6.2 *Present Port Traffic Demand*

6.2.1 Overall Transport Demand in Vietnam

(1) Cargo Transport Demand

In VITRANSS, 1999 inter-provincial cargo transport demand was estimated by commodity type. Its total volume amounted at 88.6 million tons. This means that about 240 thousand tons of cargoes are transported daily in average. The major cargoes transported more than 10 million tons are a) coal and mining products (16.4%), b) construction materials (15.2%), c) rice and other food crops (14.8%) and d) manufacturing goods (12.6%).

Total volume of exported and imported cargoes in 1997 was 21.2 million tons and 17.3 million tons, respectively. Major exported commodities were a) crude oil (9.7 million tons), 2) rice and other food crops (3.6 million tons) and c) coal and other mining products (3.6 million tons). On the other hand, major imported commodities were a) refined oil (6.1 million tons), b) manufacturing goods (2.7 million tons) and c) fertilizer (2.7 million tons).

Table 6.2.1 Cargo Transport Demand

(Unit: '000 tons/year, +: export, -: import)

Commodity Type	Domestic Inter-provincial Flow (1999)	National Trade Balance (1997)
1. Rice and Other Food Crops	13,146	+3,575
2. Sugar	2,356	-70
3. Wood	2,519	+75
4. Industrial Crops	1,545	+611
5. Fishery Products	1,658	+259
6. Animal Meat	1,081	+32
7. Steel	2,679	-1,401
8. Construction Materials	13,444	-144
9. Cement and Clinker	7,325	-1,740
10. Fertilizer	8,796	-2,680
11. Coal and Other Mining Products	14,551	+3,574
12. Crude Oil and Refined Oil	8,268	+9,670 -6,101
13. Manufacturing Goods	11,190	+2,630 -2,737
14. Other Miscellaneous Goods	-	+756 -2,412
Export Sub-total	-	21,182
Import Sub-total	-	17,285
Transit/Transshipment	-	3,151
Total	88,559	41,618

Source: VITRANSS

In domestic inter-provincial transport in 1999, road transport by trucks accounted for the highest share at 54.4% in terms of tons carried and 33.7% in terms of ton-kms, and domestic coastal shipping shared 8.4% and 25.6%, respectively. In Vietnam, only road and shipping are the available modes of transport for the international trade. Of which road shared only 18% and the remaining 82% were shared by shipping.

Table 6.2.2 Modal Share in Cargo Transport

Transport Mode	Domestic Inter-provincial Transport (1999)		International Trade (1997, % in ton)
	% in ton	% in ton-km	
Road	54.4	33.7	18
Railway	5.7	4.3	0
Shipping	8.4	25.6	82
Inland Waterway	31.4	14.2	0
Air	0.0	0.1	0

Source: VITRANSS

(2) Passenger Demand

In 1999, the total of 219 million passenger trips were made between provinces. 82% of inter-provincial passengers were transported by bus. Domestic shipping passengers are almost none.

Number of international passengers was 23 million. Of which 90% were trips made to and from the adjoining countries such as China, Laos and Cambodia. The remaining trips were made by air transport to and from the other continental and oversea countries.

Table 6.2.3 Passenger Transport Demand and Its Modal Share, 1999

		Inter-provincial Flow	International Flow
Number of Passengers (000/year)		219,433	23,882
Modal Share in Number of Passengers (%)	Car	9	90
	Bus	86	
	Inland Waterway	1	
	Shipping	0	
	Railway	4	
	Air	1	10

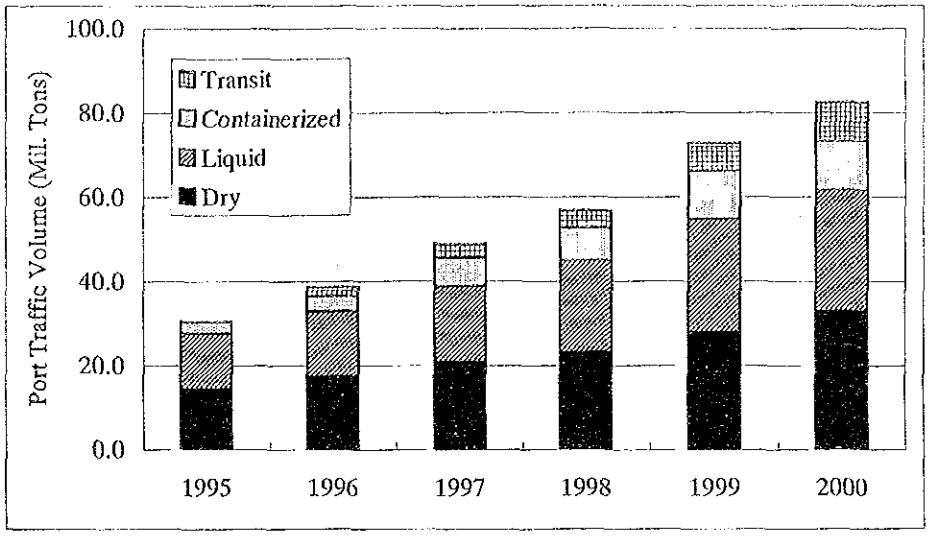
Source: VITRANSS

6.1.2 Port Traffic Demand in Vietnam

(1) Port Traffic Volume by Commodity Type

Vietnam's total port throughput in 2000 was about 83 million tons. Of which 40% was dry cargo, 35% liquid cargo, 14% container and 11% transit cargo. Total port throughput was increased 2.4 times as much as that in 1995. The cargoes transported by container were remarkably increased at 4.4 times in terms of tonnage and 3.6 times in terms of TEU. This means that average unit weight of container has increased from 8.5 tons/TEU in 1995 to 10.2 tons/TEU in 2000.

In 2000, the volume of liquid cargo was amounted at 28.6 million tons. Of which 15.4 million tons of crude oil was exported to mainly Australia, China, Japan and Singapore and 8.8 million tons of refined oil was imported from mainly Singapore. Crude oil is extracted at the Bach Ho oil field located offshore of Ba Ria-Vung Tau province and exported directly to foreign countries. In exporting crude oil, any facilities of the coastal ports are not used. Therefore, the actual volume of cargo throughputs using port facilities is estimated at 68 million tons.



Source: VINAMARINE

Figure 6.2.1 Change in Vietnam's Port Traffic Volume by Commodity Type, 1995-2000

Table 6.2.4 Vietnam's Port Traffic Volume by Commodity Type, 1995 and 2000

Cargo Type	Unit	1995	2000	% to the total: 2000	2000/1995
Dry Cargo	'000 ton	14,470	32,994	40.0	2.3
Liquid Cargo	'000 ton	13,180	28,640	34.8	2.2
Container	'000 ton	2,663	11,685	14.2	4.4
	'000 TEU	315	1,148	-	3.6
Transit	'000 ton	-	9,092	11.0	-
Total	'000 ton	34,000	83,043	100.0	2.4

Source: VINAMARINE

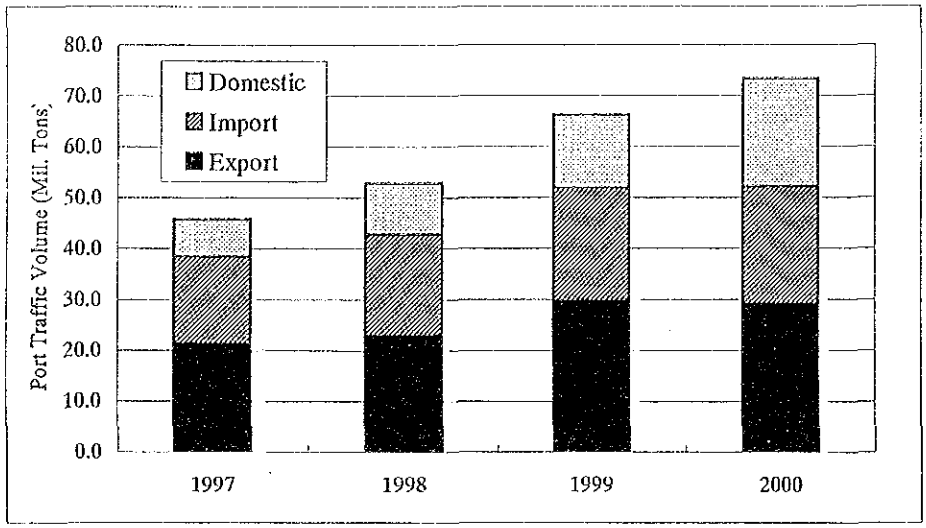
(2) Port Traffic Volume by Trade Type

The composition of port traffic volume by trade type in 2000 was 39.6% of export, 31.5% of import and 28.9% of domestic. Traffic volume for foreign trade shared more than 70% of the total. Domestic cargo traffic volume has extremely increased at 2.9 times from 7.3 million tons in 1997 to 73.3 million tons in 2000, comparing with the increases in export (1.4 times) and import (1.3 times).

Table 6.2.5 Change in Port Traffic Volume by Trade Type, 1997 and 2000

Trade Type	Unit	1997	2000	% to the total: 2000	2000/1997
Export	'000 tons	21,182	29,011	39.6	1.4
Import	'000 tons	17,286	23,117	31.5	1.3
Domestic	'000 tons	7,261	21,191	28.9	2.9
Total	'000 tons	45,729	73,319	100.0	1.6

Source: VINAMARINE
Note: Data excludes the traffic volume of transit cargoes



Source: VINAMARINE

Figure 6.2.2 Change in Port Traffic Volume by Trade Type, 1997-2000

(3) Port Traffic Volume at Key Seaports in Vietnam

Total cargo throughput of the five key seaports including Hai Phong port in the north, Da Nang port in the central, Sai Gon port, Ben Nghe port and New port in the south, reached at 25.6 million tons in 2000. It increased at 1.5 times from 17.5 million tons in 1995 in average.

The percent proportion of those throughputs to the Vietnam's total (excluding liquid cargoes) has been decreased from 84.3% in 1995 to 47.1% in 2000.

Table 6.2.6 Change in Traffic Volume at Major Ports in Vietnam, 1995-2000

(Unit: '000 tons)

Port	1995	1996	1997	1998	1999	2000	2000/ 1995
Hai Phong	4,515	4,872	4,550	5,442	6,509	7,646	1.7
Da Nang	830	850	882	829	1,200	1,411	1.7
Sai Gon	7,211	7,200	8,820	7,700	8,337	9,701	1.3
Ben Nghe	1,800	2,260	2,100	2,240	2,858	2,770	1.5
New Port	3,200	3,560	4,400	4,200	4,550	4,079	1.3
Total	17,556	18,742	20,752	20,411	23,454	25,607	1.5
% to Vietnam Total[1/]	84.3	88.6	75.1	58.3	51.0	47.1	-

Source: VINAMARINE
Note: 1/ excludes liquid cargoes

(4) Port Traffic Volume by Area

Port traffic volume by area was calculated based on the port throughput by port authority. There are 18 port authorities in Vietnam. Those are classified into three areas such as north, central and south. The north include two port authorities of Hai Phong and Quang Ninh, the central includes six authorities of Thanh Hoa, Nghe Tinh, Da Nang, Thuan An, Quy Nhon and Nha Trang and the south includes 10 authorities of Sai Gon, Dong Nai, Vung Tau, Can Tho, My Tho, My Thoi, Dong Thap, Kien Giang, Quang Binh and Hai Thinh.

The compositions of total port throughput by area are 23% in the north, 9% in the central and 68% in the south in terms of tonnage. When the liquid and transit cargoes are excluded, share of the south decreased at 57%. As for the liquid and transit cargoes and container, the south has more dominant shares more than 75% of the each total.

Table 6.2.7 Composition of Port Traffic Volume by Area, 2000

(Unit: %)

Area	Total	Total; except liquid and transit cargoes	Dry Cargo	Liquid Cargo	Container (in ton base)	Transit
North	23.2	33.0	37.5	12.5	20.2	6.2
Central	8.9	9.7	11.5	6.1	4.5	14.8
South	67.9	57.3	51.0	81.4	75.3	79.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: VINAMARINE

In the north and the central, the dominant cargo type was dry cargo sharing 66.0% and 52.4%, respectively. The share of transit cargoes is the least in the north and the most in the central. In the south, the volume of liquid cargoes shared more than that of dry cargo because of the export of crude oil.

Table 6.2.8 Composition of Arial Port Traffic Volume by Commodity Type, 2000

(Unit: %)

Area	Total	Dry Cargo	Liquid Cargo	Container (in ton base)	Transit
North	100.0	66.0	18.9	12.4	2.7
Central	100.0	52.4	23.8	7.3	16.5
South	100.0	30.7	41.9	15.9	11.6
Total	100.0	40.0	34.8	14.2	11.0

Source: VINAMARINE

(5) Shipcalls and Average Vessel Size

The number of shipcalls in the Vietnam's seaports was 38,842 in 2000. Of which 43.5% was made of domestic vessels and 56.5% of foreign vessels.

The average vessel size was calculated from the total number of shipcalls and volume of GRT. In 2000, the average vessel size in GRT were 3,926. The size of foreign vessels is bigger than the one of domestic vessels. The vessel size became about twice larger than that in five years ago.

Table 6.2.9 Number of Shipcalls and Average Vessel Size, 2000

	Domestic Vessels	Foreign Vessels	All Vessels
No. of Shipcalls	16,851	21,892	38,743
Total Vessel Tonnage ('000 GRT)	21,284	77,503	98,787
Average Vessel Size (GRT)	2,211	5,245	3,926

Source: VINAMARINE

(6) Characteristics of Domestic Cargo Movement by Coastal Shipping

In 1999, total domestic cargo volume transported by coastal shipping was estimated at 7.5 million tons, 8.4% of the total. This means that the total port throughput was 15 million. The volume of cargoes transported between the south and the north was dominant and amounted at 4.6 million tons or 61.7% of the total. Of which 2/3 are transported from the south and 1/3 from the north.

The total volume of domestic cargoes loaded and unloaded in the south was 5.3 million tons or 35% of the total port throughput in Vietnam.

Table 6.2.10 Inter-provincial OD Matrix of Coastal Shipping, 1999

(Unit:'000 tons (%))

OD	North	Central	South	Total
North	2 (0.0)	1,679 (22.4)	1,511 (20.2)	3,192 (42.7)
Central	372 (5.0)	129 (1.7)	378 (5.0)	879 (11.7)
South	3,102 (41.5)	306 (4.1)	2 (0.0)	3,410 (45.6)
Total	3,476 (46.5)	2,114 (28.3)	1,891 (25.3)	7,481 (100)

Source: VITRANSS

The volume of domestic cargoes transported by coastal shipping was 7.5 million in 1999. Of which major cargoes were bulky and liquid type such as rice and other food crops (26.7%), cement and clinker (14.1%), refined oil (13.3%), fertilizer (12.4%) and coal and mining products (11.9%).

In long and medium distance cargo transport, especially between coastal areas, coastal shipping plays a dominant role in domestic cargo movement in Vietnam. For instance, between HCMC and Hanoi, its modal share of coastal shipping was 93%.

Table 6.2.11 Domestic Cargo Volume Transported by Coastal Shipping, 1999

Commodity Type	By Coastal Shipping ('000 tons)	% to Coastal Shipping Total	% to All Mode
1. Rice and Other Food Crops	2,003	26.7	15.2
2. Sugar	0	0.0	0.0
3. Wood	119	1.6	4.7
4. Industrial Crops	0	0.0	0.0
5. Fishery Products	0	0.0	0.0
6. Animal Meat	0	0.0	0.0
7. Steel	284	3.8	10.6
8. Construction Materials	209	2.8	1.6
9. Cement and Clinker	1,052	14.1	14.4
10. Fertilizer	929	12.4	10.6
11. Coal and Other Mining Products	891	11.9	6.1
12. Crude Oil and Refined Oil	996	13.3	12.0
13. Manufacturing Goods	998	13.4	8.9
Total	7,481	100.0	8.4

Source: VITRANSS

Table 6.2.12 Modal Share of Inter-provincial Freights between Main Provinces, 1999

(Unit:'000 tons, (% to all modes))

Distance	Provinces	Road	IWT	Railway	Coastal Shipping	Air	Total
Long Distance	Hanoi ⇔ HCMC	648 (53.9)	0 (0.0)	89 (7.4)	446 (37.1)	20 (1.6)	1,202 (100)
	Hai Phong ⇔ HCMC	43 (6.0)	0 (0.0)	7 (0.9)	670 (92.9)	1.5 (0.2)	721 (100)
Medium Distance	Hanoi ⇔ Da Nang	105 (92.3)	0 (0.0)	7 (6.4)	0 (0.0)	1.5 (1.3)	114 (100)
	Hai Phong ⇔ Da Nang	74 (40.8)	0 (0.0)	2 (1.0)	106 (58.2)	0 (0.0)	183 (100)
	HCMC ⇔ Da Nang	322 (93.6)	0 (0.0)	6 (1.8)	14 (4.1)	1.5 (0.4)	343 (100)
Short Distance	Hanoi ⇔ Hai Phong	1,164 (90.3)	0 (0.0)	124 (9.7)	0 (0.0)	0 (0.0)	1,288 (100)
	Hanoi ⇔ Lao Cai	82 (37.2)	0 (0.0)	138 (62.8)	0 (0.0)	0 (0.0)	220 (100)
	HCMC ⇔ Can Tho	573 (18.5)	2,520 (81.5)	0 (0.0)	0 (0.0)	0 (0.0)	3,093 (100)

Source: VITRANSS

6.2.3 Port Traffic Volume in the SEFA

(1) Port Traffic Volume by Commodity Type

Three port authorities of Sai Gon, Dong Nai and Vung Tau are supervising the overall port activities in the SFEA (List of ports belong to each port authority is referred to Chapter 10). The total cargo traffic volume handled at the ports under three port authorities reached at 52 million in 2000. It has been increased 2.2 times since 1996. The growth rates by cargo type from 1996 to 2000 were 2.3 in dry cargo, 1.8 in liquid cargo, 2.6 in container and 4.3 in transit cargo.

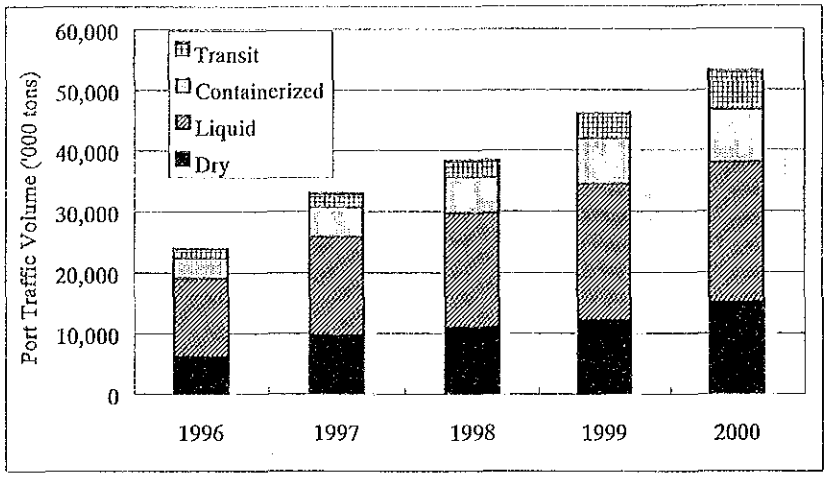
The SFEA's total port throughput in 2000 shared 63% of the Vietnam total. As for by cargo type, 42% of dry cargoes, 80% of liquid cargo, 75% of containers and 70% of transit cargoes were handled in the SFEA.

Table 6.2.13 Traffic Volume of Ports in the SFEA[1/], 1996-2000

Year	Cargo Total ('000 tons)	Dry Cargo ('000 tons)	Liquid Cargo ('000 tons)	Container		Transit Cargo ('000 tons)
				('000 tons)	('000TEU)	
1996	23,883	6,031	13,042	3,323	369	1,487
1997	32,892	9,591	16,245	4,858	539	2,198
1998	38,275	10,880	18,875	5,890	613	2,630
1999	46,116	12,061	22,412	7,523	733	4,120
2000	51,977	13,926	22,935	8,717	860	6,399
2000/1996	2.2	2.3	1.8	2.6	2.3	4.3
% to Vietnam Total in 2000	62.6	42.2	80.1	74.6	74.9	70.4

Source: VINAMARINE

Note: 1/ includes three port authorities of Sai Gon, Dong Nai and Vung Tau.



Source: VINAMARINE
Note: 1/ includes three port authorities of Sai Gon, Dong Nai and Vung Tau.

Figure 6.2.3 Change in Port Traffic Volume in the SFEA[1/], 1996-2000

The ports belong to the Sai Gon Port Authority handled the largest volume of cargoes in Vietnam. Its throughput reached at 32 million tons in 2000. Of which 38% are shared by dry cargo and 27% by container. High growth of port throughput is shown in the ports belong to the Dong Nai Port Authority, although the volume is not much comparing the one of Sai Gon Port Authority. There are no containers handled in this area.In the ports belong to the Vung Tau Port Authority, the liquid cargoes are dominant sharing 86.5% of the total. Most of them are crude oil exported from the offshore oil fields such as in Bach Ho etc. There are few containers handle in this area.

Table 6.2.14 Port Traffic Volume in the SFEA by Port Authority, 1996-2000

Port Authority	Year	Cargo Total ('000 tons)	Dry Cargo ('000 tons)	Liquid Cargo ('000 tons)	Container		Transit Cargo ('000 tons)
					('000 tons)	('000TEU)	
Sai Gon	1996	14,208	5,388	5,393	3,294	366	133
	1997	19,702	8,737	5,488	4,833	537	644
	1998	22,558	9,787	5,918	5,868	611	985
	1999	26,456	10,745	5,846	7,504	731	2,361
	2000	32,020	12,247	6,421	8,701	858	4,651
	00/96	2.3	2.3	1.2	2.6	2.3	35.0
Dong Nai	1996	48	18	20	0	0	10
	1997	817	251	554	0	0	12
	1998	1,131	214	907	0	0	10
	1999	1,254	355	885	0	0	14
	2000	1,266	712	554	0	0	0
	00/96	26.4	39.6	27.7	n.a.	n.a.	0.0
Vung Tau	1996	9,627	625	7,629	29	3	1,344
	1997	12,373	603	10,203	25	2	1,542
	1998	14,586	879	12,050	22	2	1,635
	1999	18,406	961	15,681	19	2	1,745
	2000	18,691	967	15,960	16	2	1,748
	00/96	1.9	1.5	2.1	0.6	0.7	1.3

Source: VINAMARINE

Table 6.2.15 Composition of Ports Traffic Volume by Area in the SFEA, 2000

(Unit: %)

Port Authority	Cargo Total	Dry Cargo	Liquid Cargo	Container	Transit
Sai Gon	100.0	38.2	20.1	27.2	14.5
Dong Nai	100.0	56.2	43.8	0.0	0.0
Vung Tau	100.0	3.5	86.5	0.1	9.9
Total	100.0	26.8	44.1	16.8	12.3

Source: VINAMARINE

(2) Port Traffic Volume by Trade Type

The composition of port traffic volume by trade type in 2000 was 49.0% of export, 36.4% of import and 14.6% of domestic. Traffic volume for foreign trade shared more than 85% of the total.

In the ports under Vung Tau Port Authority, export cargo shared 89% of the total. This is mainly accounted by export of crude oil from the offshore oil fields in the province.

Table 6.2.16 Port Traffic Volume by Trade Type, 2000[1/]

(Unit: '000 tons, (%))

Port Authority	Export	Import	Domestic	Total
Sai Gon	7,025 (25.7)	14,709 (53.7)	5,634 (20.6)	27,368 (100)
Dong Nai	269 (21.3)	559 (44.2)	437 (34.5)	1,265 (100)
Vung Tau	15,021 (88.7)	1,350 (8.0)	572 (3.3)	16,943 (100)
Total	22,315 (49.0)	16,618 (36.4)	6,643 (14.6)	45,576 (100)

Source: VINAMARINE

Note: 1/Data excludes the traffic volume of transit cargoes

6.2.4 Port Traffic Demand in the SFEA

(1) Classification of Ports by Handling Cargo Type

In order to analyze the features of movement of the port cargoes, the ports in the study area are broadly classified into two types in terms of the type of cargoes handled. One is a general port handling various commercial cargoes and the other is specialized port handling designated cargoes such as materials and products belong to the port managing enterprise.

The specialized ports in the study area are further subdivided into the following seven types: 1) petroleum port, 2) crude oil station, 3) gas port, 4) cement port, 5) wood chip port, 6) shipyard and 7) other ports. There are more petroleum ports and fewer gas ports in the HCMC Ports Group than in the Thi Vai-Vung Tau Ports Group. Ports of cement, wood chip and shipyard are only located in the HCMC Ports Group.

Table 6.2.17 Classification of Ports by Handling Cargo Type

Port Type	HCMC Ports Group	Thi Vai-Vung Tau Ports Group	Remarks
General	- Sai Gon Port [1/] - Tan Cang [1/] - Ben Nghe Port [1/] - VICT [1/] - Tan Thuan Dong Port - Bien Dinh Port [2/] - Vegetable Port [3/] - Lotus Port - Tan Cang Cat Lai Terminal	- Phu My Port - Dong Nai Port - Go Dau A Port - Go Dau B Port - Cat Lo Port [1/ 2/] - CTHS T. Sa Port - Trade Port	Handling mainly general dry cargoes 1/ Container 2/ Fish 3/ Vegetable
Specialized 1) Petroleum	- Sai Gon Petro Port - PETEC Cat Lai Oil Terminal - Nha Be Petroleum Terminal - PETECHIM Port - Hiep Phuoc Power Plant [4/]	- Oil K2 Port - Vietsov Petro Port - PTSC Port - Phu My Power Plant [4/]	Importing refined oil products for local distribution 4/ oil for power plant
2) Crude Oil		- Bach Ho Oil Station - Rang Dong Oil Station	Exporting crude oil from offshore oil field
3) Gas	- ELF Gas Sai Gon	- SCTGAS-VN Port - VT-GAS Port - GAS-PVC Port - LPG Cai Mep Port	Importing gas products for local distribution
4) Cement	- Morning Star Cement - Hiep Phuoc Cement		Unloading of cement for local distribution
5) Wood Chip	- VITAICO Port - Phu Dong Port - VICO WOCHIMEX Port		Exporting wood chips
6) Shipyard	- An Phu Shipyard [5/] - Ba Son Shipyard [5/] - Sai Gon Shipyard [6/] - SHIPLACON [6/] - Sai Gon South Shipyard [6/]		Handling shipyard-related cargoes 5/ ship repairing 6/ ship building
7) Others	- NAVIOIL Port (plant oil)	- VEDAN (seasonings) - Long Thanh (fertilizers)	Importing material and products for local distribution

(2) Cargo Throughput by Port

Table 6.1.18 shows the total cargo throughput of the ports in the study area. The breakdowns of dry and liquid cargoes and containers by trade type are shown in Table 6.2.19 and 6.2.20, respectively. Cargo throughput of some ports under the port authorities of Dong Nai and Vung Tau is not available because the data was not obtained from VINAMARINE as well as each port authority.

The general ports handled about 21 million tons of cargoes in 2000. The tremendous volume of dry cargoes and containers is handled by major five ports of Sai Gon Port, Tan Cang, Ben Nghe Port, VICT and Phu My Port. It reached at 18.4 million tons or 81% of the total volume excluding liquid cargoes. Those ports are all located along the Sai Gon River in the center of HCMC and handling containers totaling 858 thousand TEUs except Phu My Port located along the Thi Vai River. The ports handling containers are the above mentioned four general ports in HCMC and Cat Lo port located in Vung Tau area. However, the number of containers handled at Cat Lo ports is very few (1,600 TEUs). Other number of small general ports handle relatively small volume of cargoes ranging from thousands to half million tons.

Table 6.2.18 Cargo Throughput by Port

Port Type	Port Name	Total (tons)	by Cargo Type (tons)			by Trade Type (tons)		
			Dry	Liquid	Container	Export	Import	Domestic
General Port	Sai Gon Port	9,329,512	6,868,956	0	2,460,556	2,844,659	4,223,043	2,261,810
	Tan Cang	4,078,646	363,564	0	3,715,082	1,950,341	1,751,325	376,980
	Ben Nghe Port	2,769,632	1,607,213	0	1,162,419	760,517	1,456,574	552,541
	VICT	1,363,092	463	0	1,362,629	638,369	721,968	2,755
	Tan Thuan Dong Port	147,054	147,054	0	0	7,547	116,676	22,831
	Bien Dong Port	27,845	27,845	0	0	5,520	15,785	6,540
	Vegetable Port	676,188	647,480	28,708	0	233,831	304,715	137,642
	Lotus Port	180,234	180,234	0	0	515	121,840	57,879
	Tan Cang Cat Lai	318,590	318,590	0	0	117,200	138,184	63,206
	Dong Nai Port	404,746	404,746	0	0	862	22,174	381,710
	Go Dau A Port	77,114	64,611	12,503	0	336	22,101	54,677
	Go Dau B1 & B2 Port	476,085	427,705	48,380	0	0	309,206	166,879
	Phu My Port	888,100	888,100	0	0	47,800	656,400	183,900
	Cat Lo Port	n.a.	n.a.	n.a.	16,090	n.a.	n.a.	n.a.
	CTHS T.Sa Port	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.
	Trade Port	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.
	Sub-total	20,736,838	11,946,561	89,591	8,716,776	6,607,497	9,859,991	4,269,350
Oil Ports	*Sai Gon Petro Port*	*927,570*	*700*	*926,870*	0	*0*	*767,967*	*159,603*
	PETEC Cat Lai Oil	1,019,650	0	1,019,650	0	0	916,035	103,615
	Nha Be Petroleum	3,990,643	18,436	3,972,207	0	0	3,455,674	534,969
	PETECHIM Port	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.
	Hiep Phuoc Power Plant	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.
	Phu My 2-1 Power Plant	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.
	Oil K2 Port	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.
	Vietsov Petro Port	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.
	PTSC Port	192,713	0	192,713	0	192,713	0	0
	Bach Ho Oil Station	12,641,895	0	12,641,895	0	12,641,895	0	0
	Rang Dong Oil Station	1,478,625	0	1,478,625	0	1,478,625	0	0
	Sub-total	20,251,096	19,136	20,231,960	0	14,313,233	5,139,676	798,187
Gas Ports	ELF Gas Sai Gon	29,998	0	29,998	0	0	17,059	12,939
	SCTGAS-VN Port	1,635	0	1,635	0	n.a.	n.a.	n.a.
	VT Gas Port	17,486	0	17,486	0	0	3,291	14,195
	GAS PVC Port	75,400	0	75,400	0	n.a.	n.a.	n.a.
	LPG Cai Mep Port	248,941	0	248,941	0	n.a.	n.a.	n.a.
	Sub-total	373,460	0	373,460	0	0	20,350	27,134
Cement Ports	Morning Star Port	1,094,761	1,094,761	0	0	0	0	1,094,761
	Hiep Phuoc Cement Port	122,214	122,214	0	0	2,024	0	120,190
	Sub-total	1,216,975	1,216,975	0	0	2,024	0	1,214,951
Wood Chip Ports	VITAICO Port	55,904	55,904	0	0	55,500	11	393
	Phu Dong Port	32,000	32,000	0	0	32,000	0	0
	VICO WOCHIMEX Port	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.
	Sub-total	87,904	87,904	0	0	87,500	11	393
Other Ports	NAVIOIL	107,957	0	107,957	0	3,028	104,929	0
	VEDAN Port	374,969	374,969	0	0	n.a.	n.a.	n.a.
	Long Thanh Port	57,475	57,475	0	0	n.a.	n.a.	n.a.
	Sai Gon Shipyard	621,792	612,250	9,542	0	356,644	169,034	96,114
	Ba Son Shipyard	3,927	3,927	0	0	1,518	9	2,400
	An Phu Shipyard	0	0	0	0	0	0	0
	SHIPPLACON	0	0	0	0	0	0	0
	Sai Gon South Shipyard	0	0	0	0	0	0	0
	Thieng Lieng Anchorage	379,388	74,582	304,806	0	2,100	376,288	1,000
	Nha Be Anchorage	*50,993*	*49,293*	*1,700*	*0*	*13,500*	*11,266*	*26,227*
	Vung Tau Anchorage	40,376	21,093	19,283	0	0	40,376	0
	Sub-total	1,528,920	1,193,589	335,331	0	373,762	596,973	125,741

Source: culled from available data from VINAMARINE, port authorities and offices of port management
Note: figures of sub-total include available data only.

Table 6.2.19 Throughput of Dry and Liquid Cargoes by Port

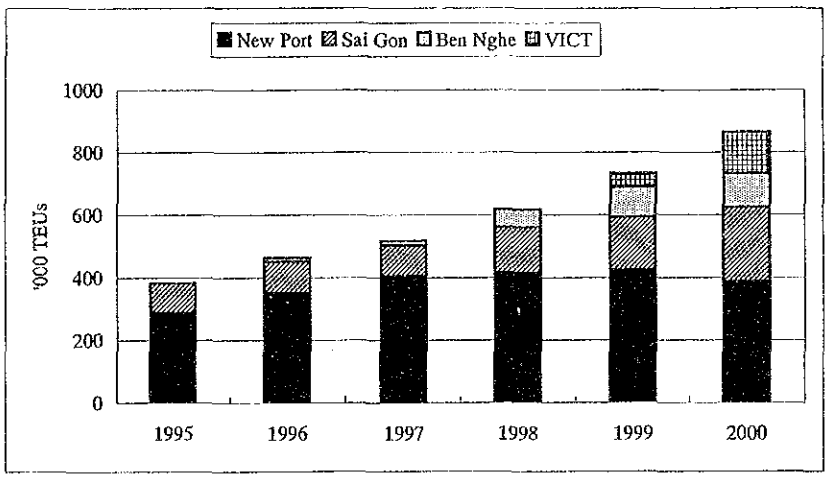
Port Type	Port Name								
		Total	Export	Import	Domestic	Total	Export	Import	Domestic
General Port	Sai Gon Port	6,868,956	1,907,435	3,101,794	1,859,727	0	0	0	0
	Tan Cang	363,564	34,006	68,072	261,486	0	0	0	0
	Ben Nghe Port	1,607,213	162,155	896,739	548,319	0	0	0	0
	VICT	463	0	0	463	0	0	0	0
	Tan Thuan Dong Port	147,054	7,547	116,676	22,831	0	0	0	0
	Bien Dong Port	27,845	5,520	15,785	6,540	0	0	0	0
	Vegetable Port	647,480	233,831	276,007	137,642	28,708	0	28,708	0
	Lotus Port	180,234	515	121,840	57,879	0	0	0	0
	Tan Cang Cat Lai	318,590	117,200	138,184	63,206	0	0	0	0
	Dong Nai Port	404,746	862	22,174	381,710	0	0	0	0
	Go Dau A Port	64,611	336	9,598	54,677	12,503	0	12,503	0
	Go Dau B1 & B2 Port	427,705	0	260,826	166,879	48,380	0	48,380	0
	Phu My Port	888,100	47,800	656,400	183,900	0	0	0	0
	Cat Lo Port	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	CTHS T.Sa Port	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Trade Port	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sub-total	11,946,561	2,517,207	5,684,095	3,745,259	89,591	0	89,591	0
Oil Ports	Sai Gon Petro Port	700	0	0	700	926,870	0	767,967	158,903
	PETEC Cat Lai Oil	0	0	0	0	1,019,650	0	916,035	103,615
	Nha Be Petroleum	18,436	0	15,001	3,435	3,972,207	0	3,440,673	531,534
	PETECHIM Port	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Hiep Phuoc Power Plant	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Phu My 2-1 Power Plant	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Oil K2 Port	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Vietsov Petro Port	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	PTSC Port	0				192,713	192,713	0	0
	Bach Ho Oil Station	0	0	0	0	12,641,895	12,641,895	0	0
	Rang Dong Oil Station	0	0	0	0	1,478,625	1,478,625	0	0
	Sub-total	19,136	0	15,001	4,135	20,231,960	14,313,233	5,124,675	794,052
Gas Ports	ELF Gas Sai Gon	0	0	0	0	29,998	0	17,059	12,939
	SCTGAS-VN Port	0	0	0	0	1,635	n.a.	n.a.	n.a.
	VT Gas Port	0	0	0	0	17,486	0	3,291	14,195
	GAS PVC Port	0	0	0	0	75,400	n.a.	n.a.	n.a.
	LPG Cai Mep Port	0	0	0	0	248,941	n.a.	n.a.	n.a.
	Sub-total	0	0	0	0	373,460	0	20,350	27,134
Cement Ports	Morning Star Port	1,094,761	0	0	1,094,761	0	0	0	0
	Hiep Phuoc Cement Port	122,214	2,024	0	120,190	0	0	0	0
	Sub-total	1,216,975	2,024	0	1,214,951	0	0	0	0
Wood Chip Ports	VITAICO Port	55,904	55,500	11	393	0	0	0	0
	Phu Dong Port	32,000	32,000	0	0	0	0	0	0
	VICO WOCHIMEX Port	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sub-total	87,904	87,500	11	393	0	0	0	0
Other Ports	NAVIOIL	0	0	0	0	107,957	3,028	104,929	0
	VEDAN Port	374,969	n.a.	n.a.	n.a.	0	0	0	0
	Long Thanh Port	57,475	n.a.	n.a.	n.a.	0	0	0	0
	Sai Gon Shipyard	612,250	356,644	160,192	95,414	9,542	0	8,842	700
	Ba Son Shipyard	3,927	1,518	9	2,400	0	0	0	0
	An Phu Shipyard	0	0	0	0	0	0	0	0
	SHIPPLACON	0	0	0	0	0	0	0	0
	Sai Gon South Shipyard	0	0	0	0	0	0	0	0
	Thieng Lieng Anchorage	74,582	2,100	72,482	0	304,806	0	303,806	1,000
	Nha Be Anchorage	49,293	13,500	11,266	24,527	1,700	0	0	1,700
	Vung Tau Anchorage	21,093	0	21,093	0	19,283	0	19,283	0
	Sub-total	1,193,589	373,762	265,042	122,341	335,331	0	331,931	3,400

Source: culled from available data from VINAMARINE, port authorities and offices of port management
Note: figures of sub-total include available data only.

Table 6.2.20 Number of Containers Handled in 2000

Port	'000 Tons				'000 TEUs			
	Total	Export	Import	Domestic	Total	Export	Import	Domestic
Tan Cang	3,715	1,916	1,683	115	386	191	181	14
Sai Gon Port	2,461	937	1,121	402	230	92	104	34
Ben Nghe Port	1,162	598	560	4	111	57	54	0.5
VICT	1,363	638	722	2	130	65	65	0.1
Cat Lo Port	16	0.03	15	0.6	1.6	0	1.5	0.06
Total	8,717	4,090	4,102	525	859	405	406	48

Source: VINAMARINE



Source: VINAMARINE

Figure 6.2.4 Change in Number of Containers handled at Four Ports, 1995-2000

The number and throughput volume of specialized ports is more than that of general ports. The cargo volume handled at these specialized ports was reached at 24.6 million tons in 2000 and sub-totals by type are as follows; 1) petroleum ports: 21.4 million tons including 14 million tons of crude oil exported from offshore oil stations, 2) gas ports: 0.4 million tons of imported gases for domestic distribution, 3) cement ports: 1.2 million tons of clinkers and cements, 4) wood chip ports: 0.1 million tons of wood chips for export and 5) other specialized ports: 1.5 million tons. Other specialized ports include designated factories, shipyards and anchorage areas.

The characteristics of cargo movement at the major ports are summarized as follows:

1) General Ports

(a) Sai Gon Port

Sai Gon port handled the total of 9.3 million tons of cargoes in 2000. Of which 6.9 million tons are dry cargo and 2.4 mil. tons or 230 thousand TEUs are containers. Containerized cargoes shares 27.2% of the total. Sai Gon Port handles the largest volume of dry cargo and the second largest number of containers in Vietnam.

As for dry cargoes, imported cargoes reached 3.1 million tons or 45% of the total dry cargoes. While the export and domestic dry cargoes shared 28% and 27%, respectively. Major cargoes are fertilizers (1.4 mil. tons), steel (0.5 mil. tons) and wheat cereal (0.3 mil. tons) for import and rice (1.8 mil. tons) for export and cement (0.5 mil. tons) and clinker (0.4 mil. tons) for domestic transport.

As for container, proportion of export and import is almost equal. Domestic containers shared 14.7% of the total, higher than other container handling ports.

(b) Ben Nghe Port

Cargo throughput of Ben Nghe port reached at 2.8 million tons in 2000. Of which 1.6 millions tons was dry cargo and the remaining 1.2 million tons or 111 thousand TEUs was container. The share of containerized cargo was 42%.

In dry cargoes, major cargoes are rice for export, construction machines and fertilizers for import and cement and steel for domestic transport. In container, proportion of export and import is almost equal. Domestic containers shared only 0.4% of the total.

(c) Tan Cang

The Tan Cang handled 386 thousand TEUs of containers in 2000. The containers handled at this port recorded the largest number in Vietnam. Containerized cargo shared 91% of the total. Proportion of export and import of containers is almost equal. Domestic containers shared only 3.9% of the total. This port handled also dry cargoes. It reached at 364 thousand tons in 2000. As for dry cargo, domestic trade is dominant, accounted for 72% of the total.

(d) VICT

VICT handles only containers. The number of handled containers reached at 130 thousand TEUs in 2000. Proportion of export and import is almost equal. Domestic containers shared only 0.1% of the total. Container throughput is being increased year after year.

(e) Phu My Port

Total cargo throughput of Phu My port was 888 thousand tons in 2000. This port handles only dry cargoes but includes manifold types of commodities in bulk and bagged. Imported cargoes accounted for 656 thousand tons or 74% of the total. Major imported cargoes are fertilizer in bulk (377 thou. tons) and steel billet (115 thou. tons). The bagged fertilizers are loaded into barge to transport to Mekong Delta Area.

(f) Dong Nai Port

Dong Nai Port (Long Binh Tan) handled 405 thousand tons of dry cargoes in 2000. Domestic trade is dominant in this port, sharing 94% of the total cargo throughput. The port handled various kinds of dry cargoes in bulk and bagged. Major domestic unloaded and loaded cargo is cement. Cement is transported from Ching Fong Cement Factory in Hai Phong and reloaded into small ship or barge to distribute to the neighboring provinces in the South. The port has exclusive warehouse for cement leased by Ching Fong Cement Company. Other major unloaded cargo is coal from Quang Ninh province. Imported cargo volume recorded at 25 thousand tons and of which 19 thousand tons are logs.

(g) Go Dau A Port

The total throughput of this port was 77 thousand tons of dry cargoes in bulk and bagged in 2000. Domestic trade is dominant in this port, sharing 71% of the total cargo throughput. Major unloaded cargo is stone for construction.

(h) Go Dau B Port

The port handled 476 thousand tons in 2000. Imported cargoes are dominant in this port, sharing 65% of the total cargo throughput. There handled no cargo for export. The port handled various kinds of dry and liquid cargoes. Major imported cargoes are steel billet (167 thou. tons) and material of fertilizer (60 thou. tons) from Japan. Steel billets are imported for the steel factory of Vinakyoei located near to the port. In domestic trade, 100 thousand tons of fertilizer is unloaded to Mekong Delta area.

(i) Other General Ports

There are five more general ports in HCMC Ports Group. Those ports handled 1.3 million tons of general dry cargoes in 2000. Proportion by trade type is 52% of import, 27% of export and 21% of domestic trade. Among them, Vegetable Port handled the largest volume of cargoes at 676 thousand tons. This port handled mainly vegetables and fruits for export. Bien Dong Port handled mainly fishery products. Tan Cang Cat Lai Terminal handled mainly logs, fertilizers and coals.

As for Thi Vai-Vung Tau Ports Group, there are three more general ports. Cargo throughput of these ports is not available but it is conjectured that not so much volume is handled. Cat Lo Port handled general cargo in bulk and container and fishery products. The number of containers handled at Cat Lo Port was 1,508 TEUs for mainly import.

2) Specialized Ports

(a) Oil and Gas Ports

There are many ports handling especially oil and gas in the SFEA. This is to meet with the large demand consumed by general households and offices as well as various factories.

Petroleum ports handled more than 7.5 million tons of refined oil products in 2000. Among them, Nha Be Petroleum Port imported 3.5 million tons of refined oil. Of which imported oil, 0.5 million tons were reshipped to other domestic areas. Similarly, other ports import refined oil and store in their own tank. The imported oil is distributed mainly by tank lorry and by small tankers ship. About 10-20% of imported refined oil was distributed by small tanker ship.

Crude oil is exported directly from offshore export stations. About 14.1 million tons of crude oil was exported in 2000. Among them, Bach Ho and Rang Dong oil stations exported 12.6 million tons and 1.5 million tons, respectively.

Gas ports belong mainly to the Thi Vai-Vung Tau Ports Group except ELF Gas Sai Gon Port located along Sai Gon River. Total volume handled at six gas ports was 373 thousand tons in 2000. LPG Cai Mep Port handled largest volume of 249 thousand tons. Gases are generally imported from foreign countries or domestic offshore gas stations and store in their own gas tanks. Some of the stored gases are consumed locally and others are reshipped to the other areas.

(b) Cement Ports

There are two cement ports in the SFEA. Morning Star (Sai Mai) Cement Port is located along the Dong Nai River in Cat Lai Area. This port unloaded 1.1 million tons of cement in bulk for local distribution, no cargoes for export and import.

Hiep Phuoc (Nghi Son) Cement Port is located along Soai Rap River. This port unloaded 120 thousand tons of cement in bulk from the factory in Thanh Hoa Province in the North Vietnam. Only 2 thousand tons of cement was exported.

(c) Wood Chip Ports

There are three ports handling wood chips for export. VITAICO Port is located along Dong Nai River in Cat Lai Area, and Phu Dong Port and VICO WOCHIMEX Port are located along Long Tau River. Those ports have belt conveyers for loading wood chips. Cargo throughput of VICO WOCHIMEX Port is not available. The total cargo throughput of remaining two ports was 88 thousand tons.

(d) Other Ports

There are three ports belong to the particular factories to handle their own materials and products. NAVIOIL Port handles 108 thousand tons and its major cargo is imported vegetable oil. VEDAN Port handled materials and products of glutamate totaling 375 thousand tons. Long Thanh Port handled 57 thousand tons of fertilizers.

There are five shipyards engaging on ship building and repairing in the SFEA. These shipyards handle particular materials and products necessary for their business.

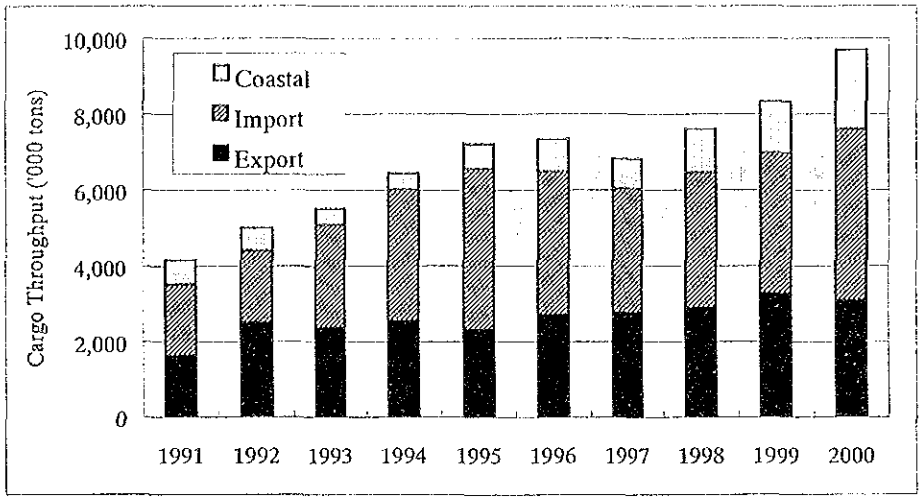
According to the Sai Gon Port Authority, there are three anchorage areas. Thieng Lieng ancholage area is located along Long Tau River and handled 379 thousand tons. Of which 305 thousand tons are liquid cargo. Nha Be and Vung Tau anchorage areas handled 51 thousand and 40 thousand tons, respectively.

(3) Characteristics of Cargo Movement at Sai Gon Port

Total cargo throughput at Sai Gon Port has increased 2.3 times from 4.6 million tons in 1991 to 9.7 million tons in 2000. Particularly, domestic cargoes have increased at 3.4 times. The increase of exported and imported cargoes remained 1.9 times and 2.4 times, respectively.

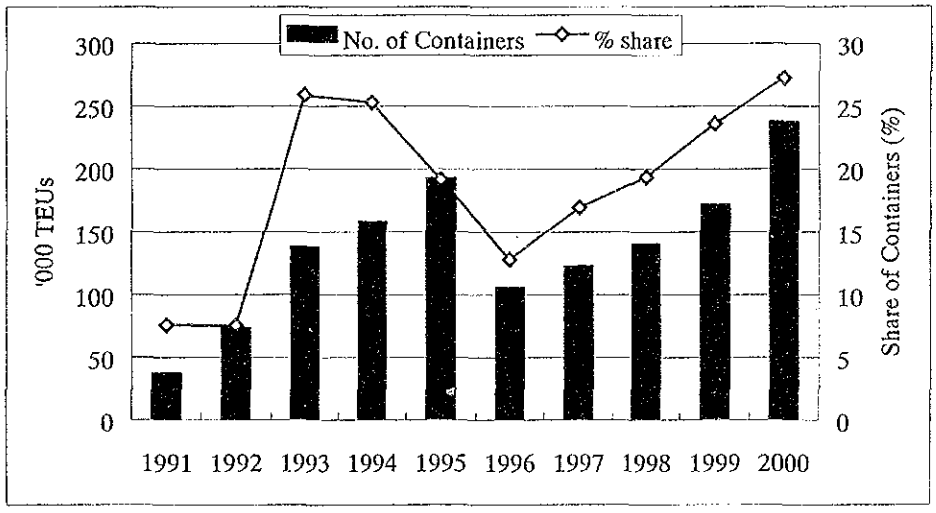
By type of cargo, the number of containers has extremely increased, 6.4 times from 37 thousand TEUs in 1991 to 237 thousand TEUs in 2000. In terms of tonnage of containerized cargoes, it increased 8.4 times rather than that in terms of TEUs. Percent share of containerized cargoes to the total has also increased from 7.6% in 1991 to 27.2% in 2000. However, the number of containers has once decreased from 192 thousand TEUs in 1995 to 105 thousand TEUs in 1996. After then it has recovered to increase continuously. It is supposed due to the decrease of import in Vietnam.

By commodity type, in export, rice is always accounted for more then half in the last decade. General cargoes are being increased recently. Major imported cargoes are fertilizers, general cargoes and metal wares. These cargoes are being increased recent years. For domestic trade, cement and clinkers are major cargoes and being increased.



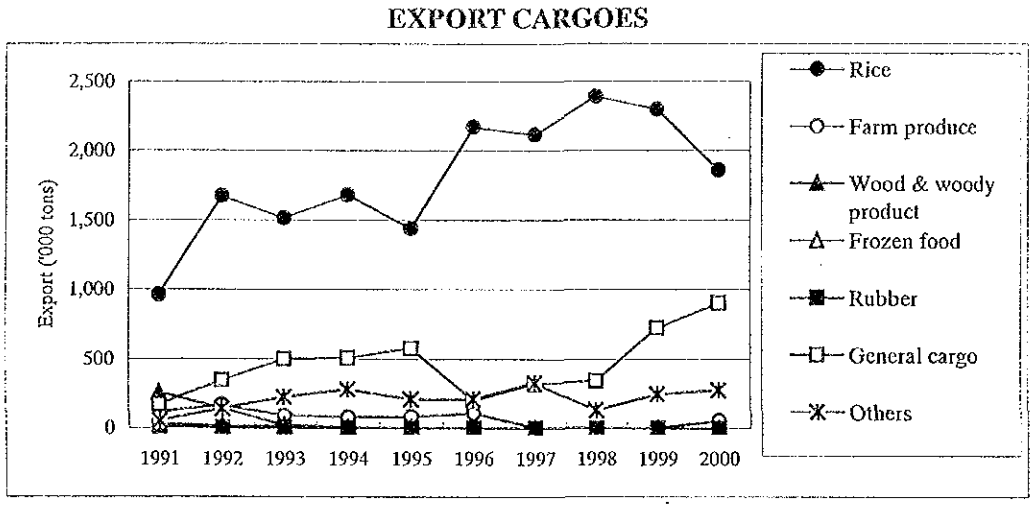
Source: Sai Gon Port

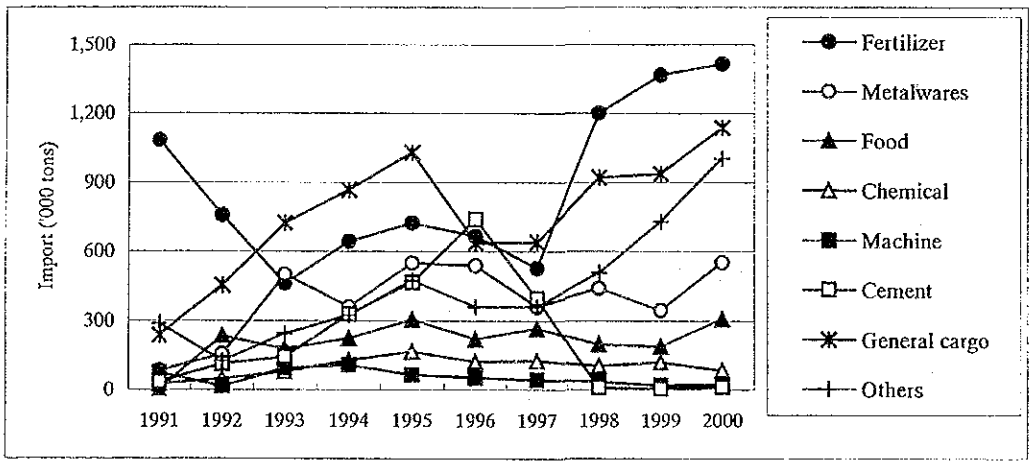
Figure 6.2.5 Change in Cargo Throughput of Sai Gon Port, 1991-2000

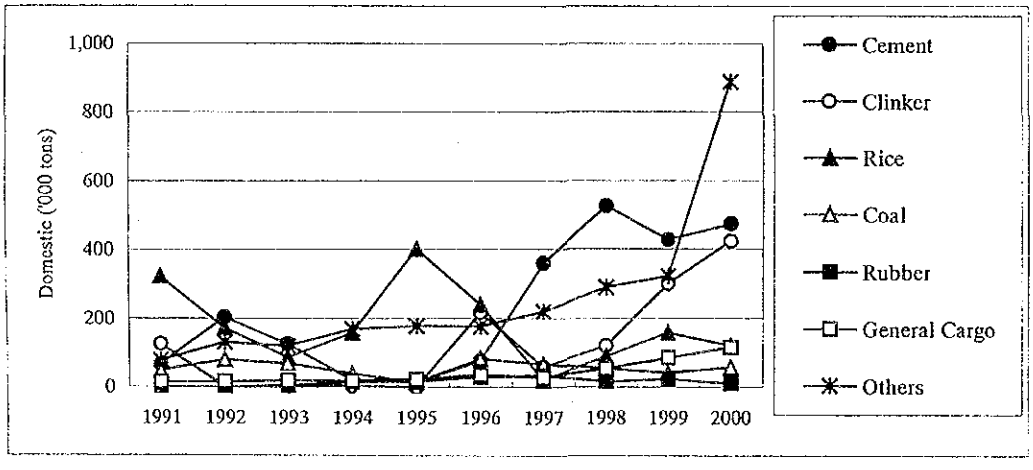


Source: Sai Gon Port

Figure 6.2.6 Change in Number of Containers handled at Sai Gon Port, 1991-2000







Source: Sai Gon Port

Figure 6.2.7 Change in Cargo Volume handled at Sai Gon Port by Cargo Type, 1991-2000

6.3 Hinterlands and Trading Partners

6.3.1 Characteristics of Major General Ports

(1) Sai Gon Port

In this study, truck driver interview survey was conducted in order to grasp the characteristics of secondary transport port cargoes to and from Sai Gon Port. Survey was conducted at the gates of Khanh Hoi and Tan Thuan Terminals.

Average number of trucks entering and exiting at the gate was 718 in Khanh Hoi and 781 in Tan Thuan terminal according to the port. The proportion by vehicle type was observed that 61-84% is ordinary truck with capacity more than 2.5 tons and 15-25% is container trucks.

As for Khanh Hoi terminal, 71% of trucks belong to forwarding companies and 24% to cargo owners. On the other hand, in Tan Thuan terminal 38% of trucks belong to forwarding companies but 33% to shipping companies.

Table 6.3.1 Truck Traffic Volume at Sai Gon Port

Terminal	Average Traffic Volume (vehs./day)	By Vehicle Type (%)			
		Truck (<2.5t)	Truck (>2.5t)	Container Truck	Tank Lorry
Khanh Hoi	718	13.5	60.9	25.4	0.2
Tan Thuan	781	1.3	84.2	14.3	0.2

Source: Traffic Survey by the Study Team, May 2001

Table 6.3.2 Owner of Truck Vehicles entering/exiting at Sai Gon Port

Terminal	By Vehicle Type (%)			
	Cargo Owner	Forwarder	Shipping Company	Others
Khanh Hoi	24.3	70.6	1.6	3.5
Tan Thuan	19.3	38.2	33.1	9.4

Source: Traffic Survey by the Study Team, May 2001

Distribution of origins and destinations of cargo handled at Sai Gon Port is shown in Table 6.3.3. In both terminals, major hinterlands are the area within HCMC sharing 67-80%, especially districts in the center (22-47%) and south (12-29%).

Other major hinterlands are Mekog River Delta region (5-9%) and western districts of Dong Nai Province where many industrial zones are located including Bien Hoa, Long Thanh and Nhon Trach (5-7%). There still be few cargoes transported to and from the central and northern Vietnam by trucks.

The survey does not cover the access transport by barge. It should be considered that a lot of containers are transported by barge to and from ICDs located in upstream of Sai Gon River and bulk cargoes such as agricultural products are transported through inland waterways to and from Mekong River Delta.

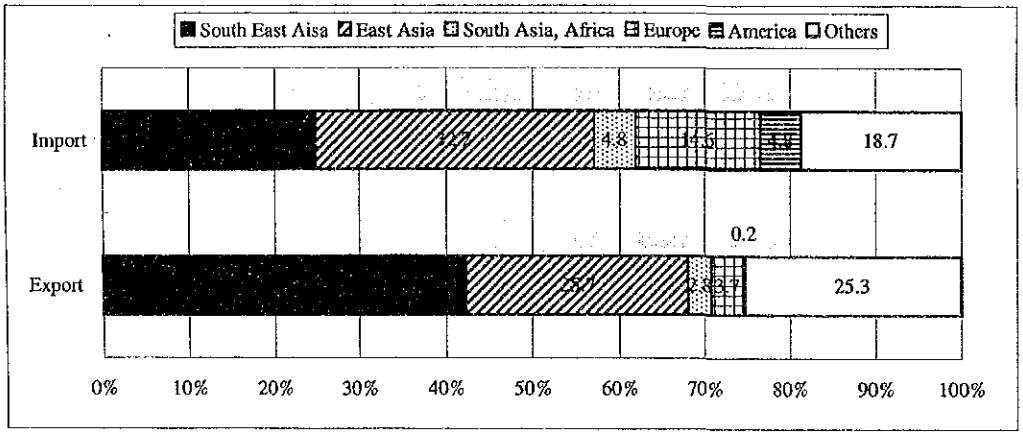
Table 6.3.3 Origin and Destination of Trucks to/from Sai Gon Port

(Unit: %)

Zone No.	Province	District	Khanh Hoi Terminal (Zone No.1)		Tan Thuan Terminal (Zone No.3)	
			to port	from port	to port	from port
1	HCMC	Central	**47.1**	**40.7**	**43.4**	**22.1**
2		East	4.0	7.3	4.2	**21.0**
3		South	**12.3**	**16.6**	**28.6**	**27.4**
4		West	3.5	3.7	3.3	8.6
5		North	0.8	1.5	0.6	0.8
6	Binh Duong	South	5.9	3.4	0.4	0.8
7		West	0.3	0.6	0.6	1.2
8		East	0.5	0.4	0.9	0.4
9	Dong Nai	West	5.3	7.3	5.5	6.6
10		East	1.3	1.1	1.9	1.2
11		North	0.5	0.4	0.1	0.0
12	BR-VT	Phu My	0.0	0.2	0.6	0.2
13		Vung Tau	1.1	1.5	0.4	0.4
14		East	0.0	1.1	0.0	0.0
15	Mekong Delta Area		8.6	8.2	5.2	5.1
16	Other Areas in South Vietnam		8.0	3.4	3.6	3.3
17	Central Vietnam		0.8	2.2	0.6	0.8
18	Northern Vietnam		0.0	0.2	0.1	0.2

Source: Traffic Survey by the Study Team, May 2001
Note: figures are calculated based on the number of vehicles.

Distribution of trading partners of Sai Gon Port is shown in Figure 6.3.1. South East Asia and East Asia shared more than half of the total. South East Asia shared 24.8% in import and 42.3% in export. East Asia shared 32.2% in import and 25.7% in export. Europe shared 14.6% in import, higher than export.



Source: Sai Gon Port

Figure 6.3.1 International Trading Partners of Sai Gon Port, 2000

(2) Ben Nghe Port

This port handles rice from Mekong River Delta by barge and truck to export to India and African countries. Construction equipment such as cranes and machines for factories are imported from Japan and South Korea. Fertilizers are also imported from Russia, Philippines, USA and India. In domestic trade, cement is imported from the North Vietnam. Steel products are handled to ship to and from northern provinces.

(3) Tan Cang

Although the hinterlands of this port are almost same as Sai Gon Port, it is assumed that more containerized cargoes are transported by barge and truck to and from the number of industrial zones in Binh Duong and Dong Nai Provinces as well as northeast HCMC because of its advantage in location. This port is located at the nearest place from ICDs in the SFEA comparing with the other ports in HCMC. More over, this port established recently own ICD in Song Than to strengthen its advantage.

(4) VICT

VICT handles only containers. Containers are transported by truck and barge. Hinterlands of this port are almost same as Sai Gon Port. Many containers are transported by barge through Sai Gon River to and from the ICDs in the SFEA.

This port is mainly used for the regular container ships operated by 12 shipping companies. Most of them come to VICT one a week. Its major destinations are the countries within Asia, especially South East Asia. There is one direct regular ship connecting with Japan.

(5) Phu My Port

Fertilizers are imported in bulk from Russia, Australia, USA and Canada and transported to the bagging factories located near to the port. Some bagged fertilizers are loaded to the small ship or barge to transport to Mekong River Delta. This port imports steel billets for Vinakyoei Steel factory located near to the port and some steel products for construction are transported to Mekong River Delta by barge or small ship.

(6) Dong Nai Port

Cement is imported from Ching Fong Cement factory located in Hai Phong Province and store in their leased warehouses for local distribution. Some volume of cement is loaded to small ship or barge to transport to Mekong River Delta. This port imports logs from Malaysia and Indonesia and coal from Quang Ning Province for local distribution.

(7) Go Dau B Port

This port imports steel billets from Japan for Vinakyoei Steel factory and materials of fertilizer in bulk from Singapore and transported to bagging factory. Some bagged fertilizers are loaded small ship or barge and transported to Mekong River Delta. .

6.3.2 Truck Traffic Volume on Major Access Road

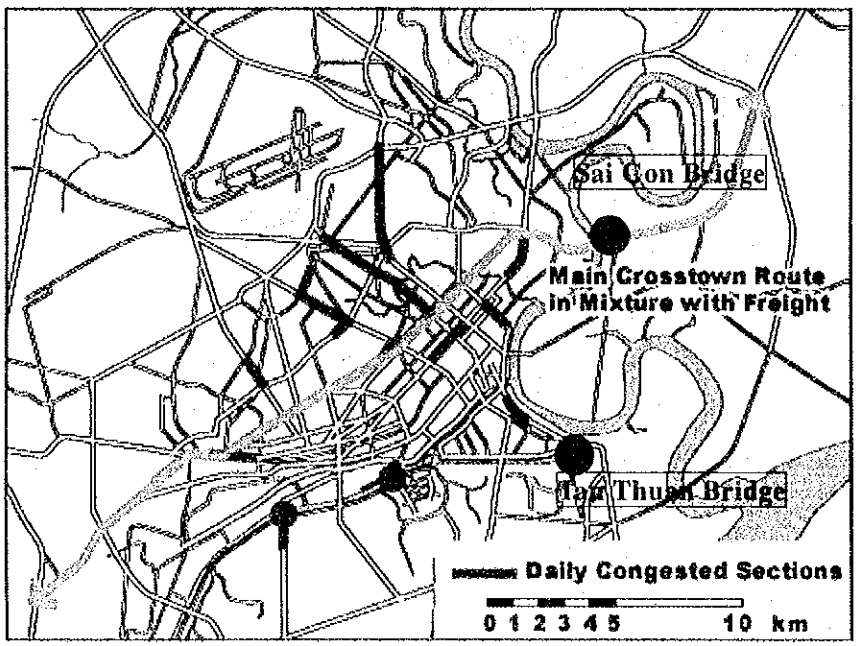
In order to grasp the influence of the traffic of port accessing trucks to the urban transport, traffic count survey was conducted in this Study. For this purpose , two survey stations, Sai Gon Bridge and Tan Thuan Bridge located on the boundary of HCMC's urban area, were selected.

The results show that the volume of trucks is more than that of passenger car. In the peak hours in the morning and afternoon, traffic volume including motorcycles and bicycles exceed the capacity of the bridges. It is clear that the morning peak is higher afternoon peak on the direction going to suburban area and opposite trend on the direction to the city center.

In the urban area of HCMC, trucks with loading capacity of more than 2 tons, construction trucks and specialized vehicle such as crane, tractor etc. are prohibited to travel inside the ring road comprising National Road No.1 and Sai Gon South Highway (Decision of HCMC People's Committee, No. 5736/QD-UB-NCVX, December 9, 1996). This is to ease the traffic congestion during peak hours. Time for truck ban is set on the following time periods, 1) 6:00-8:00, 2) 11:00-13:00 and 3) 16:00-19:00.

Although the truck ban effects a negative influence on the freight transport of HCMC, especially for port operation, it is clear that it effects to ease the congestions in the peak hours on the other hand.

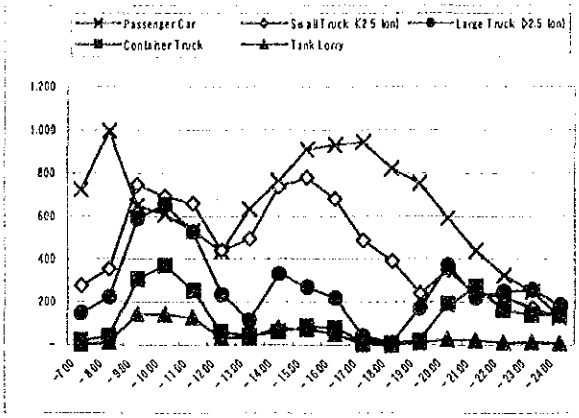
Figure 6.3.2 Location of Traffic Count Stations



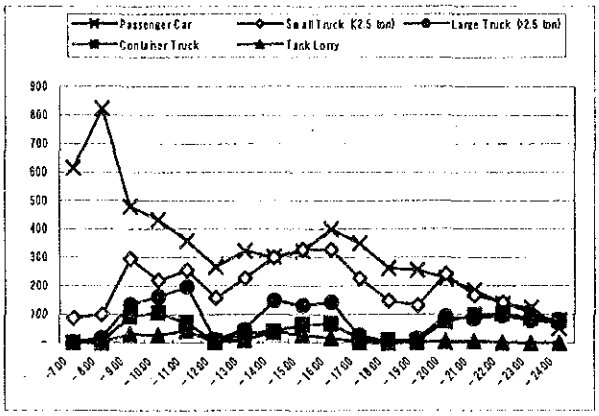
Note: Daily congested sections were identified by the HCMC Transport Study, 1999

Sai Gon Bridge

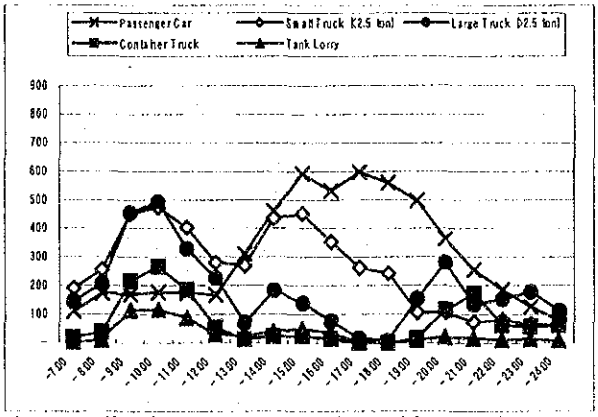
Both Directions



To Dong Nai Province

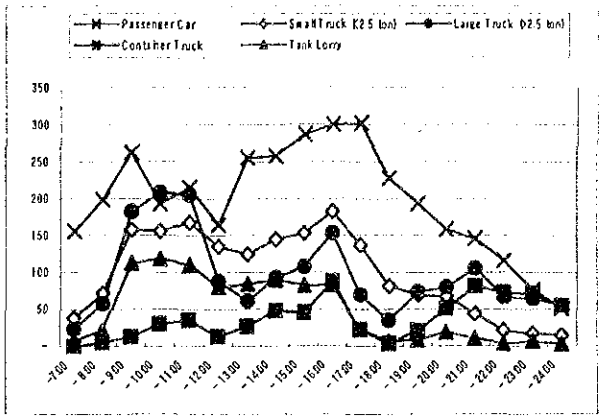


To HCMC Center

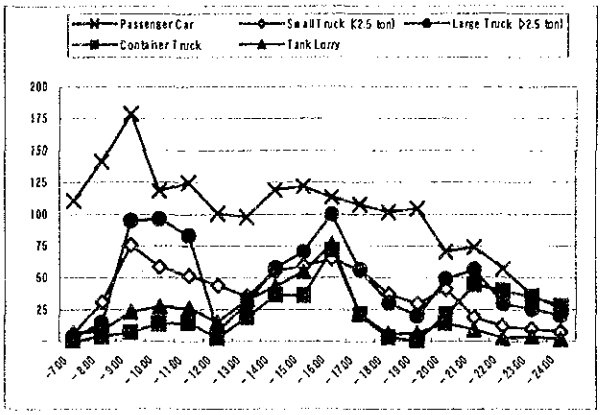


Tan Thuan Bridge

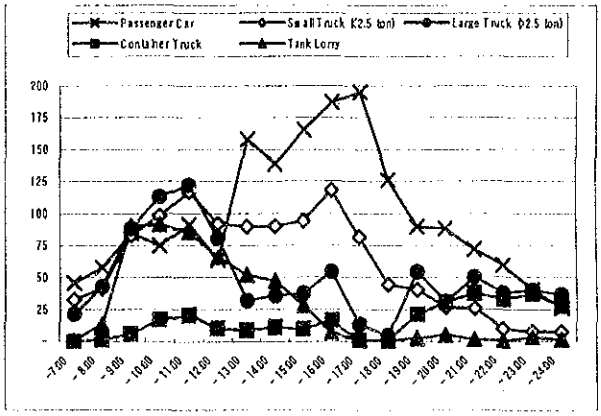
Both Directions



To Nha Be District



To HCMC Center



Source: Traffic Survey conducted by Study Team, May 2001

Figure 6.3.3 Truck Traffic Volume of Sai Gon Bridge and Tan Thuan Bridge

6.4 Shipcalls

Shipcalls in 1998 and 2000 under the management of the Sai Gon Port Authority were 3,454 and 4,078 vessels respectively. Table 6.4.1 shows the shipcalls in 1998 and 2000 by ports under the above Authority. The total number of the calling vessels increased by 18% in 2000 compared to that in 1998, while shipcalls in Sai Gon Port and Tan Cang decreased by nearly 30% and 50% respectively.

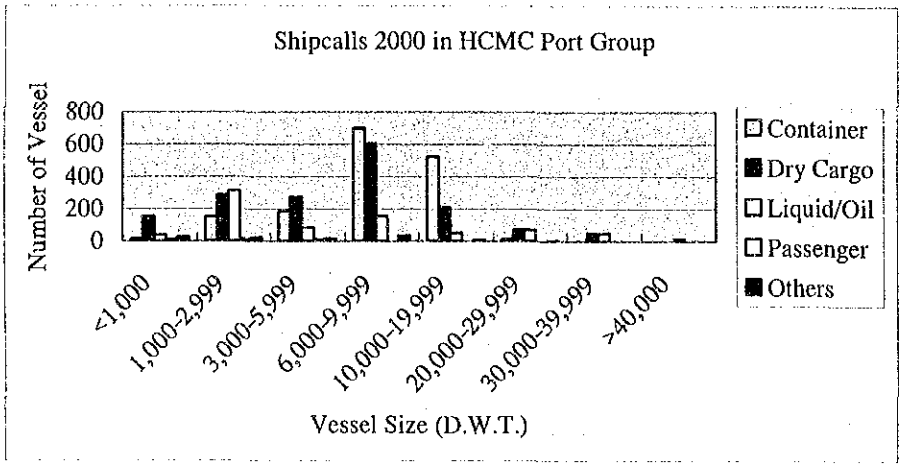
Table 6.4.1 Shipcalls in 1998 and 2000 by Ports under the Sai Gon Port Authority

Port's Name	Year 1998	Year 2000
Sai Gon Port	1,267	957
Tan Cang	662	450
VICT	0	266
Ben Nghe Port	413	532
Nha Be Port Area	118	426
Other Ports	994	1,447
Total	3,454	4,078

Source: VINAMARINE

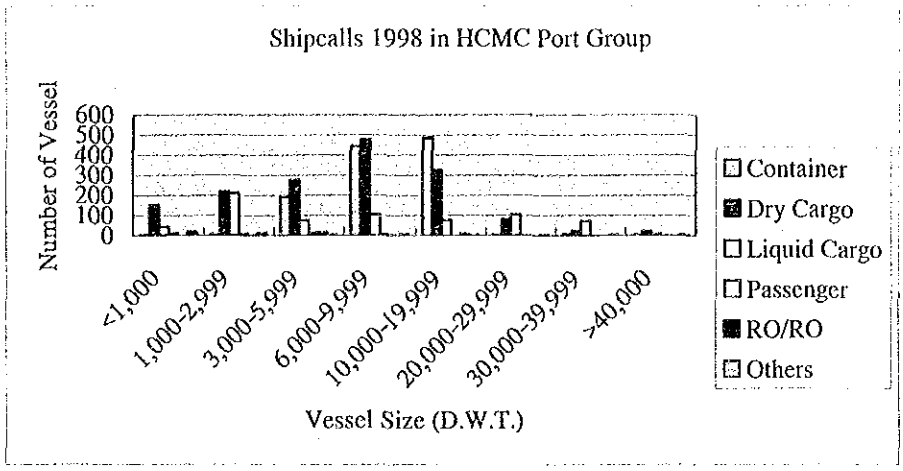
Figure 6.4.1 and 6.4.2 show the shipcalls in 2000 and 1998 by a kind of vessel under the Sai Gon Port Authority respectively. According to these figures, the ratio of container vessels to the total is 39% and that of dry cargo vessels is 40% in 2000, while the ratio of container vessels to the total is 33% and that of dry cargo vessels is 45% in 1998. In addition, number of vessels less than 20,000 D.W.T. in 2000 were 3,826 which represented 94% of the total, while in 1998 they were 3,146 which represented 91% of the total.

Figure 6.4.1 Shipcalls 2000 in HCMC Port Group



Source: VINAMARINE

Figure 6.4.2 Shipcalls 1998 in HCMC Port Group



Source: VINAMARINE

Shipcalls in 2000 by Ports in the South of Vietnam are shown in Table 6.4.2. Total shipcalls in this area in 2000 were 6,130 vessels. Nearly 70% of the total shipcalls were shipcalls in the ports in HCMC, which were followed by the ports in Thi Vai River and Vung Tau Area.

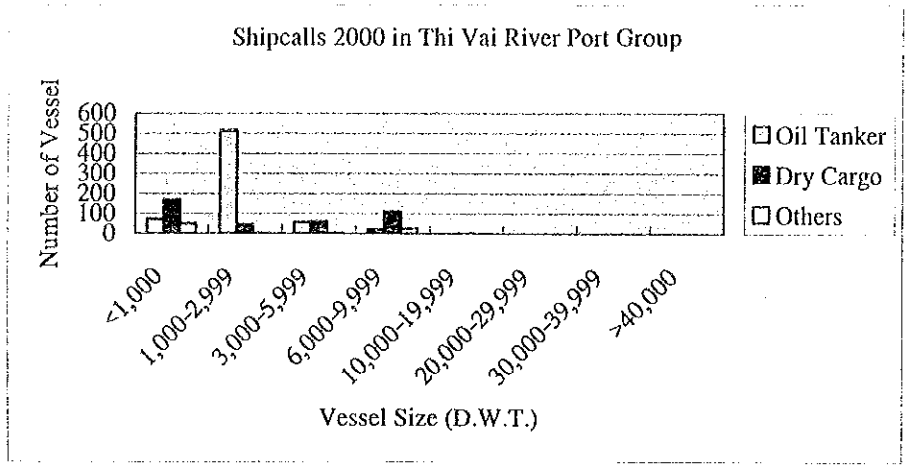
Table 6.4.2 Shipcalls in 2000 by Ports in the South of Vietnam

Vessel size (DWT)	Ports in HCM	Ports in Thi Vai River	Ports in Vung Tau	Total
<1,000	232	288	238	758
1,000-2,999	772	557	315	1,644
3,000-5,999	556	114	188	858
6,000-9,999	1,484	150	201	1,835
10,000-19,999	782	1	0	783
20,000-29,999	146	0	0	146
30,000-39,999	95	0	0	95
>40,000	11	0	0	11
Total	4,078	1,110	942	6,130

Source: VINAMARINE

Figure 6.4.3 and 6.4.4 show the shipcalls 2000 in Thi Vai River Port Group and Vung Tau Port Group by a kind of vessel respectively. According to these figures, the ratio of oil tankers to the total is 59% and that of dry cargo vessels is 34% in Thi Vai River Port Group, while the ratio of oil tankers to the total is 47% and that of dry cargo vessels is 31% in Vung Tau Port Group. In addition, number of vessels less than 10,000 D.W.T. in Thi Vai River Port Group were 1,109 which represented nearly 100% of the total, while they were 942 which represented 100% of the total in Vung Tau Port Group.

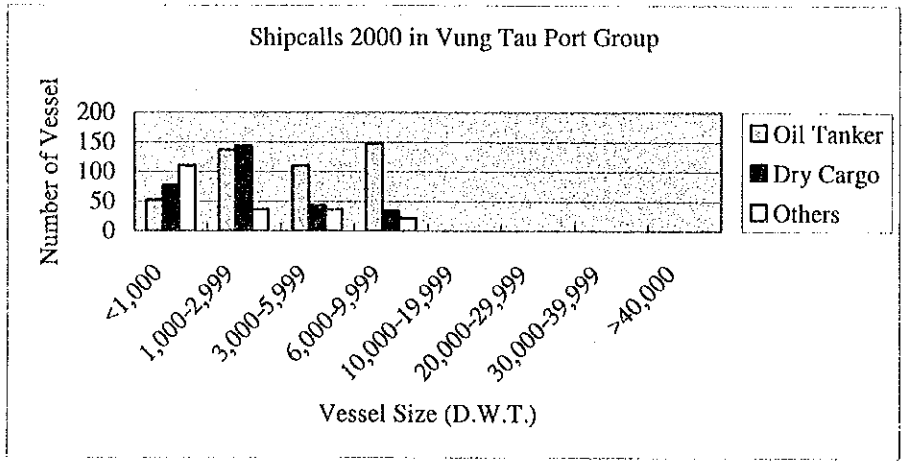
Figure 6.4.3 Shipcalls 2000 in Thi Vai River Port Group



Source: VINAMARINE

Figure 6.4.4 Shipcalls 2000 in Vung Tau Port Group

Source: VINAMARINE



Detailed informations in each port is shown in the following pages.

According to these informations, maximum size of a vessel in HCMC Port Group was 16,768 D.W.T. with 1,597 TEUs in container, 159m in length and 10.1m in draught for the Container Vessel, and 74,577 D.W.T. with 224m in length and 11.0m in draught for the Dry Cargo Vessel. In addition, maximum size of a vessel was 10,016 D.W.T. in Thi Vai River Area and 9.999 D.W.T. in the Vung Tau Area. Shipcalls by ship size and a kind of vessel indicate the features/functions of ports in the area clearly.

According to VINAMARINE, shipcalls in HCMC Port Group are defined as number of vessels which sail the Long Tau River Channel.

6.5 Condition of Existing Ports

SFEA are divided into three (3) port groups: Ho Chi Minh Port Group (Ports in HCMC), Thi Vai Port Group (Ports in Thi Vai River) and Vung Tau Port Group (Ports in Vung Tau). In this section, the present condition of the mooring facilities, storage facilities, cargo handling equipment and floating equipment in the ports of the above three (3) groups shall be reported from port-operational points of view. The following data is based on the investigation up to July, 2001.

6.5.1 Present Condition of Ho Chi Minh Port Group

The existing HCMC Port Group consists of 28 ports along Saigon River, Dong Nai River, Nha Be River, Long Tau River and Soai Rap River, of which 21 ports are specialized ports for petroleum, wood, cement or shipyard, and remaining seven (7) ports are handling general cargoes owned by public sectors or joint venture companies.
Out of 7 general cargo ports, four (4) major ports which are Tan Cang (New Port), Sai Gon, Ben Nghe and VICT and handle containers at present.
Due to the depth and the width of the river, calling ships bound for these ports have draft and LOA restrictions. Furthermore, road transport is heavily restricted due to traffic congestion in HCMC. (City Traffic Ban : Morning 06-08, Noon 11-13, Evening 16-19)
On the other hand, many industrial zones such as the Tan Thuan Export Processing Zone (EPZ) lie in the hinterland of the above ports.

(1) Sai Gon Port

The port area is 50 hectares in total and consists of four (4) terminals, 15 wharves for ocean going vessels, 25 buoy berths, 29 warehouses/sheds and open storage area.
Handling cargoes are mainly containers, and general cargo and bulk cargoes such as rice, fertilizer, cement steel products and so on. Cargo throughput in 2000 was 9,701 thousand tons (16% up than 1999) in total (Import 4,527, Export 3,088 and Domestic 2,086 thousand tons) including containers, 237 thousand TEUs (38% up than 1999) (Import 120 and Export 117 thousand TEUs). Approx. 2.6 million tons of 27% out of total cargo throughput in 2000 were handled at buoy berths. Number of calling ships to this port was 1,811 (a 25% increase over 1999), including 745 container ships (a 50% increase over 1999) in 2000. The reason for the huge increase can be attributed not only to economic growth, but also to the improvement in port management.
Maximum size of vessel that can be accommodated at this port is 30,000 DWT, and 9 m of draft, though the channel is currently –8.5m in depth. A vessel of 32,000 DWT at wharf and 60,000 DWT at buoy berth had been accepted with the permission of Port Authority. Outline of the existing facilities in each terminal are as follows: (Source: Saigon Port)

a) Mooring Facility

Table 6.5.1 (1) Mooring Facility (Sai Gon Port)

Name of Terminal	Berth Length	Water Depth	Handling Type of Cargo
Nha Rong (5 berths)	883m	-8.5~ -9.1m	General Cargo / Passenger
Khanh Hoi (5 berths)	861m	-8.5~ -10m	General Cargo / Container
Tan Thuan (4 berths)	713m	-9.6~ -11m	General Cargo / Container
Tan Thuan II (4 berths)	485m	-2.5~ -10.5m	Bagged cargo / Bulk
Buoy Berth (25 berths)	4,591m	-3.3~ -13.5m	General cargo / Container
Total (43 berths)	7,533m	Max. -13m	GC / Container / Bulk

Remark: All marginal wharves of Nha Rong, Khanh Hoi and Tan Thuan terminal were rehabilitated in recent year and T-shape pier of Tan Thuan II was constructed in 1998 with 210m in length of jetty. The situation of all facilities are in good condition.

b) Storage Facility

Table 6.5.1 (2) Storage Facility (Sai Gon Port)

Name of Terminal	Shed	CFS	Open Storage	Container Yard
Nha Rong	19,559m2	0m2	30,891m2	0m2
Khanh Hoi	28,168m2	2,800m2	13,845m2	35,700m2
Tan Thuan	7,760m2	5,400m2	0m2	81,600m2
Tan Thuan II	6,480m2	0m2	17,000m2	0m2
Tan Thuan Inland Depot	0m2	0m2	34,000m2	0m2
Total 5 terminals inc.Depot	61,967m2	8,200m2	95,736m2	117,300m2

Remark: Except Shed C of Nha Rong Terminal and Sheds in Tan Thuan Terminal, all sheds and CFS are relatively old construction.

c) Cargo Handling Equipment

Table 6.5.1 (3) Cargo Handling Equipment (Sai Gon Port)

Name of Equipment	Capacity	Nha Rong	Khanh Hoi	Tan Thuan	Tan Thuan II	Total
Rubber Tyred Gantry Crane (RTG)	40t	-	2	-	-	2
Mobile Crane	80~100t	-	2	2	-	4
Mobile Crane	10~40t	4	4	5	1	14
Crawler Crane	60t, 200t	-	2	-	-	2
Rail Mounted Quay Crane	6~12.5t	-	5	-	2	7
Reach Stacker	42t	-	5	2	-	7
Reach Stacker	8t	-	2	-	-	2
Forklift	10~40t	2	6	8	-	16
Forklift	2.5~7t	21	26	-	3	50
CFS Forklift	1.5~2.5t	-	9	9	-	18
Tractor	20'~40'	1	11	6	-	18
Dozer / Trimmer		2	13	10	-	25
Cargo Truck	12t	-	34	-	-	34
Reefer Point	220V	-	117	50	-	167
Weigh Bridge	60t/80t	-	2	2	1	5
Hopper for bulk cargo	$10m^3$	-	-	-	9	9

Remark: 2 Shore Gantry cranes for container are planned to be installed at Tan Thuan Terminal.

d) Floating Equipment

Table 6.5.1 (4) Floating Equipment (Sai Gon Port)

Name of Equipment	Capacity	Number
Tug Boat	425~640HP	11
Tug Boat	1000~2400HP	8
Floating Crane	100t	1

Remark: Tugboat Service Company, a subsidiary co. of Sai Gon Port, possesses tug boats.

(2) Ben Nghe Port

There are four (4) quays (816m in total) and seven (7) buoy berths (1,422m in total) in this port. Total land area consists of 32.22 hectares of which the developed area is 22 hectares.
Maximum-sized vessel that can be accommodated to this berth is 30,000 DWT with draft of 10m. Number of calling ships to this port was 670 (Source: Ben Nghe Port) in 2000. The general cargo stockyard of this port is currently being converted into container yard to cope with the increase of container throughput. Cargo throughput in 2000 was 2,770 thousand tons (a 3% decline from 1999) including 111 thousand TEUs of containers (an 18% increase over 1999). About 30 % out of total cargo throughput in 2000 were handled at buoy berths.

a) Mooring Facility

Table 6.5.1 (5) Mooring Facility (Ben Nghe Port)

Name of Berth	Length	Depth	Handling Cargo	Objective Vessel
Berth K14	88m	-7.5m	General Cargo	5,000DWT
Berth K15	265m	-9.0m	General Cargo	15,000DWT
Berth K15B	175m	-9.5m	Container	20,000DWT
Berth K15C	288m	-10.5m	Container	30,000DWT
Buoy Berth(7berths)	1,422m	-8.0~-9.5m	GC/Bulk	9,000~30,000DWT
Total (11 Berths)	2,238m	Max. -9.5m	General Cargo / Container / Bulk	Max. 30,000 DWT

Remark: All berths are in good condition.

b) Storage Facility

Table 6.5.1 (6) Storage Facility (Ben Nghe Port)

Name of Storage	Area	Cargo
Shed (9 sheds)	10,800m2	General
Open Storage	145,000m2	General / Container
Container Yard	51,000m2	Container
Reefer Container Yard	4,500m2	Reefer Container
Total	211,300m2	GC / Container

Remark: Six (6) sheds on K15 are used and the rest three (3) on K15B are old and not used. Two (2) CFS of 6,000m2 and one (1) bonded warehouse of 2,400m2 are under construction and container yard of 78,000m2 are planned to be constructed in 2001.

c) Cargo Handling Equipment

Table 6.5.1 (7) Cargo Handling Facilities (Ben Nghe Port)

Name of Equipment	Capacity	Number
Harbour Mobil Crane	64~104t	2
Mobile Crane	20~30t	5
Reach Stacker / Top Lifter	42t	4
Forklift	10	4
Forklift	2.5~3t	8
Tractor / Trailer	10~30t	10
Bagging System	500t/h	4
Bagging System	250t/h	6
Reefer Point	220V	60
Weigh Bridge	60t	1

(3) VICT

This port is the first pure container terminal in Vietnam, having 12 ha ground area with 1,332 TEUs ground slots and 305 m pier with two (2) Rail-mounted Quayside Container Cranes and four (4) Rubber Tired Gantry Cranes (RTGs). Container cargo throughput in 2000 was 129,852 TEUs

(Import 63,800, export 57,500 and domestic 8,552 TEUs), (45,000 TEUs in 1999). Number of calling ships to this port was 460, including domestic, and largely consisted of barges carrying containers between this port and ICDs. Number of regular calls by container ships to this terminal is scheduled as 12 per week with ten (10) shipping lines as of July, 2001. (Source: VICT)

Maximum size of container ship calling this port;1,000-1,500 TEUs, DWT 20,000 t, LOA 200m, Beam 28.7M, Draft 10m

a) Mooring Facility

Table 6.5.1 (8) Mooring Facilities (VICT)

Name of Berth	Length	Depth	Cargo	Remark
Wharf (2 Berths) (Present)	305m	-10m	Container	Capacity: (1st Phase) (Plan: 144,000 TEUs) (Max: 200,000 TEUs)
Wharf (5 Berths) (Final Plan)	715m	-10m	Container	Capacity: (Final Phase) (Plan: 600,000 TEUs)

b) Storage Facility (Present)

Table 6.5.1 (9) Present Storage Facility (VICT)

Name of Storage	Area	Remark
CFS No.1	2,000m2	* Yard and CFS are very Congested with containers. * Some of containers are stacked on the Final Phase area toward upstream of the river.
CFS No.2	1,650m2	
Container Yard	80,000m2	
Administration Office	1,200m2	
Amenity Compound	820m2	
Maintenance Shop	740m2	
Total	86,410 m2	

c) Cargo Handling Equipment

Table 6.5.1(10) Cargo Handling Equipment (VICT)

Name of Equipment	Capacity	Number
Rail Mounted Shore Gantry Crane	35.5t	2
RTG Crane	35t	4
Reach Stacker	41t	2
Side Lifter	8t	2
CFS Forklift	2.5t	8
Yard Tractor	40'	10
Yard Chassis	40'	16
Reefer Point	220V	112
Weigh Bridge	80t	1

(4) Tan Cang Sai Gon (Sai Gon New Port)

In 1993, this port was re-established in compliance with Enterprise Law and the Management Board decided to use the terminal for importing and exporting commodities, then introduced container equipment such as transfer cranes, shore cranes and so on.
As a result, it became the biggest port in Vietnam in terms of container handling volume. Nowadays Cat Lai Terminal along Dong Nai River is being added to the existing port in Sai Gon River for containers and bulk cargoes. Furthermore two (2) rubber tyred quayside container cranes are being installed in the B4 terminal in the existing port.
This port has an advantageous location compared with other container ports since it is adjacent to National Highway No.1A and relatively near to some ICDs, laying at the northward of the port, especially Bien Hoa Industrial Zone.
Container handling throughput was 386 thousand TEUs in 2000, and 423 thousand TEUs in 1999, the highest in Vietnam.
This port has 97 hectares of total port area including 20 hectares in Cat Lai Terminal and 50 hectares in Song Than ICD, and handles import/export domestic containers and general cargoes including military ones. There are two (2) terminals (B3 and B4 with the length of 706m and the depth of 9.5m) and two (2) buoy berths (-10.5m in depth) in Saigon River, and one Cat Lai Terminal (152m in length, finally to be 300m with -10.5m in depth) which is under construction.
Maximum size of vessel to be accepted is 16,000 DWT with 9.5 to 12m of her draft (Source : Brochure of the port and Detailed Membership Directory of Vietnam Seaports Association 1999) .

a) Mooring Facility

Table 6.5.1 (11) Mooring Facilities (Tan Cang)

Name of Berth	Length	Depth	Handling Cargo	Objective Vessel
Tan Cang Terminal				
Berth C0	171m	-9.5m	Container	12,000DWT
Berth C1 to C4	535m	-9.5m	Container	12,000DWT
Buoy Berth (2 berths)	NA	-10.5m	GC / Container	16,000DWT
Total	706m	Max. -10.5m	Container / GC	Max. 16,000 DWT
Cat Lai Terminal				
Berth C	152m	-10.5m	Bulk / Container	25,000DWT
Extension Berth C*	150m	-10.5m	Container	Under construction
Total (including under construction)	302m	-10.5m	Container / Bulk	Max. 25,000 DWT

Remark: All berths of Tan Cang Terminal are old.

b) Storage Facility

Table 6.5.1 (12) Storage Facility (Tan Cang)

Name of Storage	Area	Cargo
Tan Cang Terminal		
CFS (10sheds)	18,786m^2	Container
Container Yard (5 yards)	179,000m^2	Container
Cat Lai Terminal		
Warehouse	5,030m^2	General
Warehouse*	6,000m^2	Container
Open Storage	42,000m^2	General
Open Storage*	70,000m^2	Container
Song Than ICD		
Office/Shed/Yard*	500,000m^2	Container/ General

Remark: The facilities with mark * are now under construction.

c) Cargo Handling Equipment

Table 6.5.1 (13) Cargo Handling Equipment (Tan Cang)

Name of Equipment	Capacity	Number
Tan Cang Terminal		
Floating Crane	100t	1
Rubber Mounted Container Quay Crane	35t	2
Fixed Quay Crane	36t	4
Fixed Quay Crane*	36t	4
RTG Crane	35t, 40t	9
Crawler Crane	15t, 25t	5
Forklift for full container	30t, 45t	13
Forklift for empty container	4t, 7t	7
Tractor / Trailer		60
Cat Lai Terminal		
Quayside Gantry Crane*	(36t)	2

Remark: The equipment with mark * is now under procurement.

(5) Tan Thuan Dong Port

This port is under the management of joint venture Vietsovlighter enterprise among Ukline, Lotus, etc. and located in between Tan Thuan Terminal of Sai Gon Port and Ben Nghe Port.

a) Mooring Facility

Table 6.5.1 (14) Mooring Facility (Tan Thuan Dong Port)

Name of Berth	Length	Depth	Handling Cargo	Objective Vessel
Berth K13	142.5m	-9.5m	General	10,000DWT
Lash Berth	60.5m	-3.0m	General	1,000DWT
Total 2 berths	203m	Max. -9.5m	General Cargo	Max. 10,000 DWT

b) Storage Facility

Table 6.5.1 (15) Storage Facility (Tan Thuan Dong Port)

Name of Storage	Area	Cargo
Shed (12 sheds)	8,000m2	General
Open Storage	15,000m2	General
Total	23,000m2	General

Remark: All sheds are very old.

c) Cargo Handling Equipment

Table 6.5.1 (16) Cargo Handling Equipment (Tan Thuan Dong Port)

Name of Equipment	Capacity	Number
Mobile Crane	10~36t	3
Forklift	2~3t	4

(6) Vegetable Port

This port is owned and operated by Vegetable Consignation-depot Transport Corporation (VEGETRANSCO). There is a big cold storage in this port. Dry and refrigerated vegetables, and fruits are handled.

a) Mooring Facility

Table 6.5.1 (17) Mooring Facility (Vegetable Port)

Name of Berth	Length	Depth	Handling Cargo	Objective Vessel
Berth K16	222m	-11.5m	General	20,000DWT
Buoy Berth(3berths)	630m	-8.0~-9.0m	General	15,000DWT
Total (4 berths)	852m	Max.-11.5m	General Cargo	Max. 20,000 DWT

Remark: All berths are in good condition.

b) Storage Facility

Table 6.5.1 (18) Storage Facility (Vegetable Port)

Name of Storage	Area	Cargo
Shed (2 sheds)	7,420m2	General/Dry cargo
Cold Storage	6,525m2	General /Refrigerated cargo
Open Storage (paved)	16,156m2	General Cargo
Open Storage (unpaved)	27,346m2	General Cargo
Total	57,447m2	General /Refrigerated cargo

c) Cargo Handling Equipment

Table 6.5.1 (19) Cargo Handling Equipment (Vegetable Port)

Name of Equipment	Capacity	Number
Mobile (Truck) Crane	15~20t	3
Forklift	5.7t	6
Forklift	1t	12
Refrigerated Cargo Truck	10t	30

(7) Lotus Port

The joint venture company among VIETRANS-BLASCO-SSA-VOSA manages this port. Cargo ships, container ships, Ro-Ro ships and lash ships are accommodated to this berth, and the export / import and domestic cargoes are handled.

a) Mooring Facility

Table 6.5.1 (20) Mooring Facility (Lotus Port)

Name of Berth	Length	Depth	Handling Cargo	Objective Vessel
Berth K17	150m	-12.5m	General	16,000DWT

b) Storage Facility

Table 6.5.1 (21) Storage Facility (Lotus Port)

Name of Storage	Area	Cargo
Sheds	3,600m2	General
Open Storage	40,000m2	General
Total	43,600m2	General

c) Cargo Handling Equipment

Table 6.5.1 (22) Cargo Handling Facilities (Lotus Port)

Name of Equipment	Capacity	Number
Forklift for Container	31	3
Forklift	3.6~14t	6
Tractor / Trailer	-	6

(8) Other ports

In addition to the above ports, there are many specialized ports along Sai Gon, Nha Be, Dong Nai, Long Tau and Soai Rap River, such as Ba Son Shipyard, ELF Gas Sai Gon, VITAICO, PETECHIM, Saigon Petro, Morning Star, NAVIOIL, Ship Marine (LACOM), Nha Be Petrolium, PETECHIM, Hiep Phuoc Power Plant, Hiep Phuoc Cement, Phu Dong, Phuoc Khanh and VICO WOCHIMEX Ports.
In the Study, Dong Nai, SCTGAS-VN and VT GAS Ports are categorized in Thi Vai Port Group as they belong to Dong Nai Province.

6.5.2 Present Condition of Thi Vai Port Group

There are three (3) ports along Dong Nai River 16 miles upstream from the confluence of Sai Gon River, which are Dong Nai, SCTGAS-VN and VT GAS Ports, and 18 other ports along Thi Vai River. Thi Vai Port Group consists of Dong Nai River Ports, Go Dau Port Area, Phu My Port Area and Cai Mep Port Area. Go Dau Port Area is in the territory of Dong Nai Province and Ba Ria -

Vung Tau Province.

At present, in Go Dau Area, the following ports were constructed and put in operations;
A dry cargo berth for 10,000DWT and a liquid cargo berth for 12,000DWT of VEDAN Port, a specialized berth for 6,500DWT of UNIQUE GAS Port, a 3,000DWT berth of Long Thanh Super Phosphate Factory Port, a 2,000DWT berth for Go Dau A Port and 2 berths for 15,000DWT and a berth for 5,000DWT of Go Dau B Port.

Phu My Area drew the earliest attention of investors among port areas on Thi Vai River because the river section in this area has a deep riverbed, stable riverbanks and is able to accommodate ships of 30,000DWT with less investment. A pier for 10,000DWT oil tanker of Phu My Power Plant Port and a pier for 30,000DWT cargo ship of Baria Serece Port were constructed and in operation.

Cai Mep Area has a berth length of approx. 4km, river width of more than 1,000m and riverbed depth of 30m in some sections. At present, LPG Cai Mep Port had been constructed and VINAFOOD port and Saigon Petroleum Port are under construction.
In this section, present port facilities of the following four main ports, which are Dong Nai, Go Dau A, Go Dau B and Phu My Ports, shall be examined.
Long Binh Tan, Go Dau A and Go Dou B Ports are under the jurisdiction of Dong Nai Port of Dong Nai People's Committee and Phu My Port is operated by a joint venture as the first private port in Vietnam.

(1) Dong Nai Port (Long Binh Tan Port)(10-54-01N, 106-50-29E)

This port along Dong Nai River has a total area of 43,000m2, and 2,000 DWT pier and lighterage pier with the length of 60m and 10m respectively.
The cargo throughput in 2000 was 404,745 tons (import 862 tons, export 22,174 tons, domestic loaded 137,796 tons and domestic unloaded 243,913 tons), consisting of cement, logs, coal, liquid, agriculture products and other general cargoes. This port handles a considerable cargo volume because it is located about 10km nearer to the National highway No.1and HCMC than Go Dou Ports.
Number of calling vessels to this port was 177 including 20 foreign vessels in 2000, which was the highest among Dong Nai Ports. (Source: Dong Nai Port)

a) Mooring Facility

Table 6.5.2 (1) Mooring Facility (Dong Nai Port)

Name of Berth	Length	Depth	Handling Cargo	Objective Vessel
Main Pier	60.2m	-7.5m	General	2,000DWT (LOA 48m, Draft 4m)
Lighterage Pier	10m	-3.5m	General	300DWT
Buoy Berth(1berth)	NA	-9.0m	General	10,000DWT

b) Storage Facility

Table 6.5.2 (2) Storage Facility (Dong Nai Port)

Name of Storage	Area	Cargo
Shed (3 sheds)	2,168m2	General
Open Storage	15,000m2	General
Tank	800m3	LPG

Remark: 3 sheds are leased out to the cement company for yearly bases.

c) Cargo Handling Equipment

Table 6.5.2 (3) Cargo Handling Equipment (Dong Nai Port)

Name of Equipment	Capacity	Number
Mobile Crane	25~ 30t	3
Forklift	5~ 10t	3
Weigh Bridge	60t	1

(2) Go Dau A Port

This port is located in between VEDAN port and Long Thanh Super Phosphate port. There are main pier, lighterage pier and buoy berth, and total port area is 18 ha. Number of calling ships to this port was 66 including 12 foreign ships in 2000. Maximum size of calling vessel was 2,780DWT (LOA 84.3m) with draft 5.9m at Main pier. (Source: Dong Nai Port)

a) Mooring Facility

Table 6.5.2 (4) Mooring Facility (Go Dau A Port)

Name of Berth	Length	Depth	Handling Cargo	Objective Vessel
Main pier	30m	-7.5m	General	2,500DWT (Draft 6.0m)
Lighterage Pier	20m	-3.5m	General	300DWT
Buoy Berth (1 berth)	NA	-9.0m	General	10,000DWT

Remark: All berths are in good condition.

b) Storage Facility

Table 6.5.2 (5) Storage Facility (Go Dau A Port)

Name of Storage	Area	Cargo
Warehouse	720m2	General
Open Storage	1,500m2	General

c) Cargo Handling Equipment

Table 6.5.2 (6) Cargo Handling Equipment (Go Dau A Port)

Name of Equipment	Capacity	Number
Shore Crane	25t	1
Forklift	10t	1
Forklift	5t	1
Truck	11t	2

Remark: Cargo handling equipment are controlled by the mechanical department of Dong Nai port and all equipment are commonly used by three ports, i.e., Long Binh Tan, Go Dau A and Go Dau B, if necessary.

(3) Go Dau B Port

This port is located just downstream of Long Thanh Super Phosphate port and consists of two terminals, Go Dau B1 and Go Dau B2. Total area of this port is 22ha. There is PVC (Unique) Gas port between Go Dau B1 and B2. Number of calling vessels was 105 including 76 foreign ships in 2000. Maximum size of calling vessel was 8,932 DWT (LOA 152.7m) with draft 7.97m. (Source: Dong Nai Port)

a) Mooring Facility

Table 6.5.2 (7) Mooring Facility (Go Dau B Port)

Name of Berth	Length	Depth	Handling Cargo	Objective Vessel
Pier B1	72.5m	-8.5m	General	12,000DWT
Pier B2	120m	-9.0m	General	12,000DWT
Lighterage Pier	20m	-7.5m	General	5,000DWT

Remark: All berths are in good condition.

b) Storage Facility

Table 6.5.2 (8) Storage Facility (Go Dau B Port)

Name of Storage	Area	Cargo
Open Storage	15,000m2	General

c) Cargo Handling Equipment

Table 6.5.2 (9) Cargo Handling Equipment (Go Dau B Port)

Name of Equipment	Capacity	Number
Forklift	10t	1
Forklift	5t	2

Remark: Cargo handling equipment are controlled by the mechanical department of Dong Nai Port and all equipment are commonly used by three ports, i.e., Long Binh Tan, Go Dau A and Go Dau B. Therefore, location of equipment are not fixed.

(4) Phu My Port (Ba Ria Serece Port)

This port has a 300 meter T-shaped jetty with two berths (-12m in depth) on the outside and two berths (-7m in depth) on the inside, totaling 780m of quays and two (2) mooring buoys for transshipment from vessel onto barge and small boat. The port has 15 hectares of which 10 hectares was already developed and are being used. There are two (2) covered warehouses with the area of 3,200 and 4,480 m2, and four (4) open yards with the area of 4,725, 2,625, 3,325 and 9,796m2 respectively, which are 28,000m2 in total. In addition, two warehouses with the area of 8,000m2 and 6,570m2 are now under construction for storing grain in bulk such as corn and soybean. Existing warehouses are mainly used for storing fertilizer in bags.
Cargo throughput in 2000 was approx. 888 thousand tons (850 thousand tons in 1999) including domestic cargoes.

a) Mooring Facility

Table 6.5.2 (10) Mooring Facility (Phu My Port)

Name of Berth	Length	Depth	Handling Cargo	Objective Vessel
Main pier (outside)	300m	-12.0m	General Cargo	60,000DWT
Main Pier (inside)	210m	-7.0m	General Cargo	10,000DWT
Main Pier (inside)	65m	-7.0m	General Cargo	500DWT
River Pier 1	20m	-3.0m	General Cargo	500DWT
River Pier 2	20m	-3.0m	General Cargo	500DWT
Buoy Berth (2pair buoys)	150m	-12.0m	General Cargo	30,000DWT
Total	765m	Max. -12m	General Cargo	Max.60,000DWT Draft 12m

Remark: All mooring facilities are in good condition.

b) Storage Facility

Table 6.5.2 (11) Storage Facility (Phu My Port)

Name of Storage	Area	Cargo
Bonded Area (Open)	4,725m2	General Cargo (mainly bags)
Bonded Warehouse	3,200m2	General Cargo (mainly bags)
Warehouse	4,480m2	General Cargo (mainly bags)
Open stockyard	5,950m2	General Cargo (mainly bags)
Open yard Blender Hydro	9,796m2	General Cargo (mainly bags)
Total	28,000m2	General Cargo (mainly bags)

Remark: Warehouse A 8,000m2(45,000m3) and Warehouse B 6,570m2 (35,000m3) are under construction.

c) Cargo Handling Equipment

Table 6.5.2 (12) Cargo Handling Equipment (Phu My Port)

Name of Equipment	Capacity	Number
Hoppers, conveyor belt with cover	2,500t/day	1
Grain sucker with grab	100t/h	1
Bagging System	240t/h	8 lines
Mobile Crane	70t	1
Forklift	-	Available
Excavator	-	Available
Tractor with Trailer	-	Available
Weigh Bridge	50t	1

6.5.3 Present Condition of Vung Tau Port Group

There are five (7) ports along Dinh River inside the Vung Tau Peninsula and five (5) Crude Oil / Gas Fields (Sub Ports), about 63 to 125 miles off shore such as Bach Ho (White Tiger) and Dai Hung (Greater Bear) Oil Fields. Bach Ho has two (2) crude oil containing stations of 170,000 ton capacity and Dai Hung has one (1) station of 210,000 ton capacity. Twenty to 30 oil tankers call these fields to load crude oil every month according to Pilot Corporation of First Zone. In addition, The 399km Nam Con Son pipeline project is commenced, which will transport gas from the Nam Con Son Basin to the Phu My Complex and the industrial areas in the HCMC- Vung Tau Corridor. Main ports in Vung Tau are divided into two (2) port areas through Dinh River. One is the area along Cu Lao Channel consisting of PTSC, PTSC Gas Oil, Dau Khi and Dau K2 Ports. Another is the area along Cat Lo Channel. Almost all ports are oil related ports for oil fields at offshore of Vung Tau, such as Vietsovpetro port, PTSC port, K2 port. Other ports are naval port and small sea product ports such as CTHS Truong Sa port and Cat Lo port.

(1) Dau Khi Port (Vietsovpetro Port)

This port is exclusively used for oil exploitation in Bach Ho oil well area by Vietsovpetro JV. This is rather complete inland general service base. Facilities of this port are as follows:

a) Mooring Facility

Table 6.5.3 (1) Mooring Facility (Dau Khi Port)

Name of Berth	Length	Depth	Handling Cargo	Objective Vessel
Berth (10 berths)	1,377m	-5~-8.5m	Oil related good	5,000DWT~ 10,000DWT

Remark: All mooring facilities are in good condition.

d) Storage Facility

Table 6.5.3 (2) Storage Facility (Dau Khi Port)

Name of Storage	Area	Cargo
Warehouse	20,084m2	Oil related good
Open Storage	74,280m2	Oil related good

e) Cargo Handling Equipment

Table 6.5.3 (3) Cargo Handling Equipment (Dau Khi Port)

Name of Equipment	Capacity	Number
Floating Crane	1,200t, 900t, 600t	1 each or more
Crawler Crane	200t, 100t, 60t	1 each or more
Mobile Crane	35t, 15t	1 each or more
RTG	90t, 70t, 45t, 15t	1 each or more
Truck	-	many

(2) PTSC Port

PTSC port is the specialized port of Petroleum Technical Service Company (PTSC). This port consists of three terminals, Upstream Terminal, Downstream Terminal and Petroleum Terminal. These terminals are located at upstream and downstream of Vietsovpetro port and offshore of upstream terminal respectively.

a) Mooring Facility

Table 6.5.3 (4) Mooring Facility (PTSC Port)

Name of Berth	Length	Depth	Handling Cargo	Objective Vessel
Upstream Terminal				
TL 1	120.4m	-6.0m	Oil related good	<10,000DWT
Downstream Terminal				
HL 1	62.5m	-6.2m	Oil related good	<10,000DWT
HL 2	62.5m	-6.2m	Oil related good	<10,000DWT
HL 3	62.5m	-6.2m	Oil related good	<10,000DWT
HL 4	62.5m	-6.2m	Oil related good	<10,000DWT
HL 5	70.0m	-9.0m	Oil related good	10,000DWT
HL 6	70.0m	-9.0m	Oil related good	10,000DWT
HL 7	70.0m	-9.0m	Oil related good	10,000DWT
Total	460.0m			
Petroleum Terminal				
Pier	156m	-9.1m	Petroleum	10,000DWT

Remark: All mooring facilities are in good condition.

b) Storage Facility

Table 6.5.3 (5) Storage Facility (PTSC Port)

Name of Storage	Area	Cargo
Upstream Terminal	7,600m2	Oil related good
Downstream Terminal	210,000m2	Oil related good
Warehouse (9 sheds)	12,000m2	Oil related good
Open Storage	140,000m2	Oil related good
Petroleum Terminal (Berth)	10,200m2	Petroleum

c) Cargo Handling Equipment

Table 6.5.3 (6) Cargo Handling Equipment (PTSC Port)

Name of Equipment	Capacity	Number
Downstream Terminal		
Crane	30t ~ 70t	7
Petroleum Terminal		
Loading Arm	160t/h	2
Unloading Arm	700t/h	2

(3) K2 Port

K2 Port is a specialized port for oil import / export for Ba Ria Vung Tau Petroleum company.

a) Mooring Facility

Table 6.5.3 (7) Mooring Facility (K2 Port)

Name of Berth	Length	Depth	Handling Cargo	Objective Vessel
Pier K2	175m	-6.0m	Petroleum	5,000DWT
Buoy Berth (2 berths)	NA	NA	NA	NA

Remark: All berths are in good condition.

b) Storage Facility

Table 6.5.3 (8) Storage Facility (K2 Port)

Name of Storage	Area	Cargo
Oil Tanks	9,000m3	Petroleum

(4) Other ports

In addition to the above ports, there are Cat Lo Port and Truong Sa Seafood Company Port in Vung Tau area. The ports were constructed for handling sea products, however, Cat Lo port is presently handling general cargoes as well, though no special facility for general cargo is equipped.

6.6 Terminal Operations

The present situations of terminal operation for main ports in SFEA, mainly utilization of cargo equipment, cargo handling productivity, cargo dwelling time in port, stowage capacity, working time and so on are reported.

6.6.1 HCMC Port Group (Ports in HCMC)

(1) Sai Gon Port

This port has four (4) terminals and 25 buoy berths. Operation Center in this port assigns each suitable berth to each calling ship, in consideration of kind of cargo, size and type of ship, and other requirements if any.
The port has three subsidiary stevedoring companies, Nha Rong, Khanh Hoi and Tan Thuan Stevedoring Companies. They can operate basically their terminal in charge but buoy berths will be commonly used by the assignment of the Center.
In case that stevedoring companies have special contracts with shipping companies, the Center will give the priority of berth assignment for the parties concerned, even other terminal.

- Nha Rong Terminal, which is adjacent to the main office, has five (5) wharves with the length of 883m and is mainly used for conventional vessels and international passenger boats. There are empty container yard in the back area of K2 where containers were stacked five (5) high.
- Khanh Hoi Terminal has also five (5) wharves with the length of 861m and is used for mainly container ships, conventional vessels and bulk ships.
  There are two (2) RTGs in the container yard and full containers were stacked four (4) high.
- Tan Thuan Terminal has four (4) wharves with the length of 713m and is used for RO/RO vessels, container ships and conventional vessels.
  This terminal has a plan to convert general cargo stock yard into container yard with two (2) RTGs after the withdrawal of warehouses.

Because of the linkage between Nha Rong and Khanh Hoi Terminal, the utilization of these wharves can be flexible, depending on the vacancy of quays, warehouses, and yard behind.
Apart from the above two terminals, Tan Thuan Terminal is situated downstream of them across the Te Canal. It has wide-open area (existing two warehouses are planned to be withdrawn in future to make container yard).

- Tan Thuan II Terminal is situated downstream 2km far from Tan Thuan Terminal and has one (1) jetty berth with the length of 210m for bulky cargo vessel. There are two (2) rail mounted cranes on the quay and three (3) warehouses in the hinterland. Mainly bag cargoes like fertilizer and forage are handled here.
- Twenty five (25) buoy berths lie on the opposite side of Nha Rong Terminal to Tan Thuan II through Sai Gon River and are used for general cargo, container and bulk cargo ships. If the cargoes will be for transit from or to Mekong Delta by barge or small ship, buoy berth will be assigned with priority for the ship. Twenty seven (27) percent of total cargo throughput in this port was handled at buoy berths in 2000.

1) Record of cargo dwelling time in 2000

- Container: for import 7.8 days and for export 6.4 days
- General cargo: it depends on customer's request. Some cargoes can be directly delivered on trucks / lighters or loaded on ship, but some cargoes dwell in the port for more than one (1) month for the purpose of storage.

2) Record of cargo handling productivity in 2000

The port recorded many cases for cargo handling productivity: ①Vessel/truck/yard, ②Vessel/truck/deliver,③vessel/barge or small ship, ④warehouse/truck/deliver or vessel. The following figures are the records of average productivity by typical kind of cargo.

- Rice and fertilizer in bags: 150 to 200 tons per shift
- Light general cargo and rubber in bales: 100 tons per shift
- Pallet of rubber, rolling paper and drums: 130 to 150 tons per shift
- Metal in package or bundle: 260 to 300 tons per shift
- Fertilizer in bulk: 170 to 180 tons per shift
- Container: 70 to 80 TEUs per shift

The productivity figures in 2000 are very low, but net productivity might be higher because actual working hours per shift would be shorter than ordinary hours per shift due to suspension due to rain or work completion within shift.

According to the stevedoring company, net productivity of typical type of cargo is as follows:

- Cement in bag (1 ton /bag): 500 tons per gang-shift / 63 tons per gang-hour
- Bagged cargo (50kgs /bag): 350-400 tons per gang-shift / 44-50 tons per gang-hour
- Container handling productivity: 500 boxes (750 TEUs) for 20-22 hours with 2-3 gangs, in other words, about 10-13 boxes / 15 TEUs per gang-hour

Number of workers for cargo operation on ship consists of 30 to 32 per gang even for containers and each stevedoring company prepares special gang for container operation exclusively to improve its productivity.

3) Working hours

Regulations currently prescribe three shifts per day, 0600-1400 (1st shift), from 1400-2200 (2nd shift) and from 2200-0600 (3rd shift). In actual practice, however, only two (2) shifts are performed, from 0700-1700 (rest time for 2hours) and from 1900-0100.

In case of container ship, 2nd shift is prolonged up to 0500 (rest time for 2300-0100), if necessary.

There are 8 holidays a year, New Year Day (January 1), TET 4 days (lunar new year) (late January / early February), Victory Day (April 30), International Labour Day (May 1), and National Day (September 2). Cargo operation can be carried out even on holidays by the request of clients with special charge.

4) Port activity

Cargo throughput of this port in 2000 has greatly increased, compared with 1999 (see Section 6.5). In Khanh Hoi Terminal, container yard is now going to be filled with 4-5 high stacks. Next candidate for container yard will become Tan Thuan Terminal due to its wide space.

A number of RTGs may be introduced to cope with the increase of container throughput.

Table 6.6.1 Container Throughput of Sai Gon Port (1995-2000)

Year	1996	1997	1998	1999	2000
Number of Ships	333	398	399	496	745
Weight in tons	963,375	1,154,301	1,469,572	1,965,468	2,642,128
TEUs	107,602	122,877	139,967	171,666	237,331
Import					
Weight in tons	636,409	724,773	1,011,939	1,080,489	1,344,910
TEUs	55,324	67,078	85,291	93,984	120,190
In which 20'	34,192	39,340	47,233	48,402	57,944
FCL 20'	31,473	33,730	40,428	39,905	46,927
LCL 20'	648	362	279	152	97
Empty 20'	1,299	4,260	5,320	6,553	8,371
Reefer 20'	772	988	1,206	1,792	2,549
In which 40'	10,892	13,869	19,029	22,791	31,123
FCL 40'	9,437	9,087	12,652	14,107	19,530
LCL 40'	276	178	184	94	70
Empty 40'	936	4,317	5,803	8,008	10,357
Reefer 40'	243	287	390	583	1,166
Export					
Weight in tons	326,941	429,528	457,633	884,979	1,297,218
TEUs	52,276	55,799	54,676	77,682	117,141
In which 20'	33,902	35,789	34,060	42,034	58,035
FCL 20'	11,942	16,570	14,926	29,077	43,992
LCL 20'	0	0	0	0	0
Empty 20'	21,188	17,914	17,441	10,360	10,517
Reefer 20'	772	1,305	1,693	2,597	3,526
In which 40'	9,279	10,005	10,308	17,824	29,553
FCL 40'	2,980	5,633	6,121	13,900	22,792
LCL 40'	0	0	0	0	0
Empty 40'	6,056	4,065	3,472	2,771	4,722
Reefer 40'	243	307	715	1,153	2,039
Transship					
Weight in tons	25	0	0	0	0
TEUs	2	0	0	0	0

Source: Sai Gon Port

(2) Ben Nghe Port

This port has four (4) wharves of K14, K15, K15B and K15C. K14 and K15 are used for relatively small conventional and bulk ship, and K15B and K15C for mainly container ships, and also conventional and bulky ships. And seven buoy berths are used for conventional, bulky and container ships, in which about 30 % out of the total cargo throughput in 2000 was handled.
This port contracts with four (4) stevedoring companies and uses them when ships come in.

1) Cargo dwelling time

Lots of cargo such as bagged fertilizer with pallet are dwelling in the yard for a few months at a time. Nevertheless a considerable space is available for cargo stockyard. This port was nominated as Entrepot Port by the Government on May 24, 2001. The port has plan to use K15B and K15B yards as container stockyard.

2) Cargo handling productivity

The port has six (6) mobile cranes. Two (2) big cranes (104 and 64 tons) are mainly assigned for container ship and the rest (30, 25 and 20x2 tons) for conventional ship.

① Bagged cargo: For 20kgs / bag, 100-200 tons per gang-shift (8 hours)
For 50kgs / bag, 200-300 tons per gang-shift (8 hours)

② Container: 15-18 boxes per gang-hour

3) Working hours

Three (3) shift operations are basic, but two shifts are sometimes performed due to transportation of cargo in the city.

4) Port activity

Five-year port development plan is suspended for the time being because of no increase of cargo throughput. The port intends to head for a special container storage port.

(3) VICT

This port has been equipped with full container handling equipment and a computer system in container operation since the terminal commenced operations in November, 1998. The system covers and provides vessel information database, import and export container documentation, loading and discharging container control, yard inventory management, gate operation, CFS cargo maintenance and also connection of all data with customers and EDI-online system. As a result, the container handling efficiency in this terminal is currently more than twice compared with other ports in HCMC. The throughput is expected to be 200,000 TEUs in 2001 due to the present increase, though there are only ground slots of 1,332 TEUs. To cope with the increase of yard capacity, terminal is expanding container stacking yard (8 hectares) including two (2) conventional warehouses toward upstream of the river.

1) Container dwelling time in the terminal :

① Export : 2 days
② Import : 8 days
③ Empty : 15 days

2) Container handling productivity for ship operation:

25-30 boxes (40-45 TEUs) per hour, according to the terminal official

In case that number of exchange (loading and unloading) containers on a ship will be 400 TEUs, it will take around 8 hours for container operation with two cranes on a ship. Actual average ship staying time in this port was about ten (10) hours according to the record.

3) Working time :

Three shift operations are performed. The 1st shift is from 0600-1400, the 2nd shift from

1400-2200 and the 3rd shift from 2200-0600. These eight (8) hour shifts include meal and break time. The terminal operation is performed 365 days a year, if required by clients.

4) Gang Composition :

The terminal possesses their own supervisors, crane drivers and clerks (tally men), but other miscellaneous labors like lashers and signalmen are contracted from outside.
Present available labours and operators for ship operation

①	Quayside Container Crane Operator :	15 persons
②	Signal man (on shore / on board) :	20 persons (outside rental)
③	Container lashing or unlashing labor :	80 persons (outside rental)
④	Miscellaneous labor :	80 persons (outside rental)
	Total :	195 workers

5) Port Activity :

More than 10 foreign shipping lines allocates their gearless container vessels to this terminal as liner services with 12 vessel calls per week. Nowadays the capacity of container stacking space seems to be full, unless container dwelling time in the terminal could be shortened in the near future.

(4) Tan Cang Sai Gon (Sai Gon New Port)

In this port, container cargo weight shares 91 percent out of the total cargo throughput in 2000. Therefore this port needs to prepare further container facilities including equipment to cope with future container increase . Container ships come alongside to B3 and B4 berths in which front yards are basically assigned for export containers and back yards for import containers.
Almost all container stacking is implemented by means of RTGs, and four (4) high stacks are now normal for full and five high for empty.
B3 and B4 have two crawler cranes each, and container operation on ship is implemented by means of crawler cranes and ship gears if available. Now two (2) rubber mounted quayside container cranes are being facilitated on B4. Therefore container handling productivity will be improved in the near future.
Operation data are not available.

6.6.2 Ports in Thi Vai River

Ports in Thi Vai River are mainly specialized mill ports except Dong Nai Port and Go Dau Ports. Handling cargoes in these ports are mainly raw materials such as fertilizer, coal, logs and oil.

(1) Dong Nai Port (Long Binh Tan Port) and Go Dau Ports

These ports are managed and operated by Dong Nai Port of Dong Nai Peoples' Committee. Therefore they are analyzed in this section.
There are Long Binh Tan Port along Dong Nai River and Go Dau Ports along Thi Vai River. More than five (5) stevedoring companies are available there. Some of them are specialized for port warehouses and yard operations, and others on ship operation. Long Binh Tan and Go Dau Ports have long term contracts with one or two stevedoring companies.

1) Kind of handling cargoes

- Long Binh Tan

  Loading: Rubber in bales, fruits in bags, instant noodles in carton boxes, cement in bags, clay in bulk and bags

  Unloading: Logs, glass in parcels, asphalt in drums, cement in bags, stones and clay in bulk, coal in bulk

- Go Dau A

  Loading: Enamel Tile in carton boxes, fertilizer in bags

  Unloading: Clay and stone in bulk, sulfur in bulk salt in bulk, fertilizer in bags

- Go Dau B

  Loading: Fertilizer in bags, ore in bulk

  Unloading: Raw material of fertilizer, ore in bulk, steel billets in bulk, Bitumen liquid in bulk, liquid chemical in bulk

2) Cargo handling productivity

The following figures represent the average productivity per ship in which two (2) or (3) gangs are engaged.

- Long Binh Tan Port

Time	Cement in bags	Bulk cargo	Logs	Glass in parcels
Per hour	65tons	70tons	30tons	50tons
Per day	1,040tons	1,120tons	480tons	800tons

- Go Dau A Port

Time	Crushed shine Surfur	Clay in bulk	Cargo in bags
Per hour	100 tons	60-100 tons	30-40 tons
Per day	2,000 tons	600-800 tons	200-300 tons

- Go Dau B Port

Time	Bitumen Liquid in bulk	Steel Billets in bulk	Bulk Cargo	Cargo in Bags
Per hour	120 tons	190 tons	135 tons	65 tons
Per day	2,880 tons	3040 tons	3,240	1,040 tons

3) Cargo dwelling time

The duration of cargo staying in the port depends on the kind of cargo.

- Cargoes in bags: Average one (1) month in the warehouses
- Logs: Average one (1) week
- Other cargoes: Usually, direct delivery on trucks / lighters or direct loading on ship because there is not much storage space in these ports.

4) Cargo working time

Two shift operations are performed, even on holidays if requested by clients (additional charges are applied).

First shift 0730 – 1730 (rest time: 1100-1300), Second shift 1730-2400

Second shift can be extended if required.

Number of workers per gang for cargo operation consists of 10 to 12 in which 6 to 8 workers are on ship's hatch and 2 to 4 workers are on shore or truck in case of general cargoes like bags.

(2) Phu My Port (Ba Ria Serece Port)

This port handles dry bulk and break bulk cargoes (uncontainerized cargoes) such as fertilizer, general cargo, minerals and agriculture products, and is utilizing the outside and inside berths of the T-shaped jetty effectively for mainly bulk ships.

1) The port does not have specialized cargo equipment except forklifts, packing machines and belt conveyor. Therefore cargo operation on ship is carried out by ship's gear.
2) Import cargoes occupy the greater portion, compared with export cargo, and are mainly comprised of fertilizer, cement and steel billets in bulk. Main export cargo is tapioca in bulk or bags.
3) In case of billets operation, it takes 2 days to discharge 5,000 tons a ship, which translates into a productivity of 2,500 tons per day by ship's gear.
4) Cargo operations are performed for 24 hours a day and 365 days a year if clients request quick dispatch of cargo and/or ship.
5) Cargo dwelling time
   Some cargoes are directly delivered on trucks or barges, but lots of cargoes like fertilizer dwells in warehouses and open yards covered by tarpaulin for one (1) to six (6) months. Dwelling time of such cargo will be determined by market demand.

6.7 Inland Clearance Depot (ICD)

6.7.1 Facilities and Services

(1) Inland Clearance Depot in the South of Vietnam

Currently there are five inland clearance depots in the South of Vietnam. These ICD are as follows;

- Phuoc Long ICD
- Transimex – Saigon ICD
- Bien Hoa ICD
- Dong Nai ICD
- Song Than ICD

Two of them (Phuoc Long ICD and Transimex-Saigon ICD) are located in Ho Chi Minh City and have good access to many ports through the river. On the other hand, Bien Hoa ICD and Dong Nai ICD are located outside Ho Chi Minh City and may be disadvantage in terms of access to the ports.

(2) Services

Services by ICD are classified as shown below.

① ICD receives all kinds of export goods brought from border port for custom clearance, cooperating with Shipping Lines.

② Imported goods with the place of discharge as ICD stated on B/L will be forwarded to the place in term of imported goods in transit/transports. (Customers do not need to deal with transitional documentation and formalities)

③ Providing warehousing facilities such as bonded warehouse and container freight station (CFS).

④ Handling, unloading, packing, forwarding of goods, customs clearing and door to door transport.

Normally ICD offers a wide range of container services such as FCL/FCL, LCL/LCL and import/export consolidation. Main role of ICD is to increase the efficiency of smooth operations of import/export activities in the ports through the effective custom clearance procedure.

Many ICD have their own berthing facilities. Apart from the serious problem regarding the heavy traffic congestion in Ho Chi Minh City, they will function more effectively once driving into Ho Chi Minh City in daytime is prohibited in the near future.

(3) Present Activities

- Phuoc Long ICD

Phuoc Long ICD, which is located at the North of Ho Chi Minh City (HCMC) with 7 km distance from the centre of HCMC, has good access to many ports in HCMC. Almost of container cargoes have been transported by barges to Sai Gon Port / Ben Nghe Port and it means no influence by heavy traffic congestion in HCMC.

This ICD has the area of 70,000 m2 and its container handling volume was 150,000 TEUs in 2000. Further, the ICD has a direct contract with shipping companies and it is a strong sale's point in term of the expansion of business potential.

- Transmex-Saigon ICD

Transmex-Saigon ICD is located adjacent to Phuoc Long ICD and it takes 2 hours to VICT by a barge and 20 minutes to Tan Cang by a truck. Its container handling volume will be 60,000 TEUs in 2001 with 80 % in VICT and 20 % in Tan Cang.

The total area of ICD is 92,000 m2 and it has a container stock yard of 50,000 m2, 3 nos. Container Freight Station and 3 nos. Bonded Warehouse.

The ICD is a joint stock corporation and has a contract directly to the ports. Further, it is only one ICD which has been used by VICT.

- Bien Hoa ICD

Bien Hoa ICD, which is managed by Tin Nghia Company under Dong Nai Government, is located at the Dong Nai Province with 21.5 km distance from Tan Cang and 40 km distance from VICT. Its container handling volume is 10,000 TEUs per annum with a target volume of 27,000 TEUs in future. 70 % of container cargoes is to/from Tang Can, 20 % to/from VICT and 10 % to/from Sai Gon Port.

The total area of ICD is 50,000 m2 and it has a container stock yard of 2,800 m2 and 2 nos. Bonded Warehouse.

The ICD, which was established in 1999, is a new comer into the business and aims at expansion of the market.

The summary and location map of the Inland Clearance Depot in the South of Vietnam are shown in Table 6.7.1 and Figure 6.7.1, respectively.

FIGURE 6.7.1 LOCATION MAP OF ICD

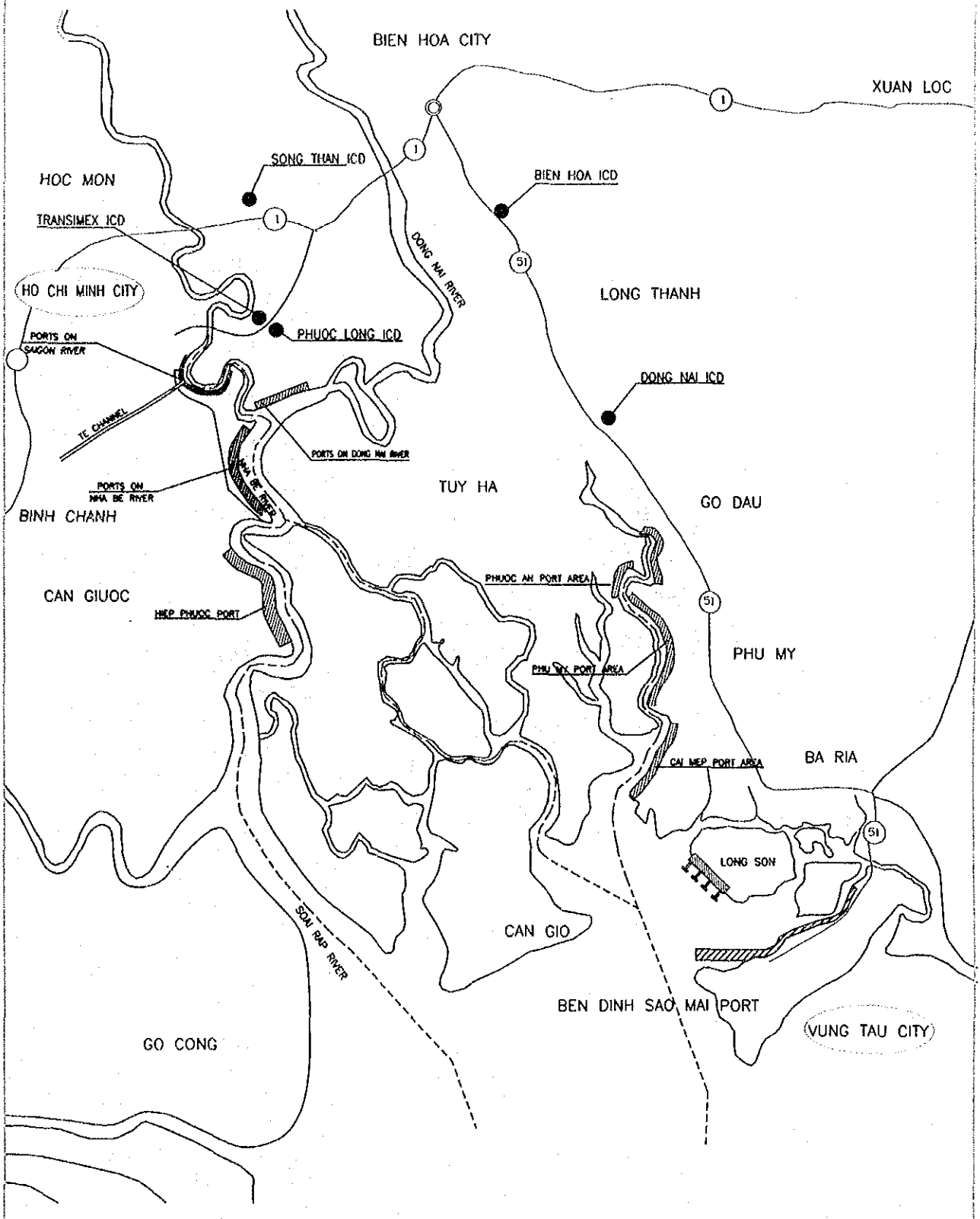


Table 6.7.1 INLAND CLEARANCE DEPOT IN THE SOUTH OF VIETNAM

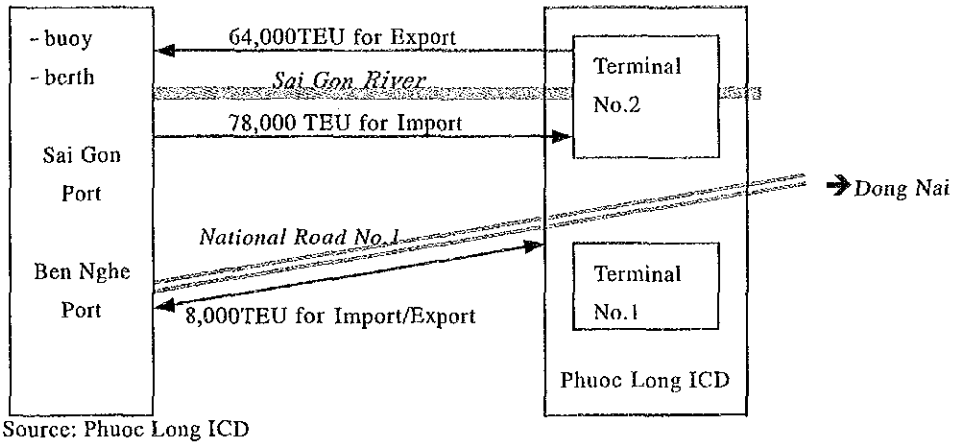
	Phuoc Long ICD	Transimex-Saigon ICD	Bien Hoa ICD	Dong Nai ICD
Location	*North of HCMC *4km from Sai Gon Newport *7km from HCMC Centre	*North of HCMC *4km from Sai Gon Newport *7km from HCMC Centre	*21.5km from Tan Cang Port *40km from VICT	*32.5km from Tan Cang Port *51km from VICT
Establishment		*State own Company in 1983 *Built ICD in 1996 *Joint stock corporation in 2000	*Established in 1999 *Operation in March 2000	*Under Construction
Owner/ Operator	*Gemadept under control by VINALINES	*Transforwarding Warehousing Joint Stock Corporation	*Tin Nghia Company under Dong Nai Government	*VINAMARINE 49%/Dong Nai Government 51%
Facilities	*Total area:70,000m2 *Container yard:55,000m2 (4,000 TEUs for one layer) *CFS:2,000m2x1,4,000m2x2 *Berth:6nos/L=350m	*Total area:92,000m2 *Container yard:50,000m2 (5,000 TEUs for 3~4 layers) *CFS:3nos *Bonded warehouse:3nos *Berth:2nos/L=100m	*Total area:50,000m2 *Container yard:2,800m2 (2,000 TEUs for 2~3 layers) *Bonded warehouse:2nos(4,100m2) *Berth:1no/L=25m	*Total area:200,000m2 *Warehouse:2,100m2 x 1no
Equipment	*Stacker:45ton x 10nos *Tractor:50nos *Trailer:100nos *Crane:75ton x 12nos *Barge:1,000ton x 50nos (36 TEUs/1 barge)	*Stacker:45ton x 2nos *Trailer:10nos *Crane:90tonx1no/100tonx1no *Barge:600ton (45~50 TEUs/1 barge)	*Stacker *Tractor:21nos *Trailer:44nos *Crane:150ton x 1no *Brage:350ton x 2nos (16 TEUs/1barge)	
Container Handling Volume	*150,000 TEUs/year 2000 *Sai Gon Port/Ben Nghe Port *Import 55%/Export 45% *LCL 20%/FCL 80%	*60,000 TEUs/year 2001 *VICT 80%/Tan Cang Port 20% *Import 30%/Export 70%	*10,000 TEUs/year (Target volume:27,000TEUs/year) *Tan Cang Port 70%/VICT 20%/ Sai Gon Port 10%	
Transport		*2 hours to VICT by barge *20 minutes to Tan Cang by truck	*2.75hours to VICT by barge *3.25hours to Sai Gon Port by barge *4hours to Tan Cang Port by barge	
Reefer Container	*15% of Export Container/ 1% of Import Container	*to be planned in near future	N.A.	
Others	*Container handling business based on the direct contract with the shipping companies	*Container handling business based on the contract with the Port *Only one ICD which is used by VICT	*Located in the triangle develop-ment region (Industrial park such as Bien Hoa 1IP&2IP)	*No operation due to no customers (Distance from the main ports too far/too costy)

6.7.2 Container Movement through ICDs

(1) Phuoc Long ICD

Phuoc Long ICD is the largest ICD in the SFEA and located along National Highway No.1 in Phuoc Long Area in District No.2, HCMC. The ICD has two terminals located at both sides of the road. Terminal No.1 handles imported containers and Terminal No.2 handles containers for export. Terminal No.2 has a berth facing to the Sai Gon River for transporting containers.

The ICD handled 150,000 TEUs of containers in 2000. Of which 55% is for import and 45% for export. Most of the imported and exported containers are transported by barge to and from Sai Gon Port and Ben Nghe Port. Remaining 5% of containers are transported by truck. 35-45% of containers by barge are transshipped at buoys and 55-65% at berth.



Source: Phuoc Long ICD

Figure 6.7.2 Container Movement between Phuoc Long ICD and Ports, 2000

It is difficult to know the distribution of hinterlands of containerized cargoes. Therefore, truck interview survey was conducted in order to grasp the characteristics of secondary cargo transport to and from Phuoc Long ICD. Survey was conducted at the gates of Terminal No.1 and No.2.

Average number of trucks entering and exiting at the gate was about 430 in each terminal according to the ICD. The proportion by vehicle type was observed that 31-54% is ordinary truck with capacity more than 2.5 tons and 35-57% is container trucks.

Most of the trucks entering and exiting the ICD is operated by forwarding companies (68-72%). Cargo owner's trucks shared about 20%.

Table 6.7.2 Truck Traffic Volume at Phuoc Long ICD

Depot	Average Traffic Volume (vehs./day)	By Vehicle Type (%)			
		Truck (<2.5t)	Truck (>2.5t)	Container Truck	Tank Lorry
No.1	430	11.8	53.6	34.6	0.0
No.2	435	12.1	30.8	57.1	0.0

Source: Traffic Survey by the Study Team, May 2001

Table 6.7.3 Owner of Truck Vehicles entering/exiting at Phuoc Long ICD

Depot	By Vehicle Type (%)			
	Cargo Owner	Forwarder	Shipping Company	Others
No.1	20.1	73.2	1.3	5.4
No.2	20.2	68.3	3.4	8.0

Source: Traffic Survey by the Study Team, May 2001

Distribution of origins and destinations of cargo handled at Phuoc Long ICD is shown in the table below. In both terminals, cargoes are transported mainly to and from the area within HCMC sharing 51-89%, especially districts in the center (25-65%) and east (12-17%).

Other major hinterlands are western districts of Dong Nai Province where many industrial zones are established (2-20%). The western districts of Binh Duong Province shared 15% of the total traffic volume to the Terminal No.2. There still be some cargoes transported to and from the central Vietnam by trucks.

Table 6.7.4 Origin and Destination of Trucks to/from Phuoc Long ICD

(Unit: %)

Zone No.	Province	District	No. 1 Terminal (Zone No.2)		No.2 Port (Zone No.2)	
			to ICD	from ICD	to ICD	from ICD
1	HCMC	Central	**65.3**	**33.8**	**28.4**	**25.0**
2		East	**11.5**	**18.3**	**14.6**	**17.3**
3		South	**11.0**	7.3	6.8	**11.5**
4		West	1.5	6.9	1.6	3.8
5		North	0.2	2.3	2.6	5.8
6	Binh Duong	South	0.7	2.5	1.8	0.0
7		West	0.7	1.0	**15.1**	5.8
8		East	0.2	1.3	0.5	0.0
9	Dong Nai	West	3.8	**20.4**	**12.8**	1.9
10		East	1.0	0.6	0.0	0.0
11		North	0.7	0.2	0.1	0.0
12	BR-VT	Phu My	0.0	0.0	0.3	0.0
13		Vung Tau	0.0	0.2	0.5	0.0
14		East	0.0	0.0	0.1	0.0
15	Mekong Delta Area		1.7	2.9	5.9	7.7
16	Other Areas in South Vietnam		0.0	1.3	4.1	7.7
17	Central Vietnam		1.2	1.0	4.8	**13.5**
18	Northern Vietnam		0.5	0.0	0.0	0.0

Source: Traffic Survey by the Study Team, May 2001
Note: figures are calculated based on the number of vehicles.

(2) Transimex-Saigon ICD

This ICD is located next to Phuoc Long ICD and has just started operation in August 2000. This ICD also has a berth to transport containers by barge. Currently, container throughput of this ICD is about 4,000 TEU per week. The ICD estimates that the throughput in 2001 will be reached at 50-60 thousand TEUs. Barge transport is operated by VICT. According to the ICD, the users of this ICD such as cargo owner are increasing because VICT is servicing with lower rate and higher quality in container handling.

Containers handled at this ICD are transported between New Port by truck (20%) and VICT by barge (80%). The exported containers transported from this ICD to the ports shared 70% of the total and the remaining 30% are from the ports to this ICD.

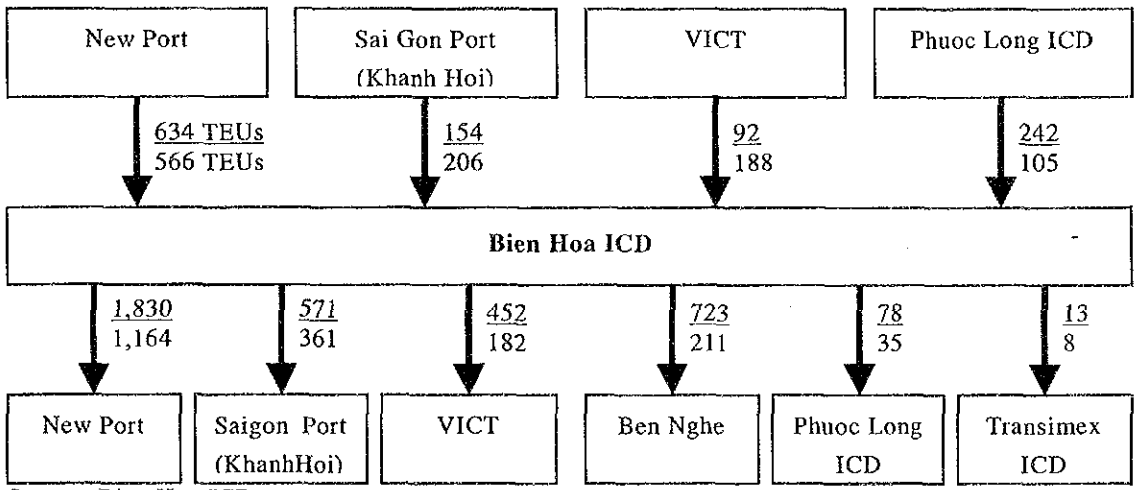
(3) Bien Hoa ICD

Bien Hoa ICD is located along the National Road No.51 in Bien Hoa District of Dong Nai Province. This ICD has commenced its operation in March 2000. This ICD is to provide transport services mainly between ports and neighboring industrial zones in Dong Nai Province for their exported products and imported materials.

Transport of container between ICD and Ports are done by truck. However, recently the ICD had berth along Dong Nai River located 5km away from the ICD to introduce barge transport.

In 2000, the ICD handled 1,122 TEUs of imported containers from New Port, Sai Gon Port, VICT and Phuoc Long and 3,667 TEUs of exported containers to New Port, Saigon Port, VICT Ben Nghe Port and ICDs of Phuoc Long and Transimex-Saigon.

This ICD handle the coffees for export. Coffees are transported by truck from the central provinces such as Dac Lac and Gia Lai and bagged or charged into containers. The volume of coffee handled was 26 thousand tons in 2000.



Source: Bien Hoa ICD
Note: Upper figures show the number of TEUs handled in 2000 and lower for the first 5 months in 2001

Figure 6.7.3 Container Movement between Bien Hoa ICD and Ports

(4) Dong Nai ICD

Dong Nai ICD is located along the National Road No.51, 11km southern from Bien Hoa ICD. There is 2100 m^3 warehouse but container yard is not completed yet. Recently this ICD stop the operation due to a little cargoes handled and high toll rate for the 40 feet container trucks (VND 140,000) if cargo is transported to the ports in HCMC.

(5) Song Than ICD

This ICD is located along the National Highway No.1 near to Song Than railway station in Binh Duong Province and Linh Trung Export Processing Zone in HCMC. This ICD is operated by New Port and started operation lately.