

Chapter 7

PREPARATION OF PRIORITY PROJECTS

1998

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7.1 Proposed Packages for Effective Implementation of Priority Projects

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

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

- whether or not the priority project package can contribute to the urgent needs of expanding and strengthening the national transportation system; and
- whether or not the priority project package can meet short-term demands of coastal shipping and contribute to its sustainable development.

Improvement of the north-south transport system is a priority issue in Vietnam. The development of coastal shipping will not only help relieve excess transport load on road and rail, which have limited capacities. It has also been found that there will be a significant traffic demand along the north-south coast, which can be far more economically transported by ship. While the north-south route of coastal shipping can meet short-term demands effectively, its sustainable operation needs to be supported, first, to meet a number of requirements specified in international conventions, and second, to strengthen the stable supply of competent manpower in different areas related to improved coastal shipping. Accordingly, the following three priority project packages have been identified.

Package A: North-South Trunk Haulage Development

As an areawise coastal shipping system, priority was given to the North-South freight trunk route since existing traffic demand is concentrated there and future increasing demand will increase such concentration until the year 2000. Once the trunk route is established, secondary routes will be developed more effectively and easily. Therefore, a short term solution must deal with how to build up haulage capacity and to upgrade services in response to possible traffic demand, and how to prevent anticipated safety problems caused by the intensified traffic. For this purpose, Package A is proposed with the following components (Refer to Figure 7.1.1 and Table 7.1.1):

Figure 7.1.1
NORTH-SOUTH TRUNK ROUTE AND EIGHT PRIORITY PORTS

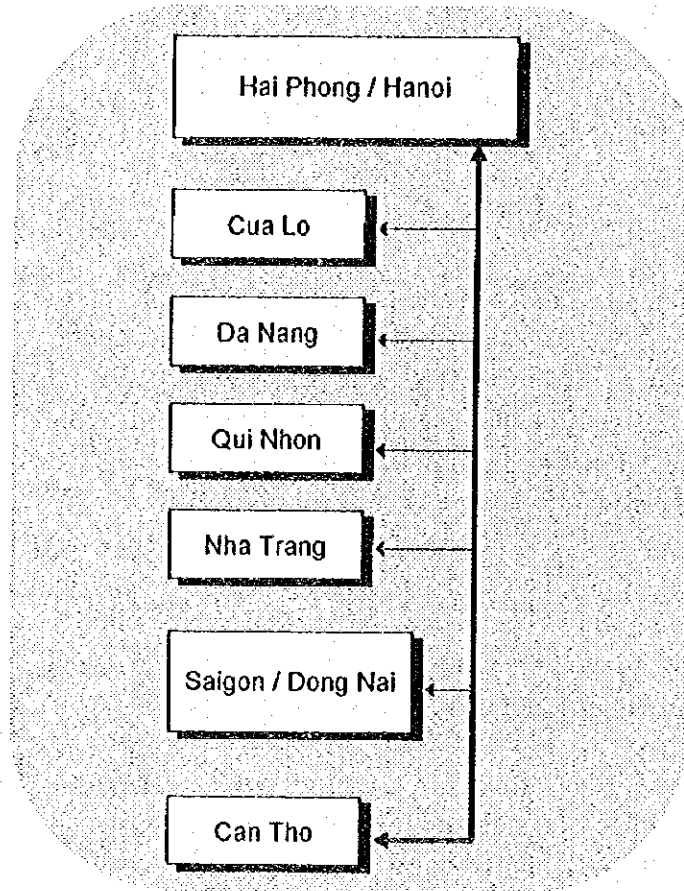


Table 7.1.1
ESTIMATED COST OF PACKAGE A

Component	Cost (US\$ million)
Nine General Coastal Shipping Ports (Haiphong, Hanoi, Cua Lo, Danang, Qui Nhon, Nha Trang, Saigon and Dong Nai and Can Tho)	160.1
Five Sea-Cum-Riverways serving the selected ports	10.9
Safety Equipment	
Visual ATN	21.7
Maritime safety fleet deployed around the above ports and routes	41.2
Workshops for fleet maintenance	2.9
Fleet development program	
Acquisition of ships	225.9 ⁽¹⁾
Ship repair yards	8.7
Shipping operation related improvement	N/A
TOTAL	471.4

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

The cost of Package A is estimated to be US\$ 460.3 million (or US\$ 338.0 million if allowance is made for possible reassignment of international ships and for chartering). Most (77%) of the benefits from implementing the Master Plan derive from lower operating costs of larger, more modern cargo vessels, in conjunction with more efficient port handling facilities. Since Package A embodies this aspect of the Master Plan it is reasonable to assume a very high economic rate of return for this package, of over 30%.

Package B: Program to Meet International Requirements

Some priority projects concern technical improvement to meet international requirements, to which Vietnam is already committed. This allows coastal shipping to be managed and operated at a sustainable level. In response to this technical aspect, Package B is prepared as listed in Table 7.1.2.

Table 7.1.2
ESTIMATED COST OF PACKAGE B

Component	Cost (US\$ million)
Sea communication system in compliance with GMDSS	
Land facilities	33.8
Vessel equipment	3.0
VIMARU improvement in compliance with 1995 STCW	4.5
Installation of testing laboratories to strengthen ship inspection	1.3
TOTAL	42.6

The cost of this package is much less than that of Package A. The corresponding economic benefits cannot be accurately estimated by the Study because, to a large extent, the benefits accrue not only to coastal shipping, but also to international shipping. Besides, because of Vietnam's international obligations these should be regarded as committed projects, without need for further evaluation.

Package C: Maritime Human Resource Development

Last but not least, human resources are a vital consideration for coastal shipping development. The aim of this package is to upgrade the existing maritime personnel to provide enough qualified staff, to be able to offer the higher standards of coastal shipping operation and management needed on an increasing scale in the future. It usually takes a certain time to develop human resources and the necessary measures have already been described in the Master Plan (section 6.3.7). The cost of the package is only US\$ 4.5 million for equipment needed to train seafarers at the main center, VIMARU, where most training takes place and where best use can be made of scarce resources. Again much of the benefit of this equipment accrues to international shipping and so evaluation is beyond the scope of the Study. However it should be seen as a complementary

package to Package A, without which many of the latter's substantial benefits could not be realized.

Immediate actions for implementing the three packages are proposed below. Since each package is designed for independent implementation, some overlap is unavoidable.

7.2 Package A: The Trunk Route Development by Capacity Building and Service Upgrading

7.2.1 Infrastructure

(a) Priority Port Improvement

The selected nine priority ports will need improvement to accommodate coastal shipping needs in the short-term. Ports are physically and functionally composed of wharf (quay type or pier type), berth, apron, yard, warehouse, cargo handling equipment, intra-port road, access road, railway siding, breakwater, access waterway, offshore anchorage area, and so on. The Study examined the necessity for improvement in every aspect, taking the projected coastal shipping traffic into account, and then worked out the detailed improvement plan and estimated costs. (Refer to Table 7.2.1 and 7.2.2.)

The improvement plan intends to avoid excessive investment and improve port operation effectively. It can be summarized as follows:

- Breakwater construction is proposed at Danang Port. Seaports in the central region usually suffer from rough seas and high waves during the monsoon season and Danang Port must close about forty-five (45) days between October and January. With a breakwater, the port can operate continuously and thus contribute a great deal to stable coastal shipping operation. At Cua Lo Port, dredging and mole construction are proposed to accommodate larger vessels all the year round. The construction cost for both ports is estimated at US\$ 52.4 million (excluding an additional 8% for design and supervision) or 45% of the total construction costs.
- Development of additional berths is proposed at Hanoi, Cua Lo, Nha Trang and Dong Nai ports while Haiphong, Danang, Qui Nhon Saigon and Can Tho ports will utilize existing berths until the year 2000. Cua Lo Port will become a big coastal shipping port with a new berth. The improvement plan proposes a total of seven berths which require US\$ 23.1 million (20% of the total construction cost.)
- To secure enough cargo handling space, yards and aprons will be expanded and/or paved at all priority ports. The cost is calculated at US\$ 11.8 million (10% of the total).
- For adequate and efficient cargo storage, new warehouses will be built at all priority ports and some dilapidated ones will be removed. The plan proposes to supply more

than 63,000 m² of covered storage area for port users. In particular, cargo storage service will be substantially improved at Qui Nhon and Saigon ports. This will account for 25% of the total construction cost, or US\$ 29.5 million.

- In the short-term, the plan involves procurement of mobile cranes and forklifts and use of pallets. As a result, fifteen mobile cranes, 167 forklifts and 54,400 pallets are included at a cost of US\$ 11.8 million (excluding 3% engineering service costs). Equipment costs represent, approximately, an additional 10% over and above the construction costs.

Table 7.2.1
**IMPROVEMENT PLAN FOR PRIORITY
 PORTS UP TO 2000 (1/2)**

<p>HAIPHONG PORT</p> <p>(Planning Assumptions)</p> <ul style="list-style-type: none"> • 5,000 DWT vessel • 1.18 million tons in 2000/ 1.6 million tons in 2010 • Major commodity (unloading agricultural products and loading cement) • Cargo allocation (1.1 million tons to Main Port, 0.5 million tons to Doan Xa district) 	<p><u>Wharf:</u></p> <p><u>Warehouse:</u></p> <p><u>Yard:</u></p> <p><u>Equipment:</u></p> <p><u>Others:</u></p>	<ul style="list-style-type: none"> • No wharf extension is planned. • Creation of additional apron space by covering vacant sections with concrete surface at Doan Xa. • Two new warehouses (floor area: 5,300m²) at Doan Xa • Pavement (5,000m²) at Doan Xa • Procurement of mobile cranes and forklifts and pallets • Access road to Doan Xa • Removal of disused revtment
<p>HANOI PORT</p> <p>(Planning Assumptions)</p> <ul style="list-style-type: none"> • 2,000 DWT vessel • 0.14 million tons in 2000/ 0.28 million tons in 2010 	<p><u>Wharf:</u></p> <p><u>Warehouse:</u></p> <p><u>Yard:</u></p> <p><u>Equipment:</u></p> <p><u>Others:</u></p>	<ul style="list-style-type: none"> • One new berth construction (90m x 20m) next to the container berth under construction. • One new warehouse (floor area = 5,300m²) • Pavement (5,000m²) • Procurement of mobile cranes and forklifts and pallets • Pavement and widening of intra-port roads • Pavement of access road
<p>CUA LO PORT</p> <p>(Planning Assumptions)</p> <ul style="list-style-type: none"> • 5,000 DWT vessel • 0.43 million tons in 2000/ 0.73 million tons in 2010 • Major commodity: rice, cement, coal 	<p><u>Wharf:</u></p> <p><u>Breakwater:</u></p> <p><u>Anchorage:</u></p> <p><u>Reclamation:</u></p> <p><u>Warehouse:</u></p> <p><u>Yard:</u></p> <p><u>Equipment:</u></p>	<ul style="list-style-type: none"> • Construction of three new berths (330m in length) downstream of existing berths. • Construction of a breakwater (1,000m in length and 5m in depth) against anticipated waves (3m in height.) • Dredging of anchorage area with a rectangular shape (330m x 150m.) The dredging volume is 430,000m³ to deepen 7m on average. • Reclamation (330m x 200m in area and 200,000m³ in quantity) and revtment (530m in length) for port expansion. • Building of three warehouses (floor area total = 11,400m²) • Pavement (16,000m²) • Procurement of mobile cranes and forklifts and pallets
<p>DANANG PORT</p> <p>(Planning Assumptions)</p> <ul style="list-style-type: none"> • 5,000 DWT vessel • 0.23 million tons in 2000/ 1.0 million tons in 2010 • Major commodity: cement, coal • Cargo allocation (0.6 million tons to Tien Sa and 0.4 million tons to Song Han) 	<p><u>Breakwater:</u></p> <p><u>Warehouse:</u></p> <p><u>Yard:</u></p> <p><u>Equipment:</u></p> <p><u>Others:</u></p>	<ul style="list-style-type: none"> • Construction of one breakwater (600m in length and 9m in depth) made mainly of blocked wall to absorb wave energy at Tien Sa. • Construction of a two-story warehouse at Song Han (floor area: 5000m²) • Pavement (3000m²) at Song Han • Procurement of mobile cranes, forklifts, indoor gate-shaped cranes and pallets at Song Han. • Construction of intra-port roads and a port gate at Song Han • Removal of three warehouses at Song Han.

Table 7.2.1
IMPROVEMENT PLAN FOR PRIORITY
PORTS UP TO 2000 (2/2)

<p style="text-align: center;">QUI NHON PORT</p> <p>(Planning Assumptions)</p> <ul style="list-style-type: none"> • 5,000 DWT vessel • 0.49 million tons in 2000/ 0.94 million tons in 2010 	<p><u>Wharf:</u></p> <p><u>Warehouse:</u></p> <p><u>Yard:</u></p> <p><u>Equipment:</u></p> <p><u>Others:</u></p>	<ul style="list-style-type: none"> • Utilization of the existing parallel wharves (350m in length for three berths. • Construction of two warehouses (floor area total: 16,800m²) • Pavement (70,000m²) • Procurement of mobile cranes, forklifts and trucks and pallets • Rearrangement and pavement of intra-port roads • Removal of two warehouses and other buildings
<p style="text-align: center;">NHA TRANG PORT</p> <p>(Planning Assumptions)</p> <ul style="list-style-type: none"> • 5,000 DWT vessel • 0.19 million tons in 2000/ 60 million tons in 2010 	<p><u>Wharf:</u></p> <p><u>Warehouse:</u></p> <p><u>Reclamation:</u></p> <p><u>Yard:</u></p> <p><u>Equipment:</u></p> <p><u>Other:</u></p>	<ul style="list-style-type: none"> • Construction of one pier (220m x 40m, 2 berths) combined with the existing quay. • Construction of one warehouse (floor area: 7,500 m²) • Reclamation (11,000m²) and revetment (200m) for port expansion. This needs earth and sand of 80,000m³. • Pavement (4,000m²) • Procurement of mobile cranes, forklifts and trucks and pallets • The access road should be widened and made less steep.
<p style="text-align: center;">DONG NAI PORT</p> <p>(Planning Assumptions)</p> <ul style="list-style-type: none"> • 2,000 DWT • 0.12 million tons in 2000/ 0.41 million tons in 2010 	<p><u>Wharf:</u></p> <p><u>Warehouse:</u></p> <p><u>Yard:</u></p> <p><u>Equipment:</u></p> <p><u>Other:</u></p>	<ul style="list-style-type: none"> • Construction of one quay (180m x 20m) for two berths. • Construction of two warehouses (floor area total = 5,120m²) • Pavement (9,000m²) • Procurement of mobile cranes, forklifts and pallets • Paving and widening of access road and installation of traffic lights at the intersection with National Route 1A
<p style="text-align: center;">SAIGON PORT</p> <p>(Planning Assumptions)</p> <ul style="list-style-type: none"> • 5,000 DWT • 1.33 million tons in 2000/ 2.60 million tons in 2010 • Cargo handling in berth 60%, in mid-river 40% • Nha Rong District will serve coastal shipping cargo. 	<p><u>Wharf:</u></p> <p><u>Warehouse:</u></p> <p><u>Equipment:</u></p> <p><u>Others:</u></p>	<ul style="list-style-type: none"> • No wharf extension (currently 492 m or 4 berths in Nha Rong District) • Construction of two warehouses (floor area total: 15,000m²) • Procurement of mobile cranes, forklifts, trucks and pallets. • Removal of seven warehouses and some other buildings. • Dredging of anchorage area
<p style="text-align: center;">CAN THO PORT</p> <p>(Planning Assumptions)</p> <ul style="list-style-type: none"> • 5,000 DWT • 0.04 million tons in 2000/ 0.05 million tons in 2010 	<p><u>Wharf:</u></p> <p><u>Warehouse:</u></p> <p><u>Yard:</u></p> <p><u>Equipment:</u></p>	<ul style="list-style-type: none"> • No wharf extension • Rehabilitation of one warehouse (floor area: 3,420m²) • Pavement (5,000m²) • Procurement of mobile cranes, forklifts and pallets.

Table 7.2.2
COST ESTIMATION FOR PRIORITY PORT IMPROVEMENTS (1/2)

Port	Category	Work Item	Unit	Unit Price (US\$)	Quantity	Price (US\$)
(1) HAIPHONG						
Main Port	Cargo Handling Equipment	Truck Crane 40t	pcs	450,000	2	900,000
		Forklift 3t	pcs	23,000	22	506,000
Pallet 1.3m ²		sheet	20	7,400	148,000	
Doan Xa	Quay with Apron	Quay Construction (180x30)	m ²	800	5,400	4,320,000
		Revetment	m	540	180	97,200
	Warehouse 35x75x2	m ²	450	5,250	2,362,500	
	Yard Pavement As	m ²	33	5,000	165,000	
	Cargo Handling Equipment	Truck Crane 40t	pcs	450,000	2	900,000
		Forklift 3t	pcs	23,000	21	483,000
		Pallet 1.3m ²	sheet	20	5,700	114,000
Sub Total						9,995,700
(2) HANOI						
Wharf (1 berth) (2000 DWT)	Quay Construction 90x20	Quay Construction	m ²	950	1,800	1,710,000
		Revetment	m	540	90	48,600
	Warehouse 40x125x1	m ²	450	5,000	2,250,000	
	Yard Pavement As	m ²	33	5,000	165,000	
	Cargo Handling Equipment	Truck Crane 20t	pcs	278,000	1	278,000
		Forklift 3t	pcs	23,000	8	184,000
		Pallet 1.3	m ²	20	2,700	54,000
Sub Total						4,689,600
(3) CUA LO						
Wharf (3 berths) (5000 DWT)	Quay Construction 330x30	Quay Construction	m ²	1,380	3,300	4,564,000
		Revetment	m	5,800	550	3,190,000
	Mole	m	18,000	1,000	18,000,000	
	Dredging	m ³	4	800,000	3,200,000	
	Reclamation	m ³	4	200,000	800,000	
	Grading 220x330m	m ²	1.3	33,000	42,900	
	Warehouse 40x95x3	m ²	450	3,800	1,710,000	
	Yard Pavement As	m ²	33	16,000	528,000	
	Cargo Handling Equipment	Truck Crane 40t	pcs	450,000	1	450,000
		Forklift 3t	pcs	23,000	12	276,000
Pallet 1.3m ²		sheet	20	4,100	82,000	
Sub total						32,832,900
(4) DANANG						
Tien Sa	Breakwater (A)	Sloping Breakwater	m	29,000	100	2,900,000
	Breakwater (B)	Composite Breakwater	m	56,500	500	28,250,000
Song Han	Warehouse (2 flrs) 20x125x1		m ²	850	2,500	2,125,000
	Yard Pavement As		m ²	33	3,000	99,000
	Cargo Handling Equipment	Truck Crane 40t	pcs	278,000	1	278,000
		Forklift 3t	pcs	23,000	14	322,000
		Pallet 1.3m ²	sheet	20	4,400	88,000
		Bridge-shaped Crane in Warehouse	pcs	91,000	4	364,000
Sub Total						34,426,000
(5) QUI NHON						
Warehouse	Warehouse 56x150x2		m ²	450	16,800	7,560,000
	Yard Pavement As 350x200		m ²	33	70,000	2,310,000
	Cargo Handling Equipment	Truck Crane 40t	pcs	450,000	2	900,000
		Forklift 3t	pcs	23,000	15	345,000
		Plane Truck 10t	pcs	89,000	12	1,068,000
Pallet 1.3 m ²	sheet	20	9,400	188,000		
Sub Total						11,561,000

Table 7.2.2
COST ESTIMATION FOR PRIORITY PORT IMPROVEMENTS (2/2)

Port	Category	Work Item	Unit	Unit Price (US\$)	Quantity	Price (US\$)
(6) NHA TRANG	Wharf (5000 DWT)	Pier Construction 220x40	m ²	1,350	8,800	11,880,000
	Reclamation		m	13,000	200	2,600,000
	Revetment		m ³	4	80,000	320,000
	Grading		m ²	1	11,000	14,300
	Warehouse	50x150x1	m ²	450	7,500	3,375,000
	Yard Pavement	As	m ²	33	4,000	132,000
	Cargo Handling Equipment	Truck Crane 40t	pcs	450,000	1	450,000
		Plain Truck 10t	pcs	89,000	6	534,000
		Forklift 3t	pcs	23,000	7	161,000
		Pallet 1.3m ²	sheet	20	2,500	50,000
Sub Total					19,516,300	
(7) SAIGON (NHA RONG)	Warehouse	90x100x2	m ²	450	18,000	8,100,000
	Cargo Handling Equipment	Truck Crane 40t	pcs	450,000	4	1,800,000
		Forklift 3t	pcs	23,000	49	1,127,000
		Pallet 1.3 m ²	sheet	20	16,200	324,000
Sub Total					11,351,000	
(8) DONG NAI	Wharf (2B) (2000 DWT)	Quay Construction 180x20	m ²	950	1,800	1,710,000
		Revetment	m	540	90	48,600
	Warehouse	32x80x2	m ²	450	2,500	1,125,000
	Yard Pavement	As: 180x100	m ²	33	9,000	297,000
	Cargo Handling Equipment	Forklift 3t	pcs	23,000	9	207,000
		Pallet 1.3m ²	sheet	20	1,500	30,000
Sub Total					3,417,600	
(9) CAN THO	Warehouse		m ²	250	3,420	855,000
	Yard Pavement		m ²	33	5,000	165,000
	Cargo Handling Equipment	Truck Crane 40t	pcs	23,000	8	230,000
		Pallet 1.3m ²	pcs	20	500	10,000
Sub Total					1,710,000	
Total	(a) Civil Construction Work					117,009,100
	(b) Design and Supervision for (a) @8%					9,360,728
	(c) Cargo Handling Equipment					12,491,000
	(d) Engineering Service for (c) @3%					374,730
	(e) Contingency @15%					20,885,332
	(a) + (b) + (c) + (d) + (e)					160,120,880

(b) Sea-cum-Riverways Development

1) Availability

Among the nine priority ports, Haiphong, Hanoi, Dong Nai, Saigon, and Can Tho ports are located inland and they need sea-cum-riverways as access routes from the sea. Taking into consideration available data made by responsible agencies and the results of supplementary engineering surveys conducted by the Study Team, the sea-cum-riverways to Haiphong, Dong Nai and Saigon ports may receive the designed vessel size, i.e., 5,000 DWT, 2,000 DWT, and 5,000 DWT, accordingly. However, the routes to Hanoi and Can Tho ports are hardly acceptable for the design vessels of 1,000 DWT and 5,000 DWT in the Master Plan.

2) Past Surveys of Lach Giang - Hanoi Route

The Lach Giang - Hanoi route is strategic in the national transport network and attractive among shipping operators and shippers. Route development is, therefore, of great concern to the government, which has conducted a series of surveys.

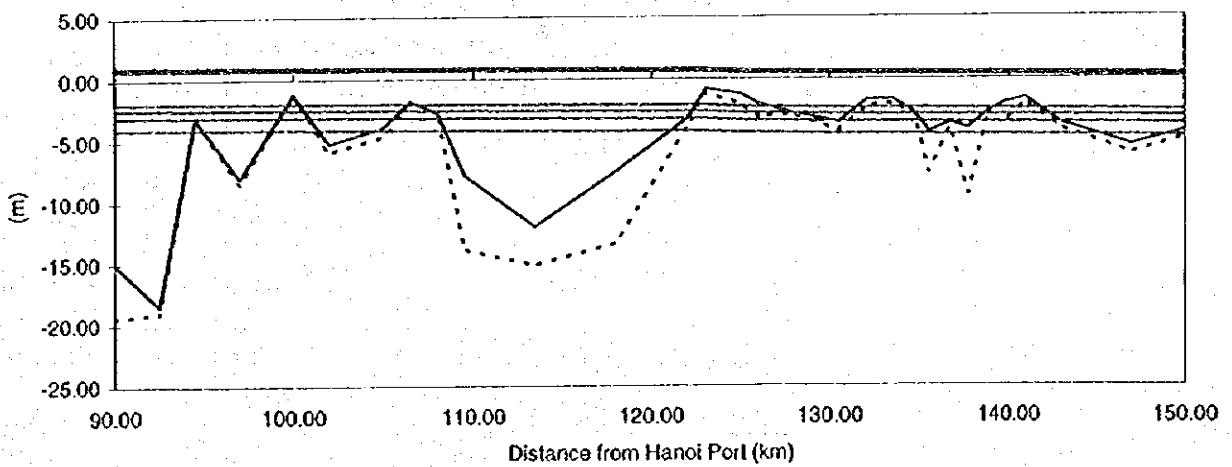
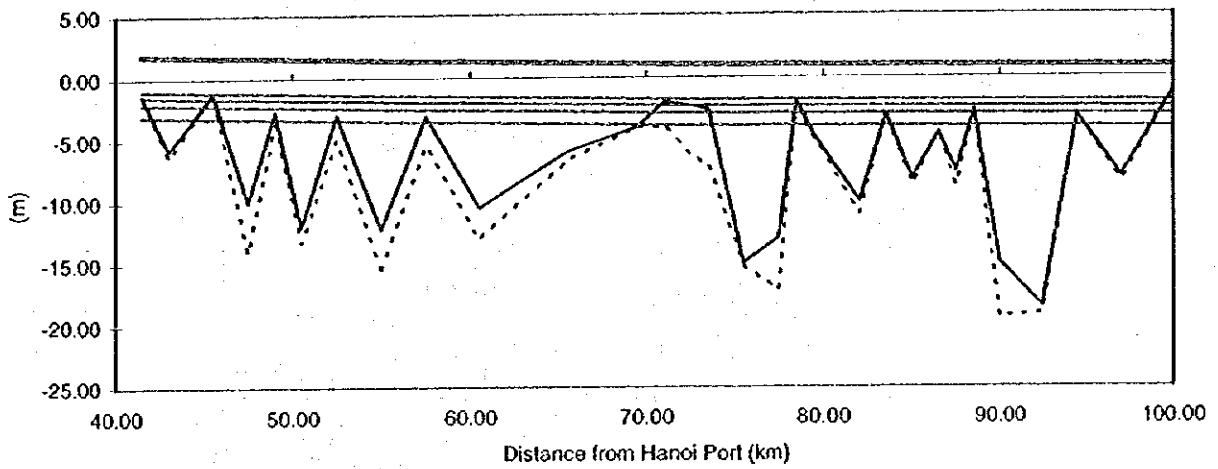
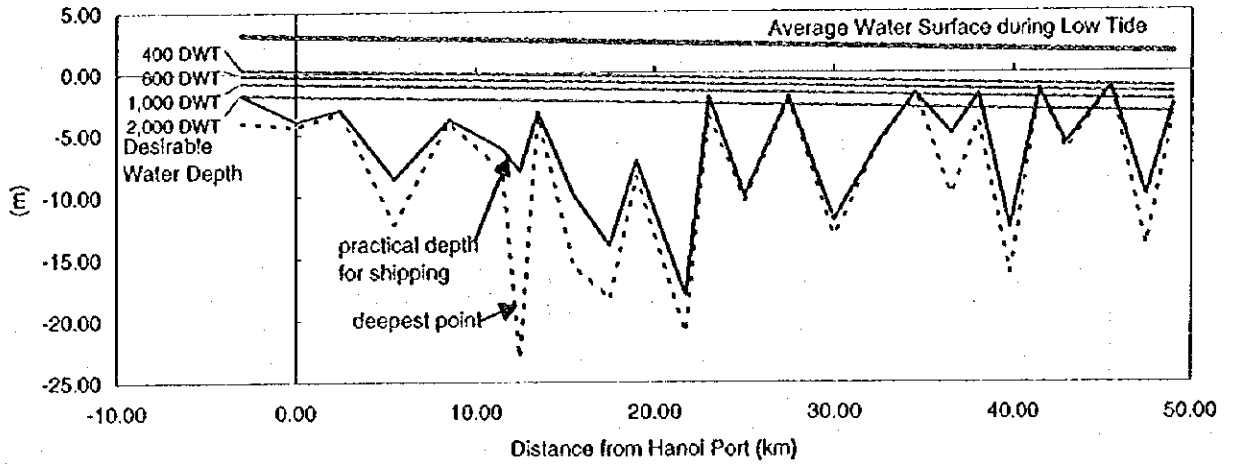
The water depth along the route is sectionally illustrated in Figure 7.2.1 which provides the deepest depth, practical depth for shipping, sporadic shallow depth and the required depths for the vessels of 400 DWT, 600 DWT, 1,000 DWT and 2,000 DWT. The sectional map indicates the number of un-navigable places by vessel type as follows:

400 DWT vessel (designed draft 1.8m)	=	0 places
600 DWT vessel (designed draft 2.3m)	=	10 places
1,000 DWT vessel (designed draft 2.9m)	=	16 places
2,000 DWT vessel (designed draft 3.9m)	=	25 places

It is noted that a clearance of 60 cm between a keel and riverbed is reserved in this exercise. Although the Study cannot check the accuracy of the map, it is anticipated that vessels of more than 1,000 DWT would face many critical passes. The most critical pass seems to be at the river mouth since water depth is quite changeable year by year and the deepest point is still insufficient for safe navigation.

TEDI estimated the necessary dredging volume along the route to accommodate vessels of 600 DWT, 1,000 DWT and 2,000 DWT as shown in Table 7.2.3.

Figure 7.2.1
WATER DEPTH IN THE HANOI-LACH GIANG ROUTE



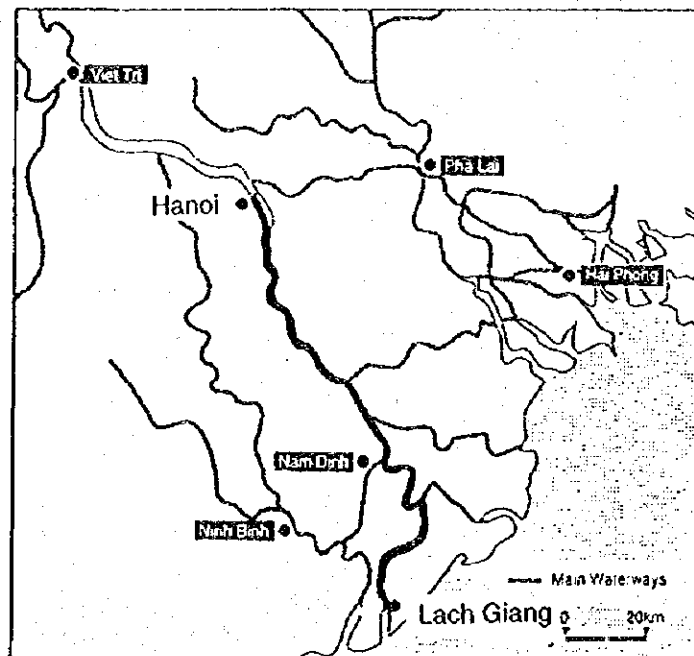
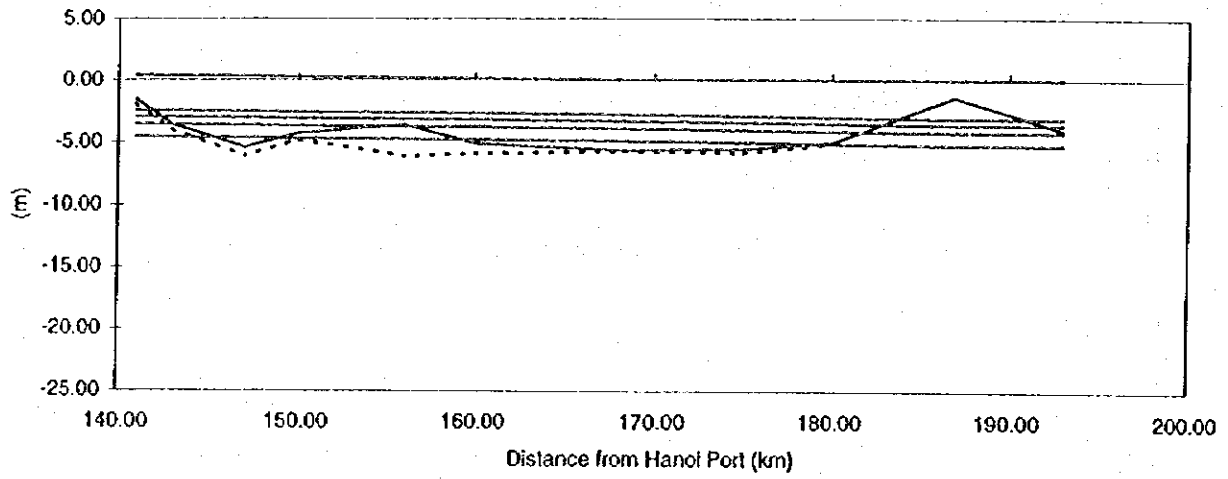


Table 7.2.3
REQUIRED DREDGING WORK AT LACH GIANG - HANOI ROUTE

Work Item	600 DWT	1,000 DWT	2,000 DWT
Initial Dredging Work			
River (m ³)	322,295	644,980	1,258,452
River mouth(m ³)	144,560	275,890	407,585
Designed Surplus (m ³)	86,824	173,843	301,868
Total Volume (m ³)	553,679	1,114,713	1,967,905
Cost (mil. VND)	6,135	12,283	21,330
Annual Dredging Work for Maintenance			
River (m ³)	107,355	172,728	244,080
River mouth (m ³)	38,250	94,500	103,660
Designed Surplus (m ³)	26,576	50,564	64,376
Total Volume (m ³)	172,181	317,793	412,116
Cost (mil. VND)	1,878	3,573	4,548

Source: TEDI 1996

Note: Dredging cost at river section and designed surplus - 9,912 VND/m³
Dredging cost at river mouth - 14,387 VND/m³

According to TEDI's calculation, the following characteristics can be pointed out:

- Large vessels need large quantities of dredging work which increases more than proportionally with vessel size.
- Maintenance work is quite significant compared with initial work. The ratio of initial work to maintenance work is 3.3 - 4.6 to 1.

3) Preliminary Suggestion on the Development of the Lach Giang - Hanoi Route
The Study found different development schedules assumed by various agencies regarding the development of the Lach Giang - Hanoi route. They are:

TEDI: 600 DWT vessels will be navigable by the year 2000, and
1,000 DWT vessels will be navigable by the year 2010
IWB: 1,000 DWT vessels will be navigable by the year 2000

A feasibility study funded by ADB will be conducted for the Red River development including this section to identify the best development option.

4) On-going Project of Cua Dinh An - Can Tho Route
Cua Dinh An is the critical pass for smooth navigation of 5,000 DWT vessels on the route. According to the hydrographic survey in 1991, the shallowest point at Cua Dinh An was 4.5m which should be deepened to 7.0m to accommodate 5,000 DWT vessels. Currently, dredging work is being undertaken with financial assistance by World Bank.

7.2.2 Maritime Safety

(a) Visual Aids

In the short term, 24 lighthouses will be rehabilitated, 11 lighthouses will be reconstructed and 26 lighthouses will be newly constructed in addition to the 20 existing operational units. Their names and positions are listed in Tables 7.2.4, 7.2.5 and 7.2.6, accordingly. They will be able to provide at least single bearing service to all the vessels which are navigating on coastal seaways in Vietnam.

Table 7.2.4
EXISTING LIGHTHOUSES TO BE REHABILITATED

Region	Name of Lighthouse	Geographic Coordinate	
I	VINH THUC	21°23'48"N	107°59'30"E
	COTO	20°59'58"N	107°45'10"E
	SOIDEN	20°49'37"N	107°17'15"E
	QUAT LAM	20°11'05"N	106°21'30"E
	LACH TRAO	19°47'30"N	105°55'24"E
	BIEN SON	19°20'20"N	105°49'14"E
II	CUA HOI	18°45'41"N	105°45'14"E
	CUA SOT	18°27'23"N	106°56'07"
	NHAT LE	17°28'45"N	106°37'06"E
	CUA VIET	16°54'06"N	107°11'30"E
	TIEN SA	16°08'15"N	106°19'36"E
	LY SON	15°23'10"N	109°08'45"E
III	PHUOC MAI	13°45'34"N	109°15'23"E
	HON CHUT	11°46'54"N	109°12'55"E
	NUI CHUT	12°12'00"N	109°13'00"E
IV	DINH AN	09°33'00"N	106°33'00"E
	HON CHUOI	08°57'00"N	104°32'00"E
	NAM DU	09°38'00"N	104°39'00"E
	NUI NAI	10°22'00"N	104°26'00"E
	THO CHU	09°28'00"N	103°28'00"E
	BA DONG	09°41'05"N	106°34'55"E
	AN THOI	10°00'00"N	104°03'00"E
	DUONG DONG	10°11'04"N	104°02'08"E
	RACH GIA	10°07'00"N	105°04'00"E
Total		24	

**Table 7.2.5
EXISTING LIGHTHOUSES TO BE RECONSTRUCTED**

Region	Name of Lighthouse	Geographic Coordinate	
I	DIEN DIEN	20°33'26"N	107°68'30"E
	LACH QUEN	19°06'14"N	105°45'14"E
II	MUI RON	18°07'03"N	106°25'19"E
	CUA TUNG	17°01'06"N	107°06'18"E
III	BA NGOI	11°54'00"N	109°09'00"E
	CUA TIEU	10°15'00"N	106°26'00"E
IV	ONG DOI	10°00'00"N	104°03'00"E
	BA LANG	15°14'00"N	108°56'00"E
	HAM NINH	10°11'04"N	104°02'08"E
	CON DAO	08°41'00"N	106°35'00"E
	DA TRANG	08°38'05"N	106°36'05"E
Total		11	

Table 7.2.6 NEWLY BUILT LIGHTHOUSES

Name of Lighthouse	Geographic Coordinate		Range
CHON MAY	16°20'17"N	108°01'02"E	16
HON HAI	09°58'00"N	109°05'00"E	25
MY THANH	08°21'05"N	106°10'00"E	14
HON DOC	10°19'00"N	104°19'00"E	14
HON CHONG	10°38'00"N	104°38'30"E	14
BAI CA MAU	08°08'00"N	103°35'00"E	14
HON BAI	20°44'16"N	107°10'28"E	15
LACH GIANG	20°00'00"N	106°12'30"E	14
CUA TU HIEN	16°21'20"N	107°55'10"E	13
VAN CA	15°25'30"N	108°47'50"E	14
CUA DAI	15°52'07"N	108°23'06"E	13
SA KY	15°13'00"N	108°55'03"E	13
TINH LUONG	15°10'00"N	108°54'00"E	13
MY A	14°49'07"N	108°58'07"E	13
CANH DEN	13°22'00"N	109°17'00"E	13
HON DO	12°28'00"N	109°21'00"E	15
PHAN RANG	11°35'02"N	109°03'00"E	13
PHAN RI	11°10'00"N	108°33'07"E	13
PHAN THIET	10°55'00"N	108°06'00"E	13
DONG TRANH	10°22'30"N	106°52'00"E	13
GANH HAO	09°01'00"N	105°25'00"E	13
CUA BO DE	08°43'42"N	105°14'30"E	13
CUA LON	08°43'30"N	104°50'30"E	13
ONG DOC	09°02'00"N	104°48'00"E	13
HON THON	09°57'00"N	104°01'00"E	15
CON LOI	09°52'54"N	108°41'36"E	13
Total		26	

Regarding light beacons and lighted buoys, nine beacons will be rehabilitated and 156 buoys will be installed around large ports and densely trafficked ways by the year 2000. Their distribution is shown in Table 6.3.18. On the other hand, lighted buoys along sea-cum-riverways under the jurisdiction of IWB will start to be installed after 2000 since navigational ways should be adequately dredged and fixed before buoy installation.

The cost of visual ATN is estimated at US\$ 21.5 million (Refer to Table 7.2.7.) The implementing agency is assumed to be VMS.

Table 7.2.7
COST ESTIMATION OF VISUAL ATN AS A SHORT-TERM PRIORITY PROJECT

Type	Size	Tower	Quantity	Unit Price (US\$000)	Amount (US\$000)
Lighthouse Rehabilitation	I	(30m Height)	6	148	888
	II	(20m Height)	4	154	616
	III	(10m Height)	11	154	1,694
	IV	(10m Height)	3	154	462
Lighthouse Reconstruction	I	(30m Height)	1	579	579
	III	(10m Height)	1	303	303
	IV	(10m Height)	9	303	2,427
Lighthouse Construction	II	(20m Height)	1	404	404
	III	(10m Height)	5	303	1,515
	IV	(10m Height)	20	303	6,060
Light Beacon Rehabilitation		10m Height	9	257	2,315
Lighted Buoy Installation	Type III		156	27	4,253
Total	-	-	-	-	21,516

(b) Maritime Safety Fleet

In the short-term, one medium size multi-purpose ship (400 tons), eight small multi-purpose ships (80 tons) and eight small boats (5 tons) will be deployed at Haiphong, Danang and Vung Tau. The multi-purpose ships will be ordinarily engaged in ATN supportive work such as patrol, maintenance, repair and delivery service during normal times while, during emergencies, they will be engaged in rescue operations such as fire-fighting and life-saving for vessels in distress. Small boats will patrol on calm waters and provide minor maintenance services to navigational aids.

With this maritime safety fleet, maritime safety in congested areas of coastal shipping will be enhanced. The total ship acquisition cost is estimated at US\$ 41.24 million provided foreign built ships are procured. The amount is divided by ship type as follows:

Ship Type	Unit Price (US\$ million)	Amount (US\$ million)
Medium multi-purpose ships	15.0	15.0
Small multi-purpose ships	3.0	24.0
Small Boats	0.28	2.24

Table 7.2.8
MAIN SPECIFICATIONS OF MARITIME SAFETY SHIPS

Item	Small Multi-purpose Ship	Medium Multi-purpose Ship
Hull Material	High tensioned steel	Steel
Navigation Area	Coastal	Coastal
Gross Tonnage	80 tons	400 tons
Size (LxBxD)	23.0 x 6.0 x 2.8m	46.5 x 9.2 x 4.3 m
Main Engines	Diesel 540 ps x 2 units	Diesel 1500 ps x 2 units
Speed	14 knots	15 knots
Major Equipment	<ul style="list-style-type: none"> • Fire-fighting guns 	<ul style="list-style-type: none"> • Foam shooting gun (3,000 ltr/min. x 2 units) • Powder shooting gun (35kg/sec x 1 unit) • Heat -protecting nozzles • 30 ton towing hook • 30 ton towing wench • Oil boom lifting devices • Operations Information Center (OIC) to become an onboard RCC in emergency

(c) ATN workshop

New visual ATN need modern repair equipment. Otherwise, the availability rate of the equipment will decline. The existing four workshops will have to replace outdated equipment. Table 7.2.9 shows the list of required equipment and its cost.

(d) Rescue Coordination Centers (RCC)

Three Rescue Coordination Centers (RCCs) will be established in Haiphong, Danang and Vung Tau before the year 2000. Their addresses are tentatively determined as follows:

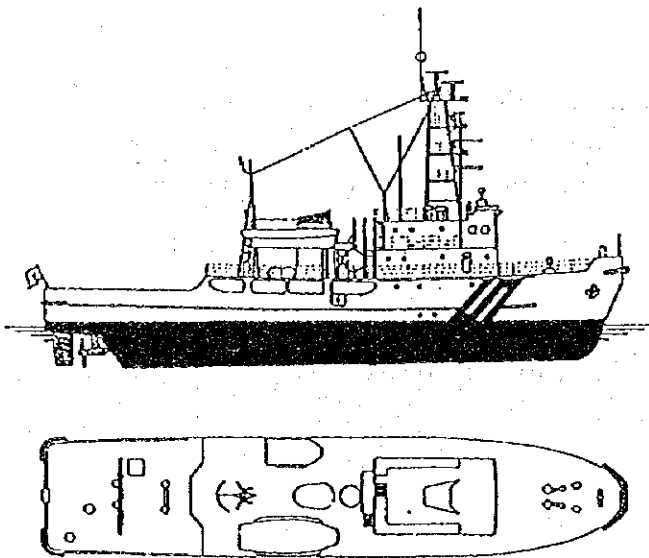
- VMS Office in Haiphong
- Port Authority Office in Danang
- VMS Office or Port Authority Office in Vung Tau

Establishing RCCs will need only minor expenditure such as installation of telephone lines although well-trained coordinators are required.

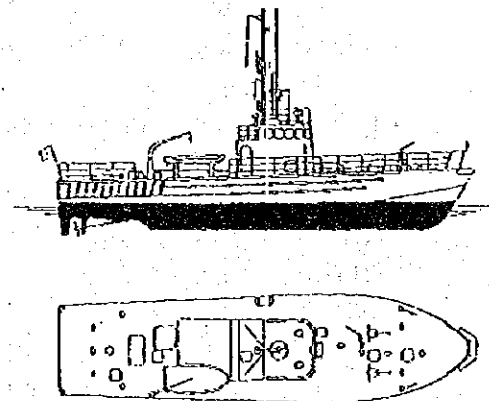
Table 7.2.9
LIST OF REQUIRED EQUIPMENT IN FOUR WORKSHOPS

Type of Equipment	Quantity	Price/set (US\$000)	Amount (US\$000)
1. Iron work machine	4	221	884
2. Wood work machine	4	15	60
3. Cutting and welding machine	4	20	80
4. Compressor and pump	4	9	36
5. Hand tools	4	2	3
6. Bench tools	4	12	48
7. Transportation equipment	4	362	1,448
8. Generator set	4	40	160
9. Test and Measuring instrument	4	29	116
10. Maintenance instrument	4	23	82
Total			2,932

Figure 7.2.2
DRAWINGS OF PROPOSED MARITIME SAFETY SHIPS



Multi-Purpose Middle Ship (400ton)



Multi-Purpose Small Ship (80ton)

7.2.3 Fleet Development

(a) Fleet Financing

The main financial requirement of maritime transport operators is funds for purchasing new or second-hand vessels. In particular funds are required for

- primary cargo routes, which serve the main ports along the north-south axis and are suitable for vessels between about 3,000 and 5,000 DWT, and
- secondary cargo routes, which serve shorter distance or low traffic density movements using vessels less than 1,000 DWT.

Because of the shortage of modern, efficient vessels able to transport goods on the primary cargo routes, it is proposed that priority should be given in the short term to acquiring vessels of between 3,000 and 5,000 DWT, which can be used on the main north-south corridor.

Vessel Requirements for Primary and Secondary Services

The potential acquisitions for each year from 1997 to 2000 are estimated in Table 7.2.4. On the main north-south corridor, 21 vessels of 3,000 DWT or 15 vessels of 5,000 DWT are estimated to be required (excluding cement carriers). This represents most of the large vessels included in Table 7.2.10. In addition about 11 vessels of 3,000 DWT are estimated to be needed on other main routes connecting Cua Lo, Danang, Qui Nhon and Nha Trang with the main corridor.

The actual number of acquired vessels depends on a number of factors such as

- the extent to which vessels are chartered rather than purchased (as indicated in Table 7.2.10),
- the age at which vessels used on coastal shipping routes are retired (it is assumed in Table 7.2.10 that all vessels are retired at 20 years of age), and
- the extent to which vessels are transferred from international to coastal shipping routes.

The following section examines the financial implications of the fleet acquisition plan and considers alternative means of financing the plan.

Financial Requirements

Estimated finance of US\$ 226 million could be required for ship acquisition up to 2000 assuming implementation of the Dung Quat project, retirement of vessels at 20 years of age, and replacement with new or second-hand purchases without any reassignments from international routes. The annual amount increases from about US\$ 37 to 95 million between 1997 and 2000. Without the Dung Quat project, only US\$ 204 million is required, increasing from US\$ 37 to 67 million annually.

Table 7.2.10
EXPECTED FINANCE REQUIRED UP TO 2000 FOR SHIP ACQUISITIONS

Ship Type	Number of Ships Acquired		Price per ship (\$ mil)	Required Capital (US\$ mil)					
				1997	1998	1999	2000	Total	
General Cargo/Bulk									
- 300 DWT	41	(41)	0.6	6.0	6.0	6.0	6.6	24.6	(24.6)
- 1,000 DWT	0	(0)	2.3	0.0	0.0	0.0	0.0	0.0	(0.0)
- 3,000 DWT	19	(15)	4.0	16.0	16.0	20.0	24.0	76.0	(60.0)
- 5,000 DWT	10	(5)	2.8	5.6	5.6	8.4	8.4	28.0	(14.0)
- 10,000 DWT	2	(0)	4.8	0.0	0.0	4.8	4.8	9.6	(0.0)
Cement Carrier									
- 5,000 DWT	4	(2)	3.4	0.0	3.4	3.4	6.8	13.6	(6.8)
- 7,000 DWT	0	(0)	4.0	0.0	0.0	0.0	0.0	0.0	(0.0)
Semi-Container Ship									
- 2,000 DWT	2	(2)	7.0	7.0	7.0	0.0	0.0	14.0	(14.0)
Ro-Ro Ship									
- 5,000 DWT	0	(0)	4.8	0.0	0.0	0.0	0.0	0.0	(0.0)
Oil Tanker									
(a) with Dung Quat									
- 2,300 DWT	2	(2)	6.4	0.0	0.0	6.4	6.4	12.8	(12.8)
- 20,000 DWT	3	(2)	7.3	0.0	0.0	0.0	21.9	21.9	(14.6)
- 80,000 DWT	1	(0)	11.2	0.0	0.0	0.0	11.2	11.2	(0.0)
(b) without									
- 1,000 DWT	2	(1)	4.0	0.0	4.0	0.0	4.0	8.0	(4.0)
- 3,000 DWT	2	(1)	8.0	0.0	8.0	0.0	8.0	16.0	(8.0)
Passenger Ship									
- 490 GRT 140 seat	2	(2)	0.6	0.0	0.0	0.6	0.6	1.2	(1.2)
- 95 GRT 200 seat	1	(1)	3.0	0.0	0.0	3.0	0.0	3.0	(3.0)
- 60 GRT 90 seat	5	(5)	2.0	2.0	2.0	2.0	4.0	10.0	(10.0)
TOTAL									
(a) With Dung Quat	92	(77)		36.6	40.0	54.6	94.7	225.9	(161.0)
(b) Without	90	(75)		36.6	52.0	48.2	67.2	204.0	(145.6)

NOTE: (1) The costs in brackets assume that some vessels are chartered rather than purchased.
(2) For Alternative 3 vessel acquisition alternative.

SOURCE: JICA Study Team

In practice the investment needs of coastal shipping could be much less, as indicated in Table 7.2.11. For example, according to VINALINES plans, about 20 old ships (aged about 20 years or more) of total capacity 100,000 DWT, currently engaged in international shipping are to be reallocated to coastal shipping routes in the short term (requiring only minor modifications to make them suitable for coastal shipping, although operating and maintenance costs would be high because of their obsolete designs and potential unseaworthiness). Such a reallocation could meet most of the short term needs of coastal shipping on the main routes, leaving a requirement only for several small general cargo vessels, about ten 3,000 DWT general cargo vessels, and several cement carriers, semi-container ships, oil tankers, and passenger ships. This would amount in total to US\$ 130-152 million, which is only two-thirds of the figure estimated for all coastal shipping.

In addition some of the required vessels could be chartered. Based on VINALINES and other operators' plans this could reduce by between 20 and 50% the number of large ships purchased before 2000 (but have little impact on acquisitions of smaller ships). Based on this assumption, and assuming no reassignment of international vessels, only US\$ 161 million would be required for ship acquisition up to 2000 assuming implementation of the Dung Quat project (US\$ 146 million without).

The combined impact of reassignment of international vessels and chartering is estimated to reduce the investment requirement to US\$ 104-119 million, which is only half the figure estimated in Table 7.2.11. However even such reduced investment levels are far higher than historic figures which raises the question of whether even the minimum investment level is feasible with present sources of finance.

Table 7.2.11
SHORT TERM INVESTMENT REQUIREMENTS ALLOWING FOR
REASSIGNING OF INTERNATIONAL SHIPS AND CHARTERING

Type of Ship	Reassignment of 20 International General Cargo Ships	Chartering 20-50% of larger ships	Reassignment of 20 International Ships and Chartering
General Cargo			
(a) 300 DWT	24.6	24.6	24.6
(b) 3,000 DWT	40.0	74.0	32.0
Cement Carrier	13.6	6.8	6.8
Semi-container	14.0	14.0	14.0
Oil Tanker			
(a) With Dung Quat	45.9	27.4	27.4
(b) Without	24.0	12.0	12.0
Passenger	14.2	14.2	14.2
TOTAL			
(a) With Dung Quat	152.3	161.0	119.0
(b) Without	130.4	145.6	103.6

SOURCE: JICA Study Team

For most coastal shipping operators, domestic finance is potentially available from

- bank credit,
- reinvestment of accumulated capital, and
- in future, the Vietnamese stock market.

In addition, foreign credit is available from

- direct foreign investment from particular foreign organizations or individuals,
- ODA investments, and
- leasing arrangements (either financial leasing or operational leasing).

Reinvestment of accumulated capital is probably the main source of domestic finance at the present time because banks rarely give loans to the shipping sector and the stock market is not yet established. Although the supply of bank credit could be improved, through continued good macro-economic management by government, making the rules for giving credit more transparent, and making hire-purchase facilities more widely available, this will always be an expensive way to borrow money (except for state operators given credit on concessionary terms) and many new operators will be unable to qualify for loans because they do not have an established track record of business operations. The stock market offers a cheaper alternative supply of capital for larger operators but it will take several years to be established. Therefore, although accumulated capital (especially from other businesses because the coastal shipping business is becoming increasingly competitive and the opportunities for accumulating profits are becoming more and more limited within the business) and bank credit could remain the principal domestic sources of finance, they will never be sufficient for all coastal shipping needs.

Direct foreign investment by banks, companies and even individuals could be the most significant source of finance for coastal shipping in the short term. However there are major policy and regulatory obstacles to tapping this source of funds. For example,

- the forms of foreign ownership are rather restrictive at present,
- government policy does not encourage foreign investment in coastal shipping, and
- there are over-restrictive regulations on involvement in coastal shipping of companies which have a foreign partner or use foreign-registered ships.

The use of ODA funds for acquiring vessels is limited by the developmental conditions usually attached to such finance. In addition it takes time to establish such lines of credit which have to be channeled through local banks which are not yet well equipped to handle such on-lending responsibilities. There is even a risk that inefficient on-lending makes this credit unattractive to borrowers. An example of the ODA funded project

which is being tapped into domestic shipping fleet in the Philippines is shown in Table 7.2.12.

Financial leasing (or hire-purchase) of ships is potentially an important means for financing ship acquisition because it allows ship operators to use the acquired vessel as collateral. Operational leasing, in which the leasing company purchases the vessel and then rents it to the operator for limited periods of time, can also play an important role for operators with little capital or property to act as insurance against loss or damage to the ship. However there are no leasing companies in Vietnam at present who could offer such services to coastal shipping in the short term, although it is understood that some foreign companies are considering leasing foreign vessels which are surplus to requirements on international routes. Even here the scope for use of leased ships is deterred by over-restrictive conditions on use of foreign registered ships.

Although direct foreign investment and leasing could offer a vital source of finance for ship acquisitions, policy actions are required in the short term to establish favorable economic conditions for investment (from both domestic and foreign sources), and to minimize the cost of acquisitions. These are described below.

Recommendations

To meet the short term financial requirements of the coastal shipping industry requires a coordinated set of measures in the short term which

- minimizes investment needs, and
- encourages the supply of funds from potentially important sources.

In accordance with these objectives the following approach is suggested.

- The 20 existing medium sized vessels used mainly on international routes at present by VINALINES be reassigned to coastal shipping over the short term.
- Direct foreign investment be encouraged, especially in new services.
- Leasing facilities for foreign ships should be encouraged.

Reassigning the VINALINES ships would substantially reduce the short term investment needed for medium/large ships, used mainly in the main north-south corridor, from about US\$ 114 to 40 million. Reassigning these ships in conjunction with improved leasing facilities and use of chartering could reduce the overall short term investment need by about 50%, making it more feasible for improved supply of domestic credit and foreign direct investment to meet the remaining needs.

Table 7.2.12

Domestic Shipping Modernization Program (DSMP) in the Philippines

Background

The inter-island fleet has been the subject of many studies to improve its safety profile. The fleet has, in the past suffered setbacks in safety reputation as a result of tragic accidents that have claimed thousands of lives. And accidents have continued to plague the domestic shipping fleet. In fact, more than 5,000 domestic passengers have died among the fifth million passengers that have used maritime transport during the 5 years from 1986 to 1990. One of the areas of concern is how the fleet can be modernized to improve individual ship seaworthiness. It means, new ships must replace the old dilapidated ones in order to raise the level of safety of the fleet.

After a series of mishaps at sea, "Study on Master Plan on Maritime Safety (MAPMAS, 1991-1992) founded by JICA formulated master plan as well as short-term plan towards the improvement of maritime safety in the Philippines. Of which, fleet replacement and financing program was given high priority. The Maritime Safety Improvement Project (MSIP - I, 1993 - 1994) funded by OECF was a natural follow-up project to MAPMAS. Maritime Industry Authority (MARINA) directed that the MSIP - I embodied the fleet replacement and financing program for its implementation.

Scope of the DSMP

The OECF - DSMP is a credit facility under the 19th Year Loan Package of the Overseas Economic Corporation Fund. This Program is a policy-based lending project to support investments of enterprises engaged in domestic shipping and shipping related industries. The financing scope is defined as follows:

- a) The Development Bank of the Philippines (DBP) is the implementing agency of the DSMP. DBP plays the lender's role of the two step loan originally financed by OECF.
- b) Eligible borrowers under the DSMP are Filipino Citizens or Corporations who are duly accredited by concerned agencies of the government to engage in the business of domestic shipping; ship repair/shipbuilding; cargo handling and related terminal operations.
- c) Possible Investment Projects include:
 - acquisition of vessels, whether for replacement of a vessel to be condemned or for fleet expansion (replacement vessels would be preferred and these may be new building or second-hand vessels);
 - conversion or modification of vessels;
 - upgrading the technical standards of vessels or bringing a vessel into class; and
 - shipyard modernization/expansion, where eligible purposes for financing are land improvements, acquisition of machinery and equipment, construction/expansion of dry docking facilities, necessary services and initial working capital.
- d) Projects requested for financing shall undergo a technical evaluation process such as the adaptability of the vessel to the route, port, cargo handling, etc. All the vessels financed must be classed by any MARINA recognized classification society.
- e) All projects under the DSMP have to comply with applicable laws and regulations governing environmental protection.
- f) Each project loan ranges within the following amount:

Minimum	-	500,000 pesos	or	US\$20,000
Maximum	-	375 million pesos	or	US\$15 million
- g) The variable interest rates are in principle, the WAIR minus 2% but not lower than 12%. "WAIR" means the Weighted Average Interest Rate of 91 - day Treasury Bills.
- h) Repayment of sub-loan maturities shall range from 3 to 15 years, inclusive of the maximum grace period of 5 years.

(b) Improvement of Shipyards for Repairing Coastal Shipping Vessels

The Master Plan proposes that three shipyards will be urgently improved for repairing coastal shipping vessels. The existing facilities of each selected shipyard are indicated in Table 7.2.13, and individually assessed as follows:

Nam Trieu Shipyard (Haiphong)

The dry dock for ships of 3,000 DWT is now under construction and expected to be complete and put into operation in the 1st quarter of 1997. Except for this new dry dock, other workshops and buildings have mostly been used for 30 years. Although some rehabilitation activities have been carried out, the facilities are in ruins and machine capacity is low. (The six workshops of 3,028 m² and old offices must be improved.) Equipment is insufficient and out of date, especially machines for repairing ships, cranes, lifters, etc.

With existing equipment, the factory will not be able to meet demand in the following years. The ability to repair ships up to 3,000 DWT can only be achieved when the factory is equipped with suitable workshops and machines. At present there is also a lack of berths for repairing ships.

Song Han Shipyard (Danang)

The slipway, of length of 160 m, is suffering unequal sagging along and across the slipway base and there are problems with the carriageway wheels. The repair berth has many rotten parts in its steel structure, the carriage can scarcely reach half the length of the shop and almost all machines and equipment in workshops have been used more than 15 years and are not working due to lack of spares.

CK-76 Shipyard (HCM City)

The slipway with lifting capacity of 500 T has become obsolete, and other facilities and equipment are poor and old. In order to meet the increasing ship repair demand, improvement of shipyard facilities and equipment, including the dry dock, slipway and workshop machinery, are necessary.

Based on the above assessment, the shipyard improvement plans have been prepared. These include proposed layouts and improvements to facilities and equipment. The investment costs are as shown in Figure 7.2.3.

Table 7.2.13
EXISTING FACILITIES IN THE SELECTED SHIPREPAIR YARDS

Name of Shipyard	Nam Trieu Shipyard	Song Han Shipyard	CK-76 Shipyard
Location	Haiphong	Danang	Ho Chi Minh City
Year of establishment	1967	1979	1976
Supervising organization	VINASHIN	VINASHIN	VINASHIN
Total area	9 ha	5.5 ha	4.9 ha
Number of working staff	404	88	352
	Engineers : 34	Engineers/Technicians : 12	Engineers : 13
	Technicians : 36	Workers : 50	Technicians : 7
	Experienced workers : 144	Administration staffs : 26	Experienced workers : 68
	Workers : 132		Workers : 244
	Office Staff : 58		Office Staff : 20
Capacity for shipbuilding	500 DWT	600 DWT	600 DWT
Capacity for ship repair	5,000 DWT	600 DWT	10,000 DWT (at anchorage)
Dock size & Crane capacity	110m x 20m - 3,000 DWT x 1 (Under construction)		
Slipway size & Crane capacity	50m x 30m - 200LT x 1		
Mooring quay length & Crane capacity	20m x 1 5/10 T x 1	160m x 10m - 400LT x 1 70m x 8m - 100LT x 1	40m x 10m - 500LT x 1
Floating dock size & Crane capacity		40m x 1 15m x 1	

Source: VRES and JICA Study team

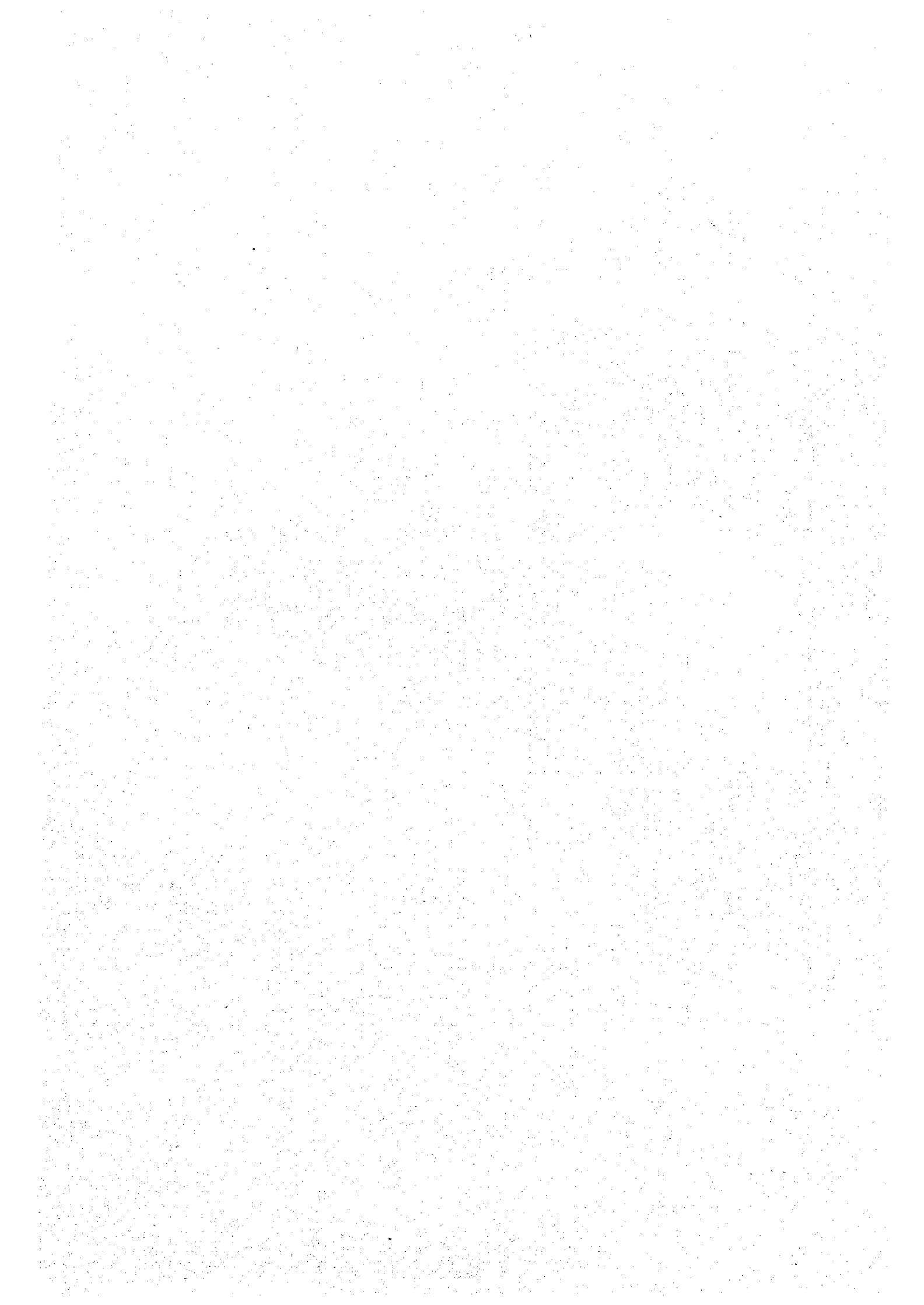
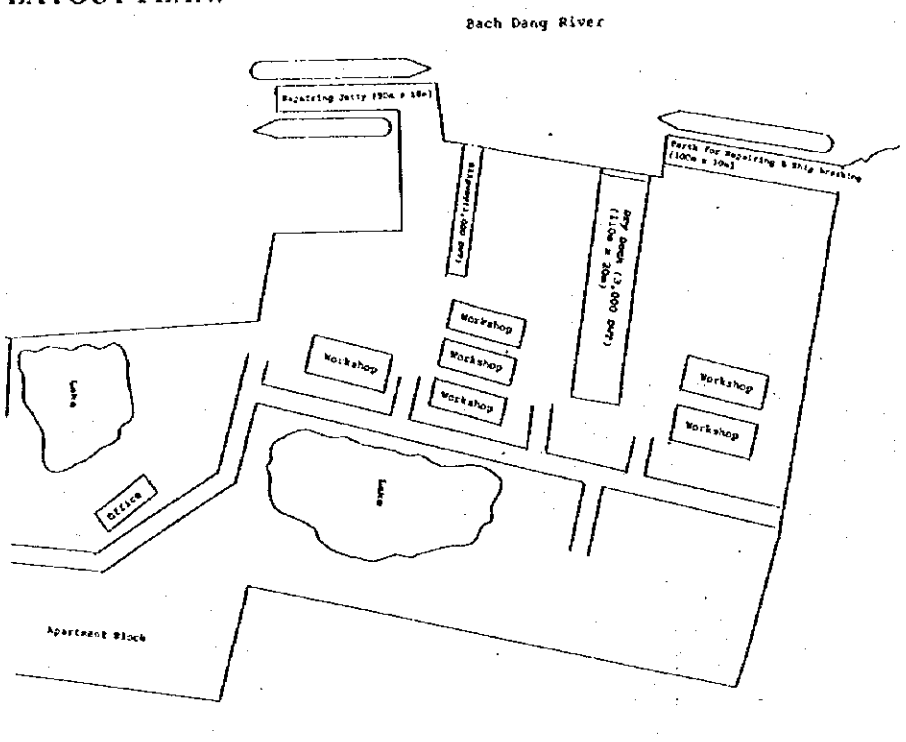
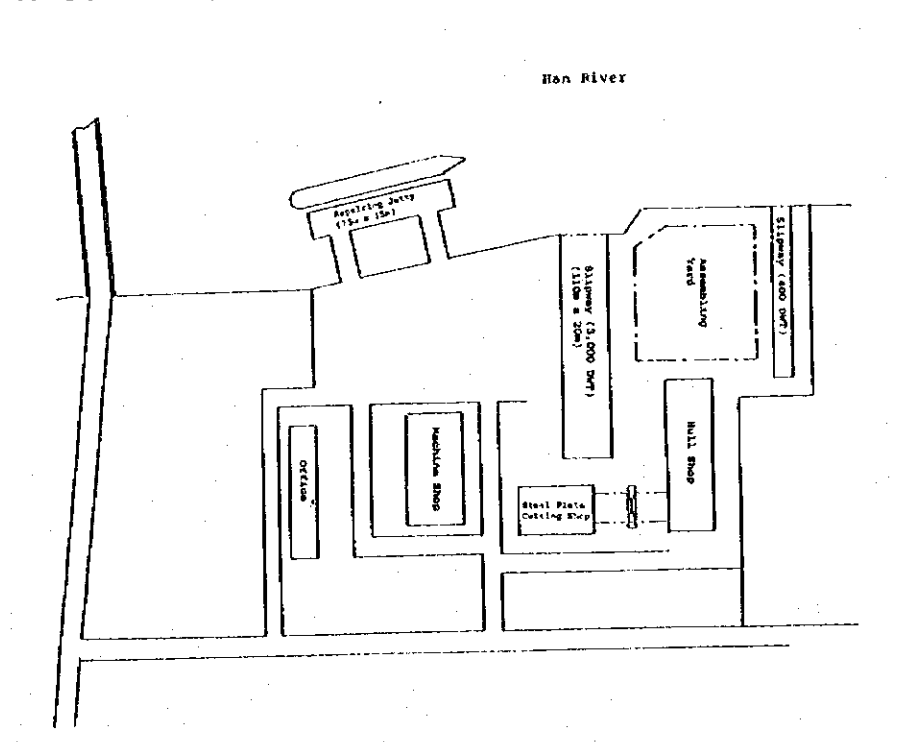
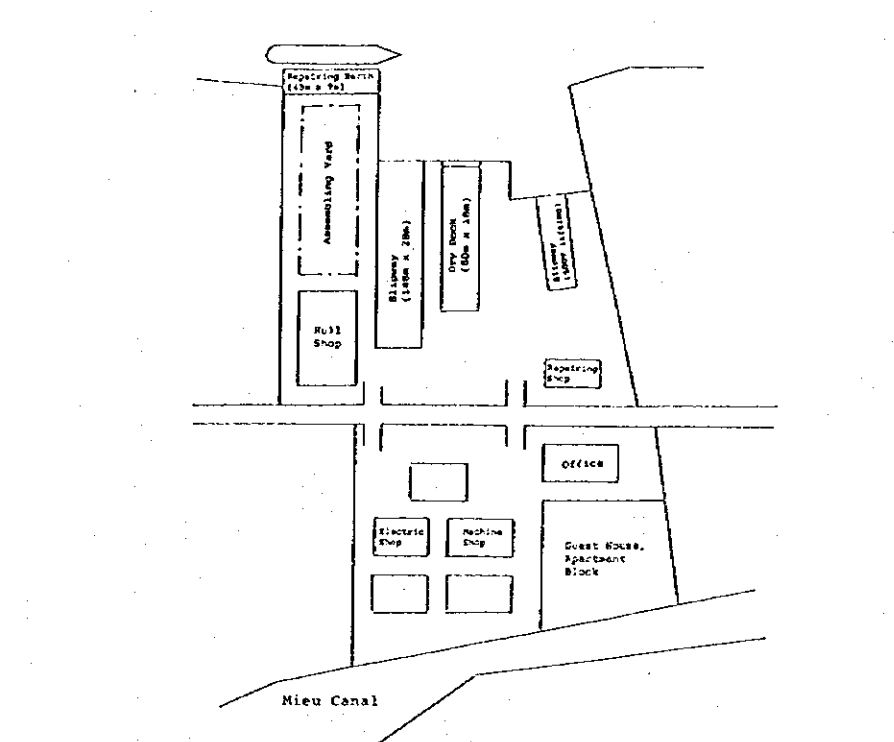
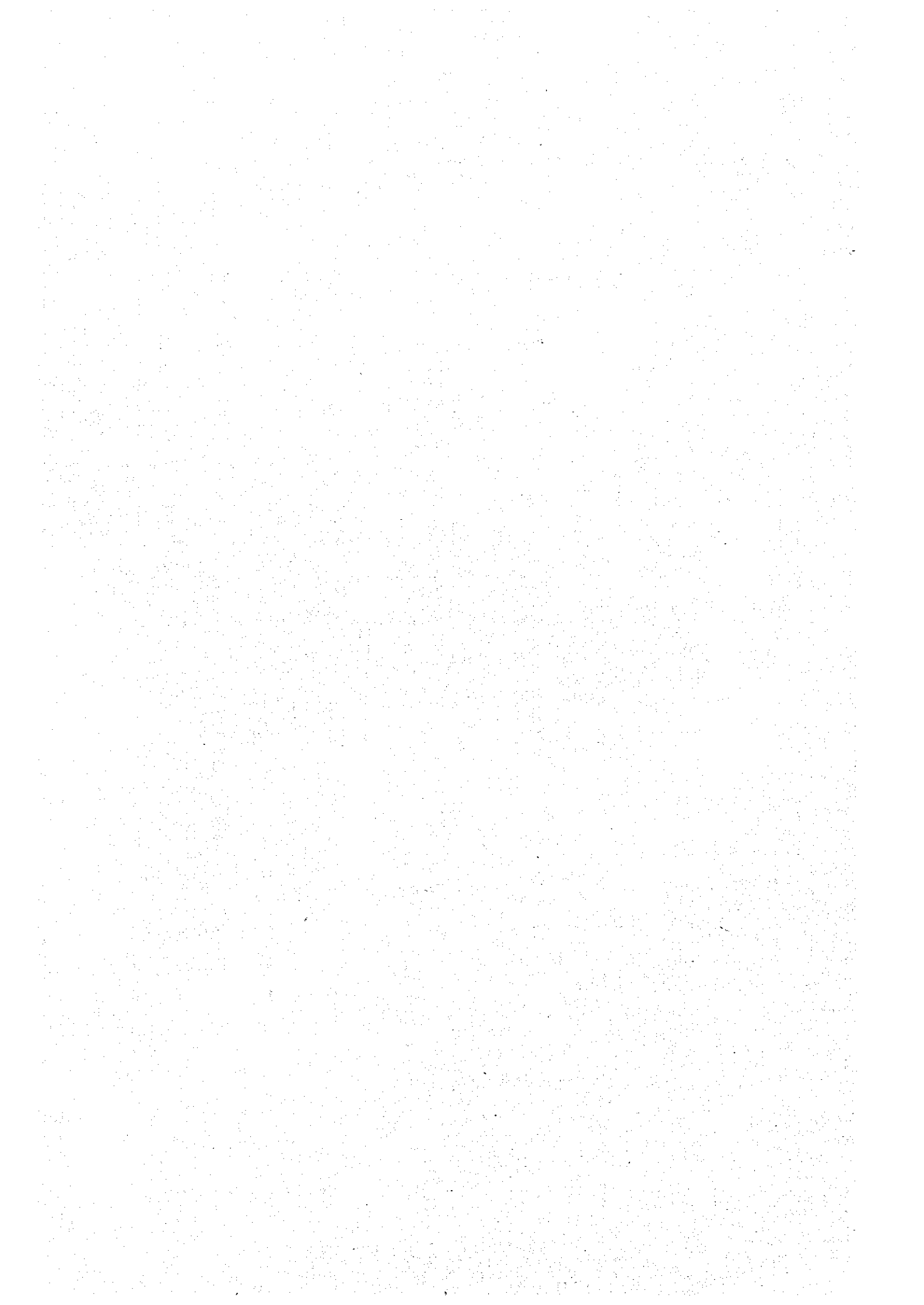


Figure 7.2.3 SHIPYARD IMPROVEMENT PLANS FOR REPAIRING COASTAL SHIPPING VESSELS

Nam Trieu Shipyard (Haiphong)	Song Han Shipyard (Danang)	CK-76 Shipyard (HCM City)
<p>LAYOUT PLAN:</p> 	<p>LAYOUT PLAN:</p> 	<p>LAYOUT PLAN:</p> 
<p>IMPROVEMENT OF FACILITIES AND EQUIPMENT:</p> <ul style="list-style-type: none"> (i) Upgrading and prolonging existing repairing berth for mooring at both sides with width of 18m and length of 90 m. (ii) Constructing new berth for repairing with length of 100 m and width of 10 m. (iii) Upgrading and constructing workshops <ul style="list-style-type: none"> Upgrading : 3,508 m² Construction : 2,200 m² (iv) Upgrading slipway system for repairing ship up to 1,000 DWT. (v) Dredging water area in front of dock, berths and slipway. (135,000 m²) (vi) Installing equipment and machinery: <ul style="list-style-type: none"> Crane alongside dry dock : 15T x 1 set Crane in slipway and yard : 3 - 5T x 2 sets Crane in hull and engine shop : 3 - 5T x 2 sets Machinery and specialized machines in workshops <ul style="list-style-type: none"> Plasma cutter : 1 set Long band lathe : 1 set Steel sheet roller : 1 set Vertical boring machine : 1 set Measuring machines (various kinds) : 3 sets Welding machines (various kinds) : 16 sets Medium multi-purpose lathe : 2 sets High air compressor system : 2 sets High pressure water ejector : 2 sets Paint spraying system : 2 sets Sand spraying system : 2 sets Lift truck 2 - 3T : 2 sets 	<p>IMPROVEMENT OF FACILITIES AND EQUIPMENT:</p> <ul style="list-style-type: none"> (i) construction new slipway system with length of 110 m and breadth of 20 m for repairing ship up to 3,000 DWT (ii) Upgrading and prolonging existing repairing berth (35 m length) to length of 75 m and width of 15 m. (iii) Dredging water area in front of slipway and repairing berth (iv) Upgrading and construction of workshops <ul style="list-style-type: none"> Upgrading of machine shop : 1,800 m² Construction of hull shop : 1,500 m² (v) Supply machinery and equipment <ul style="list-style-type: none"> Lathe machine (various kinds) : Total 3 set General purpose milling machine : 1 set Planer : 1 set Faceplate lathe : 1 set Grinding machine (various kinds) : Total 3 sets Steel plate cutting machine : 1 set Sand blasting machine : 1 set Paint spraying machine : 1 set Lorry crane (16 T) : 1 set Automatic welding machine : 2 sets Welding machine (various kinds) : 10 sets Pipe bender : 1 set High power steel plate bending machine : 1 set 	<p>IMPROVEMENT OF FACILITIES AND EQUIPMENT:</p> <ul style="list-style-type: none"> (i) Construction new dry dock with length of 80 m and breadth 18 m. (ii) Construction new slipway system with length of 148 m and width of 28 m and combined repairing berth with length of 48 m and width of 9 m. (iii) Dredging water area in front of dock, slipway and berth. (iv) Upgrading and construction of Hull shop (1,500 m²), Repairing shop (394 m²) and Machine & Electric shop (540 m² & 405 m²). (v) Supply machinery and equipment <ul style="list-style-type: none"> Winch (2 tons) : 2 sets Winch (5 & 20 tons) : each 1 set Cutting machine : 1 set Bending machine : 2 sets Hydraulic pressing machine (400 tons & 80 tons) : each 1 set Crane (5 & 10 tons) : each 1 set Punching machine : 1 set Sandblasting machine : 2 sets Painting machine : 1 set Semi-automatic welding machine : 1 set
<p>INVESTMENT AMOUNT: 47.6 billion VND</p>	<p>INVESTMENT AMOUNT: 30.7 BILLION VND</p>	<p>INVESTMENT AMOUNT: 19.1 billion VND</p>



(c) Policy Measures to Encourage Investment

As described in Section 6.4.2, policy measures to encourage foreign participation and both domestic and foreign investment are required to meet the financing needs of the fleet development program. Apart from basic economic policy measures such as providing a favorable business environment with stable prices, low interest rates and transparent regulations and tax system, and an efficient banking system to supply domestic credit, the following policy measures, targeted specifically at the vessel acquisition program, are recommended in the short term.

- The government should clarify its policy of encouraging foreign investment and management in coastal shipping in order to enable Vietnamese ship operators and freight forwarders, jointly with foreign partners, to establish new businesses and introduce new operating concepts, possibly through start-up concessions.
- The current restriction on use of foreign registered ships on domestic shipping services should be relaxed (for example through a twin flag arrangement) to encourage leasing of ships by Vietnamese operators.
- The government should encourage ODA funds from OECF and other sources to be channeled into the sector, targeted towards reforming state-owned operators and introducing innovations.
- To minimize the cost of ship acquisition, current regulations restricting imports of vessels above 15 years of age, and of engines and other equipment above 10 years of age, should be removed.
- To increase customer choice, allow more equal competition and reduce government investment needs, about 20 surplus international VINALINES vessels that could be used in coastal shipping should be auctioned to any operator paying the highest price.
- To minimize the risk of accidents from extending the life of these and other large vessels, more strict ship inspections should be introduced (as described under the Maritime Safety Component).
- To encourage investment, the equitisation policy for state-owned shipping companies should be finalized to remove further uncertainty about the role of these enterprises and the possible extent of government intervention in coastal shipping.
- To increase the attractiveness of equitised shipping enterprises to foreign investors and safeguard the interests of the state, improved accounting systems that meet international standards should be introduced into the larger state-owned enterprises.

In each of these areas government should seek ODA assistance to obtain advice on regulatory reform and restructuring coastal shipping companies to enable them to play effective future roles.

7.2.4 Shipping Operation Component

(a) Introduction of New Services

Liner services can provide high quality, advertised, scheduled services between general ports, marketed at a broad range of customers, and aimed at the transport of containers and other unitized cargoes which could be efficiently handled in the ports.

The following summarizes the main planning and management considerations involved in introducing a liner service in coastal shipping in Vietnam.

- Effective marketing is vital for successful liner operations and this requires improving the number and quality of marketing staff of shipping companies, and improving customer service procedures.
- Although the main potential for such a service would be on the main north-south route, even intermediate ports could be served. Operation to and from Hanoi is a particularly attractive commercial possibility if the river channel is adequate for appropriately designed sea-going vessels. Otherwise Haiphong port would have to serve the northern delta region.
- Depending on the particular market served, liner service vessels could be general cargo ships, container or semi-container ships, or even Ro-Ro (in the case of motor vehicles). Vessels of between about 2,000 and 3,000 DWT appear to be the most financially viable vessels in the short term.
- Liner services require guaranteed berth access at particular times and improved port facilities to reduce dwell times. Ship operators need the cooperation of port management to introduce successful liner services.
- Scheduling techniques have to be introduced which make efficient use of vessels while minimizing delays and allow recovery from delays, so that reliable customer service can be offered (with appropriate compensation arrangements).
- More sophisticated ways of assessing profitability have to be introduced based on marginal cost analysis and market research.
- The possible need for other aspects of customer level of service, such as city offices and information systems, have to be carefully assessed.

To introduce such new services, with modern specialized vessels and management concepts, requires new investment and a transfer of know-how from foreign sources. Particular administrative difficulties may be experienced by operators who are trying to introduce new types of coastal shipping services. VINAMARINE should therefore monitor difficulties being experienced by operators wishing to establish improved or new types of services, and take action to remove any undesirable administrative obstacles. The immediate need is to improve the ports at Saigon, Dong Nai, Haiphong and Hanoi) and improve the sea-cum-riverway to Hanoi, to ensure efficient scheduled operation without port and other delays

(b) Establishing a Clear Regulatory Framework

The present rules and regulations in coastal shipping are often not clearly defined or impose unnecessary restrictions which do not encourage efficiency or the introduction of new service types. A number of regulatory changes were proposed earlier in this section to relate port and waterway charges to costs incurred, to strengthen safety and environmental controls and to encourage foreign investment in coastal shipping. In order to encourage competitive coastal shipping services and the introduction of new services, the following additional measures are proposed to make regulations clearer.

- Conditions for participation of Vietnamese ship operators in international shipping, should be made more transparent. Currently government-owned operators are free to carry international traffic whereas few private operators are permitted to do so.
- Remaining government controls on freight tariffs and passenger fares should be abolished. If government wishes to subsidize certain services to remote islands then these services should be provided at least cost to government - for example, through competitive tendering.

In order to encourage the provision of coastal shipping liner services, it is particularly important to implement the policy and regulatory changes recommended earlier, concerning

- the policy framework proposed in the previous project component, to encourage investment and foreign participation, through relaxation or even complete exemption from restrictions on foreign participation which apply to more general types of coastal shipping services, and
- the abolition of discriminatory practices between state and other operators over port charges and access to berths, and between international and coastal shipping over port charges (because the lower charges set for coastal shipping may encourage port managers to give priority access to international shipping rather than domestic liner services).

(c) Training for Seafarers and Landsmen

To enable Vietnamese shipping operators to translate the new operating concepts proposed in the Master Plan into practical improvements, both general and specialized training is needed in management and administration of coastal shipping services, and especially for liner and other specialized services. This can be achieved through

- inviting foreign trainers to assist with internal training schemes of shipping operators,
- on-the-job training in foreign shipping companies or in joint-ventures between Vietnamese and foreign partners,

- training and retraining of management at VIMARU (retraining would be especially needed in liner service concepts, in addition to particular subjects such as English, computing, maritime law, marketing, economics, finance and insurance)

In addition to encouraging foreign participation in liner service development, the government can assist by encouraging ODA agencies to supply management training specialists to strengthen the VIMARU management training courses, so that they cover liner services in more depth. Furthermore ODA assistance could also be sought in providing short specialist training courses in liner services, aimed at trainers and other key personnel in the maritime transport industry. An example curriculum is given in Appendix 8 of the Maritime Transport Industry Supplementary Report.

7.3 Package B: Urgent Program to Meet International Requirements

(a) Sea Communication

The International Maritime Organization (IMO) has been promoting the introduction of the Global Maritime Distress and Safety System (GMDSS). It is necessary for Vietnam, as a party to the SOLAS Convention, to establish the GMDSS by February 1, 1999. To introduce the GMDSS effectively, development of land facilities and installation of related communication equipment on vessels should be simultaneously undertaken.

1) Land Facilities

The GMDSS, in general, utilizes some form of communication between coastal radio stations (CRSs) and vessels such as digital selective calling, narrow band direct printing (NBDP) and radio telephones. Also several wave bands are utilized by purpose and location. These are summarized in Table 7.3.1.

In introducing the GMDSS in Vietnam, CRSs will be upgraded or newly built in a hierarchical manner.

- Class 1:** Haiphong and Ho Chi Minh City (HCMC)
 DSC/MF, HF, VHF
 Haiphong CRS will be connected with RCC Haiphong
 Class 1 CRS will have satellite communication functions in the future.
- Class 2:** Danang and Vung Tau
 DSC/MF, HF, VHF
 Both CRSs will be connected with RCCs Danang and Vung Tau
 Nha Trang
 DSC/MF, HF, VHF
 Class 1 and Class 2 CRSs are internationally registered ones.
- Class 3:** Kieng Giang, Mong Cai, Cua Ong, Ha Long, Ben Thuy,
 Hue, Dung Quat, Qui Nhon, Can Tho
 DSC/MF, HF, VHF Class 3 CRSs are for domestic communications

Table 7.3.1
COMMUNICATION MEANS IN GMDSS

	DSC (Digital Selective Calling)	NBDP (Narrow Band Direct Printing)	Radiotelephone
MF	<u>2187.5</u> kHz	<u>2174.5</u> kHz NAVTEX Broadcasting 518 (English) 490 (Local Language)	<u>2182*</u> kHz
HF	<u>4207.5</u> kHz <u>6312</u> <u>8414.5</u> <u>12577</u> <u>16804.5</u>	<u>4177.5</u> kHz <u>6268</u> <u>8376.5</u> <u>12520</u> <u>16695</u> (NAVTEX Broadcasting) 4209.5 (Maritime Safety Information) 4210 6314 8416.5 12579 16806.5 19680.5 22376 26100.5	<u>4125*</u> kHz <u>6215*</u> <u>8291*</u> <u>12290*</u> <u>16420*</u>
VHF	156.525* (ch70) Mhz		156.8* (ch16) Mhz 156.650 (ch13)
Satellite	406 ~ 406.1 MHz 1530 ~ 1544 <u>1544 ~ 1545</u> 1626.5 ~ 1645.5 <u>1645.5 ~ 1646.5</u>	(COSPAS•SARSAT 406 Mhz (INMARSAT : Satellite to Ship) (INMARSAT : Satellite to Ship) (INMARSAT : Ship to Satellite) (INMARSAT : Ship to Satellite)	: EPIRB Use)
X-band	9200 ~ 9500 Mhz (in response to SART)		

Note) _ : Exclusively Use for Distress and Safety

*: General Calling Use in Common Bands

Source: MOT of Japan

The cost of the above stations is estimated at US\$ 34 million. The breakdown is shown below:

construction cost: US\$ 2.3 million
equipment cost: US\$28.4 million
engineering service: US\$ 3.1 million

The implementing and operating body is supposed to be VISHIPEL (Vietnam Ship Communication and Electronic Company).

2) Communication Equipment on Vessels

The SOLAS Convention stipulates that all the international shipping vessels more than 300 GRT are obliged to be equipped with necessary communication equipment which varies with navigation area as shown in Figure 7.3.1.

Since coastal shipping vessels in Vietnam navigate in the same waters as international shipping vessels and stormy and hazardous conditions sometimes hamper their movement, coastal shipping vessels should also be equipped with proper GMDSS devices. The coastal shipping movement belongs to either Area 1 (20-30 miles from shore) or Area 2 (100 miles from shore).

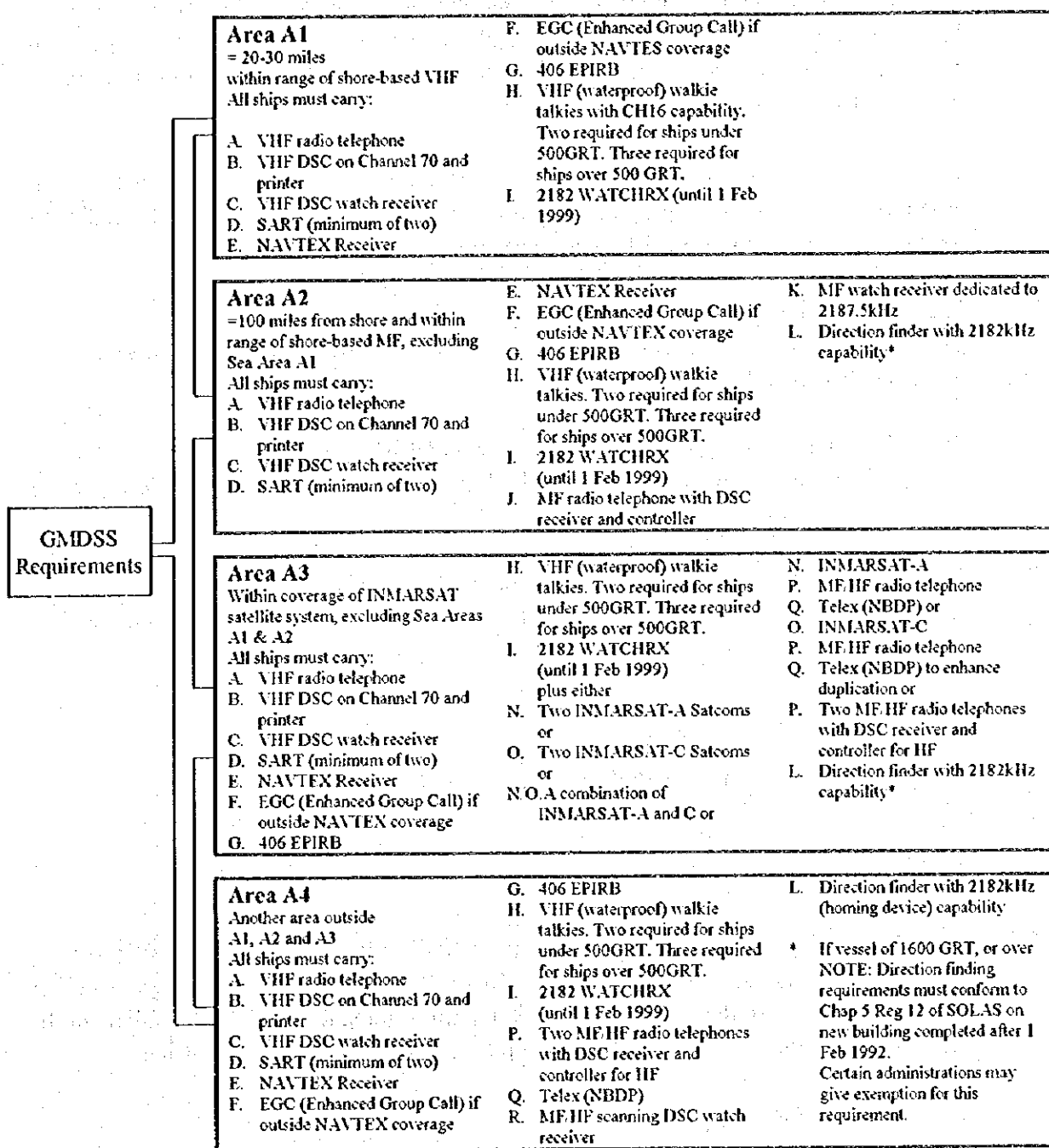
In the line with GMDSS development, communication devices are likely to be cheap. Currently, vessel owners can purchase a NAVTEX receiver for US\$3,200 or more and a EPIRB for US\$4,100 or more. It is thus assumed that the GMDSS project costs a vessel US\$15,000 to purchase the related devices. As a result, the shipowners' cost in total is estimated as follows:

Table 7.3.2
COST OF COMMUNICATION DEVICES ON COASTAL VESSEL

Period	No. of the Vessels to be Equipped with the Related Devices	Cost of the Related Devices per Vessel	Total Amount
By the Year 2000	198	US\$15,000	US\$ 3.0 Million
2001 - 2010	238	US\$15,000	US\$ 3.6 Million

For effective implementation of the GMDSS project in Vietnam, consideration should be given to promote acquisition of the necessary equipment on ships, either through regulation or through financial incentives.

**Figure 7.3.1
NECESSARY COMMUNICATION DEVICES ON VESSELS**



Note: In the GMDSS, the radio equipment to be carried on a ship is determined by the ship's area of operation in compliance with GMDSS

Source: MOT of Japan

(b) Seafarers Education

University level of maritime education can be provided only by VIMARU. However VIMARU has difficulty supplying the shipping industry with competent seafarers. Technical innovation in automated control systems has changed vessel operation drastically and therefore students must learn modern ship operation through a simulator-based training.

To meet international requirements such as GMDSS and STCW-95 is considered an urgent issue but it is also a good opportunity to raise maritime education in VIMARU to world standards through the following measures.

1) Introduction of simulator-based training on radar and ARPA

This training will be mandatory for issuing the certificates of ship captains and navigation officers under the STCW-95.

2) Introduction of simulator-based training on GMDSS and radio communication

In response to the commencement of GMDSS, the first course must be completed before 1st February, 1999.

3) Installation of practical training equipment for marine engineers

A diesel engine plant with auxiliary machines or an engine room simulator system will be installed to provide practical training to marine engineers.

4) Retraining of instructors

5) Improvement of training program, syllabi and curricula

The proposed equipment and its engineering service is estimated at US\$4.5 million.

(c) Ship Inspection

Two testing laboratories will be placed in the VIRES offices, i.e. one main laboratory in Haiphong and one sub laboratory in HCM City. Both laboratories will have a model service station with inflatable life-raft, radio equipment and the inspection equipment. In addition, the main laboratory will be equipped with the following instruments:

- Surface profile projector
- Optical microscope
- Radiographic (X-ray) examination equipment
- Ultrasonic flaw detector
- Magnetic particular flaw detector
- Noise measurement equipment
- Torsional vibration measurement equipment
- Material spark emission analyzer
- Fuel-oil quality analyzing set

- Lubrication oil quality analyzing set
- The cost is estimated at 14.2 billion VND, assuming that the laboratories would not need new buildings.

7.4 Package C : Maritime Human Resources Development

(a) Basic Training

Priority is given to improvement of training equipment and retraining of instructors at VIMARU. This is already described in Section 7.3.

(b) Practical Training

The analysis of coastal shipping management modernization requirements reveals that two types of training are required (excluding training for new types of services which are outlined in Section 7.2.4):

- general training for management in various aspects of business methods,
- specific training for a range of personnel involved in marketing, computer services, technical and financing activities.

Practical on-the-job training is vital in both of these cases. Many larger shipping operators would be able to set up formal training programs which used invited specialists from external (often foreign) organizations. However, the required practical training experience would be more difficult to acquire without the cooperation of a foreign shipping company - through allowing on-the-job training for particular staff within a foreign organization. Because of the general weakness of marketing in Vietnamese organizations, it is appropriate to give high priority to marketing training. However, practical management training in business methods appropriate in the market economy is equally vital.

Unfortunately, it is difficult to see how even the priority training needs can be achieved for most, smaller operators in coastal shipping who will never form foreign partnerships and never develop internal training schemes. For these operators, retraining courses at VIMARU appears to be the best option, for which the education equipment improvements proposed in Package B should assist significantly.

For maritime safety personnel, overseas and domestic training courses will be prepared for the time being instead of being supplied by a specialized institution. The curricula are prepared as shown in Table 7.4.1.

For the other maritime related personnel, on-the-job training, participation in ready-made training courses at home and abroad, and exchange of opinions and experiences between different experts will be encouraged, especially between:

Table 7.4.1
PROVISIONAL TRAINING COURSES FOR MARITIME SAFETY PERSONNEL

Overseas Training Course	Domestic Training Course
<p>No. of Trainee: 10 persons from VMS Course Period: 3 months Instructor: Foreign instructors</p> <p>Curriculum:</p> <p>(1) Service background and motivation</p> <ul style="list-style-type: none"> • International standardization of aids to navigation system • Overall organization • Special tasks • Cooperation between organizations <p>(2) Maritime safety</p> <ul style="list-style-type: none"> • International conventions and laws • Prevention of marine accidents • Pollution • Oceanography <p>(3) Organization</p> <ul style="list-style-type: none"> • International organizations • Establishing operation and maintenance procedures • Establishing operation and maintenance programs • Organization staff resources • Budgetary planning and control • Future planning • Recruitment and training <p>(4) Administration tasks</p> <ul style="list-style-type: none"> • Maintenance plan and execution • Procurement plan • Data and records publications • Budgetary procedures <p>(5) Navigational warnings</p> <ul style="list-style-type: none"> • Notification of casualties • General notice to mariners • Navigational warnings • Casualty records <p>(6) Training on board ATN ship</p>	<p>No. of Trainees: 30 persons from VMS Course Period: 2 months Instructor: Foreign and Vietnamese instructors</p> <p>Curriculum:</p> <p>(1) Maritime safety</p> <p>(2) Organization</p> <p>(3) Administration</p> <p>(4) Marine aids to navigation</p> <ul style="list-style-type: none"> • Basic theory • Use of equipment and devices • Safety • Routine maintenance • Fault finding • Work at sea • Practical applications of study • Basic theory and rule of wiring work for electric power line • Advanced fault finding and repair

- managers of shipping companies and port managers,
- ship captains and harbor masters,
- quarter masters and pilots,
- engineers in shipyards and engine officers, and
- naval architects in shipyards and ship inspectors.

7.5 Environment Impact Assessment (EIA)

Taking account of the results of the IEE study and the components of the short-term priority projects, an EIA is necessary prior to making improvements at some ports where large infrastructure developments, involving reclamation and construction of breakwaters, are planned. The ports in question are those at Cua Lo, Danang and Nha Trang.

To gauge adverse environmental impact, the study prepared an "Environmental Impact Checklist for Coastal Shipping Development in Vietnam" and assessed three ports using this framework. (Refer to Table 7.5.1)

(a) EIA for Cua Lo Port

The main EIA issues in the development of Cua Lo Port are (1) the extension of the breakwater, (2) the construction of the three berths by reclamation, and (3) the dredging in front of the berth and in the approach channel.

1) Extension of Breakwater

A 1,000 meter extension to the existing 365 meter breakwater is planned as protection from fairway sediment. The extended breakwater would be expected to change the natural current pattern in this area. Thus an accurate survey about current dynamics should be conducted and then the designed direction of the breakwater extension might be adjusted in order to mitigate current flow disturbance.

2) Dredging of Approach Channel and Berth

It is first of all necessary to conduct accurate surveys of seabed soil, fauna and flora in the proposed areas. As a result, if there are some existing precious flora in the area, its transplantation may be required. According to the plan, about 800,000 m³ of soil may be produced by dredging, and about 400,000 m³ of this soil may be used to construct three berths. The 400,000 m³ of surplus soil should be disposed of in an appropriate place in accordance with the instructions of the relevant authority.

3) Construction of three berths

It is planned to construct the berths of 330 m in length and about 200 m wide by piling and reclamation. As this area is very shallow (less than one meter), no serious impact on natural resources might be expected.

In regard to these three issues, EIA reports of the projects, based on thorough survey work, shall be required. Only on prior approval of DOSTE should the construction work be initiated.

(b) EIA for Danang Port

The main EIA issues for the development of Danang Port are the construction of the breakwater and the dredging adjacent to the proposed new jetty at Tien Sa. The construction of the jetty of 200 m length and 40 m width, by piling, will not require an EIA. The area to be developed, Tien Sa, is situated 5 km north from Danang city and on the opposite bank of the city. Therefore this area seems to be a suitable place for future development from an environmental point of view, though some impacts on fishing activities must be considered.

1) Construction of breakwater

The construction of a 600 m breakwater is planned for the protection from high waves of Tien Sa harbor (including a proposed new jetty). Prior to commencement of construction, changes in current flow caused by the breakwater should be simulated and analyzed by computer. Whether the breakwater will cause negative impacts on beach, aquatic life and seabed should be studied. On the other hand, if the flow of water of to and from the inner harbor is expected to deteriorate, further water pollution control measures would be required by means of strengthening port regulations. The effect of constructing the breakwater (with given direction and length) must be examined taking account both of effects on wave movement and on the environment generally.

2) Dredging Adjacent to New Jetty

Dredging adjacent to the new jetty and in the nearby basin is planned to allow 20,000 DWT vessels with 11 m draft to be accommodated. About 270,000 m³ of soil will be produced by the dredging. It must be disposed of somewhere on appropriate land or at sea, according to the instruction of the local relevant authority.

(c) EIA for Nha Trang Port

There is a beautiful long beach with many resort hotels in Nha Trang. Nha Trang Port is situated to the south, separate from that area. The construction of a new 220 m jetty is planned. In addition reclamation work is planned to make additional space for marshaling yards, warehouses and access roads to cope with the future coastal shipping cargo. According to the above plan, a survey of aquatic life in the proposed development area is necessary. If precious flora or coral is existing, then transplanting may be required. There is a berth for small boats in the proposed reclamation area near Nha Trang Aquarium and the relocation of the berth must be considered when the plan is implemented.

As a result of the above studies for the IEE and EIA based on the conditions described at the beginning of this chapter, the main environmental issue seems to be the establishment

of a nationwide oil spill protection system because coastal shipping traffic by oil tankers will become 27 times the present level in 2000, and double again by 2010. However an appropriate regime for addressing this issue has still not been completely established yet.

The other issues, that may involve negative environmental impacts, appear to be able to be solved or mitigated without huge investments, provided necessary actions are taken at the planning stage, in accordance with instructions of relevant authorities.

Table 7.5.1
ENVIRONMENTAL IMPACT CHECKLIST FOR COASTAL SHIPPING DEVELOPMENT
 (1/2)

Environmental Impact Factors	Environmental Impact	Degree of Impact		
		Cua Lo	Danang	Nha Trong
1. Impact of construction works				
1.1 Operation of working boats, construction machines	1.1.1 Air pollution	L	L	L
	1.1.2 Generation of Noise/vibration	L	L	L
	1.1.3 Change in terrestrial ecosystem	N	N	N
1.2 Disturbance of soil by dredging, soil dumping into water	1.2.1 Pollution of water and bottom sediments (ss. hazardous materials)	L	N	N
	1.2.2 Offensive odor	N	N	N
	1.2.3 Reduction in aquatic life	L	N	L
	1.2.4 Pollution of marine products	L	N	N
	1.2.5 Devaluation of tourism resources (water color, coral reef)	N	N	N
1.3 Soil removal	1.3.1 Change in topography, underground water system	L	L	N
	1.3.2 Extinction of terrestrial ecosystem	N	N	N
1.4 Generation of surplus oil wastes, dumping of dredged soil on ground	1.4.1 Pollution of water/ sediments	L	L	N
	1.4.2 Impact on terrestrial ecosystem	L	N	N
1.5 Employment of laborers	1.5.1 Inflow of alien cultures	N	N	N
	1.5.2 Change in economic activities	N	N	N
1.6 Congestion of work vehicles and boats	1.6.1 Economic loss (traffic/congestion)	N	N	N
	1.6.2 Devaluation of fishing areas	N	N	N
2. Impact of development of port facilities and site				
2.1 Construction of site (including landfill)	2.1.1 Pollution of water/sediment	N	N	N
	2.1.2 Beach erosion and accretion	N	N	N
	2.1.3 Change in coastal currents	L	N	N
	2.1.4 Decrease of habitats for aquatic life	N	N	L
	2.1.5 Decrease of habitats for terrestrial life	N	N	N
	2.1.6 Change in scenic beauty	N	N	N
	2.1.7 Resettlement of local residents and culture	N	N	N
	2.1.8 Extinction of fishing areas	N	N	N
2.2 Construction of external facilities	2.2.1 Pollution of water/sediments	N	N	N
	2.2.2 Beach erosion and accretion	L	L	N
	2.2.3 Change in coastal current	L	L	N
	2.2.4 Decrease of habitat for aquatic life	N	N	L
	2.2.5 Change in scenic beauty	N	N	N
2.3 Construction of sea route	2.3.1 Change in coastal currents	N	N	N
	2.3.2 Decrease of habitats for aquatic life	N	N	N
2.4 Construction of anchorage	2.4.1 Change in coastal current	N	N	N
	2.4.2 Decrease of habitats for aquatic life	N	N	N
3. Impact of use of facilities in water area and anchorage				
3.1 Impact of boats	3.1.1 Air pollution	N	N	N
	3.1.2 Water pollution (bilge)	N	N	N
	3.1.3 Beach erosion caused by furrow waves	N	N	N
	3.1.4 Generation of wastes (including dredged material)	L	N	N
	3.1.5 Obstruction to fisheries activities	L	N	N
4. Impact of cargo loading and utilization of storage facilities				
4.1 Cargo loading activities and use of storage facilities	4.1.1 Air pollution (dust)	N	L	L
	4.1.2 Pollution of water/sediments	N	L	N
	4.1.3 Generation of noise	L	N	L
	4.1.4 Generation of offensive odor	N	N	N
	4.1.5 Change in coastal ecosystem	N	N	N
	4.1.6 Generation of wastes	L	N	N
	4.1.7 Employment effect	N	N	N

Table 7.5.1
ENVIRONMENTAL IMPACT CHECKLIST FOR COASTAL SHIPPING DEVELOPMENT
 (2/2)

Environmental Impact Factors	Environmental Impact	Degree of Impact		
		Cua Lo	Danang	Nha Trong
5. Impact of operation of facilities handling hazardous materials				
5.1 Operation of oil distribution depot and facilities which handle hazardous materials	5.1.1 Air pollution	N	N	N
	5.1.2 Pollution of water/sediments (oil)	N	N	N
	5.1.3 Generation of offensive odor	N	N	N
	5.1.4 Change in coastal ecosystem	N	N	N
	5.1.5 Change in terrestrial ecosystem	N	N	N
	5.1.6 Decrease in amount of agricultural products, fisheries products and price	N	N	N
6. Impact of waste treatment and disposal				
6.1 Operation of waste treatment facilities	6.1.1 Air pollution	N	N	N
	6.1.2 Pollution of water/sediments	N	N	N
	6.1.3 Generation of offensive odor	N	N	N
	6.1.4 Change in coastal ecosystem	N	N	N
	6.1.5 Change in terrestrial ecosystem	N	N	N
6.2 Impact of waste disposal facility	6.2.1 Air pollution (dust)	N	N	N
	6.2.2 Pollution of water/sediments	N	N	N
	6.2.3 Generation of offensive odor	N	N	N
	6.2.4 Change in coastal ecosystem	N	N	N
	6.2.5 Change in terrestrial ecosystem	N	N	N
	6.2.6 Formation of slums	N	N	N
7. Impact of traffic function				
7.1 Road traffic	7.1.1 Air pollution	N	L	L
	7.1.2 Generation of noise/vibration	N	L	L
	7.1.3 Change in terrestrial ecosystem	N	N	N
	7.1.4 Change in local population distribution	N	N	N
	7.1.5 Traffic congestion/accidents	N	N	L
8. Impact of industrial production activities				
8.1 Operation of factories and plants	8.1.1 Air pollution	N	N	N
	8.1.2 Pollution of water/sediments	N	N	N
	8.1.3 Generation of noise/vibration	N	N	N
	8.1.4 Generation of offensive odor	N	N	N
	8.1.5 Ground subsidence	N	N	N
	8.1.6 Change in coastal ecosystem	N	N	N
	8.1.7 Change in terrestrial ecosystem	N	N	N
	8.1.8 Generation of wastes	N	N	N
	8.1.9 Change in local population distribution	N	N	N
	8.1.10 Employment effects	N	N	N
9. Impact of distribution and storage functions				
9.1 Storage functions (including outdoor storage)	9.1.1 Air pollution (dust)	N	N	N
	9.1.2 Pollution of water/sediments	N	N	N
	9.1.3 Generation of offensive odor	N	N	N
9.2 Cargo handling	9.2.1 Generation of noise	N	N	N
	9.2.2 Employment effects	N	N	N
10. Impact of operation on recreational facilities				
10.1 Use of hotels, marinas, artificial beaches	10.1.1 Pollution of water/sediments	N	N	N
	10.1.2 Change in coastal ecosystem	N	N	N
	10.1.3 Generation of wastes	N	N	N
	10.1.4 Inflow of alien cultures	N	N	N
	10.1.5 Employment effects	N	N	N
	10.1.6 Obstruction to fishing activities	N	N	N

Note) Degree of Impact
 N: none or negligible
 L: little
 M: moderate
 S: serious

Chapter 8

CONCLUSION AND RECOMMENDATIONS

Chapter 8 CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

Coastal shipping in Vietnam has a great development potential. There is a growing demand which can be economically and effectively handled by coastal shipping as planned industrial developments are implemented and regional economies in the north and south become more integrated. The economic benefits of coastal shipping development are significant as indicated by the estimated EIRR of 34%. Additional benefits of coastal shipping development include the rationalization of modal split in the national/interregional transport system, promotion of socioeconomic development in areas on the mainland and islands which will be covered by coastal shipping, and inducement of related industry development.

While the development potential of coastal shipping is significant, there are a number of conditions to be met to realize the expected effects of coastal shipping improvement. They include, among others, the following:

- (a) Incorporation of coastal shipping into the overall transportation policy framework: At present coastal shipping has not been properly incorporated in the national transportation policy framework, while international shipping, as well as inland waterway transport, are specifically dealt with. For this, coastal shipping should be given equal importance with other modes of transport and be adequately incorporated in the official planning and budgeting systems.
- (b) Improvement of relevant infrastructures: Infrastructure development, covering ports, waterways, aids to navigation facilities, etc., need to be adequately developed as planned in this Study to meet the specific requirements of coastal shipping.
- (c) Improvement of management of shipping operators: Management capacities of shipping operators should be improved considerably to meet the specific needs of the market covering the introduction of new services, strengthening of planning and marketing function, training of personnel, etc.
- (d) Improvement of regulatory environment: This is one of the most important aspects for effective coastal shipping development since there is a large number of potential investors who may enter the industry when the institutional framework is more explicitly and equitably provided. The existing regulatory framework needs to be further reviewed from the point of view of ensuring that the private sector, including foreign operators, may participate on an equal footing as existing state operators. This requires urgent reform of the state shipping sector.

8.2 Recommendations

Since the proposed development of coastal shipping system covers the whole country, it is recommended that three specific areas selected for short-term priority projects be implemented at the earliest possible time. They are:

- Program on north-south coastal shipping trunk route development;
- Program to meet international requirements; and
- Program on maritime human resources development.

In addition, to provide an appropriate policy environment for development of coastal shipping, the following recommendations are made for government:

- (1) For MOT to provide a clear policy statement and introduce more transparent regulations for coastal shipping which provide a level playing field for competing shipping operators;
- (2) For the government to implement a program of equity and privatization of state and provincial-owned ship operators;
- (3) For VINAMARINE to allow the autonomous management of ports with delegated responsibilities for finance and meeting performance targets, and the power to sub-contract various port services;
- (4) For VINAMARINE to improve pricing of ports and waterways to encourage efficiency and adequate cost recovery;
- (5) For MOT to strengthen VINAMARINE as the key regulatory organization for coastal shipping by ensuring adequate finance and removing its remaining commercial functions, as well as resolving the overlapping responsibilities of VINAMARINE and IWB; and
- (6) For MOT to implement the required legal changes to introduce the improved regulatory framework regarding import and registration of ships, inspection standards of ships, quality standards for shipbuilding and repair, etc.

8.3 Implementation

To establish the policy environment for the Master Plan, government must establish an action program to implement the policy recommendations listed above. There is considerable international experience in making such reforms and so the government should consider requesting ODA assistance in developing and implementing the program. In this case the first step would be to draw up terms of reference for technical assistance.

Implementing the short term priority packages involves several agencies and so, for effective coordination of implementing activities, overall responsibility for implementing each package has to be assigned to one organization. This organization could be responsible for coordinating plans and programs of the various agencies involved, and liaising with ODA organizations over assistance needed. The organization could also report on progress being made to highlight difficulties encountered and propose corrective measures.

For package A, MOT or VINAMARINE could assume the role for coordination. As illustrated in Table 8.1, both organizations are centrally involved in the project components and would be well placed to perform this important role. Important supporting roles would be played by VMS and other organizations.

One of the most important activities, apart from implementing of policy measures, is to prepare the various projects for implementing, through further planning, design and evaluation work. In many cases ODA assistance may be available, especially for the infrastructure and safety components. However because of the commercial nature of the fleet development and shipyard components, further careful project preparation would be needed before this could be considered for these other components (involving evaluation of the impact of the assistance).

Again for Package B, either MOT or VINAMARINE could be responsible for coordination. The provision of on-shore equipment would be expected to be delegated to VISHIPEL who would therefore handle much of the financial component of the package. The MOT has an important role in determining the degree to which coastal shipping are fitted with the complementary on-board equipment. Financial incentives or regulatory measures can be used, although the possible impact on coastal shipping costs would have to be considered if regulatory measures are involved.

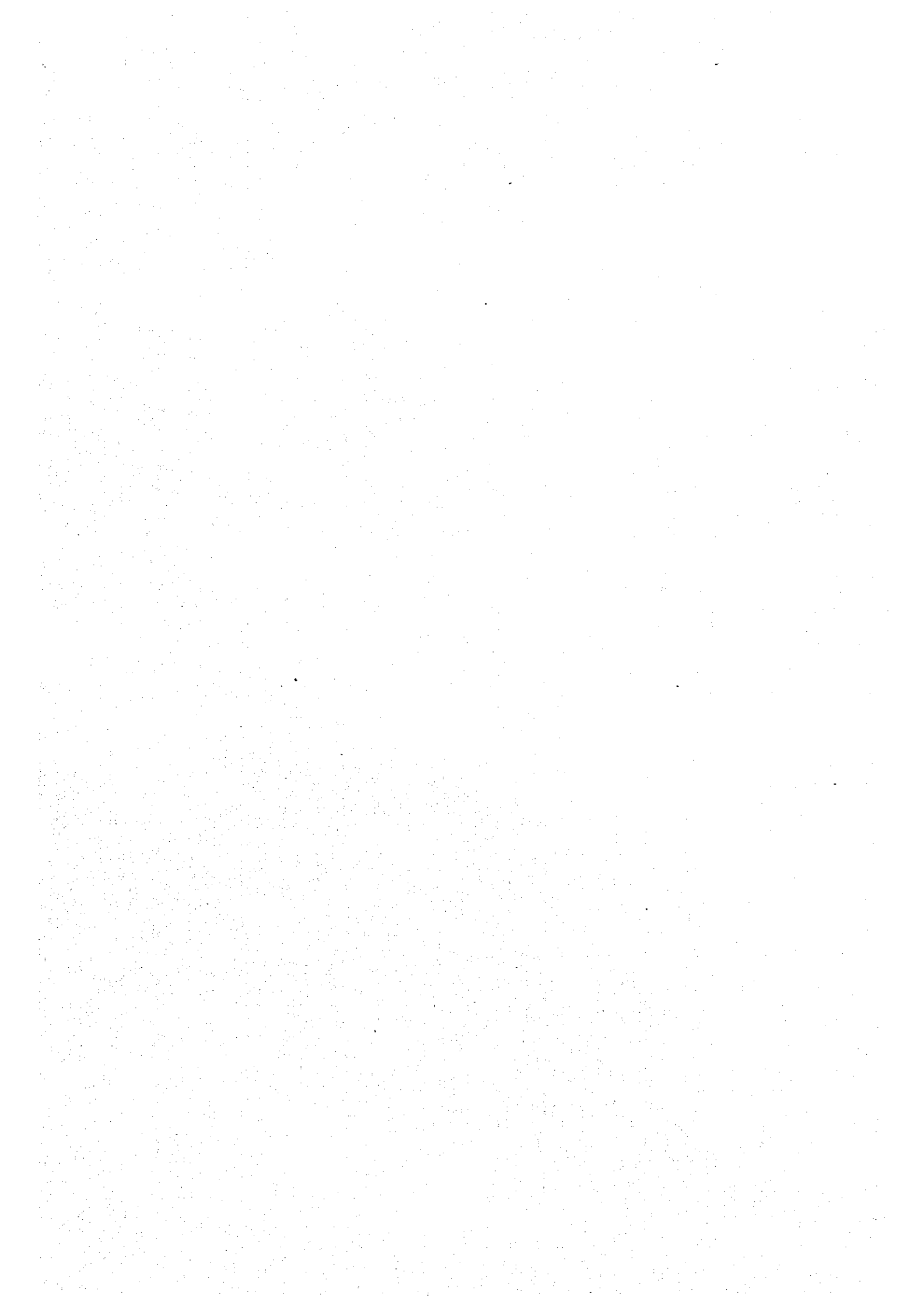
For financing the on-shore communications and training equipment, possibilities for using ODA funds could be considered (indeed it is understood that, already, plans are well underway to utilise ODA funds in this area). However since much of these costs are associated with international shipping, there is a strong case for financing this component as far as possible (consistent with international agreements) through user charges paid by international shipping companies.

VINAMARINE appears to be best suited to coordinating Package C concerned with human resources development. Although the financial component is concentrated in VIMARU, the coordinating responsibilities consist of continually reviewing training needs throughout the maritime sector, identifying additional investment needs (including those in other training institutes) and the need and opportunities for overseas training.

Table 8.1

IMPLEMENTATION RESPONSIBILITIES FOR PACKAGE A

Project Component	Possible Responsible Agency	Implementation Activity
Infrastructure	MOT VINAMARINE IWB	<ul style="list-style-type: none"> • Prepare projects for possible ODA finance, through pre-feasibility studies, seeking interest from donor agencies. • Ensure that interaction between coastal shipping, international shipping, and inland water transport are recognized in planning stage. • Review infrastructure user charges based on anticipated development costs.
Safety	MOT VINAMARINE VMS	<ul style="list-style-type: none"> • Prepare projects for possible ODA finance, through pre-feasibility studies, seeking interest from donor agencies. • Ensure that interaction between coastal shipping, international shipping and fishing activities are recognized in planning stage. • Review infrastructure user charges based on anticipated development costs.
Fleet Development	MOT VINAMARINE	<ul style="list-style-type: none"> • Implement general policy recommendations to encourage investment. • Equitise and privatize state-owned shipping companies • Invite foreign participation in ship repair yards, through joint-ventures, privatization etc.
Ship Operation Component	MOT MPI	<ul style="list-style-type: none"> • Implement policy recommendations concerned with attracting foreign participation in new service development. • Seek ODA support for local and overseas management training (partly in Package B)



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