for SAR and then to set up an efficient and effective SAR system which involves the following resources and functions:

1) SAR vessels, aircraft and their supporting facilities,
2) Communication network,
3) Competent personnel,
4) Chains of command, and
5) Creation of awareness of maritime safety among the general public

A ship reporting system is one of the systems which were recommended to be set up under the SAR Convention 1979. Under this system, information from ships such as position and navigation schedule is processed by computers and it thus enables SAR activities to take place as promptly as possible.

The Marine Hydrometeorological Center is the government agency in charge of weather observation and forecasting, mainly for sea areas. But the organization is more a research institute than a weather information center. The weather forecasting system, consisting of information and communication facilities, is far from adequate for preventing accidents at sea.

3.6.3 Sea Communications System

(a) Present Situation of Maritime Safety Communications

Maritime safety communications is carried out by coastal stations. Vietnam has five internationally registered coastal stations: HAIPHONG RADIO (XVG), HO CHI MINH VILLE RADIO (XVS), DANANG RADIO (XVT), NHA TRANG RADIO (XVN), VUNG TAU RADIO (XVR), and two national stations: QUANG NINH RADIO (XVQ) and CAN THO RADIO (XVV). They are operated and maintained by the Vietnam Ship Communications and Electronic Company (VISHIPEL) which is under VINAMARINE. The national stations engage in only domestic communication.

The above-mentioned seven stations are keeping watch around the clock in case of need for search and rescue, medical assistance, weather forecast, commercial and other services. These duties are carried out by internationally certified radio operators.

(b) Frequencies and Methods of Communications for Maritime Safety

Table 3.6.5 indicates the communication frequencies used by coastal stations. Frequencies of 500 KHz, 2182 KHz and 156.8 MHz are used to respond to distress and urgent calls.

Table 3.6.5
SEA COMMUNICATION EQUIPMENT

Equipment	Method of Communication	Frequencies	Vietnamese Coastal Stations						
			XVG	XVS	XVT	XVN	XVR	XVQ	XVU
TX/RX (MHF)	WT (A1A; A2A)	500 HHz	+	+	+	+			
TX/RX (MHF)	RT(J3E)	2182 KHz	+	+	+	+	+		+
RX (MHF) Automatic	RT(J3E)	2182 KHz	+	+	+	+	+		
TX/RX (VHF)	RT(F3E)	156.8 MHz	+	+	+	+	+	+	+
TX/RX (HF)	RT(J3E)	4125 KHz 6215 KHz 12290 KHz	+ +	 + +	 +			+ 	

(c) Problems with Present Communications and Needs under GMDSS

The traditional distress and safety communications system using Morse code telegraphy has played a great role in saving lives at sea. However, this system has some problems as follows:

1) Difficulty with long distance communication;
2) Difficulty in coping with very sudden accidents;
3) Need for special techniques and skills because of the use of Morse code;
4) Unreliability because of human error.

To solve the above problems and improve the communications systems drastically, GMDSS (Global Maritime Distress and Safety System) has been introduced under the SOLAS Convention. GMDSS has already been recognized as an international standard system and some Asian countries such as China, Indonesia and Malaysia are now underway to introduce the system.

GMDSS has the merit that it enables officers with lower grade certificates to carry out communications duties, and can thus save personnel costs.

3.6.4 Aids to Navigation

(a) Management

In managing the aids to navigation (ATN) facilities in Vietnam, VMS has divided Vietnamese territorial waters into five regions. The headquarters are located in Haiphong while regional head quarters are in Vinh, Qui Nhon and Vung Tau. The fifth Regional Marine Safety regional office is in Haiphong, adjacent to the headquarters. Figure 3.6.2 shows the responsible areas of the Regional Marine Safety offices.

The number of personnel in charge of ATN is 1,168. There are two special ATN schools located in Haiphong and Ho Chi Minh City to train new staff.

(b) Distribution of Aids to Navigation

Many navigational aids are in operation all over the country. There are 55 lighthouses, 89 light beacons, 308 lighted buoys and five RACON units.

Most of the lighthouses are old and difficult to operate as initially designed. Figure 3.6.1 shows the deployment of existing lighthouses. In the North, some lighthouses constructed under the French regime are still operational and the equipment made in the former USSR, China and the former Czechoslovakia is also still in use. In the South, the existing equipment was made in the USA during the last war. This has made efficient maintenance and repair work difficult.

VMS manages 69 light beacons, while other organizations manage another 20. The light beacons managed by VMS are mainly located in the Haiphong and Vung Tau areas while the others are mainly at Quang Vinh.

There are 273 lighted buoys under the control of VMS and 35 buoys under other management. Many of them can be found on Haiphong, Hong Gai, Cua Hoi, Saigon and Thi Vai waters.

In Vietnam, radio ATN has not been extensively utilized and the sole five units of RACON are installed at Vung Tau, Ba Lat, An Bang, Da Tay and Song Tu Tay.

Figure 3.6.2

AREA OF RESPONSIBILITY OF REGIONAL MARITIME SAFETY OFFICES

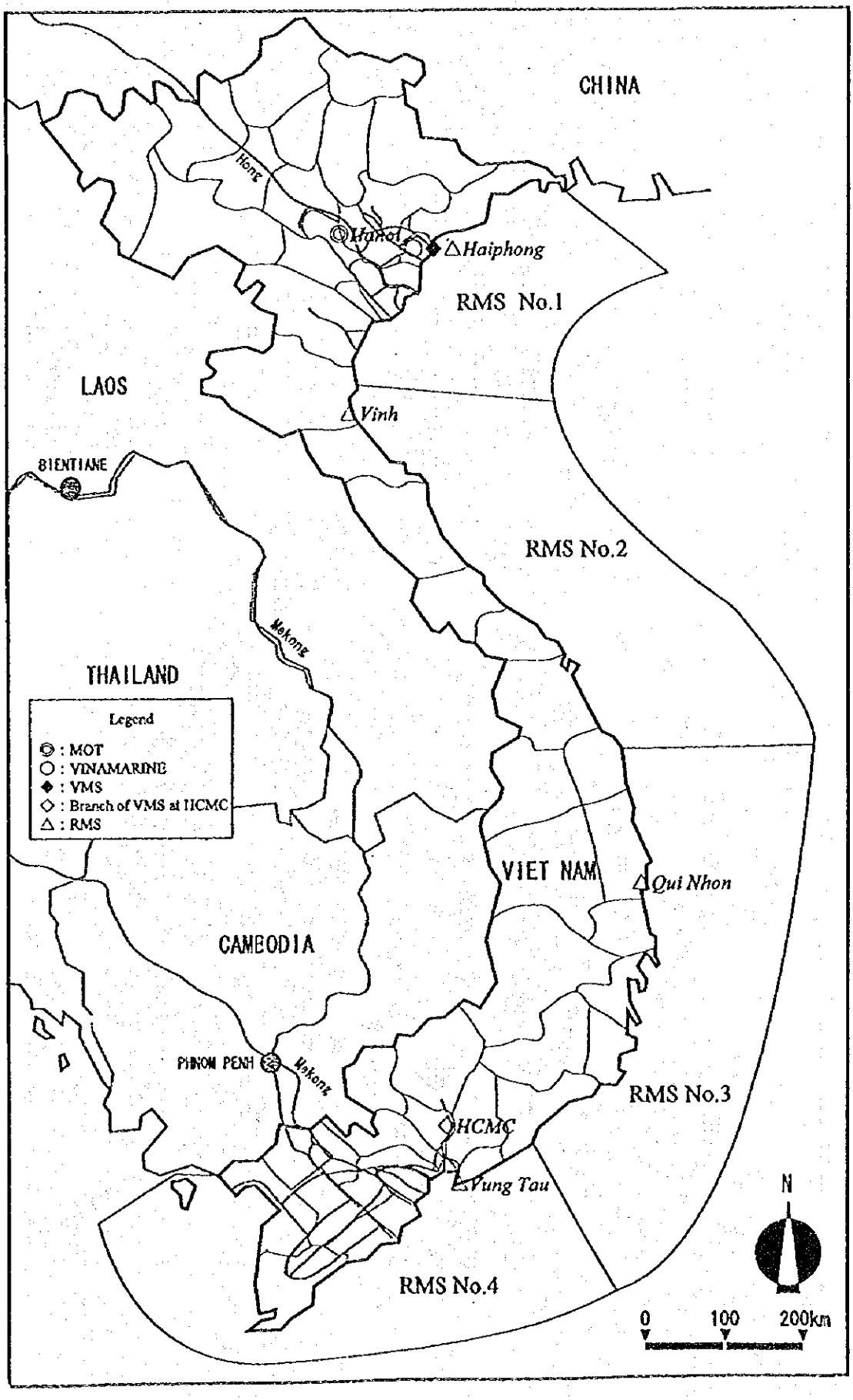
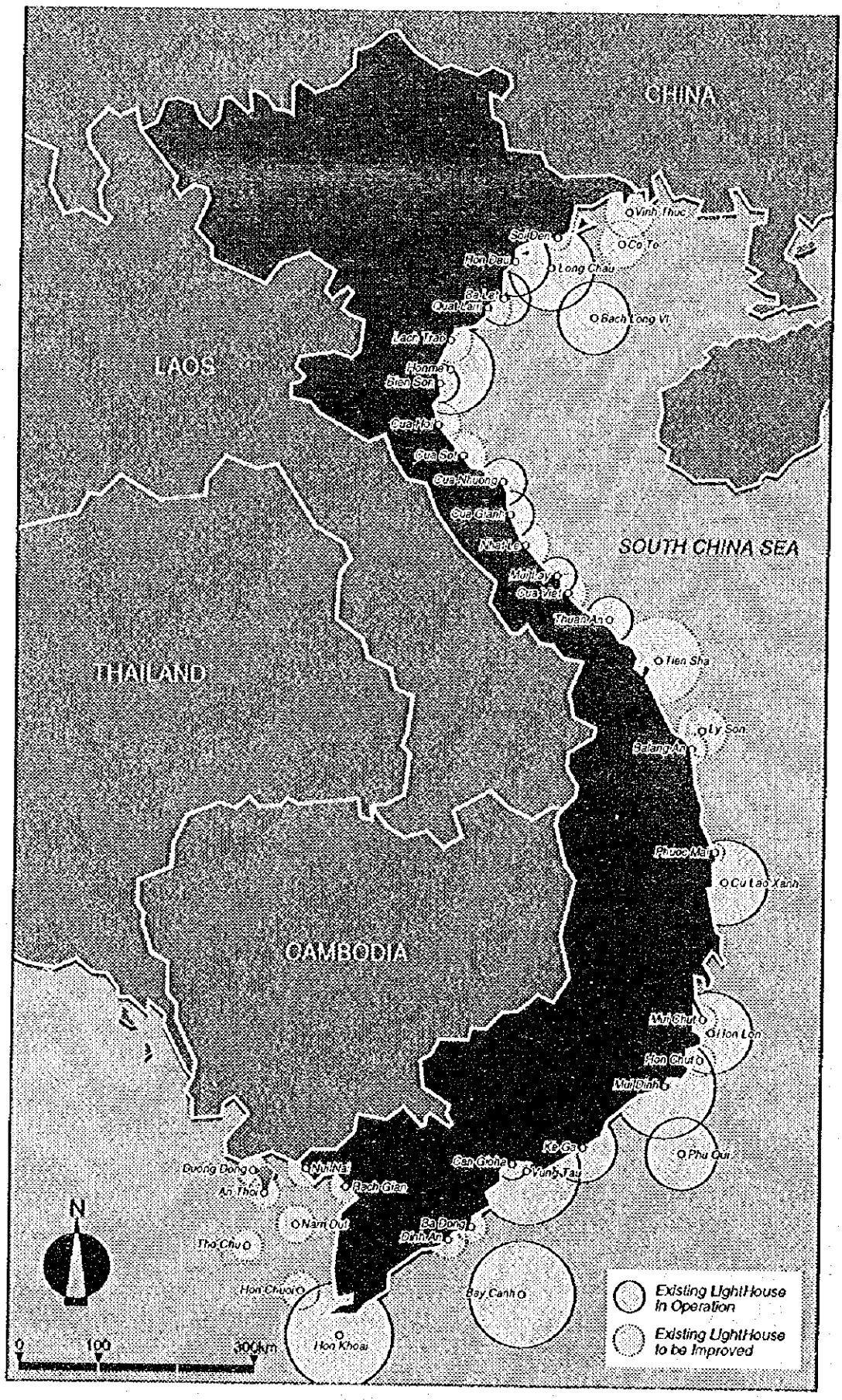


Figure 3.6.3
DEPLOYMENT OF EXISTING LIGHTHOUSES



(c) ATN Supporting Facilities

The supporting facilities of ATN are indicated in Table 3.6.6. All facilities and vessels have different roles - workshop for repair and improvement of equipment, a buoy tender for installation of buoys and an inspection boat to patrol ATN. It is noted that there is no training ship in this field.

Table 3.6.6
EXISTING SUPPORTING FACILITIES

Facilities		Region I	II	III	IV	Total	Remark
Factory		1	0	0	1	2	
Workshop		1	1	1	1	4	
Ship	Buoy tender	0	0	0	1	1	400t
	Supply	2	1	1	1	5	50t
	Inspection	1	1	0	1	3	50t
	Supporting	1	0	0	0	1	50t
	Training	0	0	0	0	0	

3.6.5 Ship Inspection

Ship inspection is basically done in relation to the ship construction process, the quality of equipment to be used on-board, and also ship operational safety. The former is concerned more with the management of shipyards and repair facilities; the latter depends upon the shipowner's management policies, the ship captain's (and crew's) recognition of safety of life at sea (SOLAS), prevention of pollution from ship (MARPOL) and application of relevant conventions, rules and regulations.

Some members of the Study team, accompanied by the technical group on shipbuilding, visited the main shipbuilding/ship repair facilities at Ho Chi Minh City, Danang, and Haiphong and, on the way, also boarded some Vietnamese flag ships for condition evaluation. They also visited shipowners' offices to confirm their knowledge of safety management concepts.

(a) Result of Ship Registration and Inspection

For the Register of Ships (1994 - 1995), 678 sea-going ships have been registered under VIRES. Classified data according to year of construction are shown in Table 3.6.7.

Table 3.6.7
NUMBER OF SHIP REGISTERED UNDER VIRES

	Total Registered Ship		Ocean-going Ships	
Year Built	No.	G/T	No.	G/T
>1960	8	16,396	0	-
1961-1970	51	97,440	8	30,099
1971-1980	97	136,508	38	80,248
1981-1985	66	82,140	14	53,474
1986-1990	189	72,015	5	11,385
1991-1995	86	33,968	6	8,288
Total	497	438,467	71	183,494

Note: Tug boats, fishing boats, and marine structures without propulsion machinery are excluded.
Source: Register of Ships, 1994-1995

VIRES had surveys conducted 1,164 times on Vietnamese flag vessels in 1995 pursuant to VIRES rule, and 90 times on foreign flag vessels upon application.

(b) Inspection Equipment

Materials, equipment, ship inventory, machinery and welding materials used for ship construction and installation have not yet been approved by VIRES due to lack of supporting industry in Vietnam. The shipowners are, thus, forced to use imported ones which have been approved by foreign governments and/or by one of the international classification societies. Also, maintenance workshops for safety equipment and for ship pollution prevention equipment are necessary.

VIRES, as the inspection agency responsible for the early establishment of an internationally recognized maintenance workshop, has the duty to oversee the compliance of rules agreed upon in international conventions, i.e., life-raft routine maintenance workshop, radio equipment (including GMDSS equipment) maintenance workshop, and oil receptor facilities to prevent marine pollution.

VIRES has no testing laboratory at present and cannot carry out mechanical and non-destructive examination on its own. They have to request an outside institution and/or shipyard facilities for this purpose. However those facilities are also not properly operated due to lack/unavailability of maintenance parts and equipment (originally supplied from the former USSR and/or East European countries). For this reason, VIRES plans to establish a modern testing laboratory and to ask the cooperation of Vietnam Maritime University (VIMARU) in Haiphong city, in the near future; but no financial support is expected at the moment.

VIRES' branch office, which is also duty-bound to conduct safety inspections onboard ships, also does not have enough equipment.

(c) Identified Problems

A most of machinery and equipment used for shipbuilding and/or ship repair work are out of operation owing to difficulties in obtaining spare parts. Thus accurate machining work cannot be expected. In addition, there is a lack of interest in "quality control systems".

Interviews conducted with shipowners, ship captains and crew on-board vessels revealed that these people do not have enough knowledge about ISM-CODE (SOLAS 74 Chp. IX), although this will be enforced shortly. All ship management company shall establish and implement the safety management system for safe operation and maritime pollution prevention.

3.7 Maritime Environment

(a) Regulatory Framework

The environmental administration in Vietnam can be divided into three levels:

- Central level core agency - National Assembly
- Central level sectoral agencies - mainly Ministry of Science, Technology & Environment (MOSTE)
- Provincial level agencies - mainly Provincial People's Committees

"Law on Environmental Protection", constituted in 1993, stipulates overall environmental aspects. In addition, Decree 175/CP was enacted to guide the implementation of this law in 1994. The National Assembly mandates MOSTE to implement this law and decree.

The National Environmental Agency (NEA) is in charge of environmental administration under the MOSTE. The MOSTE issued Decision No. 229/QD-TCC in 1995 which defines several kinds of environmental standards such as the Standards of Vietnam TCVN 5943-1995; Water Quality - Coastal (Shoreline) Water Quality Standards.

The fundamentals of environmental legislation in the maritime sector are as follows:

- Vietnam Maritime Code 1990: It stipulates the provisions of maritime navigation safety and prevention of environmental pollution.
- MARPOL 1973/1978
- Rules for Marine Pollution Prevention by Ship (TCVN-4044-85)

VINAMARINE, VIRES and VIMARU are responsible for aspects of maritime environmental administration under the MOT. However, the administration does not functioned well.

(b) Current Activities Which Degrade the Maritime Environment

There are a number of activities which degrade the maritime environment in Vietnam as follows:

- Pollution of water due to non-control of noxious liquid substances, harmful substances, sewage and garbage from ships.
- Pollution of water, air and land due to industrial waste, untreated sewage, pesticides, chemicals and fertilizers.
- Unsustainable and inefficient use of natural resources, especially water, biological resources and mineral resources.
- Pollution from oil spills from vessels and oil terminals in rivers and ports, and along coasts, and in off-shore oil production fields.
- Pollution from handling cement and other dusty cargoes in ports.
- Coral destruction through the use of dynamite and through coral mining for lime and concrete.

According to the NEA, 14 oil spill accidents took place on coastal and inland waterways between 1989 and 1996. VIETSOVPETRO (VSP), a joint-venture firm, has an oil spill control base in Vung Tau and contracts with many oil and gas companies to provide response services to off-shore oil spills.

(c) Assessment of Present Situation

To maintain the cleanliness of coastal water, the environmental administration must tackle two main issues: how to control pollution from vessels and how to control pollution on shore. The study considers that the following improvements are necessary:

- strengthening of investing/monitoring/auditing system
- upgrading of seafarers education
- establishment of national oil spill protection system

3.8 Maritime Human Resources Development

(a) Certification

In consideration of the international necessity of measures to safeguard life and property at sea, and to protect the marine environment, the Government of Vietnam ratified the international convention STCW-78. This convention has been in effect, in Vietnam, since 1991. In this connection, the certification system was revised and regulated in the Rules on Examination, Certification and Rank Assignment for Seafarers Working onboard Vietnamese Ships (Decision No. 1299/QD-TCCB-LC, 1993).

The system can be outlined as follows:

- Officers and engineers are classified into four classes. Allowable rank assignment is defined in terms of class, ship size and navigation area.
- Ships are grouped into four sizes, in terms of tonnage, for deck officers, and in terms of main engine output for engineers, as follows:
  Tonnage (GRT): less than 50/50 to 200/201-1,600/more than 1,600
  Main engine output (kW): less than 75/75 to 750/751 to 3,000/more than 3,000
- Navigation area is divided into three areas: ocean (unlimited), near sea (limited by latitude ranging from 45 Degrees North to 12 Degrees South and longitude ranging from 146 Degrees East to 70 Degrees East) and coastal (within 50 miles from shoreline).

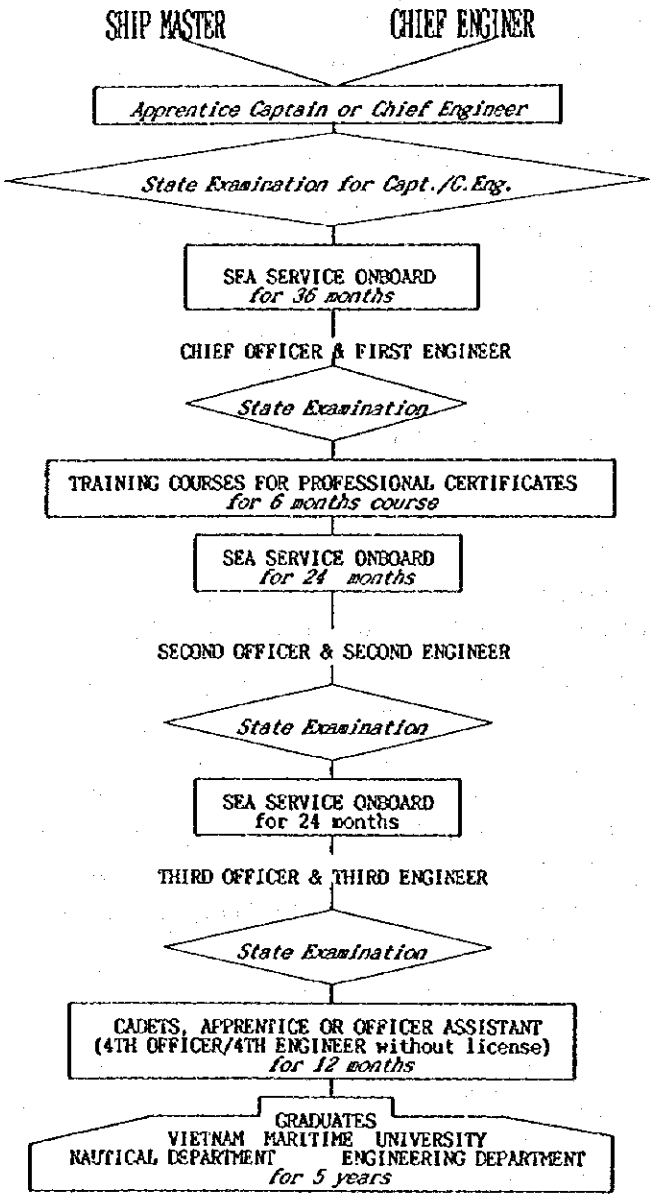
To become a ship captain or a chief engineer, the candidate must undergo education, re-education, apprentice ship, working experience of given duration, and several state examinations as illustrated in Figure 3.8.1.

(b) Schools

The Maritime University, which has its main campus located in Haiphong and a branch in Ho Chi Minh City, provides the highest education for ship officers and other maritime personnel in Vietnam. This university is under the jurisdiction of the Ministry of Transport (MOT).

The Maritime Technical and Training School No. 1, in Haiphong, and the Ho Chi Minh City Maritime Technical and Training School (formerly called Maritime Technical and Training School No. 2, Ho Chi Minh City) are under the jurisdiction of VINAMARINE. They are the training schools for coastal officers and ratings of the maritime sector in Vietnam.

Figure 3.8.1
THE PROCESS OF CAREER DEVELOPMENT (Class 1 and Class 2)



Under the jurisdiction of IWB, are the Riverway Technical School No. 1, Hai Hung, Inland Navigation Training Center, Ho Chi Minh City (formerly called Technical and Professional Navigation Center No. 2), and Technical Worker Waterway School, Haiphong. These are the training schools for officers of inland water vessels and workers of inland waterways in Vietnam.

The above mentioned schools are briefly described as follows:

1) Vietnam Maritime University, Haiphong and Ho Chi Minh City/(VIMARU)
As the highest maritime educational institution, VIMARU has turned out a number of graduates who are now playing important and active parts in the maritime industry of the country. Enrollees are not limited to local students; foreign students from countries such as Laos and Cambodia have also been accepted.

The Maritime University, Haiphong, has six departments; nautical, mechanical (engineering), marine electric/electronic radio/communications, sea transport economics, naval architecture, and port construction/hydro engineering. On the other hand, its branch in HCMC has four departments, namely: navigation, marine engineering, sea transport economics, and marine electric/electronic radio/communications.

The university's functions are to educate and train students through three or five-year programs; to hold refresher courses for seafarers; and to provide training for seafarers to upgrade their capabilities. For the last purpose, the Maritime Training Center and the South Seafarers' Training and Employment Center are attached to VIMARU, Haiphong, and its branch in HCM City, respectively.

VIMARU has revised the curricula in accordance with the new IMO model courses. The number of lecturers is deemed sufficient to handle the student population.

2) Maritime Technical and Training School No. 1, Haiphong
This training school is very important for Vietnamese domestic and international shipping, as the school supplies coastal officers of Class 3 and Class 4, and ratings of all shipping sectors through education and training courses (including refresher and upgrade courses). The field of education is navigation and marine engineering, with a main course duration of two years, including six months of onboard training. It was reported that the school has already trained more than 10,000 diversified personnel during the last 24 years since its establishment.

The education facilities would be adequate if the planned construction work is completed. However, equipment, including training ships, are outdated and some of them do not meet international standards.

3) Ho Chi Minh City, Maritime Technical and Training School
This training school is located south-east of Ho Chi Minh City, and is also very important for domestic and international shipping of the country. Since its establishment in 1977, the school has already trained over 3,000 students on long-term courses and over 800 students on refresher and skill-upgrading courses. Graduates of the school are now working in Vietnam's national maritime sector, in provincial shipping companies and shipping-related companies.

The present facilities and equipment are too poor to train international standard seafarers. Therefore, the plan to move to the new site should be implemented as soon as possible.

4) The Riverway Technical School No. 1, Hai Hung

This school was established in 1961 as a professional training school, specializing in training and upgrading officers for all types of river-going ships and sea-cum-river-going vessels in Vietnam's inland water subsector. The school also serves management and other professional training needs in inland water transport. The school has trained over 10,000 students on long-term courses and over 15,000 students on the complementary courses for officers working in inland water transport. The school conducts training for 200 to 300 students in the north of Vietnam every year. The training applicants must have graduated from senior high school. The school has 102 lecturers. The facilities of the school are adequate, with five training ships and a workshop, where students can practice what they learn.

5) Inland Navigation Training Center No. 2, Ho Chi Minh City

This Center was established in 1976, and it has trained and re-trained sailors, captains, engineers, mechanics and other workers in inland water transport, in the southern provinces of Vietnam. The training center has long-term training classes for 200 to 250 students per year, plus re-training and refresher courses for captains, engineers and professionals. Now the training center and the Mekong (River) Secretariat Committee are conducting a project to raise the training quality of maritime personnel in order to contribute to the improvement and development of the economy of the lower reaches of the Mekong River. Training facilities and equipment are apparently not in satisfactory condition, neither in terms of quality nor in scale.

6) Technical Workers Waterway School, Haiphong

This school was established in 1990 and has trained technical workers for maintenance of inland waterways and for dredging work. The school has 18 teachers and accepts about 300 students every year for its two-year course and its 18-month course. Applicants must be graduates of senior high school and must be 18 to 35 years old. The facilities and equipment have been effectively improved despite a limited budget.

(c) Identified Problems and Issues

These educational institutions are very important for the maritime human resources development, not only for seafarers but also for all personnel in maritime and inland water transport. The present status and condition of the educated institutions are not satisfactory in terms of educational equipment, and some problems cannot be solved by schools themselves.

1) Problems to be solved in the Maritime Schools.

There is a big gap in educational equipment, between that available in Vietnamese maritime educational institutions and the required level under the STCW 78 and Revised STCW convention of 1995. Therefore Vietnam's maritime educational institutions have difficulties in supplying seafarers with the STCW certificate.

These educational institutions also have difficulties in supplying seafarers suitable for modernized ships. The education and training programs being conducted in maritime schools do not reflect the technology used in modern ships because they, too, lack up-to-date training equipment. As a result, graduates have difficulties getting suitable jobs in the shipping industry.

The above problems can be solved in two ways in the long term. Improvement must be made both in the curricula of education and training courses for seafarers, and in the acquisition of modern training equipment. For the latter, particularly, installation of basic training and communication equipment and training simulator systems newly required by the new Code of the revised STCW 1995 (effective on 1st February, 1997) as well as GMDSS (effective on the same day) is an urgent issue.

2) Problems to be solved outside Maritime Schools

Reliable data about seafarers is barely available from VINAMARINE due to the lack of continuously updating data. This makes it difficult to formulate optimum measures for seafarers education. VINAMARINE should develop a seafarers database which includes:

- active seafarers
- reserved seafarers
- maritime schools
- issuance of certificates and licenses

Besides education and re-education schemes, the need for OJT (on-the-job-training) is very great among non-seafarer maritime related personnel such as naval architects, ship inspectors, navaids experts and administrative and management staff in shipping companies. This is partly explained by the low availability of apprentice ships in maritime schools but, to a greater extent, it is due to the limitation of maritime schools to catch up with the advanced technology and methods used in those fields. In particular, there is a need to establish a specialized school to train maritime safety-related personnel.