Chapter 6

FORMULATION OF MASTER PLAN

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6.1 Objectives and Development Strategies

6.1.1 Background

The Master Plan for coastal shipping has been created with the recognition that high development potential exists for this mode of transport in Vietnam. In particular,

- there is a large potential growth in demand due to the anticipated economic development of the country, especially considering that coastal shipping does not currently play its full potential role in the domestic transport system,
- coastal shipping offers much lower freight costs compared to road and rail over long distances, and
- improving coastal shipping contributes to the socio-economic development of coastal areas, including the island economies.

However the analysis of the present situation in coastal shipping demonstrates that a wide range of development measures must be used to achieve the potential benefits of coastal shipping. These can be categorized as follows.

Development of Transport Infrastructure must be Oriented more towards Coastal Shipping - Current government plans largely ignore coastal shipping and yet improvements are needed to ports and port facilities, waterway channels and aids to navigation, secondary transport infrastructure. Further investment is needed to supply the modern vessels required.

Coastal Shipping Management must be Improved - This applies generally, including shipping operators, port and waterway managers, freight forwarders, and the administrative staff in government responsible for safety and environmental matters.

The Policy and Regulatory Environment must be Improved - The government has not yet fully implemented economic reforms which would create a "level playing field" in the transport market and encourage a competitive and efficient coastal shipping industry, able to attract the investment needed to develop attractive, low cost services.

6.1.2 Objectives

The demand forecasts and comparative cost analysis of various modes clearly indicate that coastal shipping can play a very important role in realizing the country's socio-economic development plans. The expected role of coastal shipping is particularly likely to focus on transporting over distances of about 600 km or more:

- large-volume bulky or liquid cargoes, and
- various industrial goods from production to consumption areas.

Therefore, the Study has adopted the following four objectives to construct the master plan for coastal shipping in Vietnam.

(a) To expand coastal shipping in accordance with demand

The biggest issue in coastal shipping development is the small traffic demand caused by separately developed local economies in the north and south, and fledging economic activity in the central region. Within the shipping subsector, this makes coastal shipping subordinate to overseas shipping. However, the Study forecasts that the growth in traffic demand for coastal shipping will be considerable, and that demand in 2010 will be 12.7 times bigger in terms of tonnage and 8.6 times greater in terms of ton-mileage compared with that in 1995.

(b) Development of coastal shipping as a competitive transport system in the market economy where customers choose between modes and services

In accordance with its comparative economic advantages, coastal shipping can be expected mainly to serve freight customers requiring cheap, long distance transport along the north-south axis. This is in accordance with the government's plans in "Master Plan for Development of Transport Infrastructure to The Year 2010", (MOT).

In a market economy, however, the government cannot allocate transport demand to transport means; this is done by market forces. The Master Plan envisages future coastal shipping to become more competitive and attractive compared to others in long-distance haulage, and thereby increases its role in domestic transport.

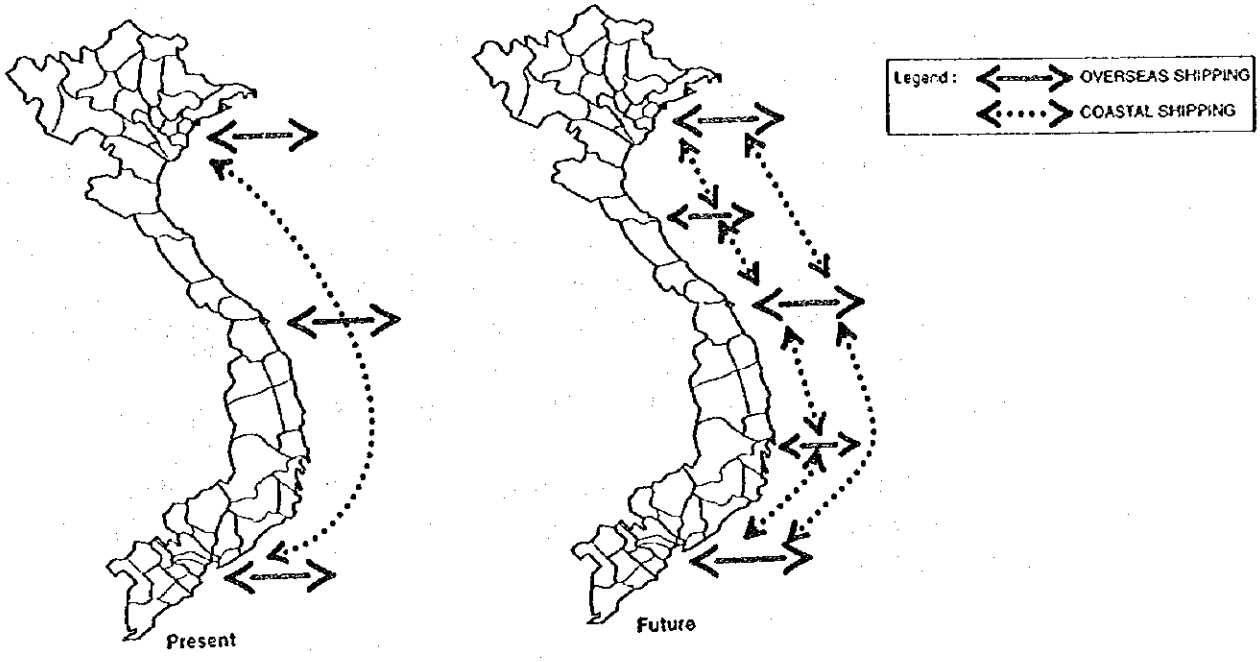
(c) Coastal shipping to be developed to complement international shipping by linking the Economic Focal Areas to other regions of the country

The government, understandably, gives extremely high priority to developing international shipping because of the key role of foreign trade in economic development. Consequently there is much concern within the shipping subsector about the possible lack of deep seaports which could impede national economic development and the lack of a Vietnamese fleet which could offer the country a measure of independence from foreign shipping companies. This is one reason for the neglect by government of coastal shipping.

However while deep seaports and overseas shipping are needed to develop certain economic focal areas, complementary modes are required to carry goods between these economic focal areas and other regions of the country. We believe that coastal shipping is an effective means to integrate, into the national economy, several local economies which are accessible to the coast (as indicated in Figure

6.1.1). The opportunities for sharing infrastructure with international shipping mean that coastal shipping can often serve local economies at relatively little cost compared to other inland modes. Most importantly, without coastal shipping, severe imbalances in the national economy may occur.

Figure 6.1.1
COASTAL SHIPPING DEVELOPMENT IN ASSOCIATION WITH OVERSEAS SHIPPING



(d) Development of safety and environmental controls where justifiable

Coastal shipping involves relatively less day-to-day impact on the environment compared to road transport. However, it has its own safety and environmental problems such as marine pollution due to oil spills, and hazardous conditions during typhoons and other times. These problems require the development of adequate preventive and responsive systems to deal with coastal shipping accidents.

6.1.3 Development Strategy

In order to meet the objectives of coastal shipping development, the required strategy involves the following four aspects.

(a) Building an effective coastal shipping network

The basis of the strategy is an effective coastal shipping network development which is economical from the national economic viewpoint and attractive for shipping companies and their customers. Since modern coastal shipping business concepts are virtually unknown in Vietnam, the exact course of development is

rather unclear. Improvements in infrastructure should be prioritized taking account of likely future demand.

(b) Expansion and improvement of economic and efficient vessels in accordance with the existing and potential future demand

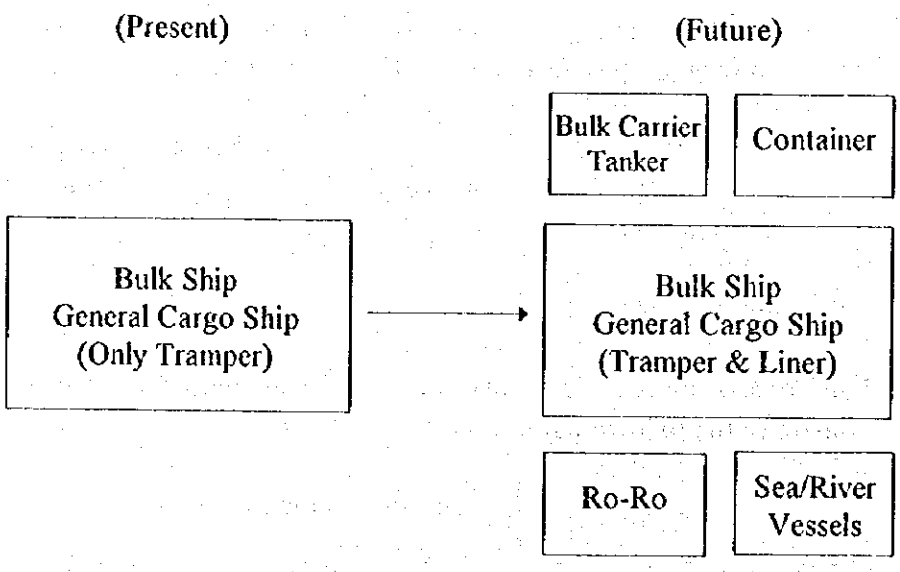
The nature of the future increased coastal shipping traffic requires not only expansion of the fleet with conventional ships. To market coastal shipping services effectively requires the introduction of new ship types, particular with regard to the following aspects (see Figure 6.1.2 below).

- Introduction of specialized ships (such as tankers and cement carriers) for efficient transport of specific bulk cargoes.
- Efficient cargo handling requires unitization (especially containerization) of cargo. This requires container or semi-container ships.
- Integrated operation between coastal and inland waterways requires ships able to navigate sea-cum-riverways.
- Intermodal connection with road transport requires Ro-Ro ships.

In this connection, scheduled (or liner) services will be essential to meet the demand from small and irregular shippers, and would complement current tramper services.

Figure 6.1.2

DEVELOPMENT DIRECTION OF FUTURE FLEET STRUCTURE AND OPERATION



(c) Effective development/improvement of ports suitable for coastal shipping transport

Coastal shipping does not require large ports like international shipping but rather a dense network of smaller ports. Of the existing seventy seaports located over the country, those which are to serve the bases for regional socio-economic activities should be identified and improved/developed with due consideration to economic criteria and needs for inter-modal integration with secondary transport.

(d) Effective integration with inland waterways and utilization of sea-cum-riverways

The largest cities of Vietnam are located in delta areas, so connecting these socio-economic activity centers directly with coastal shipping is a critical issue in developing an effective coastal shipping network. Identification and development of sea-cum-riverways is very important in this regard.

6.2 Context of the Master Plan

6.2.1 Physical Aspects

(a) Definition of the Scope of the Master Plan

In the Master Plan, coastal shipping can be clearly defined based on the following three aspects:

- traffic movement by classified seaborne vessels;
- traffic movement on coastal seaways (including that portion on sea-cum-riverways); and
- domestic traffic movement between Vietnamese seaports.

In Vietnam, seaports open for the operation of seaborne vessels are stipulated in regulations issued under the Maritime Code of Vietnam (these are listed in Appendix 1 of the Supplementary Report on the Maritime Transport Industry).

According to this definition, the Master Plan excludes from consideration the movement of foreign trade. It also excludes movements by seaborne vessels wholly within the delta areas, and any movement by inland waterway vessels.

(b) Classification of Ports

To define rationally the future port system in Vietnam, seaports should be divided functionally into national ports (serving particular regions as main international gateways) and local ports. Furthermore, ports should be distinguished as either general

ports (serving a wide range of users) or as dedicated or specialized ports (specializing in serving the needs of particular users or particular commodities).

On the basis of the demand analysis, a total of seventeen (17) general ports relevant to coastal shipping have been identified. (Refer to Figure 6.2.1 and Table 6.2.1)

North Region: Haiphong and Cai Lan as national ports, and Viet Tri, Hanoi, Ninh Binh as local ports.
Central Region: Danang as a national port, and Cua Lo, Thuan An, Quy Nhon and Nha Trung as local ports. Vung Ang is a possible new local port that would serve Zone 10 (Ha Tinh-Quang Binh) sometime after 2000. In addition, Dung Quat and Chan May are currently under study as new deep seaports for public use. However they would not be expected to handle much domestic cargo.
Southern Region: Saigon as a national port (possibly supplemented in future by Vung Tau-Thi Vai) and Dong Nai, My Tho, Dong Thap, My Thoi and Can Tho as local ports.

The characteristics of the hinterlands of these ports, such as population, GDP and labor force are outlined in Table 6.2.2.

Dedicated ports deal with only selected commodities to maximize port operation and industrial efficiency. They are usually controlled by the Ministry of Industry, Ministry of Trade or other ministerial organization rather than MOT. Major dedicated ports subject to the Master Plan are as follows:

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

Table 6.2.1

FUTURE PORT SYSTEM FOR DEVELOPMENT OF COASTAL SHIPPING

Region	National Seaport	Major General Seaport for Coastal Shipping	Other General Seaport	Dedicated Seaport	Traffic Demand Zone No.
NORTH	Cai Lan	**Viet Tri**			1,3
		Cai Lan	Quang Ninh (Floating Trans-Shipment)	B12, Hong Gai, Cua Ong, Dien Cong, Quang Ning (Steel)	4
		Hanoi			5
	Haiphong	**Haiphong**	Ha Bach	Hoang Thach, Pha Lai, Chinh Phong	2,6
		Ninh Binh	Nam Dinh, Diem Dien, Hai Thinh		7
CENTRAL	Danang	**Cua Lo**	Ben Thuy, Xuan Hai, Thanh Hoa	Nghi Son	8,9
		Vung Ang (Ha Tinh-Quang Binh)	Nhat Le		10
		Thuan An	Cua Viet	Hue Oil	11
		Danang	Lien Chieu	My Khe	12
		Quy Nhon	Sa Ky, Thi Nai	Dung Quat	13
		Nha Trang	Ba Ngoi, Hon Khoi	Mui Chut	14
SOUTH	Saigon (Vung Tau - Thi Vai)	**Saigon**	Ben Nghe, Tan Cang, Tan Thuan	Nha Be (Oil) Nha Be (Vegetable)	15
		Dong Nai	Vung Tau (Cat Lo)	Thi Vai (Phu My, Go Dau) Thu Duc, Chinh Phong	16
		My Tho			17
		Dong Thap	Vinh Long		18
		My Thoi	Hon Chong	Kien Luong	19
		Can Tho	Nam Cau Ca Mau		20

Figure 6.2.1

FUTURE PORT SYSTEM FOR COASTAL SHIPPING DEVELOPMENT

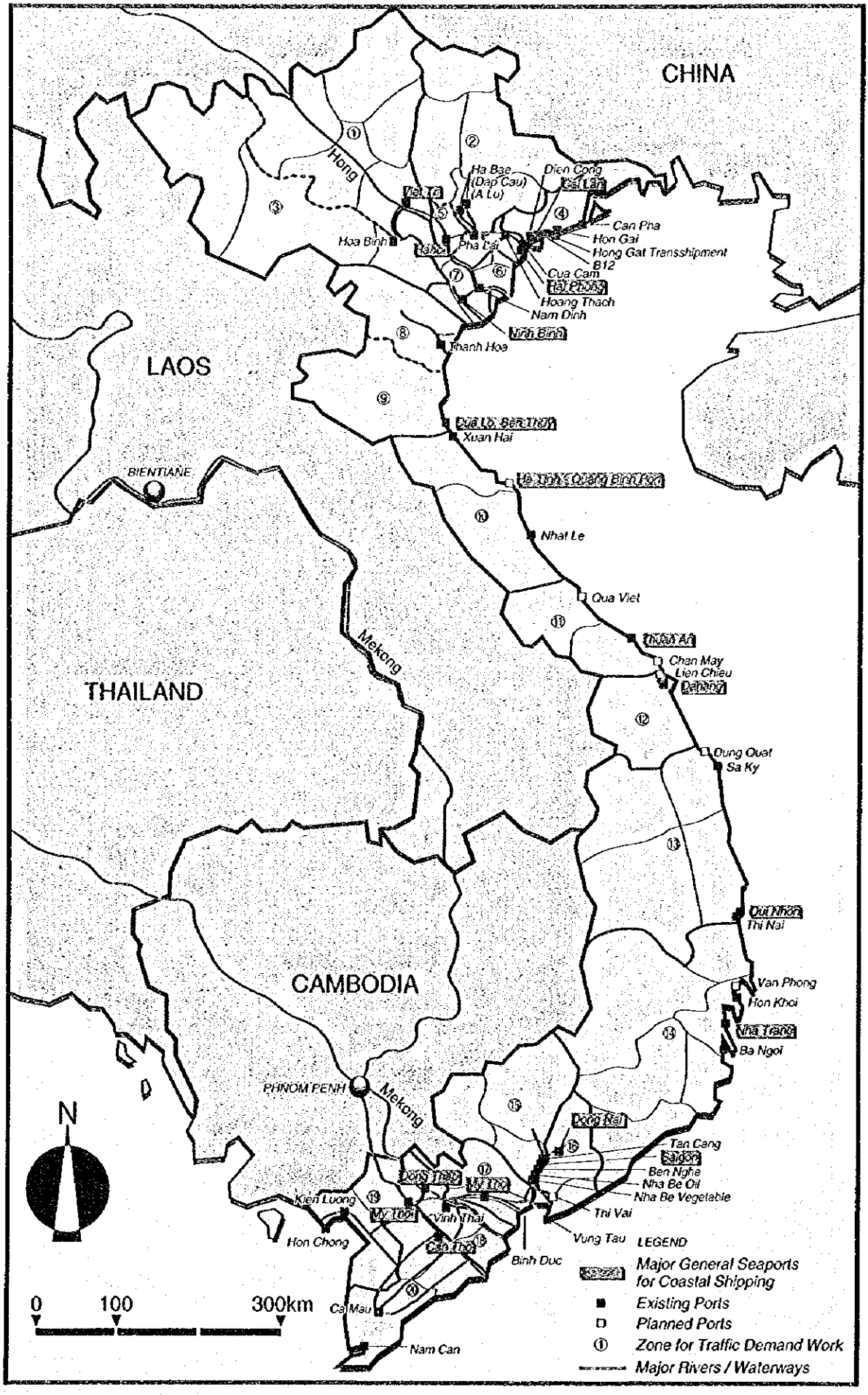


Table 6.2.2

HINTERLANDS OF MAJOR SEAPORTS FOR COASTAL SHIPPING

Port Name	Zone No. for traffic demand	Population			GDP			Labour force composition in 2010		
		1995	2000	2010	1994	2000	2010	1st	2nd	Tertiary
Viet tri	1;3	6820	7691.5	9373.2	1387.1	2345	6030	2922.6	579.9	741.7
Cai lan	4	905	1002.2	1175	348.2	616	1909	195.1	175.1	130.1
Ha noi	5	2228	2411.3	2697.6	1407	2809	9625	189.3	432.7	730.2
Hai phong	2;6	11544	12682.8	14611.9	2649.1	4546	12524	3987.2	1329	1702.8
Ninh phuc	7	5360	5843.7	6645.1	1076.8	1825	4905	1679.5	729.7	960.5
Cua lo	8;9	6219	6937.8	8075.6	1243.6	1916	4653	2220.2	775.3	969.2
Vung ang	10	2080	2327.1	2739.5	322.3	536	1401	808.1	220.6	300.3
Cua viet	11	1544	1739.8	2064	334.8	621	1568	495.9	179.2	251
Da nang	12	1984	2191.6	2525.5	488.2	913	2830	589.5	301.3	419.2
Qui nhon	13	3679	4164.3	4988.9	660.4	1036	2607	1389.9	401	634
Nha trang	14	5167	5952.7	7418.6	1113.1	1864	4487	2029.4	571.4	915.3
Sai gon	15	6751	7554	8806.6	4055.2	8162	27236	752.6	1480.8	1792.7
Vung tau	16	2573	2929.3	3512.8	2363	4408	13697	644.5	432.2	694.2
My tho	17	4286	4678.2	5335.9	908	1349	3048	1590.1	446.7	704.6
Dong thap	18	3536	3879.2	4435.2	784.3	1230	2779	1347	370.9	613.5
My thoi	19	3383	3734	4347.7	703	1185	2811	1244.6	451.3	758.3
Can tho	20	4857	5406	6269.7	1176.4	1846	4171	1776.3	568.9	861.2
Total		72916	81125.5	95022.8	21020.5	37207	106281	23272.3	9446	13178.8

(c) Definition of the Waterway System

Coastal shipping vessels navigate either on coastalways or on sea-cum-riverways. According to VINAMARINE, the coastal navigation area is defined as the water area within 50 miles from the coast line. Each vessel selects the most suitable course from economic and safety viewpoints.

Sea-cum-riverways is a particular technical term in Vietnam and the improvement and development of these are, in theory, solely the responsibility of the Inland Waterways Bureau. According to the Bureau, the concept of sea-cum-riverways entails development of some riverways and coastalways in order to enhance the integral operation on both, and even remote island routes are considered to be a part of sea-cum-riverways. "Strategy and Plan for Development of Inland Waterways Transportation" envisages that 1,500 km of sea-cum-waterways will be developed by 2010 as shown in Table 6.2.3.

Table 6.2.3
DEVELOPMENT OF INLAND WATERWAYS
(unit : km)

Waterway Type	1995	2000	2010
Sea-cum-Riverways (BPS)	711	850	1,500
Class I Rivers	1,172	2,083	3,500
Class II Rivers	1,157	2,016	3,800
Class III Rivers	2,986	5,236	9,500
Total	6,026	10,185	18,300

Source : Inland Waterways Bureau

For the purpose of coastal shipping development, sea-cum-riverways are quite strategic to avoid time and labor spent in transshipment to river transport. The Master Plan considers as part of the shipping network only those sea-cum-riverways on which self-propelled vessels of more than 1,000 GRT can navigate. Taking the existing inland waterways and the IWB's plan into account, the following sections listed in Table 6.2.4, can meet the Master Plan's requirement before 2010. During the planning term of the Master Plan, 832 km of sea-cum-riverways are assumed to be developed for accommodating larger seaborne vessels safely and efficiently.

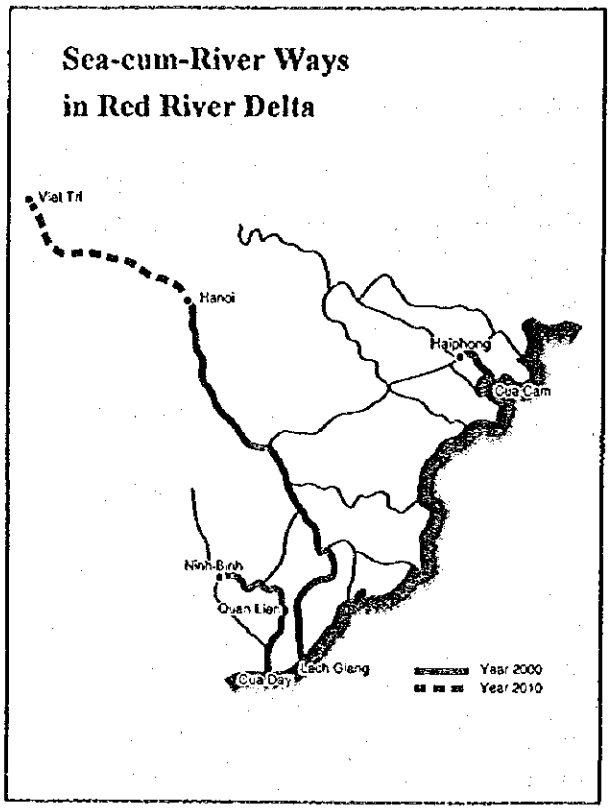
Table 6.2.4
DEVELOPMENT OF SEA-CUM-RIVERWAYS FOR COASTAL SHIPPING

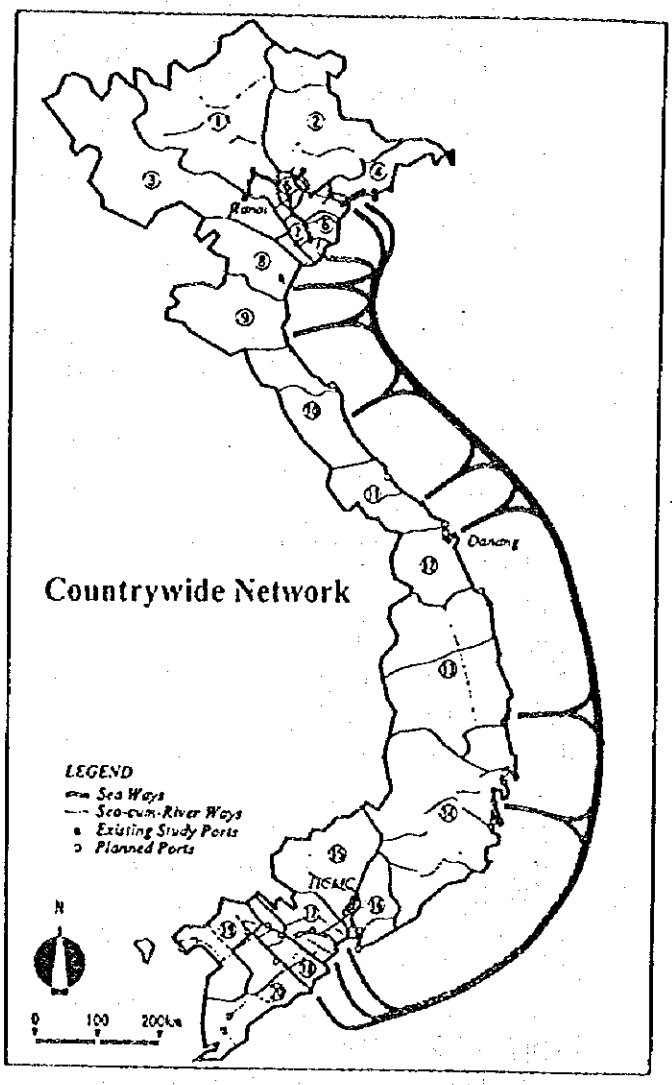
Section	Distance (km)	Current IWB's Classification	Designed Allowable Ship Size (GRT)	Target Year for Improvement
Red River Delta Area				
Cua Lach Giang - Hanoi	199	1 (BPS)	2,000	2000
Cuay Day - Ninh Binh	57	1 (BPS)	2,000	2000
Cua Cam - Haiphong	36	2 (BPS)	5,000	Existing
Hanoi - Viet Tri	75	3	1,000	2010
Quan Lien Canal	3	3	2,000	2010
Sub-Total	370	-	-	-
Mekong River Delta Area				
Cua Dinh An - Can Tho - Cho Mot (Hau River)	175	1 (BPS)	5,000	2000
Cua Tieu - My Tho - Dong Thap - Vinh Long - Cho Mot (Tien River)	192	1 (BPS)	3,000	2010
Vung Ganh Rai - Saigon	65	1 (BPS)	20,000	Existing
Cat Lai - Dong Nai	30	1 (BPS)	2,000	2000
Sub-total	462	-	-	-
Total	832	-	-	-

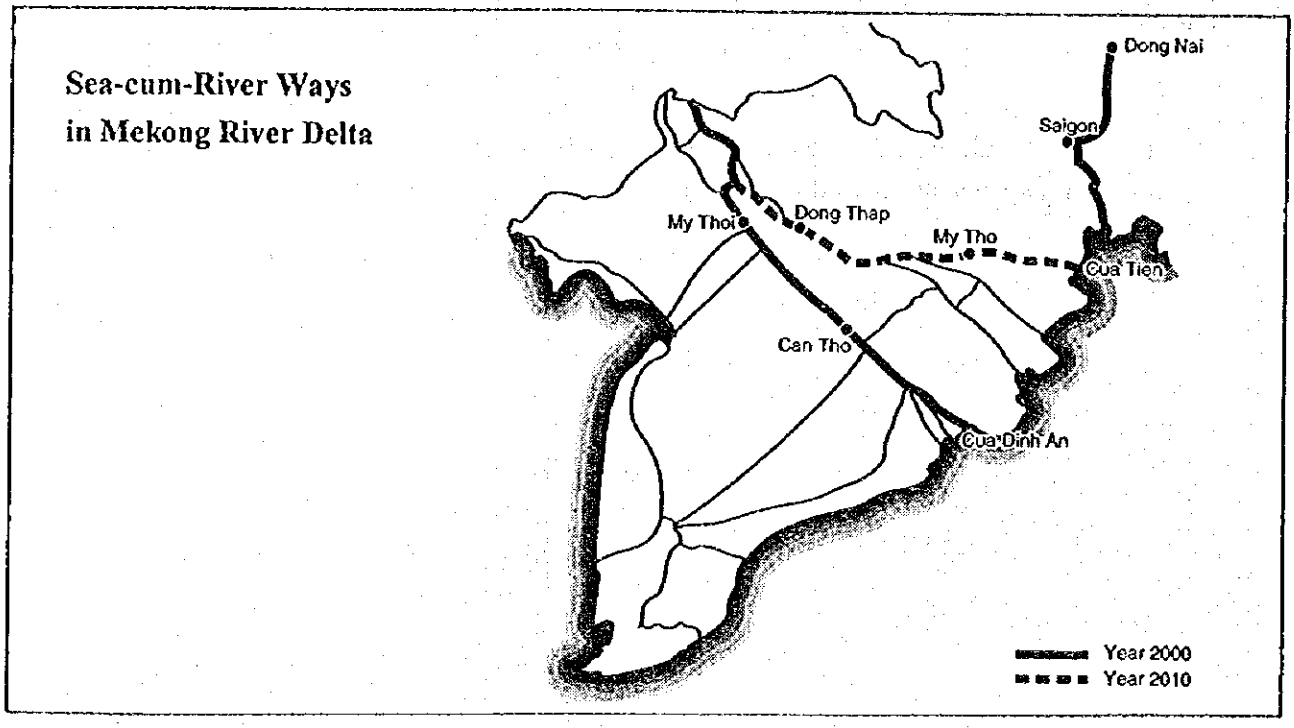
Figure 6.2.2 shows the designed waterway network for coastal shipping comprising of coastal seaways and sea-cum-riverways.

Figure 6.2.2

DESIGNED WATERWAY NETWORK FOR COASTAL SHIPPING







6.2.2 Policy and Regulatory Environment

(a) Policy Objectives

The economic characteristics of the coastal shipping industry include the absence of significant economies of scale, most assets are neither fixed nor specialized, and entry costs are not prohibitively high. Under these conditions, under free market conditions, monopolies are unlikely to occur, so the main requirement of regulation is to ensure free entry and exit from the market, and to ensure that safety and environmental impacts are controlled (especially external impacts on coastal and riverside communities).

It follows that to meet the four objectives of the Master Plan, shipping operators must be allowed to develop existing and new coastal shipping services in accordance with demand. Support industries must, in turn, supply the equipment and value added services required by shipping operators.

This requires government to ensure that there are no unnecessary obstacles to shipping operators developing services and that the market mechanism works efficiently in matching supply and demand, taking account of external costs to the country such as environmental impacts of coastal shipping. This requires government action

- to provide the waterway and port infrastructure outlined in the previous section, where the private sector is less able to provide these themselves, and where this infrastructure is economically justifiable,
- to ensure that prices reflect social costs in the maritime industry (not only costs to transporters and customers but also infrastructure costs, and safety and environmental costs that affect others outside the industry),
- to establish a "level playing field" in the maritime transport industry with minimal entry controls for all shipping operators and support industries so that competition is free and fair,
- to put in place safety and environmental controls, where these are economically justifiable and where the pricing mechanism cannot fully encompass external costs.

These principles are applied throughout the Study Team's analysis of proposed improvements described in this chapter. Specific ways that government can regulate the maritime transport industry, by influencing prices, terms of competition and safety standards, are discussed below.

(b) Pricing Options

The Vietnamese government, as in all market economies, intervenes in pricing in three main ways:

- through indirect taxes on fuel and other inputs to transport,
- setting general taxes on profits and incomes inside and outside the transport industry, and

- levying specific charges for transport users, for example for infrastructure such as ports, or for the transport service itself.

The general aim of such intervention is to ensure that transport users pay the full social costs of transport - not only those incurred by users themselves but also those incurred by non-users. In coastal shipping, environmental pollution is a major potential external cost which should, if possible, be internalized through taxation (by making users pay for the necessary environmental protection and compensation measures). Infrastructure costs attributable to coastal shipping should also be internalized through user charges.

The Vietnamese taxation system is still being developed and major changes are planned which would affect the impact of taxation on the maritime transport industry. These include

- introduction of a unified income and profits tax scheme with a broad base to replace the present complicated system which targets narrow groups, and
- introduction of a value added tax to replace the turnover tax,

The present tax and charging system gives advantages to coastal shipping in various ways because

- general tax rates are often lower, both for profits or income taxes, compared to other inland transport industries such as road, and
- infrastructure charges for ports are often set by government at much lower levels for domestic rather than international shipping services, and charges for Vietnamese carriers are often less than that for foreign carriers, which implies that port charges for coastal shipping may not cover their full costs but are cross-subsidized by international shipping.

On the other hand the road transport industry is given an advantage through the low fuel tax on diesel (which under latest changes is 20% of CIF import price). This tax is also paid by coastal shipping operators on the same basis. According to an estimate in the World Bank report "Viet Nam Transport Sector", 8 August 1994, fuel tax should be about 90% of CIF price in order to cover road maintenance costs for trucks (the main users of diesel fuel in Vietnam). Railways are also given a considerable advantage through operating subsidies.

The overall effect of these subsidies on relative competitiveness of coastal shipping and other modes is difficult to assess, but it is likely that such subsidies will be reduced as the taxation system is developed because (a) increased competition in port services will make it very difficult to maintain cross-subsidies between different users, and (b) failure to set high enough user charges would constrain development of infrastructure and increase transport costs.

Since it is not clear to what extent provision of coastal shipping infrastructure, including ports, navigation channels and seaways, is paid for through existing port charges on the "user pays" principle (the current channel fees only appear to cover minimum maintenance needs), it is recommended that a review is made of the form and level of port, waterway and safety-related charges paid by coastal shipping operators, both to reflect differences in costs incurred by different users and to provide a means of financing infrastructure (allowing for changes in expenditure proposed in the Master Plan). A possible fuel tax compensation scheme for coastal shipping operators may be justified, especially if the tax is increased to pay for road improvements. The scope of the review would have to embrace international shipping and inland waterways because of their overlap with coastal shipping.

There is no economic case for regulation of shipping tariffs and fares provided that, as now, there is free entry into the business. There is now a reasonable degree of competition in coastal shipping and the only restriction on freight tariffs (on movement for government of rice and other strategic foodstuffs) is ineffective anyway, so this should be abolished as soon as possible. Present passenger tariffs are largely set by government and may not take account fully of total operating costs, including asset replacement, cost of capital and profit. To minimize this risk and to encourage competition, operators should be free to set their own fares.

If government wishes to limit fares in certain cases, for example on routes to and from remote islands, then it should consider ways to obtain such services as cheaply as possible, such as by awarding contracts to ship operators through competitive tendering. To ensure value for money, such transport service subsidies should be funded and controlled at the lowest possible administrative level.

(c) Terms of Competition

The government's policy towards regulation of coastal shipping, as defined in the Maritime Law and implementing decrees and decisions, encourages competition by allowing most Vietnamese operators to enter into the business provided they satisfy minimum business requirements (defined in registration conditions concerning capital and qualifications of management and staff) and use ships which satisfy minimum safety and environmental standards (defined in ship inspection and registration rules). Operators are almost entirely free to negotiate terms and conditions with customers: the main exception is control of the price of government agricultural shipments mentioned above.

However current legislation does not fully achieve the "level playing field" objective because of unclear rules and regulations in many areas, which sometimes lead to discrimination between operators. In some cases discrimination originates from regulation itself. For example

- different port charges are levied depending on the nationality of operator and whether or not traffic is international or domestic,

- informal regulation of berth allocation is reported to lead to preferential access to Vietnamese state-owned ships,

As described in the next section, state-owned operators can also enjoy preferential credit terms which considerably enhance their competitive position.

In addition to being discriminatory, regulations may impose restrictions on foreign participation - this does not encourage the much needed foreign investment and modernization of coastal shipping management. Restrictive regulations may distort the industry by encouraging (foreign) own-account shipping in certain cases.

The underlying causes for this situation is that the necessary rules and regulations required to implement the Maritime Law have not been fully defined, are unduly restrictive, or are not based on economic principles. The areas in which further implementation could take place include the following.

(1) Conditions for participation of Vietnamese ship operators in international shipping, which need to be made more transparent. Currently government-owned operators are free to carry international traffic whereas few private operators are permitted to do so.

(2) Conditions for shipping operators, with part foreign ownership, to establish shipping businesses in Vietnam. It is not clear to what extent this is encouraged by the government.

(3) Conditions for Vietnamese operators, with part foreign ownership, to carry cargo on domestic coastal shipping services. Vietnamese operators with a significant foreign ownership are excluded at present from this market except under very limited conditions.

(4) Conditions for Vietnamese operators to use foreign registered ships in domestic coastal shipping. At present they must be registered under a bareboat charter or hire-purchase agreement whereas there may be circumstances, for example when operators want to introduce innovative services, when dual flag arrangements or even time charter arrangements (which use foreign crews, at least in part) are appropriate. Time charters may be the only way for new Vietnamese operators to enter the business and so the government can stimulate their development by minimizing entry barriers. Consideration should be given to allowing foreign registered ships to operate under some kind of dual flag arrangement (especially if owned abroad but leased to a Vietnamese operator).

(5) Maximum age of ship imports which is currently 15 years. For engines and other equipment the maximum age limit is 10 years. There is no economic basis for these regulations. Vietnamese ship operators would not buy ships that could not be operated competitively in the market, so if they consider that the best way to compete is through using a particular vessel aged over 15 years they should reasonably be allowed to do so provided that they meet the same safety standards of existing operators (many of whom use vessels considerably older than 15 years).

Again, such regulations constitute entry barriers to new Vietnamese operators who may only be able to afford to purchase old vessels.

Consideration could even be given to allowing greater freedom to foreign ship operators to compete in Vietnam's domestic shipping market. However although this would provide benefits to Vietnamese users of shipping services it would handicap Vietnamese ship operators unless they too are allowed to compete in the domestic markets of other countries. Because of the risks to the Vietnamese shipping industry, which is not in a strong competitive position after years of adverse policies, it is not recommended that free access is given to foreign ships in the domestic market at the present time. However because of the potential advantages to Vietnamese shipping operators of developing businesses in other neighboring countries it is recommended that the government considers seriously any future proposals to make bilateral or multilateral agreements with south east Asian countries which would allow reciprocal access to domestic shipping markets.

(d) Safety and Environmental Controls

There is a tendency for governments in developing countries to allow transport users to avoid paying the full social costs of transport, including full infrastructure and environmental costs, because high priority is given to minimizing transport charges. For the same reason, governments are likely to be wary of introducing safety and environmental controls which greatly increase the cost of transport.

It is clear that, in practice, current safety and environmental standards of coastal shipping in Vietnam are lower than those in many other countries. This is to be expected because the much lower incomes of Vietnamese result in lower valuation of many accident costs (especially those associated with the value of human life and subjective aspects such as environmental appearance). It follows that approaches to increasing safety and environmental standards must be sensitive to the economic priorities of the Vietnamese, and take account of the degree to which people are willing to pay for higher standards.

In practical terms, preventing use of unsafe vessels is easier if there are alternative vessels which can substitute for them. This means that the measures proposed earlier to increase investment and competition are vital to allow safety standards to be raised.

The measures necessary to develop safety and environmental standards are considered in more detail in Section 6.3.8, taking account not only of the economic priorities of Vietnam but also the international obligations of the country to meet world-wide standards in shipping.

6.2.3 Institutional Environment

(a) Regulatory Organizations

The weakness of VINAMARINE and other agencies is a major problem which prevents the desired safety and environmental standards being set and enforced. Institutional strengthening of these agencies deserves high priority. Many specific measures are required as discussed in more detail in Sections 6.3.7 and 6.3.8. In addition certain strategic measures are required which would establish a stronger framework for regulation, including

(1) Divest VINAMARINE's remaining commercial operating units in ports and finance to independent agencies so that VINAMARINE can concentrate on its core safety functions.
(2) Review the organizational structure and division of responsibilities, and define more clearly the duties and administrative procedures which are required for VINAMARINE, VMS and other organizations to play their roles efficiently.
(3) Review the classification of sea and river ports and waterways, and the division of responsibilities between IWB and VINAMARINE to ensure effective administration of rivers used by sea-going vessels.
(4) Where necessary, introduce further legislation to define the respective responsibilities of VINAMARINE, IWB, VMS and other related agencies for regulation of coastal shipping.
(5) Allocate the resources necessary to enable VINAMARINE and other related agency staff to perform their duties. If current restrictions on pay and conditions for government staff prevent adequate improvements being offered then consideration should be given to

- divesting more of VINAMARINE's regulatory activities to agencies which are free from such constraints, and
- financing ship inspections and other vital regulatory activities from user fees (this can be considered as part of the proposed review of user fees).

(b) Reform of State-Owned Enterprises

Background

Under the Vietnamese government's program of economic reform, the state-owned enterprises are facing radical change. In particular,

- the legalization of the private sector has introduced competition to the enterprises,
- other administrative changes required for a market economy such as a legal system which guarantees property and investment rights and a competitive banking system, have introduced new management conditions,

- they have considerable financial autonomy for the first time, giving them new responsibilities and challenges, enabling them to engage in joint ventures with foreign partners,
- those enterprises which are not considered to be financially viable have been abolished,
- under the equitisation program, private shareholding and control of the enterprises are possible in future, opening up yet further developmental possibilities, and
- other developments such as the proposed stock market will enhance these changes.

The government attaches great importance to the development of state-owned enterprises in key areas of the economy. It recognizes too the dangers of these enterprises exerting monopolistic influences and the need for appropriate controls to ensure competition and efficiency. The government is also open to the possibilities for introducing improved management from the private sector or from foreign joint ventures.

Under the time period of the master plan up to 2010, therefore, considerable changes can be anticipated in the institutional framework of coastal shipping.

Aims of Institutional Development

Three important aims of reforming state enterprises in the maritime sector are

- better management due to increased responsibility plus appropriate incentives under competitive conditions to increase efficiency,
- more autonomy for management to pursue efficiency objectives without the risk of these being undermined through interference by government (for example, to carry particular goods at certain tariffs or to acquire vessels from particular ship yards), and
- establishing a genuinely "level playing field" under which all operators compete on the same basis (in contrast to the present situation where state-owned enterprises (a) pay low charges for state capital based on deflated historic values rather than current market values, (b) enjoy easier access to credit and, (c) in the shipping sector, have easier access to international routes).

Reforming the state sector in the coastal shipping subsector is important because ships of the VINALINES general company currently dominate the supply of coastal shipping. Any competitive advantages given to VINALINES would be against the "level playing field" principle. On the other hand, the government attaches high priority to developing the international fleet and has approved an ambitious plan for development of the VINALINES government-owned general company in order to increase the Vietnamese fleet. In other countries the state-sector rarely plays a dominant role in coastal shipping and state-owned shipping companies are increasingly being privatized in order to increase efficiency. Plans for developing VINALINES must therefore take account of their impact on competition in coastal shipping.

The Options for Institutional Reform

Given the clear policy position of government towards equitisation, the main general issues affecting reform, in the short term, concern procedural matters, especially in situations where the government wishes to maintain a degree of control in strategic industries:

- specifying the proportion of shares that the government should keep where it needs to maintain a controlling interest,
- who should represent the state's interest,
- clarifying how shares could be valued and made available to the public without a stock market.

In coastal shipping a range of situations could be anticipated which raise specific issues over reform.

(1) Attracting New Management and Investor Participation

New management and investors with expertise of shipping are most likely to come from foreign sources. However equitised state-owned companies are unlikely to attract much investment from these sources unless the new investors can secure adequate control through ownership of a large proportion of shares and appropriate representation on the management board.

(2) Attracting Foreign Investment

For foreign investors better accounting procedures are required in state-owned enterprises. Bringing these up to international standards should be a priority of the shipping companies wishing to attract foreign investment.

(3) Implementing the VINALINES Development Plan

There is a danger that support, through preferential supply of credit and other measures, for VINALINES' international fleet development plan will undermine competitive conditions in the coastal shipping business. To minimize this, the government should target support carefully at those activities of VINALINES which only concern international shipping. For example operators receiving support could be barred from coastal shipping except under certain conditions specified by MOT (following analogous procedures to the way that foreign operators are permitted to engage in coastal shipping).

(4) Dealing with Unprofitable Shipping Companies

Many government-owned coastal shipping enterprises (especially those owned by local authorities) could prove to be financially unviable. Options for dealing with these include

- absorbing unprofitable businesses into larger, more profitable ones,
- liquidating the whole company and its assets (and auctioning assets at the highest value, which would minimize government liabilities and offer the opportunity for new ship operators to enter the business with the auctioned assets), and

- reorganizing the company into a smaller, more profitable unit and liquidating only the unprofitable units.

The second and third options would appear to be preferable because they deal directly with the problems of unviable businesses, make assets available more quickly for alternative use by other operators, and minimize job losses.

(5) Small Government-Owned Enterprises

Many of the local authority coastal shipping enterprises are small and not very suitable for conversion into joint stock companies. Consideration could be given either to

- auctioning the company, in whole or in part, to the highest bidder, or
- selling the vessels at book value to existing operators.

The first option is particularly attractive because it allows equal opportunity to all operators, including potential new operators, to acquire the vessels. It also maximizes proceeds to government.

Considerable experience has been gained in other former centrally planned economies in reforming state-owned enterprises, and ODA assistance could be utilized in making this experience available to the Vietnamese government when tackling the above issues.

6.3 Master Plan on Coastal Shipping Development

6.3.1 Overall Structure and List of Projects

The master plan is composed of seven components:

- coastal shipping network development program,
- coastal shipping fleet expansion and modernization program,
- coastal shipping management modernization program,
- maritime human resource development program,
- ports and waterways development program,
- secondary transportation improvement program, and
- maritime safety enhancement and environmental protection program.

Since coastal shipping transportation is a system wherein subsectors are to be fully integrated, the coastal shipping network development program is considered as the umbrella program which coordinates the rest of the programs. (Refer to Figure 6.3.1).

Figure 6.3.1

OVERALL STRUCTURE OF MASTER PLAN

Coastal Shipping Network Development Program	• Route Classification • Institutional Framework for Shipping Operation
Coastal Shipping Fleet Expansion and Modernization Program	• Fleet Procurement • Fleet Replacement and Procurement Support • Introduction of Standardized Cargo Vessel • Improvement of Shipyards for Building New Vessels Including Standardized Vessel • Improvement of Shipyards for Repairing Coastal Shipping Vessels • Shipping Quality Management
Ports and Waterways Development Program	• Port Improvement/Development Plan • Management Improvement for Coastal Shipping Ports • Sea-Cum-Riverways Development Plan • Management Plan for Coastal Shipping and Sea-cum-Riverways
Coastal Shipping Management Modernization Program	• Improvement of Existing Operations and Management • Introduction of New Services • Development of Specialized Vessel Operations • Fostering of Small to Medium-scale Operations
Secondary Transport Improvement Program	• Improvement of Inland Waterway Transportation • Strengthening of Secondary Transport Serving Coastal Shipping Ports • Development of Ancillary Service Industries
Maritime Human Resource Development Program	• Supply of Seafarers • Improvement of VIMARU and MTTS • Training for Seafarers for Tanker Operations • Ship Operator Management and Administrative Staff Training • Training of Maritime Safety Personnel • Training of Port Related Personnel • Training of Shipbuilding Engineers • Training of Ship Inspectors
Maritime Safety Enhancement and Environment Protection Program	• Improvement of Ship Inspection during Shipbuilding • Improvement of Ship Inspection while Ship Operation • Development of Visual and Electronic ATN • ATN Supporting Equipment/Facility • SAR System Development Plan • Sea Communication Improvement Plan • Introduction of Maritime Accidents Statistics and Ship Reporting System • Establishment of National Oil Spill Protection System

6.3.2 Coastal Shipping Network Development Program

The coastal shipping network development program is defined in accordance with the physical, policy and institutional environment described above to identify, in broad terms, the overall route and service patterns on which the Master Plan is based.

Taking account of the forecast traffic demand pattern and provision of ports and sea-cum-riverways, the main shipping lanes of the coastal shipping network between general ports (excluding specialized ports for coal, steel, cement and oil) have been indicated in Figure 6.3.2.

(a) Freight Routes

In order to estimate the pattern of routes which is likely to be developed by operators in response to the forecast demand pattern the Study has assumed a vessel assignment summarized in Table 6.3.1. The allocation of vessel size to traffic volume is based on a comparison of operating costs for various sizes of vessels which suggests that 3,000 and 5,000 DWT vessels are the most efficient sizes for the main general cargo routes between general ports. (See Section 6.3.3 for details).

Table 6.3.1
VESSEL ASSIGNMENT PLAN

Major O-D Pairs by Traffic Demand (mil. ton-mile)	Possible Vessels to be Assigned				
	Average 300 DWT	Average 1,000 DWT	Average 3,000 DWT	Average 5,000 DWT	Average 10,000 DWT
4 - 19	x				
20 - 49	x	x			
50 - 99	x	x	x		
100 - 399	x	x	x	x	
More than 400	x	x	x	x	x

Based on this vessel assignment it would be expected that certain main routes would be operated by general cargo 3,000 and 5,000 DWT vessels (or greater). There would be seven main routes between general ports with forecast traffic greater than 100 million ton miles and therefore suitable for stable operation of 5,000 DWT vessels, and an additional six main routes with traffic over 50 million ton miles which are suitable for 3,000 DWT vessels. These routes are shown for 2010 in Table 6.3.2 and Figure 6.3.3.

Figure 6.3.2

FUTURE COASTAL SHIPPING NETWORK

IN CONJUNCTION WITH GENERAL SHIPPING PORTS(Year 2010)

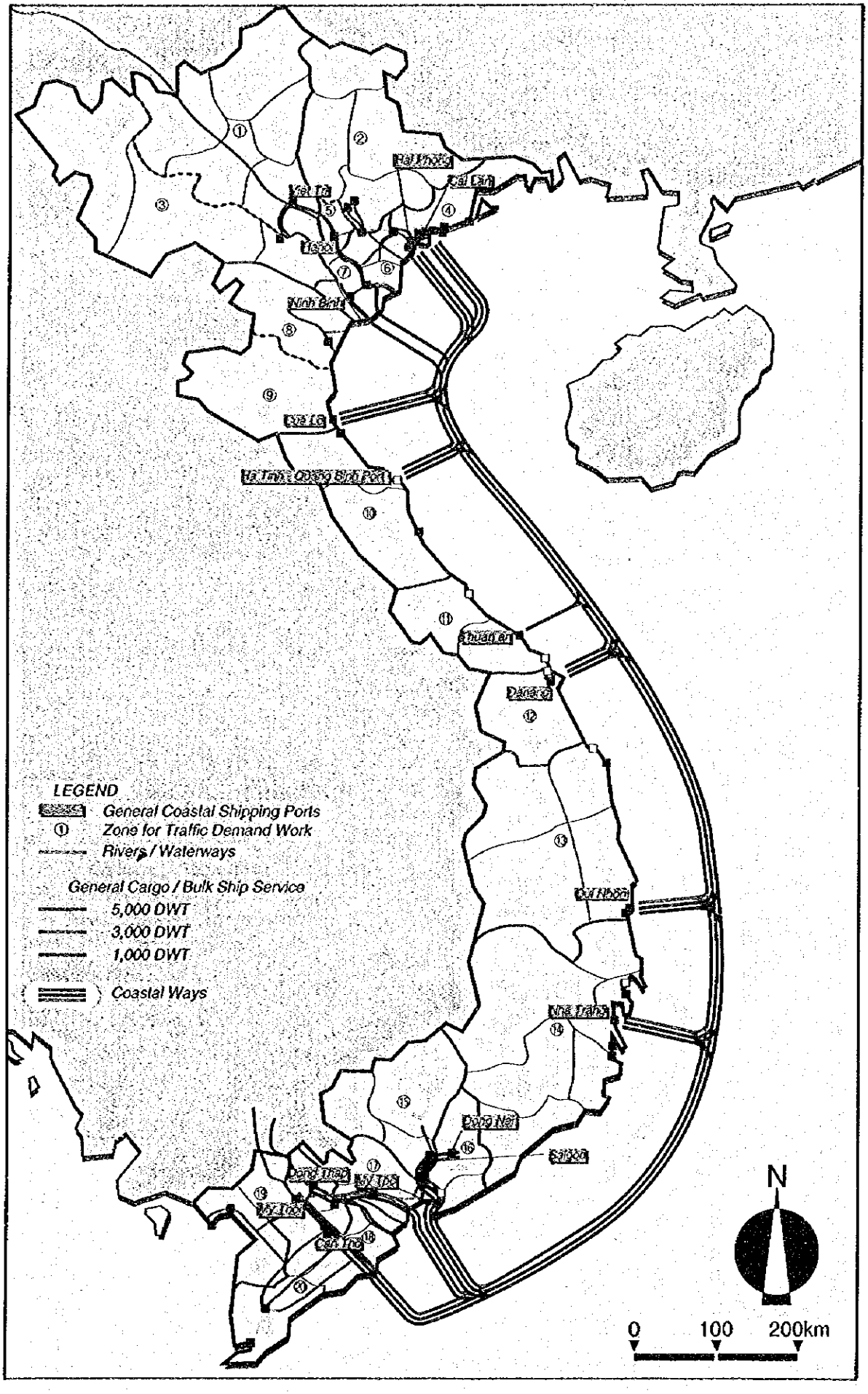


Figure 6.3.3

IDENTIFIED COASTAL SHIPPING ROUTES FOR MEDIUM-SIZE VESSELS OPERATION (YEAR 2010)

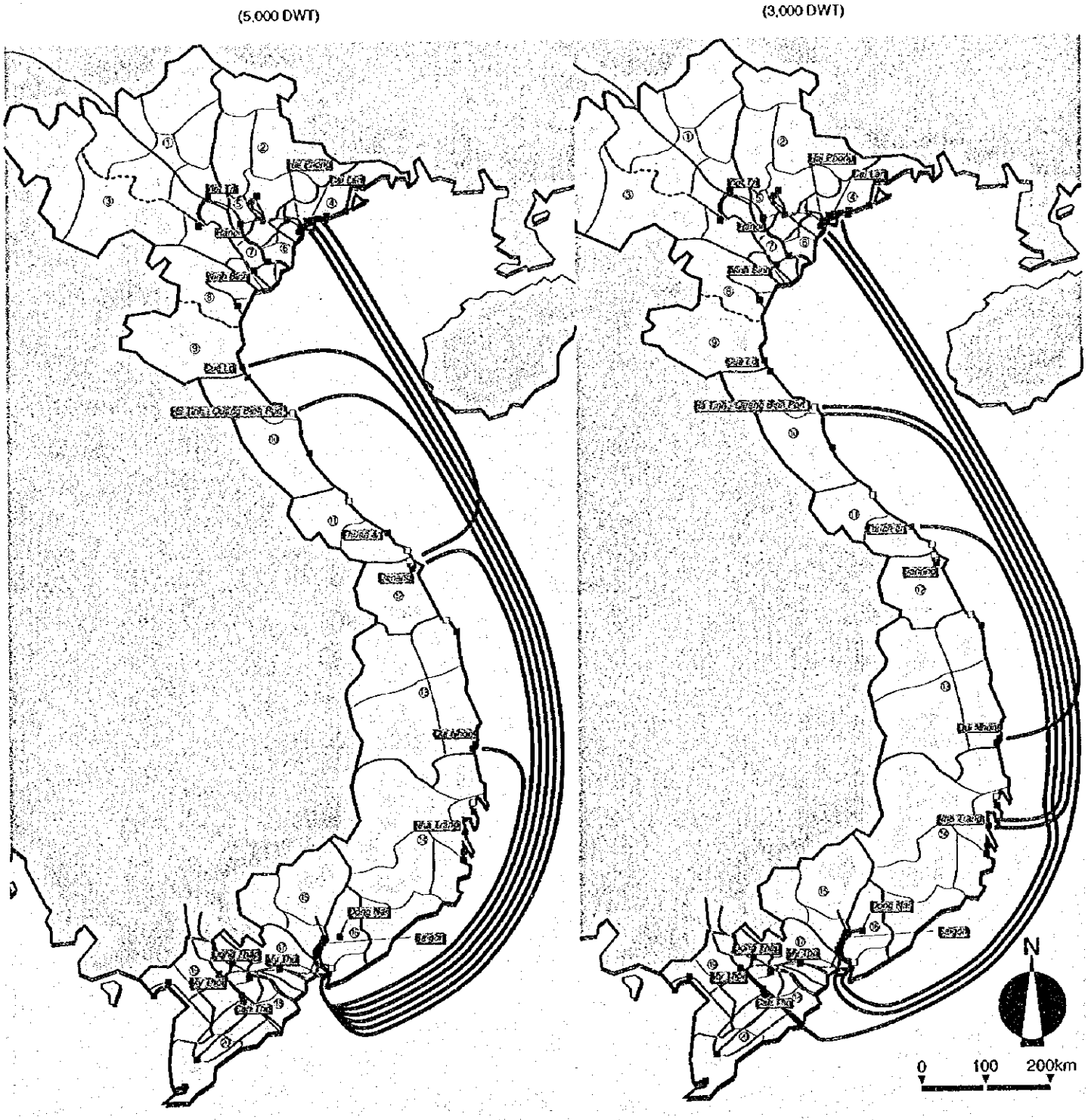


Table 6.3.2

MEDIUM-SIZE VESSEL ASSIGNABLE ROUTES IN YEAR 2010

General Cargo/Bulk Ship of 5,000 DWT	General Cargo/Bulk Ship of 3,000 DWT
1. Cai Lan - Saigon	1-6 (same as left)
2. Haiphong - Saigon	7. Cai Lan - Qui Nhon
3. Cua Lo - Saigon	8. Haiphong - Nha Trang
4. Ha Tinh / Quang Bing - Saigon	9. Haiphong - My Thoi
5. Danang - Saigon	10. Ha Tinh / Quang Bing - Nha Trang
6. Qui Nhon - Saigon	11. Ha Tinh / Quang Bing - Dong Nai
7. Haiphong - Danang	12. Thuan An - Saigon

NOTE (1) Excluding routes serving specialized ports, or operated by cement carriers

Traffic between specialized ports dedicated to traffic of particular types in order to maximize efficiency are anticipated to be as follows:

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

The potential traffic movements between specialized ports, or by cement carriers between general ports, are illustrated in Figures 6.3.4 to 6.3.6. If the large bulk oil and cement traffic flows are excluded, then 3.7 million tons of coastal shipping traffic is forecast for 2000. Of this, 2.2 million tons (59%) is concentrated on the main north-south route, and the rest is on other routes to/from intermediate ports. Traffic between the eight major ports (Haiphong/Hanoi, Cuo Lo, Danang, Qui Nhon/Nha Trung, Saigon/Dong Nai) is 1.8 million tons (48% of the total).

Scheduled liner operations by container, semi-container and Ro-Ro ship have significant development potential on the main north-south corridor. Liner operation would be a completely new type of business in Vietnamese coastal shipping and so use of a semi-container vessel is most likely.

Figure 6.3.4

FORECAST PATTERN OF COASTAL SHIPPING - OIL TRAFFIC

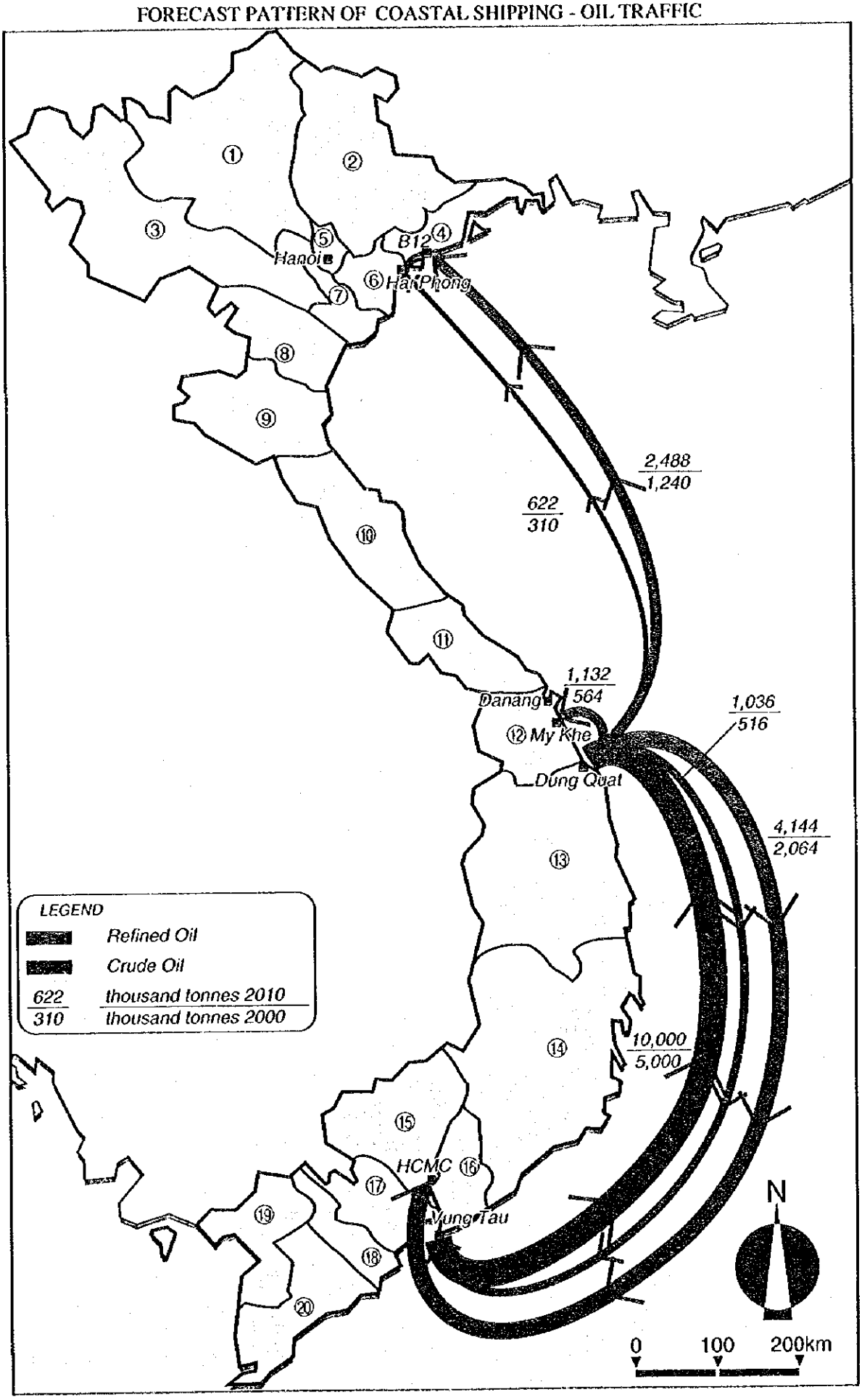


Figure 6.3.5

FORECAST RATTERN OF COASTAL SHIPPING CONSTRUCTION MATERIALS AND MINING PRODUCTS (BETWEEN SPECIALIZED BERTHS)

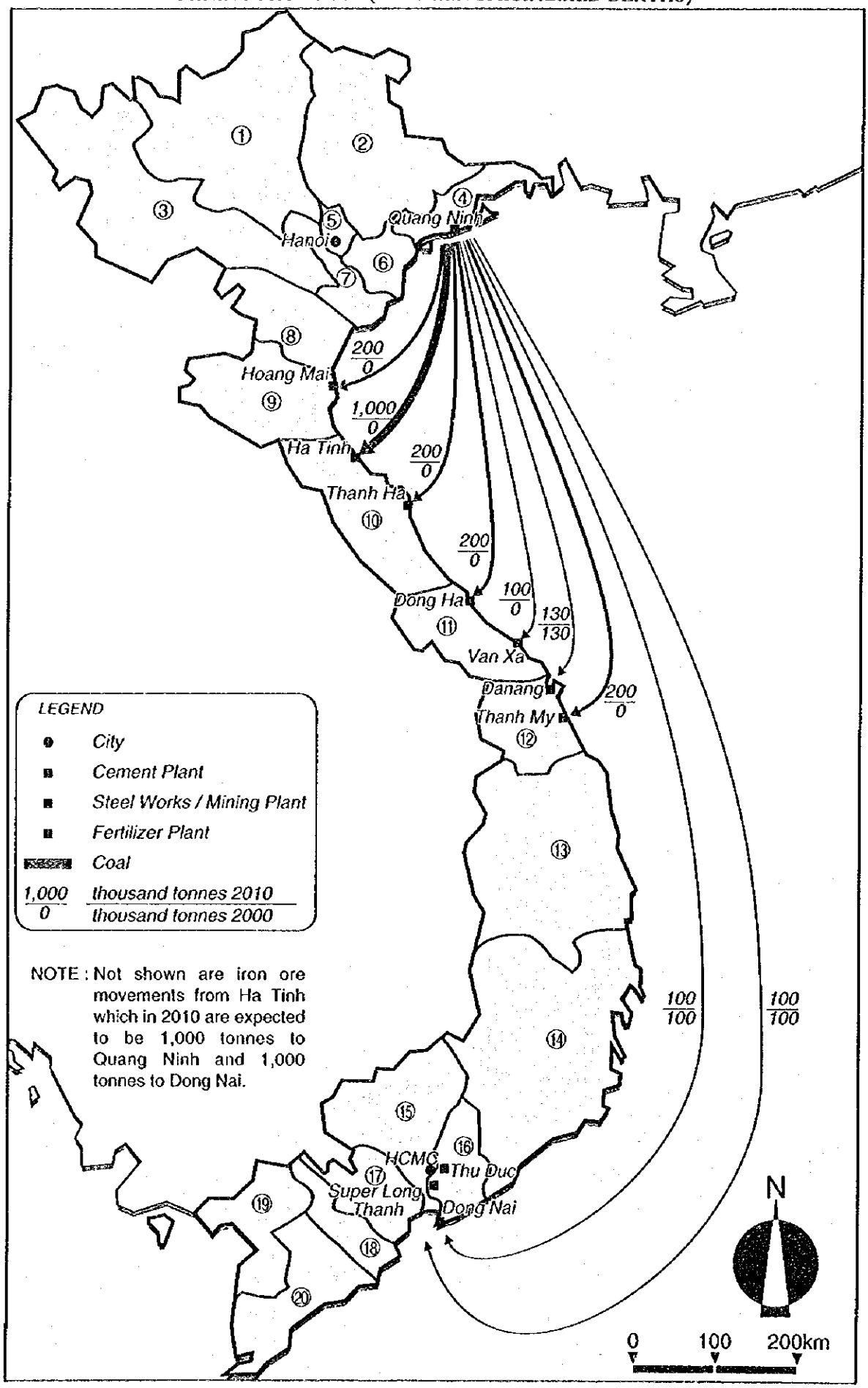
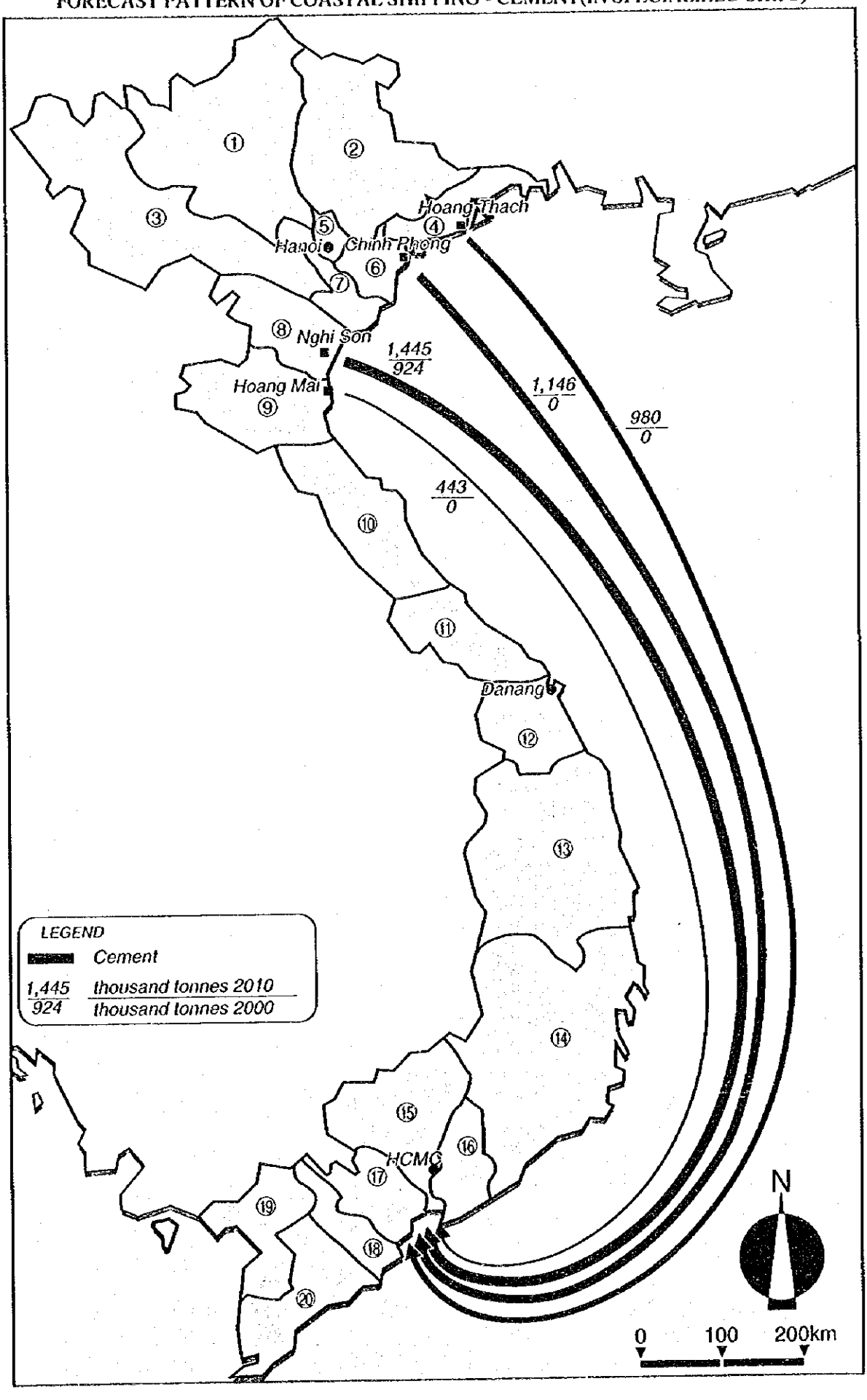


Figure 6.3.6

FORECAST PATTERN OF COASTAL SHIPPING - CEMENT(IN SPECIALIZED SHIPS)



(b) Passenger Routes

The main routes serving passenger services are shown in Table 5.3.2 in Section 5.3. The main routes in 2010 would be the two interprovincial routes between Haiphong and Quang Ninh and between HCMC and Vung Tau, and the tourist services to the islands near Quang Ninh, Haiphong, Danang, Nha Trung and Qui Nhon. Other local routes could develop in response to particular initiatives, especially in tourism.

(c) Issues in Service Development

The pattern of services outlined above for 2010 is merely indicative of future routes. Actual service patterns will be affected by numerous factors which cannot be predicted at present. However in accordance with the Study Team's concept of a master plan, revisions to these predictions of service patterns can be made in future years which take account of changing circumstances.

At this stage the following issues could affect service patterns.

Implementation of the Dung Quat Refinery

Whether or not major projects, such as the Dung Quat oil refinery, are implemented could have a radical change on the pattern between specialized ports, as described more fully in Chapter Five. This would not however affect the service pattern between general ports described above.

Development of Inland Waterways and Ports

The service pattern is based on current plans of the IWB and VINAMARINE for development of infrastructure. As described later in this section., implementing the service pattern requires minimal additional investment in inland waterways because, in most cases, the larger proposed vessels can be used under existing draught limitations. However considerable investment is required in ports.

Relationship of Coastal Shipping to Other Transport Activity

Coastal shipping forms part of a wider transport system and therefore may be affected by related traffic flows. Transshipment from one form of transport to another could affect the role of coastal shipping in the following ways:

- non-Vietnamese trade, especially that oriented towards Cambodia and Laos, requires port facilities shared with coastal shipping (however development of any specialized transshipment port serving ocean-going shipping would, by its very nature, have relatively little impact on coastal shipping),
- Vietnamese foreign trade requires port facilities shared with coastal shipping and even vessel capacity between Vietnamese ports for feeder and distributor services (although this is likely to occur only to a small extent because of the high transshipment costs), and
- road, inland waterway and even rail services provide feeder and distributor services for coastal shipping at many ports, so any bottlenecks in these services could

adversely affect coastal shipping, causing alternative less favorable ports to be used or even complete loss of traffic.

In addition many vessels engaged in coastal shipping are likely to be also engaged in international shipping, even on the same voyage. In this sense the supply of coastal shipping services is inextricably linked to the supply of international shipping services, with important implications for vessel planning and operation which must be allowed for when planning coastal shipping services.

The main issue here is the extent to which planning of coastal shipping services by operators is affected by their plans for international services. However although it would affect detailed vessel scheduling and routing of particular vessels, by individual operators, it would be unlikely to affect strongly the overall pattern of coastal shipping services described in the Study.

Potential Routes for Specialized Vessels

Clearly the introduction of specialized vessels or services in coastal shipping would be expected to have an impact on vessel operating patterns and services. In particular operation of large bulk carriers would tend to concentrate traffic on certain routes. Even here however changes in use of specialized vessels would have little impact on the general pattern of services described above although it would affect frequencies on them.

In the case of liner services it is far from clear at the present time which routes are most likely to be served by liner services. Initially the most likely candidates are routes between major traffic generators and attractors in the north or south of the country. However it is not clear to what extent services in the north would serve Haiphong rather than Hanoi. The latter would provide a direct service to the capital but would depend on the resolution of uncertainties about the navigation potential of the Nam Dinh - Hanoi river. Liner services would only be expected to capture a small proportion of total traffic and so their development would not greatly affect the operating pattern of other vessels.

6.3.3 Fleet Expansion and Modernization Program

(a) Objectives

Different operators are likely to react in different ways to the development in the coastal shipping market. Some operators of sea-going vessels in Vietnam often have interests in inland waterway transport and therefore may seek to concentrate on short distance coastal services requiring small vessels. There is much evidence from other countries of a strong tendency for small scale operators to specialize in short distance coastal services using domestically built vessels. However others in this situation may try to develop longer distance services as a complementary business activity, especially where ancillary inland waterway services can economically provide feeder or distributor services to coastal shipping.

Large scale operators currently focus their business activities on international shipping because of greater profit margins than in domestic shipping. Many large operators are

unlikely to develop coastal shipping services except as a subsidiary activity to international shipping - carrying domestic cargo when vessels would otherwise be idle, when vessels have to be repositioned, or when operators can increase load factors on international routes that pass domestic ports. Other operators are likely to focus on the coastal shipping market in order to provide dependable services to domestic customers. Although it is not possible to anticipate the extent to which operators specialize in coastal shipping it seems reasonable to assume that current practices of mixing international and domestic business activities will continue for most large scale operators, and we have taken account of this in our estimates of fleet capacity required in coastal shipping.

(b) Options for Fleet Development

The major strategic options facing coastal shipping operators when developing their fleets are concerned with

- choice of vessel type and design (general purpose or specialized ship),
- carrying capacity of vessel,
- method of acquisition (through purchasing or chartering), and
- age of vessel.

For passenger services, a wide variety of smaller vessels can be expected to be used according to the type of service, including small but fast tourist boats, traditional passenger vessels on short, low traffic density routes, with some larger vessels on the main routes (some of which would also carry freight).

The choice of cargo vessel depends to a large extent on the traffic characteristics expected in future years, especially:

- package style, which affects loading/unloading equipment required and operating efficiency (whether or not loading/unloading can be performed in rainy weather),
- variations in demand during the year, which affect utilization of vessel,
- consignment size, which affects not only ship capacity but also on-shore facilities.

The main characteristics of Vietnamese domestic freight traffic were summarized in Table 5.1.2 in Section 5.1. To carry this range of traffic, there are various possibilities for mixing traffic on particular ship types as shown in Table 6.3.3.

Table 6.3.3
POTENTIAL FOR CARRYING CARGO ON VARIOUS SHIPS

Commodity Type	Ship Type	Compatibility with Other Commodities
A. Agricultural Products	General Cargo/Bulk	Yes, with D, E and F
B. Construction Materials and Mining Products	Bulk General Cargo/Bulk	No
C. Oil	Tanker	No
D. Bulk Cargo	General Cargo/Bulk	Yes, with A, E and F
E. Cement	General Cargo/Bulk Specialized Ship	Yes, with A, D and F No
F. General Cargo	General Cargo/Bulk Container Ro-Ro	Yes, with A, D and E

Based on these possibilities, the following six categories of ship type are required to serve coastal shipping cargo traffic:

1) General Cargo/Bulk Ship, which can carry most of the traffic types,
2) Bulk Ship, to carry break-bulk cargo only, with a shoulder tank and hold of suitable shape to unload cargoes efficiently (see Figure 6.3.7 for examples),
3) Oil Tanker/Chemical Tanker, which are specialized ships for transporting crude or refined oil, or chemicals,
4) Container Ship, for carrying containers only,
5) Semi-Container Ship, multipurpose ship for carrying not only containers but also general cargo, often in conjunction with wide holds for efficient loading/unloading and special fittings to secure containers,
6) Ro-Ro Ship, to carry trucks and other motor vehicles

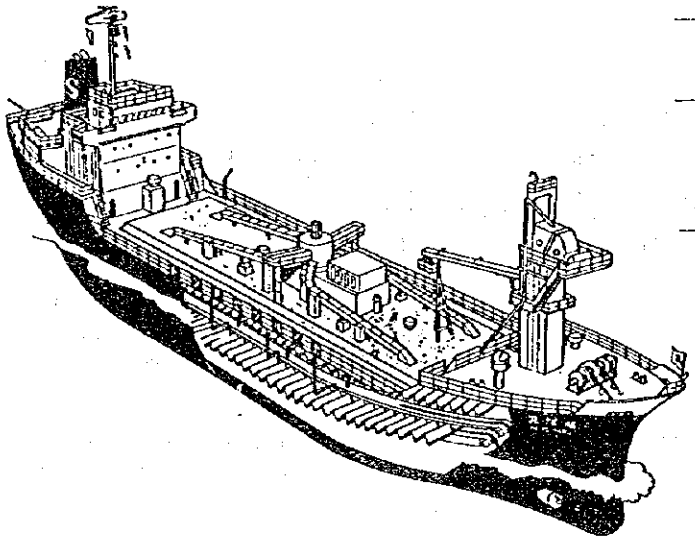
Specialized barge and LASH (Lighter Aboard Ship) systems are not suitable for coastal shipping, even though they may appear to be attractive for Vietnam's mixture of sea and river services. Barges are not particularly sea-worthy. In particular, pusher barges (which are not used for coastal shipping even in Japan) cannot be safely navigated against high broadside waves.

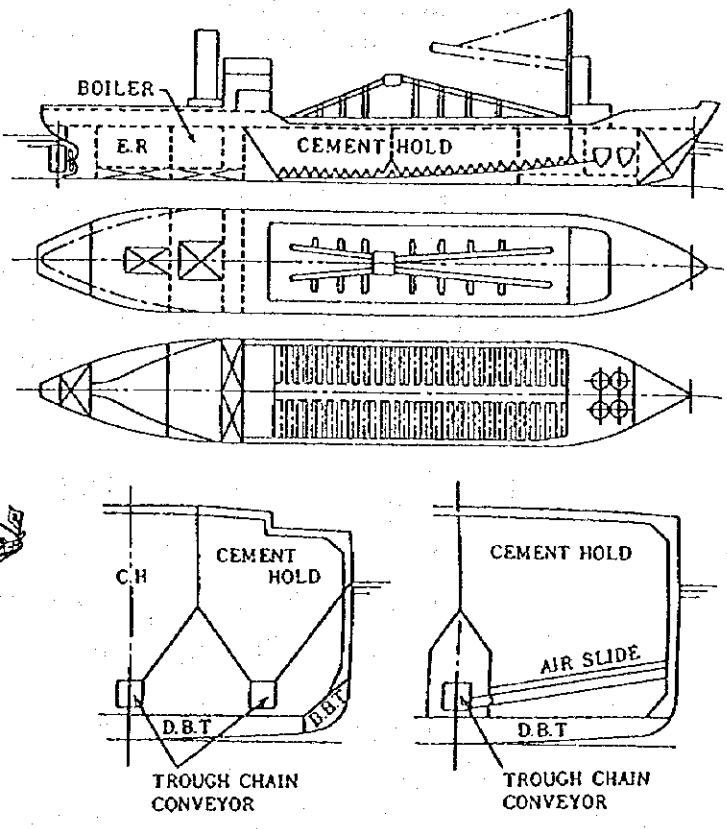
The LASH system can be economically advantageous on international shipping routes, serving areas with river systems, where large ships can economically be utilized for the trunk haul, in conjunction with quick loading and unloading times. For the short distances of Vietnamese coastal shipping with irregular traffic flows, such a system would almost certainly cost more than conventional shipping (even if a scaled-down version were specially developed for this application).

Figure 6.3.7

ILLUSTRATIONS OF SPECIALIZED SHIPS

(Cement Tanker)

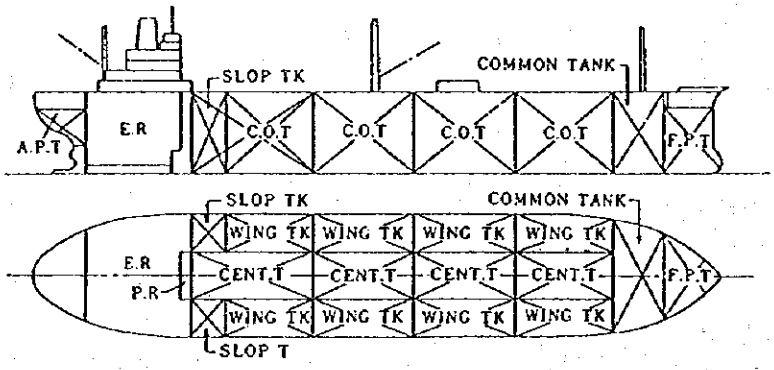


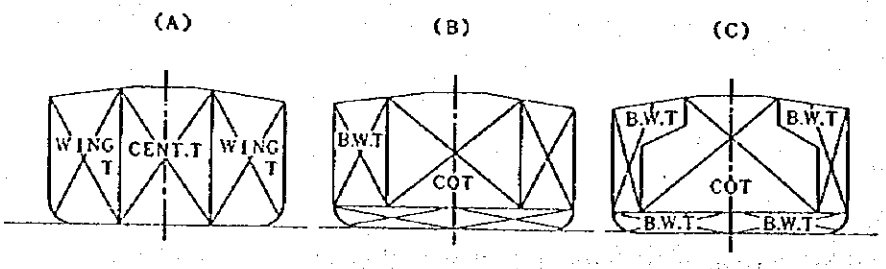


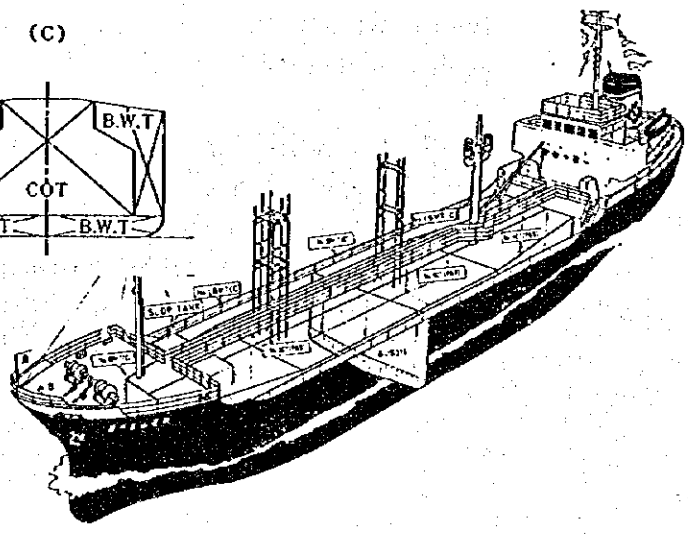
Hopper Type

Air Slide Type

(Crude Oil Tanker)







For most freight operators there seems little doubt that the advantages of general purpose ships outweigh their disadvantages. Most domestic cargoes can be carried on general purpose ships and although there would be potential cost and level of service advantages from using certain specialized vessels such as bulk cement carriers, the high capital requirements and risks associated with them would be expected to rule out their consideration except in particular circumstances where demand and revenue can be reliably predicted.

The main factors affecting the choice of ship size are initial cost (and availability of finance), overall operating costs, physical constraints (particularly draught limits in ports and waterways) and management tradition/capability. Arguably the main determining factor in Vietnam is initial cost which acts as a strong constraint on all operators (especially considering the investment risks and uncertainty about traffic and navigation uncertainties for large ships on sea-cum-riverways). By contrast, the costs of labor and fuel are secondary considerations. Many ship operators in Vietnam have little experience of operating medium/large ships over 1,000 DWT and this is likely to be an important factor in determining vessel size.

Decisions over whether to purchase or charter ships depend on availability of finance, chartering costs and availability of suitable vessels for either purchase or charter. These factors can vary strongly from year to year depending on market conditions and availability of surplus vessels in the world market. In principle chartering offers many attractions to Vietnamese coastal shipping operators who wish to accumulate capital from a very low base. It may be the only way of acquisition for new entrants into the business and is therefore a vital consideration in policy making. However the world market in chartered vessels is dominated by large vessels and so this form of acquisition is of little use to many coastal shipping operators, especially small scale operators.

The difficulties of financing vessels obviously means that most operators prefer to buy second-hand rather than new vessels. This allows capital can be accumulated more rapidly even though these incur higher operating costs. However restrictions on imports of small vessels may prevent operators from purchasing second-hand foreign vessels in preference to a new Vietnamese built vessel. In the case of established Vietnamese operators of international services, such as VINALINES, a further option is simply to cascade ships which cannot compete effectively on international routes down onto coastal shipping services. Although the vessels may not be ideal for coastal shipping, and may require modification or rehabilitation to meet safety standards, they offer a low cost alternative to new purchases.

(c) Comparison of Options for Cargo Ships

Since capital costs pose such an important constraint on fleet development, the effect of three different cargo fleet development patterns on overall capital costs has been compared below. The development patterns have been defined for alternative assumptions about size, type and age of acquired vessels. For the sake of this comparison, no chartering or reassignment of international vessels is assumed.

The alternative assumptions adopted are as follows:

ALTERNATIVE 1 - Expansion of the coastal shipping fleet with the same size and type of vessels as used at present, using new vessels less than 1,000 DWT and second-hand vessels above this size (similar to current practice). Under this alternative the average size of coastal shipping vessels remains at about 1,000 DWT.

ALTERNATIVE 2 - Expansion of the fleet with larger more modern designs, including specialized vessels, to minimize total overall operating costs (including both running and capital costs). All vessel replacements are assumed to be with new ships. Under this alternative the average size of vessels increases by 2010 to 2,000 DWT.

ALTERNATIVE 3 - An intermediate situation in which less of the larger vessels are acquired, all vessels below 3,000 DWT are acquired new and the rest second-hand. Under this alternative the average size of vessels increases by 2010 to 1,500 DWT.

The estimation of the vessels needed under Alternative 2 has been based on an analysis of comparative costs of operating vessels of various sizes. This analysis is described in the Supplementary Report on the Maritime Transport Industry and is based on current recorded financial costs in Vietnam for a typical voyage between Saigon and Haiphong, using a second-hand vessel. Certain fixed costs are excluded so that the results indicate the revenue needed to break-even on an individual voyage. The results are summarized in Table 6.3.4.

The 1,000 DWT vessel incurs high costs because of many factors such as high fuel consumption, higher price of diesel compared to fuel oil, and lower running speed. The 10,000 DWT vessel incurs higher costs because it requires longer time loading and unloading (because ports are not well equipped to handle large vessels), which becomes especially significant in coastal shipping because haulage distances are shorter than for international routes. Consequently vessels with capacity between 3,000 and 5,000 DWT have the lowest costs. It has therefore been assumed that under Alternative 2, more of such vessels are deployed on general cargo routes. Even larger vessels are assumed to be deployed on specific routes between specialized ports in some cases where improved facilities could allow greater utilization of large vessels.

Table 6.3.4

ESTIMATED FINANCIAL OPERATING COSTS OF VARIOUS SIZES OF CARGO VESSELS

(VND thousand/voyage)

Cost Item	Size of Vessel			
	1,000 DWT	3,000 DWT	5,000 DWT	10,000 DWT
Variable Costs				
- Fuel Oil	0	37,410	44,370	73,950
- Diesel Oil	49,680	16,740	26,780	52,380
- Loading Port Charges	4,400	9,100	14,870	37,700
- Unloading Port Charges	3,700	7,500	12,500	32,900
- Other Voyage Costs	1,000	1,000	1,000	1,000
Total Variable	58,780	71,750	99,520	197,930
Fixed Costs				
- Seafarers	11,990	16,920	25,390	39,720
- Depreciation	32,120	70,040	153,760	411,280
- Repairs, Tax, Insurance	23,290	50,780	111,480	298,180
Total Fixed	67,400	137,740	290,630	749,180
TOTAL VOYAGE COSTS	126,180	209,490	390,150	947,110
COST PER TON	140.2	77.6	86.7	105.2

The number of vessels acquired under each alternative has been estimated allowing for the expected continued use of existing vessels, up to 20 years of age. This means that many existing large vessels must be replaced soon. Because vessels are used both for domestic and international shipping, it is necessary to define a hypothetical fleet that would be required if vessels were exclusively used on coastal shipping services. Under Alternative 1 it is assumed that the current contribution to coastal shipping capacity, from various sizes of vessels, varies from 5% for large vessels over 7,000 DWT (used mainly for international services) to 70% for vessels between 500 and 1,999 DWT, as shown in Table 6.3.5. According to this assumption about half of the coastal shipping capacity is derived from vessels between 500 and 1,999 DWT and the average capacity of vessels used in coastal shipping, excluding oil tankers, is about 1,000 DWT.

Under Alternative 2 the high rate of replacement of existing vessels would increase short term capital requirements up to 2000 from US$ 237 million (for Alternative 1) to US$ 422 million. Because of the difficulties of operators securing capital such an alternative would be impractical. However under Alternative 3, with greater acquisition of second-hand vessels the capital costs required can be substantially reduced, even lower than under the present procurement practices assumed for Alternative 1. The reduction in capital costs arises because of the lower capital cost per DWT of larger vessels compared to those for existing vessel types. Therefore despite the lower overall capital costs, the amount per ship would be higher.

Table 6.3.5

ASSUMED COASTAL SHIPPING CARGO FLEET COMPOSITION (EXCLUDING TANKERS), 1995

Ship Size (DWT)	Total Registered DWT	Assumed Assignment Rate for Coastal Shipping	Available DWT for Coastal Shipping
Less than 500	68,940	20%	13,788
500 - 1,999	93,707	70%	65,595
2,000 - 3,999	63,134	25%	15,784
4,000 - 6,999	117,543	15%	17,631
More than 7,000	342,078	5%	17,104
Total	685,402	19%	129,902

Source: JICA Study Team

The composition of the fleet, up to 2000 and 2010, and the associated capital costs for new acquisitions are summarized in Table 6.3.6.

(d) Potential Financial Requirements

Perhaps the most realistic fleet acquisition program that will develop under Vietnamese conditions is Alternative 3. This combines both low capital costs and a trend towards lower operating costs. However in practice the finance required for acquiring vessels will depend on the extent to which vessels are chartered, leased or reassigned from international routes.

Under the present uncertain circumstances in Vietnam there are considerable advantages from chartering because of the lower capital costs involved. This would imply that many of the larger vessels anticipated to be operated in coastal shipping would be chartered in the first instance (especially for specialized vessels that would have higher risks of failing to achieve the required utilization). After a few years chartering would become less attractive because capital is more likely to be available in Vietnam (partly because of capital accumulation by operators), implying that a greater proportion of vessels would be purchased. However the proportion of smaller vessels, less than 3,000 DWT, which would be chartered could be rather low, even in the short term, because of the small number of vessels available for charter in the South East Asian market. The potential for chartering passenger vessels also appears low.

The number of passenger vessels expected to be purchased up to 2010 is estimated in Table 6.3.7.

Table 6.3.6

FUTURE CARGO FLEET COMPOSITION ALTERNATIVES (WITH DUNG QUAT PROJECT)

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Fleet Development Policy	Fleet expansion based on the existing fleet structure	Fleet enlargement, modernization and diversification	Moderate fleet enlargement, modernization and diversification
Average Fleet Size (excluding oil tankers)	1,000DWT in 2000 1,000DWT in 2010	1,700DWT in 2000 2,000DWT in 2010	1,300DWT in 2000 1,500DWT in 2010
No. of Ships (Year2000 / Year2010)	•General Cargo Bulk Ship (300DWT) 88 ships /240 ships •General Cargo Bulk Ship (1,000DWT) 123 ships/ 322 ships •General Cargo Bulk Ship (3,000DWT) 10 ships/ 30 ships •General Cargo Bulk Ship (5,000DWT) 7 ships/ 22 ships •General Cargo Bulk Ship (10,000DWT) 2 ships/ 2 ships •Oil Tanker (2,300-80,000DWT) 6 ships /12 ships	•General Cargo Bulk Ship (300DWT) 43 ships/84 ships •General Cargo Bulk Ship (1,000DWT) 47 ships/65 ships •General Cargo Bulk Ship (3,000DWT) 19 ships/23 ships •General Cargo Bulk Ship (5,000DWT) 10 ships/27 ships •General Cargo Bulk Ship (10,000DWT) 2 ships/6 ships •Cement Carrier (5,000-7,000DWT) 4 ships/16 ships •Coal/Ore Carrier (1,000-3,000DWT) 5 ships/35 ships •Semi/Full Container (2,000-5,000DWT) 2 ships/4 ships •Ro-Ro Ship (5,000DWT) 0/2 ships •Oil Tanker (2,300-80,000DWT) 6 ships/12 ships	•General Cargo Bulk Ship (300DWT) 87 ships/161 ships •General Cargo Bulk Ship (1,000DWT) 50 ships/118 ships •General Cargo Bulk Ship (3,000DWT) 19 ships/42 ships •General Cargo Bulk Ship (5,000DWT) 12 ships/28 ships •General Cargo Bulk Ship (10,000DWT) 2 ships/4 ships •Cement Carrier (5,000-7,000DWT) 4 ships/16 ships •Semi-Container (2,000-5,000DWT) 2 ships/2 ships •Ro-Ro Ship (5,000DWT) 0/2 ships •Oil Tanker (2,300-80,000DWT) 6 ships/12 ships
Entire Coastal Shipping Fleet	236 ships (379,000DWT) / 628ships(903,200DWT)	138ships(370,500DWT) / 276ships(826,400DWT)	182ships(381,700DWT) / 385ships(859,500DWT)
Fleet Procurement Method	Less than 1,000DWT - new vessels Over 1,000DWT - second hand vessels	All new vessels	Less than 3,000 DWT - new vessels Over 3,000 DWT - second-hand vessels
Estimated Fleet Procurement Cost (including replacement)	US$ 237 mil. up to 2000 US$ 897 mil. between 2001 and 2010 (US$ 213 mil. and 836 mil. respectively without Dung Quat project)	US$ 422 mil. up to 2000 US$ 1,121 mil. between 2001 and 2010 (US$ 315 mil. and 868 mil. respectively without Dung Quat project)	US$ 212 mil. up to 2000 US$ 711 mil. between 2001 and 2010 (US$ 190 mil. and 627 mil. respectively without Dung Quat project)

Table 6.3.7
EXPECTED PASSENGER SHIP PURCHASES

Service Type	Number of Passengers (thousand)		Number of Vessels Required		Number of Vessels Acquired	
	2000	2010	Up to 2000	2000-2010	Up to 2000	2000-2010
Interprovincial	644	1,059	4	6	2	4
Remote Island	114	139	1	2	1	1
Tourism	992	2,392	11	27	5	22
TOTAL	1,750	3,590	16	35	8	27

NOTE: (1) Assuming 200,000 passengers per year per vessel for 140 seat interprovincial services (using passenger/cargo ships of 490 GRT) and 90,000 passengers per year per vessel for 200 seat inter-island services (using 95 GRT vessels), and 90,000 passengers per year per vessel on 90 seat tourist services (using 60 GRT vessels).

(2) Assuming 50% of 2000 demand can be met with existing vessels.

SOURCE: JICA Study Team

The potential capital required to finance the ship acquisitions under Alternative 3 (assuming no chartering, leasing or reassignment of vessels from international routes, and assuming a vessel life of 20 years) is shown in Table 6.3.8. In the short term, with the Dung Quat project, the capital requirement would be US$ 226 million (US$ 45 million per year). It is estimated that chartering could reduce this to about US$ 161 million (US$ 32 million per year). Continued acquisition of small locally built vessels at low prices could possibly reduce this investment still further. Extending vessel life beyond 20 years and/or reassigning international vessels would also reduce investment requirements.

The capital requirement between 2000 and 2010 is expected to be about US$ 761 million in total (which represents US$ 76 million per year). The scope for reducing this is rather small because chartering is not an attractive option in the long term.

To meet this capital requirement, both domestic and foreign financial resources are needed, as discussed in Section 6.4.2.

Table 6.3.8

POTENTIAL FINANCE REQUIRED FOR SHIP PURCHASES

Ship Type	Up to 2000			2001 - 2010		
	Expected Acquisition (Vessels)	Price (US$ mil)	Required Capital (US$ mil)	Expected Acquisition (Vessels)	Price (US$ mil)	Required Capital (US$ mil)
General Cargo/Bulk						
- 300 DWT	41	0.6	24.6	115	0.6	69.0
- 1,000 DWT	0	2.3	0.0	120	2.3	276.0
- 3,000 DWT	19	4.0	76.0	23	4.0	92.0
- 5,000 DWT	10	2.8	28.0	30	2.8	84.0
- 10,000 DWT	2	4.8	9.6	4	4.8	19.2
Cement Carrier						
- 5,000 DWT	4	3.4	13.6	14	3.4	47.6
- 7,000 DWT	0	4.0	0.0	2	4.0	8.0
Semi-Container Ship						
- 2,000 DWT	2	7.0	14.0	2	7.0	14.0
Ro-Ro Ship						
- 5,000 DWT	0	4.8	0.0	2	4.8	9.6
Oil Tanker						
a) With Dung Quat						
- 2,300 DWT	2	6.4	12.8	4	6.4	25.6
- 20,000 DWT	3	7.3	21.9	6	7.3	43.8
- 80,000 DWT	1	11.2	11.2	2	11.2	22.4
b) Without						
- 1,000 DWT	2	4.0	8.0	2	4.0	8.0
- 3,000 DWT	2	8.0	16.0	0	8.0	0.0
Passenger Ship						
- 490 GRT 140 seat	2	0.6	1.2	4	0.6	2.4
- 95 GRT 200 seat	1	3.0	3.0	1	3.0	3.0
- 60 GRT 90 seat	5	2.0	10.0	22	2.0	44.0
TOTAL						
a) With Dung Quat	92		225.9	351		760.6
b) Without	90		204.0	341		676.8

NOTE: (1) Assuming average prices of passenger vessels are (in US $ million):

0.6 for 490 GRT (12 years old assuming US $ 2.0 million new)

3.0 for 95 GRT (12 years old assuming US $ 11.0 million new)

2.0 for 60 GRT (five years old assuming US $ 3.0 million new)

SOURCE: JICA Study Team

(c) Introduction of Standardized Cargo Vessel

Standardizing domestic cargo vessels is effective for the shipbuilding industry in Vietnam which is far from a fully developed industry. The advantages of ship standardization can be enumerated:

1) Reduction in construction period
2) Reduction in man-hours for design and construction work
3) Upgrading of quality of work (skill of workers will be improved by repetitive work)
4) Saving of man power in indirect jobs such as design and production control
5) Easy and simple maintenance work for standardized ships in service
6) Standardization of cargo handling equipment on quay side
7) Increased efficiency in port operation
8) Stabilized production of products of shipbuilding rerated industries

In order that coastal shipping vessels are built locally and economically, multi-purpose cargo vessels with 1,000 DWT and 3,000 DWT have been chosen as standardized vessels. These have been designed with the following considerations:

1) The vessels have a shallow draft and convey general cargo. Such shallow draft vessels can enter many riverports located in the Mekong Delta and the Red River Delta, and transport not only packed cargo but also break-bulk cargo.

2) The vessels must have adequate speed, seaworthiness, stability and cargo space from safety and profitability viewpoints. The vessels are also equipped with ship gear on deck.

3) The vessels can carry bagged cargo, boxed cargo and bulk cargo in the hull and some containers on the deck on shippers' request.

4) The vessels will be built and repaired in Vietnam.

Table 6.3.9 shows their principal dimensions and estimated vessel princes. It is noted that the vessel prices apply to the ones built first. A reduction in price, up to a maximum of 15%, would be expected for subsequent production.

Table 6.3.9

PRINCIPAL DIMENSIONS OF STANDARDIZED CARGO VESSELS

Item \ Type of Ship	1,000 DWT			3,000 DWT		
Length (O.A)	abt.	69.50	m	abt.	90.00	m
Length (P.P)		65.00	m		85.00	m
Breadth (mid)		12.00	m		14.50	m
Depth (mid)		5.00	m		7.50	m
Draft design (mid)		3.20	m		5.00	m
Displacement (ton)	abt.	1,800		abt.	4,300	
Light weight (ton)	abt.	800		abt.	1,300	
Dead weight (ton)		1,000			3,000	
Cargo hold cap. (bale)	abt.	1,300	m^3	abt.	3,700	m^3
Gross tonnage (ton)		1,000			2,800	
Complement		20			28	
Engine gear (PS)		980			1,800	
Speed (Service)		11.0			11.0	
Endurance (S.M)		2,000			2,000	
Tank cap.						
F.O.T		45			80	
F.W.T.		30			70	
Cargo gear		5t x 1			10t x 2	
Container (8' - 6" x 8' x 20')		12			24	
Hatch covers	Single pull Steel			Single pull Steel		
Vessel Price (in the first year billion VND)		24.7			43.9	

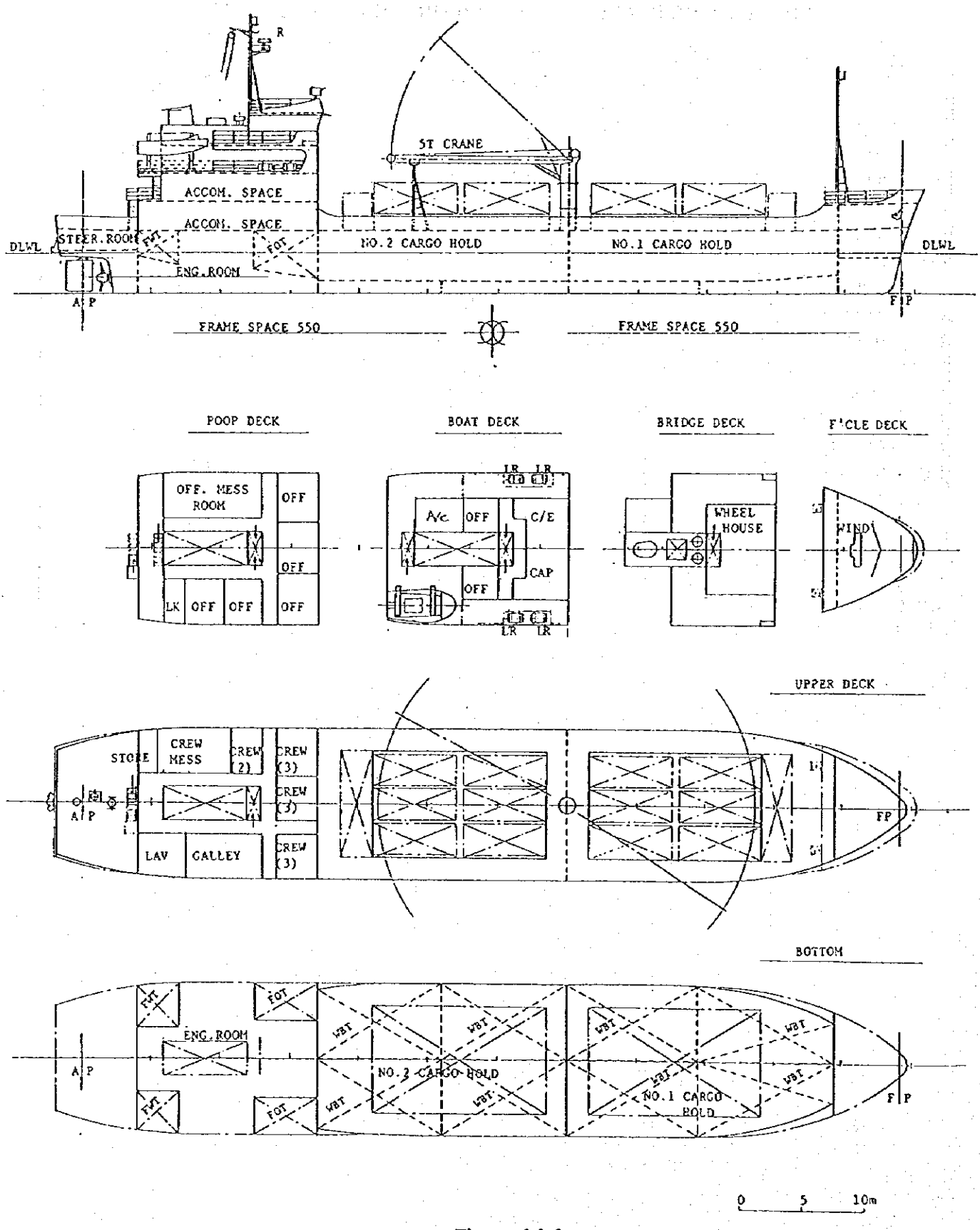


Figure 6.3.8
1,000 DWT STANDARDIZED VESSEL

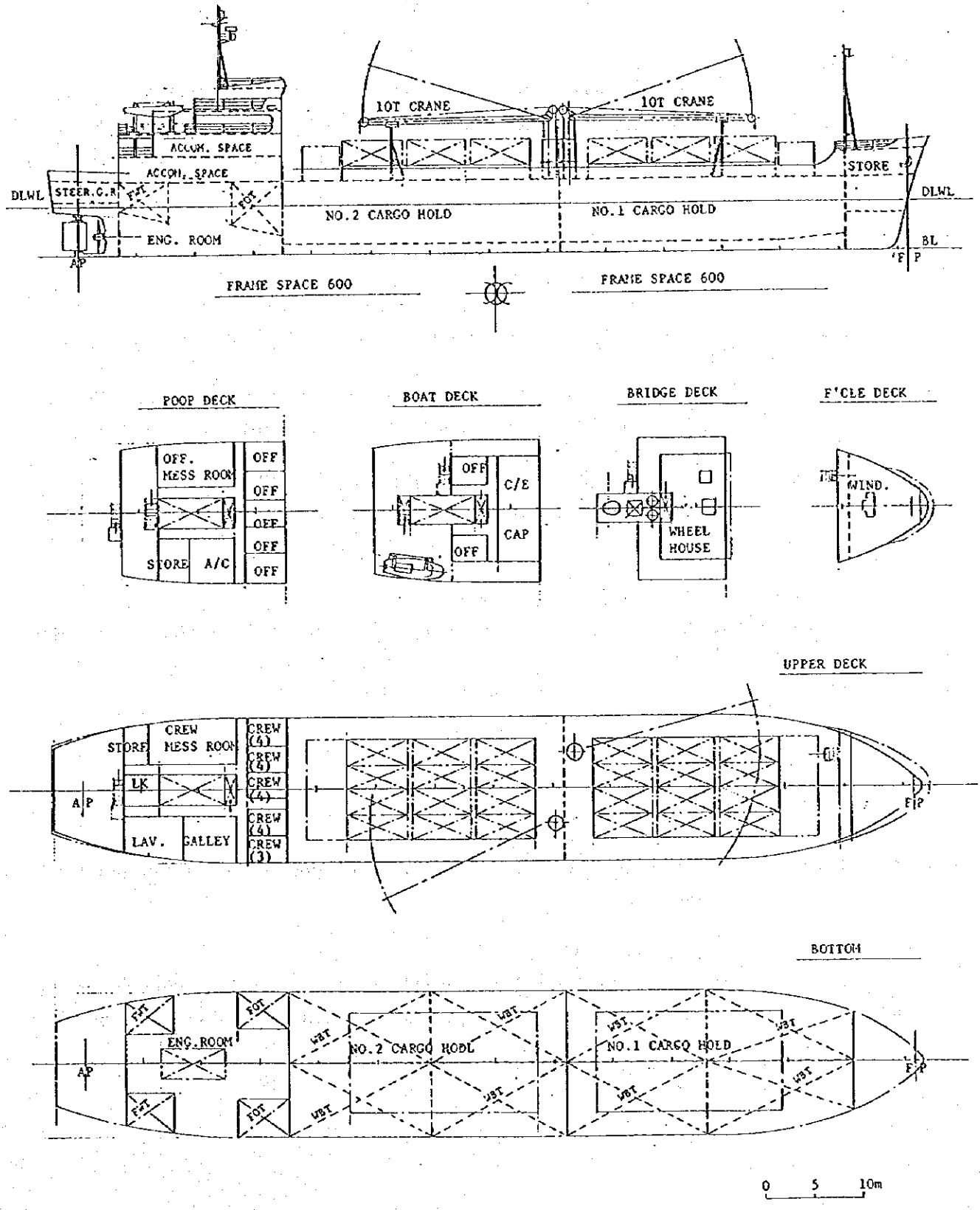


Figure 6.3.9
3,000 DWT STANDARDIZED VESSEL

(f) Improvement of Shipyards for Building New Vessels

1) Necessity of Improvement

As coastal shipping traffic increases, the current aged fleet will be replaced and modernized. However, Vietnamese shipbuilding activity in recent years has been sluggish and therefore shipyards suffer from basic technical weaknesses. Urgent improvement is carried out as follows:

- Welding work should be done by qualified welders who are authorized by a Classification Society or have equivalent skill levels.
- Yards should be rationally designed to allocate necessary facilities and working areas. Production units are required to maintain proper working standards and to achieve high work efficiency.
- Shipyards should take full responsibility for the quality of their products. For this purpose, an inspection department should be responsible for matters related to quality in the shipyard.
- Shipyards should strictly control progress of work from keel laying to ship delivery. Most materials have to be imported and so the buyer's work is particularly important. Major equipment and parts should be imported from reliable sources.

2) Selection of Yards for Building New Ships

The Study designates three shipyards, i.e., Bach Dang Shipyard, Ha Long Shipyard and Ben Kien Shipyard, for building new vessels engaged in coastal shipping especially the proposed standardized cargo vessels taking account of the following:

- Facilities and equipment in the three shipyards are comparatively satisfactory and they do not need large investments.
- The three shipyards are located in the north where related industries have concentrated and material procurement is easy.
- The building of general cargo vessels over 1,000 DWT since 1984 was concentrated at these three shipyards.

3) Preparation of Improvement Plans

To raise productivity, improve quality and lower ship building costs with minimum investment, individual improvement plans for the three shipyards have been prepared as shown in Table 6.3.10.

Table 6.3 10

IMPROVEMENT PLANS FOR SHIPBUILDING YARDS

	Bach Dang shipyard	Ha Long Shipyard	Ben Kien shipyard
Location	Haiphong	Ha Long	Haiphong
Year of Establishment	1964	1971	1976
Supervising Organization	VINASHIN	VINASHIN	VINASHIN
Area of Compound	30 ha	25 ha	13 ha
No. of Worker	2,000	650	45
Capacity for Building Ships	6,000 DWT	5,000 DWT	1,500 DWT
Capacity for Repairing Ships	8,000 DWT	3,500 DWT	2,000 DWT
Proposed Improvement	(Machining Shop) • Universal Lathe 6 sets • Crank Craft Shaft Grinder 1 set • Overhead Crane (15t) 3 sets and others (Plate Shop) • Automated Cutting Machine 1 set • Automated Welding Machine 10 sets • Overhead Crane 2 sets and others (Piping Shop) • Oil Burning Furnace 2 sets • Hydraulic Pipe Bending Machine 1 set and others	(Machining Shop) • Universal Lathe 6 sets • Crank Shaft Grinder 1 set • Hydraulic Press (40t-100t) 3 sets and others (Plate Shop) • Automated Cutting Machine 1 set • Automated Welding Machine 10 sets • Overhead Crane and others 2 sets (Piping Shop) • Oil Burning Furnace 2 sets • Hydraulic Pipe Bending Machine 1 set and others	(Machining Shop) • Universal Lathe 3 sets • Crank Shaft Grinder 1 set • Hydraulic Press (100t) 1 set and others (Plate Shop) • Automated Cutting Machine 1 set • Automated Welding Machine 4 sets • Overhead Crane and others 1 set (Piping Shop) • Oil Burning Furnace 1 set • Hydraulic Pipe Bending machine 1 set and others
Proposed Annual Capacity for Building	1,000 DWT - 8 vessels	1,000 DWT - 6 vessels	1,000 DWT - 4 vessels
Standardized Vessels	3,000 DWT - 4 vessels	3,000 DWT - 8 vessels	3,000 DWT - (none)
Necessary Investment for Improvement (billion VND)	63	58	36

(g) Improvement of Shipyards for Repairing Coastal Shipping Vessels

According to the Study Team's observations, the current repairing capacity is estimated at 220 ships per year, divided by region as follows:

- north - 90 ships of 1,000 DWT and above per year
- central - 20 ships of 1,000 DWT and above per year
- south - 110 ship of 1,000 DWT and above per year

On the other hand, the study assumes that the future coastal shipping fleet will consist of about 260 ships of 1,000 DWT and above in 2010. It is therefore clear that the existing ship repair yards will not be able to cope with the future fleet engaged not only in international shipping but also in coastal shipping.

Although there are numerous shipyards in Vietnam, intensive investment in several key shipyards is an effective way in which the majority of coastal shipping fleet ranging 1,000 DWT to 3,000 DWT can be repaired efficiently and economically. Taking geographical distribution into account, six shipyards have been selected for repairing coastal shipping vessels as shown in Table 6.3.11. From a viewpoint of demand, three shipyards will be improved in the short term while the rest will be improved in the long term.

Table 6.3.11
SELECTION OF KEY SHIPREPAIR YARDS

Region	Improvement Period	
	1997 - 2000	2001 - 2010
Northern Region	Nam Trieu Shipyard, Haiphong (up to 3,000 DWT)	Nam Ha Shipyard, Nam Dinh (up to 3,000 DWT)
Central Region	Song Han Shipyard, Danang (up to 3,000 DWT)	Ben Thuy Shipyard, Vinh (up to 1,000 DWT)
Southern Region	CK-76 Shipyard, HCM City (up to 3,000 DWT)	Bin Trieu Shipyard, HCM City (up to 1,000 DWT)
Necessary Improvement Cost (billion VND)	95	90