

SSF JR 97-027(7/7)

The exchange rate used in the report is
J. Yen 110 = US\$ 1 = Vietnam Dong 11,000
J. Yen 1 = Vietnam Dong 100
(average during FY 1995-1996)

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) MINISTRY OF TRANSPORT (MOT), VIETNAM

MASTER PLAN STUDY ON COASTAL SHIPPING REHABILITATION AND DEVELOPMENT PROJECT IN VIETNAM

FINAL REPORT
SUPPLEMENTARY REPORTS Vol. 5
Coastal Shipping Traffic Demand

March 1997

THE MARITIME INTERNATIONAL COOPERATION CENTER OF JAPAN (MICC)

OVERSEAS SHIPBUILDING COOPERATION CENTER (OSCC)

ALMEC CORPORATION

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SUPPLEMENTARY REPORTS VOLUME 5

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GLOSSARY OF TERMS

ADB Asian Development Bank

ARPA Automated Rader Plotting Aid

ATN Aids To Navigation

BOT Building, Operation and Transfer

CCID Cement Consulting, Investment &

Development Corporation

CRS Coastal Radio Station

DGPS Differential Global Positioning System

DWT Dead Weight Tonnage

EIA Environmental Impact Assessment

FDI Foreign Direct Investment
GDP Gross Domestic Product

GMDSS Global Maritime Distress and Safety System

GPC Government Pricing Committee

GRT Gross Registered Tonnage

GSO General Statistics Office

HP Horse Power

IEE Initial Environmental Examination

IMO International Maritime Organization

IWB Inland Waterways Bureau

JICA Japan International Cooperation Agency

IV Joint Venture

LASH Lighter Aboad Ship

MARPOL International Convention for the Prevention of

Pollution from Ships

MOSTE Ministry of Science, Technology and

Environment

MOT Ministry of Transport

MPI Ministry of Planning and Investment

MTTS Maritime Technical and Training School

NTSR National Transport Sector Review

OD Origin - Destination

ODA Official Development Assistance

OECF Overseas Economic Cooperation Fund of

Japan

OPRC International Convention on Oil Pollution

Preparedness, Response and Cooperation

OSRAP Oil Spill Response Action Plan ASEAN

RCC Rescue Coordination Center

RO-RO Roll-Off ship

SAR Search And Rescue

SOLAS Safety Of Life At Sea

STCW Standards for Training, Certification &

Watchkeeping

TEDI Transport Engineering Design Incorporation

TESI Transport Economic Scientific Institute

UNDP United Nations Development Program

VIMARU Vietnam Maritime University

VINALINES Vietnam National Shipping Lines

VINAMARINE Vietnam National Maritime Bureau

VINASHIN Vietnam Shipping Industry Corperation

VIRES Vietnam Register of Shipping

VISAL Vietnam Salvage Corporation

VMS Vietnam Maritime Safety Agency

VNR Vietnam National Railways

VRA Vietnam Road Administration Bureau

VISHIPEL Vietnam Ship Communications and Electronic

Company

VTS Vessel Traffic Service

Chapter 1 PRESENT COASTAL SHIPPING TRAFFIC

This chapter aims to explain the work procedure for the preparation of present cargo Origin-Destination (O-D) tables by commodity type and to show the present condition regarding the Vietnamese ports related to the coastal shipping, such as port traffic by commodity type, port facilities, cargo handling equipment and port capacity.

The preparation of cargo O-D tables by commodity type is shown in Figure 1.1.

Port Traffic Survey Shipcall Records Interviewing Cargo Classification Port Profile Port Traffic Cargo Traffic Volume by Port by Loaded/Unloaded Port Facility by O-D Port Handling Equipment by Commodity Type Port Capacity **Shipcall Records Zoning System** Layout Plan **Pictures Zonal Cargo O-D Tables** by Commodity Type

Figure 1.1
PREPARATION OF CARGO O-D TABLES

1.1 Zoning System and Commodity Classification

(1) Zoning System

To determine the zoning system of the study, the following aspects were duly considered:

- A province or combined provinces within the same Socio-economic Development Region (SDR) that divides the country into seven,
- Port hierarchy such as a major port and supportive minor ports within a zone, and
- Each adjoining country, amalgamations of other countries in East and South-East Asia, and other countries along international routes.

As a result, the zoning system consisting of 20 domestic zones and 10 foreign ones has been prepared, as shown in Table 1.1 and Figure 1.2.

The characteristics of domestic zones such as population, GDP, Area and port system were outlined in Table 1.1.2

Table 1.1
ZONING SYSTEM FOR TRAFFIC DEMAND FORECAST

Feerman	L1	JNING SYSTE	M FOR TRAFF
Zone	Province	Existing Port	Planned
l i	Ha Giang	•	
	Tuyen Quang	ļ.	
	Lao Cai	! -	
	Yen Bai	.	
l	Vinh Phu	Viet Tri	
2	Cao Ban	•	
	Lang Sen	1	
l ,			
	Bae Thai	! -	
	Ha Bac	Ha Bac	
		(Dap Cau. A Lu)	<u></u>
3	Lai Chau	•	
	Son La	-	
	Hoa Binh	Hoa Binh	
4	Quang Ninh	Hong Gai	
ŀ	•	Hong Gai	
1		Transshipment	
]		Cai Lan	
1	•	Cua Ong (Cam Pha)	
İ		Dien Cong	
l		B12	
5	Hanoi	Hanei	
6	Haiphong	Haiphong	Chinh Fong
'		Cua Cam	
		Hoang Thach	
	, .	Pha Lai	
	Ha Tai	<u> </u> .	
	Hai Hung		
7	Thai Binh		
	Nam Ha	Nam Dinh	
	Ninh Binh	Ninh Binh	
8	Thanh Hoa	Thanh Hoa (Le Mon)	Nghi Son
9	Nghe An	Cua Lo	
		Ben Thuy	
10	Ha Tinh	Xuan Hai	Vung Ang (Mui Ron)
	Quang Binh	Nhat Le	, , , , , , , , , , , , , , , , , , , ,
11	Quang Tri		Cua Vict (Dong Ha)
	T.T. Hue	Thuan An	Chan May
12	Q.NDanang	Danang	Lien Chieu
13	Quang Ngai	Sa Ki	Dung Quat
''	Binh Dinh	Qui Nhon	Ivens Anar
	130 at 13 (13)	Thi Nai	
	Gia Lai	* r=1 4 V (I)	
	Kon Tura	-	
14	Phu Yen		į
'`	Khanh Hoa	Nha Trang	Van Phong
	t to to the title	Ba Ngoi	van raong
		Hen Khei	
	Ninh Thuan	Helt Met	
	Binh Thuan		1 to 1
	Dae Lac	<u></u>	
	i	Ī	
	Lam Dong	<u>i* : </u>	<u> </u>

Zone	Province	Existing Port	Planned Port
15	HCMC	Saigon	
		Ben Nghe	
		Tan Cang (New Port)	
	,	Nha Be Oil	
	Song Be	-	
	Tay Ninh		į
16	Dong Nai	Dong Nai	Vung Tau (Ben
		Thu Due	Dinh, Sao Mai)
	B.RVung Tau	Vung Tau (Cat Lo	Thi Vai (Pho My, Ca
	.	Dist.)	Mep.)
17	Long An	į-	
	Tie Giang	My Tho	
	Ben Tre		
18	Dong Thap	Dong Thap (Cao Lanh)	
	Vinh Long	Vinh Long	
	Tra Vinh	•	
19	An Giang	My Thoi (Long Xuyen)	
	Kien Giang	Kien Luong	
. :		Hong Chong	
20	Can Tho	Can Tho	
	Soc Trang	•	
	Minh Hai	Nam Can	
		Ca Mau	

Zone	Foreign Countries
21	China
22	Laos
23	Cambodia
24	Thailand
25	Myanmar
26	Singapore
	Malaysia
	Indonesia
27	Hong Kong
	Taiwan
	Philippines
28	Japan
	North South Korea
	Russia Maria de Maria de Maria
29	North South America
	Australia
30	India
- 1	Africa
	Europe

Figure 1.2 ZONING SYSTEM

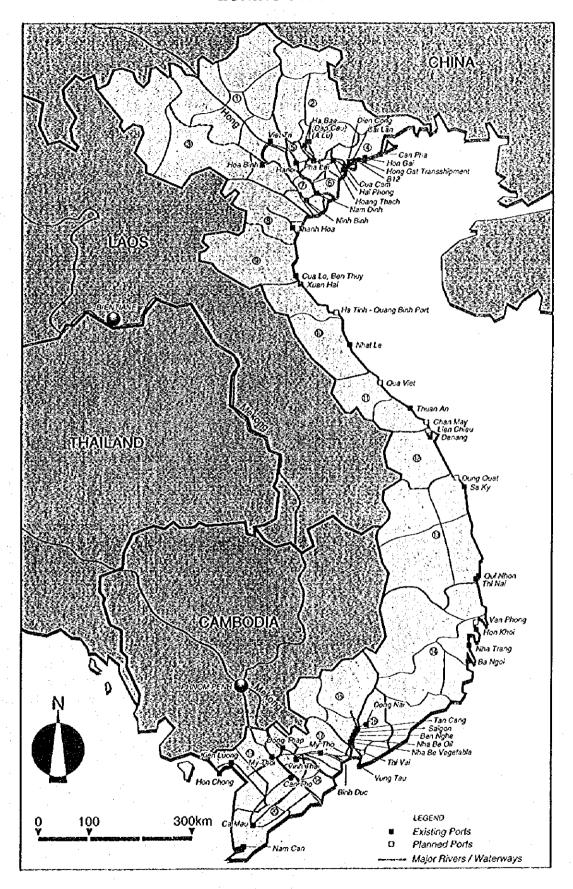


Table 1.2

PROFILE OF DOMESTIC ZONES (1/7)

r			FILLE OI		· · · · · · · · · · · · · · · · · · ·	ONES (1	11)
	ZONE	······································	<u>.</u>		ORT SYST		
	Population	GDP in	Zone Area	Represen-	Other Port	Planned	ZONAL CHARACTERISTICS
	in 1995	1994	(sq.km)	tative Port		Port	
	(thousand)	(mil.USD)					
I VIET TRI	4,732	889.1	33,317	Viet Tri	(none)	(none)	Located in the North Mountain and Midland and bordered west and north by Yunnar Province of PR China.
							Low density (142 persons/sq.km) and depressed local economy (GDP per capita
					76 8 8 8 8 9 9 9 9		188 USD).Viet Tri is the confluence of two rivers.
				. :			Thao River and Lo River. National Route
					·	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	No.2 and the Lao Cai Railway Line also pass through
							 Rich in apatite and other mining resources. A factory called "Super Lam Thao" will
	-						provide farmers in the Red River Delta with phosphate fertilizer.
2 HA BAC	4,848	853.0	27,751	Ha Bac	(none)	(none)	Located in the North Mountain and Midland
			- 1	(Dap Cau,			and bordered north by Nam Min Province of
				A Lu)			PR China
	į						 Relatively low density (175 persons /sq.km)
							and depressed local economy (GDP per
							capita 176 USD)
							 Ha Bac has two river ports at different rivers
		Ì				,	(Thuong River and Cau River).
			i				 National Route No. I and No. 3, and the Lang
							Son Railway Line are accessible to Hanoi
			·				 One cement plant will be newly constructed
							while on steel mill expanded.
3 HOA BINH	2,088	408.8	35,955	Hoa Binh	(none)	(none)	Located in the North Mountain and Midland
			1				and bordered by Yunnan Province of PR
	-						China and Laos
					i		 Scarcely inhabited area (581.1 persons/
	***************************************						sq km) and low local economy (GDP per capita 230 USD).
							Da River and Nation Route No.6 can access
	2			•	į		
							to Hoa Binh. Hoa Binh Dam controls the
į							water quantity of Da River.
	<u> </u>				İ	* * * * * * * * * * * * * * * * * * *	 One cement plant will be constructed in Luong Son.

Table 1.2
PROFILE OF DOMESTIC ZONES (2/7)

		1101	THE OF				
	ZONE	· · · · · · · · · · · · · · · · · · ·	:		ORT SYSTI		GOVERN ON A DESCRIPTION
		•	Zone Area		:	•	ZONAL CHARACTERISTICS
	in 1995	1994	(sq.km)	tative Port		Port	
	(thousand)	(mil.USD)					·
4 QUANG	905	465.1	5,938	Cai Lan	Cua Ong	Cai Lan	• Located in the North Mountain and
NINH					(Cam	(cymin)	Midland, and facing the Gulf of Tonkin.
					Pha), B12,	Cau Trang	 Low Population density (152 persons
·				İ	Dien Cong	:	/sq km) but high GDP per capita (515 USD)
				٠			 National Route No.18 and the Cai Lan
							Railway Line can connect Quang Ninh with
						:	inland area.
							Hong Gai Port and Cua Ong Port are located
·							at Ha Long Bay while Cai Lan Port and B12
							Port at Bai Chay Bay.
							Famous Quang Ninh Coalfield and active
							industrialization (2 cement plants, 1 steel
the second							mill and 1 fertilizer factory)
		<u> </u>		· · · · · · · · · · · · · · · · · · ·		<u> </u>	Remarkable marine tourism assets Lead 1
5 HA NOI	2,228	1,407	921	Hanoi	(none)	(none)	Located in the Red River Delta High paragraphs (2.112 paragraphs)
•				•			High population density (2,419 persons (as hard and high CDP personnite (632 USD))
							/sq.km) and high GDP per capita (632 USD) since the zone encompasses only Hanoi
					İ		City.
							 Hanoi is the focal point of the North in terms
							of transport network.
•							Waterways are graded at the 1st level and
							therefore vessels of 1,000 dwt are used to be
							navigable.
· .							 Various industries are accumulated and
							many industrial estates and individual
							factories are being developed.
6 HAI PHONG	6,696	1,696	1,503	Haiphon₂	Cua Nam	Chinh	 Located in the Red River Delta and facing
	,,,,,,	-,	.,		Hoang	Phong	the Gulf of Tonkin
					Thach		 High population density (1,080 persons
[Pha Lai		/sq.km) and moderate GDP per capita (253
			1		1.02.200	•	USD)
		Ì				<u> </u>	National Route No.5 and the Hanoi -
		1					Haiphong Railway Line are regarded as an
							important axis between the capital city
						;	(Hanoi) and the international port city
							(Haiphong).
and the						•	Haiphong Port will constantly accommodate
				1			10,000 dwt vessels while currently 5,000 -
				:			7,000 dwt at the maximum.
+ + 16							Several industrial estates are under
The second section							construction which are suitable for heavy
	1		1	<u> </u>	L	<u> </u>	industry and port proximity industry.

Table 1.2
PROFILE OF DOMESTIC ZONES (3/7)

	ZONE			y	ORT SYST		, , , , , , , , , , , , , , , , , , ,
		GDD:-	Zona Aran		**********	····	ZOMAL OHAD AOTERISSIOS
1		•	Ī	1	Other Port		ZONAL CHARACTERISTICS
	in 1995	1994	(sq.km)	tative Port		Port	·
	•	(mil.USD)	;				
7 NINH BINH	5,360	1,077	10,086	Ninh Binh	Nam Dinh	Diem Dien	 Located in the Red River Delta and the
					<u>!</u>	Ha Tinh	facing the Gulf of Tonkin.
							 High population density (995 persons/sq.
						•	km) and low GDP per capita (201 USD)
							• The zone is endowed with rich mining
							products and construction materials.
				['			• Ninh Binh is the old industrial town where
							roads and inland waterways have been well
				ĺ			developed.
							One steel mill is operational and two
							cement plants (capacity of 4.2 million tons
							in total) will be constructed.
8 THANH	3,439	685	11,168	Thanh Roa	(Nghi Son	(none)	Located in the North Central Coast and
HOA	,,,,,	<i>503</i>	11,100	(Le Mon)	_	(mone)	bordered west by Laos
noa				•			 308 persons/sq.km and low GDP per capita
					Port)		(199 USD). 93% of the population belongs
							to agriculture sector. This is the 2nd largely
							populated province.
							National Route No. 1A and the North - South
							Railway Line run through Thanh Hoa while
	•						two sea ports (Le Mon and Nghi Son) are
							available. In particular, Nghi Son is a new
							port and capable of accommodating vessels
							ranging 10,000 to 35,000 DWΓ.
						İ	 The existing cement plant (Bim Son) will be
							expanded and another one (Nghi Son) will
							be newly constructed. Other industry
						ŀ	facilities are on rolling mill and one paper
						:	factory.
						•	 Agricultural products are rice, maize,
	!						sugarcane, etc.
9 VINH	2,780	558	16,371	Cua Lo	Ben Thuy	(none)	 Located in the North Central Coast and
							bordered west by Laos
		ĺ				1	Low population density (170 persons/sq.
	1	Ī					km) and low GDP per capita (201 USD).
		ĺ		1		·	This is the 3rd largely populated province.
		į			i		National Road No.1A and the North-South
						. [Railway pass through Nghe An Province
					į		National Road No.7 connects Nghe An with
			•			:	Laos. Cua Lo Port can presently
			·	Ī			accommodate 3,000DWT ships.
	r			į],	Agricultural products are rice, rubber, tea
						i	pork and fish products.
				į			Mineral resources are marble, coal.
					•		limestone, etc.
			ŀ		į		
		-	:			1	Remarkable development projects are
			ŀ				Hoang Mai Cement Plant, Cua Lo Industrial
i	<u>:</u>						Estate and Cua Lo Beach Resort.

Table 1.2
PROFILE OF DOMESTIC ZONES (4/7)

	ZONE			· · · · · · ·	ORT SYST		
	Population	GDP in	Zone Area	·····		4	ZONAL CHARACTERISTICS
	in 1995	1994	(sq.km)	tative Port	•	Port	
	:			tative i ort			
	(thousand)		•	1F.:	NTL -4 Y -	17	Located in the North Central Coast and
10 VUNG ANG	2,080	322	14,038	Xuan Hai	Nhat Le	}	
						(Mui Ron)	• Low population density (148 person
	·					Hon La	/sq.km) and depressed local economy (GDI
•						•	per capital 155 USD)
							National Route No.1A and the North - South
							Railway Line run through the zone along
							the coastal line. Route 8A and Route 29
						•	connect Laos, especially the former directly
							with Vientiane.
•		·				•	• Existing ports are small sea ports. Bu
						•	Vung Ang Bay is expected to have natura
					Ì		depth and favorable position to construct a
		·					deep seaport.
							Agricultural products of tea, mulberry
							pomelos and fishery and forestry products.
							A great reserve of Thach Khe Iron Ore Mine
							and new construction of Ha Tinh Steel Mill
11 DONG HA	1,544	334	9,597	Thuan An	(none)	Cua Viet	• Located in the North Central Coast and
II DONG IBA	1,544	331	,,,,,,	I ROOM I'M	(none)	Chan May	bordering Laos
						Gianh	Low population density (161 persons
				,		Olanut	/sq.km) and low GDP per capita (217 USD)
\$ - *							National Route No.1A and the North - South
							Railway Line are two spines while No.9
							connects Dong Ha with Laos.
							 Cua Viet Port is under construction but it is
							not a deep seaport. Chan May, possibly a
		4.0					deep seaport, is under study.
							 Rubber, coffee and woods are good for
•							export.
							 Two cement plants will be constructed in
							the zone.
•		13					 Tourism supports the local economy in and
			ļ				around Hue.
12 DANANG	1,948	488	11,985	Danang	(none)	Lien	Located in the South Central Coast and
						Chieu	bordering Laos
1.4				٠.			Low population density (166 persons
en en en en en en en en en en en en en e		1			•		/sq.km) and low GDP per capita (246 USD)
The second of the second		* 7 1 *					Beside the national network of rail and road,
		4 M. F. S.				:	airport and seaport are international nodes.
							Danang Port with its deep water of 11
		14 April					meters is accessible for ships of 20,000 dwt.
							Forestry is a big local industry and Tra My
							cinnamon is famous in domestic and foreign
$\frac{1}{2} \sum_{i=1}^{n} \frac{1}{2} \left(\frac{1}{2} \sum_{i=1}^{n} \frac{1}{2} \sum_{i=$		1 = 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 +					market.
		11 12 1	,				• There are 3 industrial estates and the An
Programme							Dong EPZ is a forerunner of the Central
		18 67	<u> </u>		<u> </u>		Development Region.

Table 1.2
PROFILE OF DOMESTIC ZONES (5/7)

Population (GDP in 1995 1994 (est km) tative Port (est km) (housand) (mil USD) 13 QUY MION 3,679 660 37,399 Qoy Nhon Sa Ki Ihi Nai 14 QUY MION 3,679 660 37,399 Qoy Nhon Sa Ki Ihi Nai 15 Casted in the South Central Coast and bondsring lass and Cambodia 15 Searce population density (98 personar 15 Searce population density (98 personar 16 And Minto North - South Railway Line, No.24 links Quang Ngai Province with Lass and No.19 16 In Malia 17 The Dung Qual Project with develop an oil 18 The Dung Qual Project with develop an oil 19 The Dung Qual Project with develop an oil 19 The Dung Qual Project with develop an oil 19 The Dung Qual Project with develop an oil 19 The Dung Qual Project with develop an oil 19 The Dung Qual Project with develop an oil 19 The Dung Qual Project with develop an oil 19 The Dung Qual Project with develop an oil 10 The Dung Qual Project with develop an oil 10 The Dung Qual Project with develop an oil 10 The Dung Qual Project with develop an oil 10 The Dung Qual Project with develop an oil 10 The Dung Qual Project with develop an oil 10 The Dung Qual Project with develop an oil 10 The Dung Qual Project with develop an oil 11 The Dung Qual Project with develop an oil 12 The Dung Qual Project with develop an oil 13 The Dung Qual Project with develop an oil 14 The Province of the South Central Cosst and 15 Shafforn All Province oil 16 The Dung Qual Project with develop and its access channel is wide to accommodate vessels of 16 The Dung Qual Project with develop and its access channel is wide to accommodate vessels of 17 The Dung Qual Project with develop and its access channel is wide to accommodate vessels of 18 The Dung Qual Project with develop and 19 The Dung Qual Project with develop and 20 The Dung Qual Project with develop and 20 The Dung Qual Project with develop and 20 The Dung Qual Project with develop and 20 The Dung Qual Project with develop and 20 The Dung Qual Project	ſ <u></u>	/7/31.11				ODT OVOT		
In 1995 1994 (sq km) Intive Port Port Port		ZONE		<u>.</u>	••••••		*	
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Nha Be (oil) Nha Be (Vegetile) Nha Be (Vegetile) Nha Be (Vegetile) Nha Be (Vegetile) Nha Be (Vegetile) Nha Be (Vegetile) Nha Be (Vegetile) Nha Be (Vegetile) Nha Be (Vegetile) Nha Be (Vegetile) Nha Be (Vegetile) Nha Be (Vegetile) Concentrated investment in industry sector has been done at HCMC and Bien Hoa. Most of newly located factories are machine manufacturing and light industry. Since transport network is well formulated. 5 industrial estates rely on roads and railways but 3 industrial estates can directly access to seaports. To support further economic development, 2 cement plants (production capacity - 3.7)			·		-	- 3	` ′	· •
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million tons/year) and 2 steel mills (0.8)			ļ	٠				
manus tensyony and 2 seet mans (o.o.			I					million tons/year) and 2 steel mills (0.8
million tons) will be constructed.			<u> </u>					million tons) will be constructed.

Table 1.2
PROFILE OF DOMESTIC ZONES (6/7)

		PROI	TILE OF		STIC ZO	, <u>, , , , , , , , , , , , , , , , , , </u>	<u> </u>
	ZONE		:		ORT SYST	····	
	Population		•		1	1	ZONAL CHARACTERISTICS
	in 1995	1994	(sq.km)	tative Port		Port	
	(thousand)			· · · · · · · · · · · · · · · · · · ·		<u> </u>	
16 VUNG TAU-	2,574	2,363	7,829	Dong Nai	}	Thi Vai	• Located in the Eastern Nam Bo
THI VAI					1		 Relatively high population density (329 persons/sq.km) and extremely strong local economy (GDP per capita 918 USD) The zone is an emerging industrial area consisting of 6 industrial estates. The
					Vong Aug (Cat Lo)	:	largest industry is oil related since Vung Tau is the access point to submarine oil fields such as Bach Ho, Rong and Dai Hung. • Large vessels are navigable through Thi Vai
							River. Con Son Island has a population of 3,500 who need daily transportation with Vung Tau.
17 MY THO	4,286	908	8,924	My Tho	(none)	(none)	 Located in the Mekong River Delta and faced with Cambodia High population density (480 persons/sq. km) but low GDP per capita (212 USD) The road and waterway network is good and convenient for both industrial and daily activities. My Tho Port can accommodate vessels of
							 3,000 dwt. My Tho will become an industrial town to support HCMC partially. The zone has many products for export such as rice, coconut oil, frozen shrimp
18 DONG THAP	3,536	784	7,132	Dong Thap (Cao Lanh)	Vinh Long	·	 Located in the Mekong River Delta, midst of two big Tien and Hau revers' basin. Dong Thap Port and Vinh Long Port are located along Tien River. High population density (496 persons /sq.km) but low GDP per capita (222 USD). The zone is endowed with flat and fertile
							 land and fresh water available through the year. Strategic products for export are rice, coconut oil, frozen shrimp, frozen meal and garment.

Table 1.2
PROFILE OF DOMESTIC ZONES (7/7)

	ZONE			Y	ORT SYST		i'
	Population	GDP in	Zone Area		Other Port	********	ZONAL CHARACTERISTICS
	in 1995	1994	(sq.km)	tative Port	•	Port	
	(thousand)	(mil.USD)	4 4 9				
19 LONG	3,383	703	9,667	My Thoi	Kien		Located in the Mekong River Delta and
XUYEN				(Long	Luong		faced with the Bay of Stam and Hau River.
				Xuyen)	Hong		Relatively high population density (350
					Chong		persons/sq.km) and low GDP per capita
							(208 USD).
							Long Xuyen has two ports, My Thoi and
						-	Long Xuyen. My Thoi Port can
			·			·	accommodate vessels of 3,000 dwt and main
							cargoes are rice, cement and fertilizer. Long Xuyen functions an intermediate port with
							Cambodia.
							The zone is rich in stone and limestone. One
							cement plant is operational and will be
, , , , , , , , , , , , , , , , , , ,							expanded at a capacity of 1 mil. tons. Kien
							Luong Port serves exclusively for the plant.
							 Rice, frozen shrimp and coffee are main
							commodities for export.
							Phu Quoc Island (population 26,000) needs
			i				a daily transportation means to/from Kien Giang Province
20 CAN THO	4,857	1,176	13,845	Can Tho	Nam Can		Located in the Mekong Delta and faced with
			,,,,,,	:	Cau Mau		the Bay of Stam and South-east China Sea
	į	Ì		į			Relatively high population density (651
				Ì		ł	persons/sq.km) and lightly lower GDP per
	į		İ	į			capita (242 USD) than the national average
			:	į	1		(242 USD).
	i						Can Tho Port is a center of Cuu Long River
						**	Plain. Its basin is large and deep enough for
į			.	•			accommodating vessels of 5,000GRT. Nam Can Port is open to the South east
1				į			China Sea while Cau Mau Port is situated at
	į						Hao River. Both port facilities are obsolete
							and the latter ships out only frozen aquatic
						.	products.

(2) Commodity Classification

In general, commodities loaded on seaborne transportation have a variety of physical characteristics which require different vessel types and forms of handling. In Vietnam, major commodities in coastal shipping are rice, coal, cement, fertilizer and oil. Taking the characteristics of commodities: such as size, weight, bulkiness, vulnerability and physical state, commodities can be classified into six categories.

In order to cope with the growth in passenger traffic, vessels that can accommodate passengers are required. They could include passenger ships, passenger cargo ships and Ro-Ro (roll-on, roll-off) ships.

Table 1.3 defines commodities and possible vessel types by classification.

Table 1.3.
COMMODITY CLASSIFICATION AND VESSEL TYPE

Classification	Commodity	Package Size	Seasonality	Consignment Size	Ship Type
Agricultural	Rice, wheat, bran,	Bag, case,	Varies greatly	Various, not so large	General
Products	manioc, sugar	drum, carton			Cargo/Bulk Ship
	molasses, rubber, etc.				
Construction	Clinker, sand, stone,	Break-bulk	•	Depends on	Bulk Ship
Materials and	coal, ore, apataite,	9 4 8 8 8 9	meeting industrial	consumer's facility	General
Mining	sulfur, lead, zinc, glass,		nceds, but less		Cargo/Bulk Ship
Products	titanium, tin,		constant meeting		
· .	magnesium, etc.		building needs		
Oi1	Crude oil, petroleum oil	Liquid	Constant	Depends on	Tanker
				consumer's facility	
Bulk Cargo	Steel, wood, iron, cable,	Bag, break-	Fairly constant	No so large	General
	etc. fertilizer, asphalt,	bulk			Cargo/Bulk Ship
	plaster, urea, etc.		6 6 6 6 6 6 6 6 6 6 7		
Cement	Cement	Mainly in case,	Fairly constant	Depends on port	General
•		carton, drum		facility (silo,	Cargo/Bulk Ship
		or loose	• • • • • • • • • • • • • • • • • • •	exclusive berth, etc.)	Specialized ship
Other cargo	Machinery, equipment,	(construction	Fairly constant,	Various	General
	chemical, electric	equipment,	although		Cargo/Bulk Ship
	appliances food, car	vehicles)	composition may		Container Ship
	Other industrial		change		Ro-Ro Ship
	products				
Passenger					Passenger Ship
-					Passenger-Cargo
.*					Ship
** .				_	Ro-Ro Ship

1.2 Port Traffic Survey

(a) Survey Background

In the past, coastal shipping traffic has not clearly defined. The existing cargo O-D traffic data was that worked out in the UNDP Survey, "National Transport Sector Review (NTSR)" in 1992. In the NTSR, however, only the traffic between the main ports is taken into account, keeping however in mind that a marginal traffic is developing along the coast between the main and secondary ports.

Further, several seaports under the jurisdiction of VINAMARINE announced statistical port traffic data but they are insufficient to grasp a overall coastal shipping cargo movement required for the study.

The Study Team, therefore, established close contact with relevant agencies such as VINAMARINE, Inland Waterways Bureau, TEDI and TESI. However available data were not sufficient, and discrepancies were somewhat confusing.

(2) Conduct of Port Traffic Survey

Under such a situation, the study team conducted a port traffic survey covering 44 ports which comprise seaports and some river ports closely related to coastal shipping in order to check the existing statistics and to establish an original database.

In the survey, all surveyed ports were visited by the study team member and/or staff. Following information and data were obtained through an interviewing with the personnel of the survey ports:

- Port Traffic Data (by loaded/unloaded, by O-D port and commodity type)
- Shipcall Record and/or Ship Manifests
- Port Organization
- Port facility (berth, yard, warehouse and etc.)
- Cargo Handling Equipment (crane, forklift, truck, barge, tug boat)
- Cargo Handling Capacity (per year/day)
- Port Development/Improvement Plan

Also pictures of facilities and equipment were taken at surveyed ports and layout plan was collected from some ports.

As a result, the Study collected port traffic data from ports as shown in Table 1.4. The results are summarized below.

International Cargo :10,492,135 tons (export)

12,664,468 tons (import)

• Domestic Cargo 7,809,976 tons (loaded) 5,237,199 tons (unloaded)

(3) Problems Encountered

It is noted that port managers do not understand the concept of coastal shipping and some managers refused to disclose data. The port traffic can be divided only into international and domestic, and since numerous small river ports have not been studied, there is a large discrepancy between loaded and unloaded cargo in domestic shipping.

In Vietnam, port traffic statistics are not only confusing, they are also insufficient for the following reasons:

• In ports open to sea-going vessels, international traffic is not the sole activity, domestic coastal shipping traffic and inland waterway traffic also play important roles. It is noted that sea-going vessels can carry domestic cargo in Vietnam and it is thus difficult to account for all domestic cargo.

It is a common practice in Vietnam ports for loading and unloading to be separately counted and, a load which is transshipped is counted twice. Therefore, cargo traffic

might be double-counted.

Unfortunately, official statistics are not available in minor ports, while at others, are
not under the control of VINAMARINE. VINAMARINE H.Q. receives monthly
reports although not in a uniform format. There is no effort made to prepare
statistics. It is mainly attributed to government's disregard of coastal shipping.

(4) Port Profile

Port Profiles containing the port traftic, port facilities, cargo handling equipment and port capacity etc. were prepared as shown in Appendix 1. Those information was based on the collected records from the survey ports and interviewing with the staff of ports and port authorities.

(5) Shipcall Record

Shipcall records were obtained from some ports. They were the only one information to understand the cargo traffic movement between ports by commodity. They are attached in Appendix 2.

(6) Picture and Port Layout Plan

The pictures of port facilities, cargo handling equipment and warehouse etc. were taken through the survey, and port layout plan was obtained from some ports. They are attached in Appendix 3.

Table 1.4
PORT TRAFFIC SURVEY IN 1995

Zone	Port		ONLINA		onal Cargo		tic Cargo	Total	Volume
No.	No.	Port	Province	Export		Loaded	Unloaded	Int'l	Domestic
1	1	Viet Tri	Vinh Phu	0			130,000	0	160,000
2	2	Ha Bac (Dap Cau, A Lu)	Ha Bac	0			148,000	0	148,000
3	3	Hoa Binh	Hoa Binh	0			13,000	0	18,000
4	4	Hong Gai	Quang Ninh			301,100	• • • • • • • • • • • • • • • • • • • •	2,174,400	651,100
1	5	Cai Lan	Quang Ninh	' ' '		131,100	220,000	2,174,400	051,100
1	6	Cua Ong	Quang Ninh	1,976,900	1,300	118,400	0	1,978,200	118,400
	. 7	B12	Quang Ninh		814,412	27,545	72,678	814,412	100,223
	8	Hong Gai	Quang Ninh	•	184,954	20,644	4,149	662,090	24,793
		Transshipment							
	9	Dien Cong	Quang Ninh	0	0	350,000	0	0	350,000
5	10	Hanoi	Hanoi	0	0	0	723,415	0	723,415
6	- 11	Haiphong	Haiphong	193,588	2,361,658	514,490	1,145,686	Ç	1,660,176
1	12	Cua Cam	Haiphong	0	114,586	6,560		114,586	25,618
	13	Hoan Thach	Haiphong	0	0	191,600	20,000	0	211,600
<u>-</u>		Pha Lai	Haiphong	0	0	3,000	1,010,000	0	1,013,000
7	15	Nam Dinh	Nam Ha	0	, 0	0	130,000	0	130,000
		Ninh Binh	Ninh Binh	0	100,000	192,000	225,000	100,000	417,000
8		Thanh Hoa (Le Mon)	Thanh Hoa	12,000	0	36,000	72,000	12,000	108,000
9		Thuy)	Nghe An	56,163	68,522	100,790	52,483	124,685	153,273
10		Xuan Hai	Ha Tinh	45,000	4,000	3,000	22,500	49,000	25,500
	•••••	Nhat Le	Quang Binh	5,800	0	200	10,000	5,800	10,200
11	•••••	Thuan An	T.THue	9,500	7,000	0	66,000	16,500	66,000
12	•••••	Danang	Q.NDanang	149,424	631,657	23,000	216,888	781,081	239,888
13		Sa Ky	Quang Ngai	. 0	0	5,000	5,000	0	10,000
:		Qui Nhon	Binh Dinh	171,289	151,801	29,356	94,584	323,090	123,940
		Thi Nai	Binh Dinh	3,500	0	34,400	20,000	3,500	54,400
14		Nha Trang	Khanh Hoa	16,558	214,245	18,836	93,473	230,803	112,309
		Ba Ngoi	Khanh Hoa	213,546	500	57,964	4,295	214,046	62,259
1 5		Hon Kohoi	Khanh Hoa	5,500	0	31,500	6,000	5,500	37,500
15		Saigon Bay Naha	HCMC		4,259,198	:	:	6,567,400	614,227
		Ben Nghe	HCMC	630,000	780,000	246,820		1,410,000	352,600
•		Tan Cang Nha Be Oil	HCMC	1,500,000	1,500,000	0		3,000,000	0
		Nha Be Vegetable	HCMC	750,000		1,780,000	0		1,780,000
16		Thu Duc	•	46,929	255,000	0 000 000	5,856	301,929	5,856
10			Dong Nai B.RVung	0 19,000	0 47,000	900,000 7,600	100,000 3,000	0 66,000	1,000,000 10,000
17	3.6	My Tha	Tau Tion Ciona				<u>.</u>		
17		My Tho	Tien Giang	16,446	4,558	117,489	65,242	21,004	182,731
18		Dong Thap (Cao Lanh) Vinh Long	Dong Thap	40,000	110,000	100,000	0	150,000	100,000
19			Vinh Long	18,000	7,000	65,000	4,000	25,000	69,000
17	:	My Thoi (Long Xuyen) Kien Luong	An Giang	48,000	0	112,000	0	48,000	112,000
	,	Hong Chong	Kien Giang Kien Giang	0	•	1,800,000	200,000		2,000,000
20	••••••	Can Tho		66 151	4,000	0	0	4,000	0
-0			Can Tho Minh Hai	66,154 5,000	23,598	34,379	1,788	89,752	36,167
			Minh Hai	5,000 4,000	0	0	0	5,000	0
.,+>*****		Ca Mau Total	***************************************		0	7 200 076	0	4,000	0
	-	uras NCA Canda Tanan		10,492,133	12,004,408	7,809,976	5,237,199 [2	(3,106,603).	13,047,175

Source: JICA Study Team

1.3 Traffic Flows

(1) 1995 O-D Tables

Based on the cargo traffic volume by port, by loaded/unloaded, by O-D ports and by commodity type obtained from port traffic survey, some inter-port cargo traffic volume was integrated into one inter-zonal cargo traffic volume in terms of the location of O-D ports.

As a result, seven inter-zonal cargo O-D tables (6 commodity groups and 1 total cargo) have been prepared as shown in Table 1.5 to 1.11. The desire lines of them are illustrated in Figure 1.3.

Salient characteristics are analyzed separately for domestic seaborne traffic, overseas traffic and passenger traffic below.

a) Domestic Seaborne Traffic

In Vietnam, domestic seaborne traffic can be physically defined as that using coastal seaways and sea-cum-riverways and functionally as domestic traffic that uses seaborne vessels. The traffic is further divided geographically into three: traffic movements within the Red River Delta and within the Mekong River Delta, and coastal movement (possibly inclusive of both the delta areas).

The 1995 OD tables reveal that present domestic seaborne traffic is estimated at 5,336 thousand tons, comprising coastal shipping (2,738 thousand or 51.2%), the Red River Delta (1,326 thousand or 24.8%) and the Mekong River Delta (1,277 thousand or 23.0%). Refer to Table 1.12.

According to the data released from the Inland Waterways Bureau, both the delta areas have about 6 millions of freight traffic each and the 1995 O-D tables, therefore, imply more or less 20% of the river traffic is functionally regarded as seaborne traffic.

The traffic features by commodity type are described as follows:

Agricultural products: These products predominantly come from the South to the North. In the year, there was a shortage of rice in the North and about 600,000 tons were shipped out from the Mekong Delta during the period of emergency. Other products included wheat, palm oil, etc.

Construction materials and mining products in bulk: Coal in bulk is shipped out from Quang Ninh (Zone 4) to many ports and from Viet Tri (Zone 1) to Cua Lo (Zone 16). The biggest unloading port is Ninh Binh (Zone 7) where many factories have been historically located. Long Xuyen (Zone 19) ships out clinker in bulk mainly to Ho Chi Minh City (Zone 15).

Table 1.5 1995 CARGO O-D TABLE (All Cargoes)

	(unit:toms)	P.P.	•	•	٥	3.853.600	1		8	٤	12	ę.	Ç	8	(a)	174	235,604	00.0		ŝ	15,486	00 ¥	98 400	ž Š	016.05											
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Table 1.6 1995 CARGO O-D TABLE (Agricultural Products)

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Table 1.7
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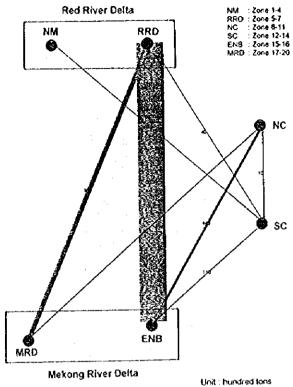
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Table 1.11
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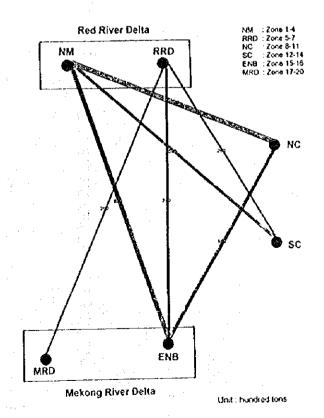
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Figure 1.3
COASTAL SHIPPING TRAFFIC FLOW BY COMMODITY IN 1995

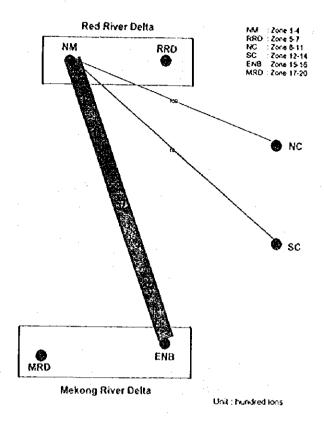
Group1: Agricultural Products



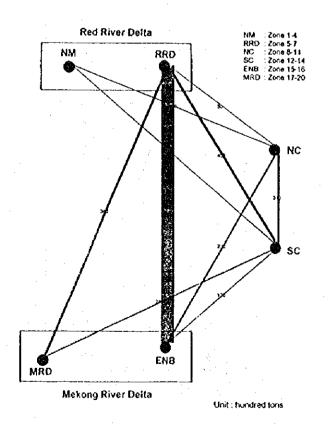
Group2: Construction Material and Mining Products



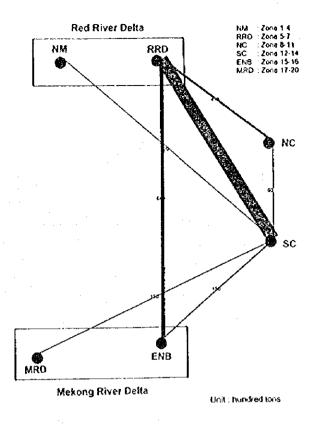
Group 3: Wet Cargoes



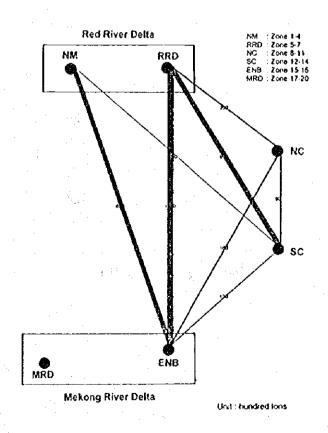
Group 4: Bulkey Cargoes

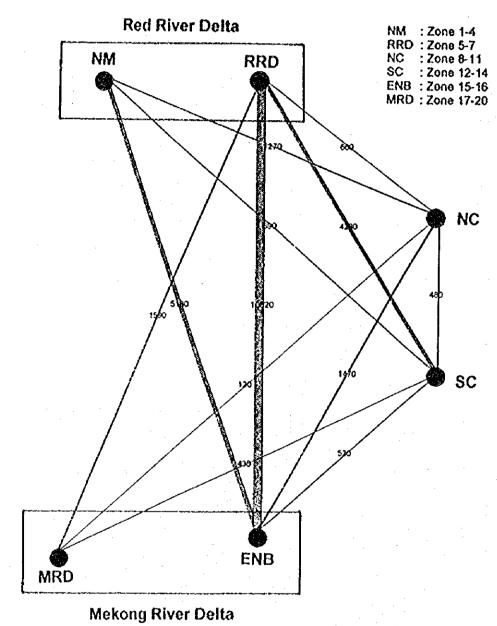


Group 5: Cement



Group 6: Other Cargoes





Unit: hundred tons

Wet cargo: Compared with foreign trade, domestic wet cargo movement is small but tangible. Petroleum oil is transported from Nha Be (Zone 15) to B12 (Zone 4) to meet the demand in the North. A large cement plant in Kien Luong (Zone 19) needs petroleum oil for fuel use.

<u>Bulky cargoes</u>: Haiphong (Zone 6) ships out steel to various industrial areas such as Hanoi (Zone 5), Danang (Zone 12) and Ho Chi Minh City (Zone 15). Ninh Binh (Zone 7) has many factories engaged in production and distributes fertilizer to the central region and to the South.

<u>Cement</u>: Hoang Thach Port and Haiphong Port (both located in Zone 6) and Kien Luong Port (Zone 19) are the major shipment ports of cement nationwide.

Other cargoes: Haiphong Port (Zone 6) and Saigon Port (Zone 15) ship out various industrial products all over the country. On the other hand, salt is usually shipped out from Nha Trang port (Zone 14) while beverages are shipped from My Tho port (Zone 17).

Table 1.12 SUMMARY OF DOMESTIC SEABORNE TRAFFIC IN 1995

, a	Commodity Group	Coastal Sh	ipping	Red Rive	er Delta	Mekong Riv	er Delta	Domestic	Total
1	Agricultural products	725,251	26.5%	0	0.0%	142,000	11.1%	867,251	16.6%
2	Construction materials & Mining products in bulk	398,159	14.6%	798,320	60.2%	676,168	52.9%	1,872,647	37.1%
3	Wet cargo	360,623	13.2%	18,000	1.4%	150,000	11.7%	528,623	11.3%
1	Bulk cargo	482,388	17.6%	162,500	12.3%	0	0.0%	644,888	12.1%
5	Cement	403,854	14.8%	187,200	14.1%	151,000	11.8%	- 742,054	10.2%
6	Other cargoes	363,454	13.3%	159,500	12.0%	158,053	12.4%	681,007	12.7%
	Total	2,733,729	100%	1,325,520	100%	1,277,221	100%	5,336,470	100%

Source: JICA Study Team

b) Overseas Traffic

Based on foreign trade statistics and the results of port traffic surveys, overseas traffic through Vietnamese ports in 1995 was estimated in Table 1.13. The total overseas traffic was 33,655 thousand tons consisting of export (18,016 thousand tons) and import (15,639 thousand tons).

Table 1.13
SUMMARY OF OVERSEAS TRAFFIC THROUGH VIETNAMESE PORTS IN 1995
(Unit: tons)

£						701	ar. tons)
<u></u>	Commodity Group	Expo	rl	Impo	nt	Foreign Tra	de Total
1	Agriculture products	2,067,102	11.5%	357,500	2.3%	2,424,602	10.5%
2	Construction materials & Mining products	4,241,531	27.5%	1,461,866	9.3%	5,703,397	17.0%
3	Wet cargo	8,260,000	45.9%	4,896,600	31.3%	13,156,000	39.1%
1	Bulky cargoes	189,553	1.1%	2,433,791	15.6%	2,623,344	7.8%
5	Cement	41,520	0.2%	1,006,414	6.4%	1,047,934	3.1%
6	Other cargoes	3,216,353	17.9%	5,483,571	35.1%	8,699,924	25.9%
	Total	18,016,059	100%	15,639,142	100%	33,655,201	100%

Source: JICA Study Team

The most significant trade flows to/ from other countries, by commodity group, are as follows:

Agriculture products: China, Indonesia, the Philippines and Malaysia as major rice importers.

<u>Construction materials and mining products</u>: Major coal importers are China and Japan while various kinds of sand and stone come from Russia and Japan.

Wet cargo: Crude oil is exported to Japan, Taiwan and Singapore while petroleum oil is mainly imported from Singapore.

<u>Bulky cargoes</u>: Vietnam exports some wood products, imports fertilizer from Indonesia, Malaysia, the Philippines, etc., and imports steel from Indonesia, Japan, Bangladesh, etc.

Other cargoes: A strong economic connection can be observed between Vietnam and other ASEAN countries in trading other cargoes.

c) Passenger Traffic

To offset the lack of data regarding passenger shipping service, the Study Team selected some passenger shipping routes and conducted onboard passenger interview surveys. (Refer to Table 1.14 and Figure 1.4)

The shipping routes in Haiphong and/or Quang Ninh Province belong to interprovincial and remote island services while the one between HCMC and Vung Tau is a typical tourism service.

In the Haiphong and Quang Ninh area, the responses can be generalized as follows:

- · fare is reasonable and frequency of service is satisfactory, but
- there is much anxiety about risk of accident due to doubtful seaworthiness of the vessel;

According to TESI and the Inland Waterways Bureau, there are some other interprovincial shipping services although the traffic volume is negligible. In addition, Vietnam has 31 inhabited islands with between 44 and 26,000 residents. These islands need shipping service to and from the mainland to maintain the communities.

The Study estimates that the current passenger shipping service serves more or less one million passengers at the national level.

Table 1.14
RESULTS OF PASSENGER SHIPPING SURVEY

Route	Distance (in km)	Travel Time and Frequency	Fare	Capacity and Occupancy
Haiphong - Hong Gai	61	2h30m 2 round trips /day	16,000 VND - 14,000 VND	200 seats 40-65%
Haiphong - Bai Chay	50	3h 1 round trip/day	14,000 VND	100 seats 80%
Haiphong - Dan Tien	171	8h 1 round trip/day	30,000 VND - 27,000 VND	200 scats 40%
Haiphong - Cat Hai Island	25	1h30m 2 round trips/day	8,500 VND	100 seats 80%
Haiphong - Cat Ba Island	60	3h 1 round trip/day	18,000 VND	100 seats 80%
HCMC - Vung Tau	70 km	1h15m 2 round trips/day	110,000 VND	116 seats 50-60% on weekday 80-90% on weekend

Source: JICA Study Team

Figure 1.4
TRAFFIC VOLUME OF PASSENGER SHIPPING BY ZONE

