10.3 Capacity of Navigation Channel

10.3.1 Evaluation of the Navigation Channel

(1) Long Tau River Channel

Long Tau River Channel is an important maritime route to ports of HCMC-Dong Nai. This has contributed to the regional socio-economic development for many decades. Recently maritime activity is increasingly developing, revealing an inherent disadvantage. Navigating vessels along the river will be very difficult. Therefore, calling vessels have to wait at Vung Tau anchorage as currently, the distance between the berthing area and the handling area is 70-80 km. Waterway faces difficulties. The access to ports in HCMC is long and curved and it is difficult for many vessels to navigate through. Riverbed is narrow and it is not deep. Therefore, this route is not able to meet the requirement of the vessel development (from 30,000 to 50,000 DWT).

Evaluation of the future available capacity of Long Tau River Channel is one of the most crucial issues for long-term port master planning. While the introduction of an appropriate VTS (Vessel Traffic Service) may be helpful for improving channel capacity and safety, the maximum size of vessels allowed for the channel will remain under 20,000-25,000DWT. The physical improvement of the channel by dredging the riverbed is not always feasible technically (or financially in this case). Therefore, it would be difficult to develop large-scale port system.

(2) Development of Upper Soai Rap River Channel

The development of a new channel by dredging the upper part of Soai Rap River up to the junction with Long Tau Rviver may be necessary to promote the planned industrial park project (Hiep Phuoc Industrial Park Project). It is very difficult at this moment to keep the channel of the lower part of Soai Rap River in adequate depth enough for the size of the vessels expected for the planned new port of the project.

(3) Development of Lower Soai Rap River

If the dredging of the lower part of Soai Rap River down to the meaningful level would be technically and financially feasible, its may be quite helpful to reduce the traffic load of Long Tau River channel, and if the Hiep Phuoc Industrial Park project would succeed to relocate the industrial activities from the center of HCMC, it may also effective in saving the heavy congestion of the Saigon River Channel. In connection with this dredging affairs, there is another issue that if the total a Soai Rap River would be deeply dredged, substantial volume of the up-stream river flow might shift to Soai Rap River effecting serious reduction of Long Tau River flow that would create another navigational problem. However, these issues should carefully be examined on the firm base of engineering surveys and detailed feasibility analysis. It is considered almost impossible to conclude the issues within the Study, which is not expected to conduct such a large scale, time/budget consuming survey within its framework. It may therefore be reasonable to understand in this Study that the dredging of the total Soai Rap River is not feasible on the short-term basis.

10.3.2 Possible Traffic through the Long Tau River Channel

(1) Calculation Conditions

It is 80 km from the pilot station in Vung Tau to the VICT in HCMC. Most of the navigation passage is two-way traffic but the section between the point of 30 km and 40 km from the pilot station is limited to one-way traffic because this 10 km section has strong bends in the channel and the width is very small. Therefore pilots try to avoid operated vessels passing through each other in this section.

A vessel whose LOA is more than 160 m is restricted from navigating in the channel at night. Therefore, in the calculation we assume that such large vessels navigate only in the daytime while the other smaller vessels can navigate both during the day and the night.

The channel is used averagely not to occur the congestion in the both upstream and downstream of the one-way section.

The vessel speed depends on its type, size and cargo. The traffic capacity of the channel increases if the vessel speed is high. In this calculation we assume that vessels of all category navigate in the channel at a minimum speed of 8 knots.

The effective transit capacity is though to be 80-90% of the actual transit capacity since the number of daily transits is considered to be subject to Poisson's distribution, and the waiting ratio will increase in case that traffic in vessel is more than 80-90% of actual transit capacity. So in this calculation we use 80% as an arrival ratio to the capacity.

(2) Vessel Interval

Vessels have their blockade area around themselves. The blockade length is said to be 8 L in the minimum. Therefore we assume 8L as the minimum vessel interval distance. We can get the time interval of vessels by dividing the vessel speed by the vessel interval distance. In addition, vessel interval distance should be doubled to 16L for night navigation from the viewpoint of safety.

We assume 3 type of vessels will navigate the channel. The mix ratio of vessels is based on the actual navigation statistics of Long Tau Channel in 2000.

Table 10.3.2(1) Time Interval of Vessel in the Channel

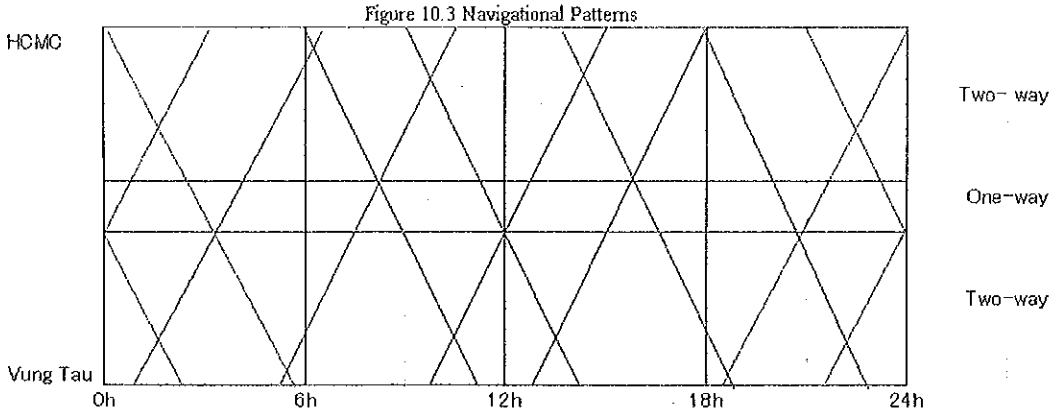
LOA (m)	Time Interval (h)	Vessel / hour	Mixing Ratio
70	0.047	21	0.5
150	0.101	10	0.4
180	0.122	8	0.1

Vessels whose LOA are more than 160 should navigate in daytime. Therefore the time interval of those vessels is 0.122 hour / vessel in daytime. On the other hand the

(3) Navigational Patterns

Large vessels are assumed to navigate in daytime and to pass each other in the side of Vung Tau. Because there are a smaller number of barges in Vung Tau side, it is easier and safer to pass each other.

Figure 10.3 Navigational Patterns



Using this navigational pattern, we can calculate the possible using time of channel and possible vessel number in a day as below.

Table10.3.2 (2) Vessel Number in a Day

	Using Time a Day	Time Interval of Vessels	Vessels in a Day
Daytime	5.2 h	0.122 h/v	42.6 v
Night	13.8 h	0.142 h/v	97.2 v
Total	18.8 h	-	139.8 v

(4) Adequate Number of Possible Navigational Vessels

We set a safety factors of 1.5 for days of bad weather and accidents. The adequate number of possible navigational vessels in a year is calculated as below.

139.8 x 360 / (1.5 x 1.5) =22,368 vessels / year

(5) Tidal Operation of Larger Vessels

High water level in the Long Tau River Channel is +3.5m above CDL. Therefore, vessels, which have the maximum draft of 10.7m, can navigate during peak tide. Larger vessels are assumed to pass through the channel in the time of high water from –3 hour to +3 hour. In this

time, the water level of the channel keeps more than -9.5m above CDL. Voyage time from Vung Tau to HCMC takes 5.5 hours. Larger vessels can depart during 0.5 hour from the start of the high tide in each direction. If the time interval is 0.122 hour and the arrival ratio is 0.8, the number of larger vessels in a day is calculated as below.

(0.5/0.122) x 0.8 x = 3.3 vessel in a day.

Larger vessels can navigate only in daytime. Therefore, high water continues for 6 hours in daytime 182.5 days of the year,, if tidal cycle is assumed to be sinusoidal characteristics. The adequate number of Possible navigational vessels in a year is calculated as below. The safety and accident factors are ignored in this case.

182.5 x 3.3 = 602 vessels in a year

(6) Conclusion

8,156 vessels passed through the Long Tau Channel in 2000 of which 354 vessels were larger ones. In this calculation, a maximum of 22,368 vessels can pass through the channel including 602 larger vessels using a tidal operation. Therefore, more than twice the present number of transit vessels can pass through the channel, at least from the viewpoint of channel capacity.

10.3.3 Channel Operation

Traffic Control of Sai Gon, Long Tau, Thi Vai and Soai Rap River channels in the SFEA waters are presently implemented by manual under the pilot organization controlled by Port Authorities concerned, but the traffic density will gradually increase, as the SFEA economy will prosper in the near future. For safety of navigation, efficiency of maritime traffic flow and protection of environment, Vessel Traffic Service (VTS) shall be introduced in these waters in the near future.

Sai Gon Port Authority is now planning to introduce this service with the assistance of Canadian Government. The system to date in the world is as follows:

(1) Vessel Traffic Service (VTS)

1) Since VTS equipped with a surveillance radar was first established at the entrance of Liverpool in England in 1948, more than 500 various styles and scales are now in operation all over the world. The scale of VTS consists of port, river and coastal areas, and is connected among these areas.
2) The following kinds of systems and services are available:
   ① VTS station to receive the information from ships
      - Ship Reporting System
      - Ship Movement and Reporting System
   ② VTS station to surveille ship movement by radar and give information to ship
      - Port information Service
      - Radar and Information Service

- Vessel Traffic Information Service
- Marine Traffic Service
- Channel Navigation Information Service
- Cooperative Vessel Traffic Service

③ VTS station to surveille ship movement by radar and control ship movement
- Traffic Control System
- Traffic Control and Safety System
- Maritime Movement Control and Information System

④ VTS station to minimize risks for safety as well as to control ship movement and to intend to respond on public and private demand
- Vessel Traffic Management Service (VTMS)
- Vessel Traffic Management & Information Service (VTMIS)

3) International Maritime Organization (IMO) has recommended that AIS (Automatic Identification System) and VDR (Voyage Data Recorder) be installed for to international going vessels of greater than 3,000 GT and domestic vessels of greater than 300 GT built after July 1, 2002, and to vessels built before July 1, 2002, finally until July 1, 2008, though the time is different by kind of vessels.

4) VTS will improve the system by means of AIS and VDR in the future.

(1) Style of VTS to be introduced in the SFEA waters

The Maritime Organization in Vietnam shall introduce VTS first in the water area between Vung Tau and HCMC, and the style shall be recommended to be VTMS or VTMIS to control ship movement for safety of navigation and efficiency of maritime traffic, taking into account the following issues.

- The channel from Vung Tau to Sai Gon River through Long Tau River is very long with 80 km distance, compared with other river channel in the world.
- There are some very narrow and bent channels, and turning basins in the channel.
- There are navigation restrictions for vessel in turning basins and vessel speed restriction in Sai Gon River.

After the service on the channel will start on the right lines, then it shall be introduced in the other waters of SFEA.

10.4 Capacity of Ports in HCMC

10.4.1 Evaluation of Ports in HCMC

(1) Cargo Flow

At present, the HCMC 's port cargo throughput is mainly handled by four major ports, namely Sai Gon Port, Tan Cang , Ben Nghe Port and VICT. Their throughputs amount at 85 % of ports in HCMC, while the other ports share the remained 15 %. Container throughput of these four ports in 2000 was 859,000TEU, occupying 75% of the country total. According to the plan, the HCMC 's port maximum throughput capacity can be thought to reach more than 20 million tons per year. However in fact, the above figure is hardly reachable, not because of the limit of cargo flow but because of the restrictions of cargo transportation caused by heavy traffic in HCMC.

(2) Water Area

At present, HCMC is the biggest junction for maritime transportation in the country. Sai Gon River and Nha Be Rivers actually are rich potential for ports with the length of more than 10km, with the depth of more than 10m, and with the width of about 300-400m (not very wide), it allows 5,000-20,000 DWT vessels to accommodate, and especially 20,000-25,000 DWT in Nha Be River. There exists the serious limitation of available river spaces particularly in Sai Gon River. There are four (4) turning basins in Sai Gon River of which spaces are insufficient. A number of vessels turning at same time is so limited that they have to wait for quite a while depending on the actual situations.

(3) Port Facility

Quays of Nha Rong and Khanh Hoi terminals of Sai Gon Port and Tan Cang are very old structures but had been rehabilitated in recent years, thus they might be used for another 20 years or so, and quays of Tan Thuan terminal of Sai Gon Port, Ben Nghe Port and VICT are new structures constructed within past 10 years and might be used for another 30 years or more.

However, if these ports want to accept large sized vessels than now, for example 30,000DWT to 40,000DWT vessels, the water depths of quays have to be deepen up to –12m to –13m from present depths of –8.5m to –11m. If riverbeds in front of the existing quays are dredged, not only the strength of foundation piles and stability of well foundation become insufficient but also the revetments behind quays will failure by sliding. Therefore, all existing quays and revetments should be demolished and new ones have to be constructed or the existing structures are kept as they are and the new quay structures should be constructed in front of them. The former needs huge construction cost and long construction time and the latter makes the width of water area narrow.

In addition to the disadvantages mentioned above, there is another disadvantage for deepening the depth that even now periodical dredging are required to maintain the water depth of quays, the more frequent or large amount of maintenance dredging might be required for all ports.

From above view points, the development of ports in HCMC area for large vessels are

restricted in addition to the restriction by navigation channel mentioned below.

(4) Land Transportation

Apart from the limitation of berths and channels, ports in HCMC still have some other difficulties. Because ports are located in the city center, the transferring cargo on road is easy to cause inner city traffic jam. Transportation in the hinterlands of HCMC's vicinity is a big difficulty for the construction of large ports in this area. The existing ports have already faced a lot of problems in transportation of cargo from ports. Therefore, the increase of throughput capacity of the ports in this area will definitely cause deteriorating problems for road transportation activities. It is clearly that due to the inner city locations of Sai Gon Port, Ben Nghe Port and Tan Cang, heavy cargo and container trucks have to travel in the increasingly overloaded inner city streets and Sai Gon Bridge. Therefore, the development of the existing inner city ports should be limited.

(5) Environmental impact

In the future, when the industrial production in the city increases, the need to use 40ft containers also increases, which leads to the increase in pressure to transportation inner and outer HCMC. Moreover, there is also the increase in air pollution and noise pollution.

(6) Urban Development

A number of bridges to cross Sai Gon River is planned to construct to make the outer road ring, including a bridge in Phu My linking Binh Thuan Road and Cat Lai (in District 2). A tunnel in Thu Thiem linking the old city center (district 1) will be construct. A bridge in An Phu (district 2) will link Thanh Da (Binh Thanh district). Other some bridges in district 9 will link the Expressway and Long Thanh. Concerning with the outer ring road and Nhon Trach industrial zone, bridges on Soai Rap River in Long Thoi (Nha Be) will link the South Expressway to Can Giuoc and will cross Long Tau River to Nhon Trach (Dong Nai). Some other bridges are also planned on other rivers and canals. Therefore Due to the urban development, particularly the construction of bridges on Sai Gon River, the navigation and port activities in HCMC area will be affected by some restriction.

10.4.2 Potential Capacity of Ports in HCMC

The port capacity is studied from both sides of cargo capacity and berthing capacity.

(1) Cargo Capacity in port

Cargo capacity in a port shall be examined mainly by taking account into the following factors:

1) The area of existing warehouses, sheds and open yards for general and bulk cargoes, and container stacking yards
2) Cargo dwelling time in a port (days)
3) Annual working days

And the required cargo capacity (cargo throughput) is calculated by the following formula:

1) For annual container throughput

$$Myc = (Sl \times L \times Dy) / Dwc$$

Myc : Annual container throughput (TEUs)
Sl : Available number of ground slots (TEUs)
L : Stacking height of container
Dy : Annual operating days
Dwc : Container dwelling time (days)

2) For annual general and bulk cargo throughput

$$Myg = (Qg \times Dy) / Dwg$$

Myg : Annual general/bulk cargo throughput (tons)
Qg : *Cargo capacity of warehouse, shed and open yard* ≒ an area(m2) x 2.5m x 0.7 (tons)
Dwg : General and bulk cargo dwelling time (days)

(2) Berthing Capacity

Berthing capacity in a port shall be examined mainly by taking account into the following factors:

1) The length of existing berths for ocean going vessels
2) The required berth length of calling model ship (container and conventional/bulk ship)
3) Kind of cargoes and cargo weight to be loaded and unloaded per vessel
4) Cargo handling productivity
5) Annual operating days
6) Berth Occupancy Ratio

* Formula

$$Bo = (S + V) / T$$

Bo: Berthing Occupancy Ratio (BOR)
S : Time of vessel in berth (hours)
V : Time of vessel berthing and unberthing (hours)
T : Time of investigation (hours)

* Criteria

According to the UNCTAD Report ("Port development, a handbook for planners in developing countries"), the berth occupancy ratio should be set so as not to exceed the following figures on ordinary berths.

Number of berths	Upper limit of adequate BOR (%)
1	40
2	50
3	55
4	60
5	65
6 – 10	70

And a required berthing capacity (cargo throughput) is calculated by the following formula.

1) Annual cargo throughput

$$My = Sn \times Cw$$
$$Sn = Bn \times Dy \times Bo / Ts$$
$$Ts = [Cw / (Cp \times Gn \times 0.8) + Ti] / 24 \text{ (days)}$$

Sn : Number of calling vessels
Cw : Loading and unloading cargo weight per vessel (tons)
Bn : Number of berths
Bo : Berthing Occupancy Rate
Ts : Time of ship occupying berth (days)
Cp : Cargo handling productivity (tons/TEUs per hour)
Gn : Number of gangs to be attended on ship operation
Ti : Necessary time other than cargo operation including ship berthing and unberthing (hours)

(3) Overall of Port Capacity

Maximum port capacity in a port shall be taken smaller either the above cargo capacity or berthing capacity. The calculation is made by using the above formulas, the following approximate figures given by the ports and ordinary factors.

Table 10.4.2 (1) Approximate Value used for the Calculation

No.	Item	Containership	General cargo and Bulk ship
1	Berth length assigned for model Calling vessel	180m	160m
2	Cargo weight to be loaded and unloaded per vessel	4.000 to 4,500 Tons (350 to 400 TEUs) @ 11 tons / TEU	5,000 to 5,500 tons
3	Cargo handling productivity	20 to 45 TEUs / hour (220 to 500 tons)	35 to 40 tons / hour
	Number of gangs to attend cargo Operation on a ship	1.5 to 2 gangs	4 gangs
4	Number of necessary hours other than operation hours (including hours of vessel berthing and unberthing)	4 hours	6 hours
5	Annual operating days (95 % of 365 days due to bad weather, etc.)	347 days	347 days
6	Berth occupancy ratio	40 to 70 %	40 to 70 %
7	Required cargo stacking area and weight (assumed from actual conditions)	Ground slot / 50m2 (to use RTG)	Area(m2) x 2.5m x 0.7 tons
8	Average cargo dwelling time in port	6 to 8.7 days / TEU (including empty container)	8 to 15 days

1) Tan Cang (New Port)

As a result of the calculation, maximum port capacity without Cat Lai Terminal is expected as the following figures.

Table 10.4.2 (2) Expectation of Maximum Port Capacity (Tan Cang)

No.	Item	Present Condition			Improved Condition		
		Container Ship	GC/ Bulk Ship	Total	Container Ship	GC/ Bulk Ship	Total
1	Cargo throughput (Thousand Tons)	4,700	450	5,150	6,200	670	6,870
2	Container (Thousand TEUs)	430	0	430	560	0	560
3	Maximum number of calling vessels	1,200	90	1,290	1,400	120	1,520

Remark: B3 / B4 berths are assumed to accommodate containerships and buoy berths to accommodate conventional/bulk ships.

The statistics of this port in 2000 showed cargo throughput of 4,079 thousand tons including containers of 386 thousand TEUs and 450 calling vessels. These figures already occupied greater than 80 percent and 90 percent of cargo throughput and container throughput respectively out of the maximum capacity at the present conditions, and also 60 percent and 70 percent of cargo throughput and container throughput respectively out of the maximum capacity at the improved conditions in the Table 10.4.2 (2).

This port has introduced two (2) quayside container cranes and then the productivity of container operation on ship will surely improve, but the limits of the capacity in this port will come in no distant future.

2) Sai Gon Port

As a result of the calculation, maximum port capacity is expected as the following figures.

Table 10.4.2 (3) Expectation of Maximum Port Capacity (Sai Gon Port)

No.	Item	Present Condition			Improved Condition		
		Container Ship	GC/ Bulk Ship	Total	Container Ship	GC/ Bulk Ship	Total
1	Cargo throughput (Thousand Tons)	3,500	8,400	11,900	5,000	12,600	17,600
2	Container (Thousand TEUs)	310	0	310	460	0	460
3	Maximum number of calling vessels	900	1,680	2,580	1,140	2,290	3,430

Remark: Khanh Hoi and Tan Thuan Terminals are assumed to accommodate container ships, and Nha Rong, Tan Thuan II and buoy berths to accommodate conventional and bulk ships.

The statistics of this port in 2000 showed cargo throughput of 9,330 thousand tons including container throughput of 230 thousand TEUs and 957 calling vessels. These figures already occupied greater than 90 percent of cargo throughput and 70 percent of container throughput out of the maximum capacity at the present conditions, and also greater than 70 percent of cargo throughput and 50 percent of container throughput out of the maximum capacity at the improved conditions in the Table 10.4.2 (3).

On the other hand, number of calling ships in 2000 was 50 and 40 percent less than the maximum capacity at the present and improved conditions respectively. As well aware, the length of wharves in this port is considerably long compared with the depths of the inside yard and there are 25 buoy berths. That means the maximum capacity will be limited by total area of available cargo-stacking yard.

To increase cargo capacity, this port will be desirable to reduce cargo dwelling time by increasing imported cargo directly delivered on trucks and barges from vessels, and exported cargo directly loaded on ships.

3) Ben Nghe Port

As a result of the calculation, maximum port capacity is expected as the following figures.

Table 10.4.2 (4) *Expectation of Maximum Port Capacity (Ben Nghe Port)*

No.	Item	Present Condition			Improved Condition		
		Container Ship	GC/ Bulk Ship	Total	Container Ship	GC/ Bulk Ship	Total
1	Cargo throughput (Thousand Tons)	2,300	4,000	6,300	5,100	4,600	9,700
2	Container (Thousand TEUs)	210	0	210	460	0	460
3	Maximum number of calling vessels	610	800	1,410	1,150	830	1,980

Remark: K14, K15, K15B and K15C wharves are assumed to accommodate container ships, and 7 buoy berths to accommodate conventional and bulk ships .

The statistics of this port in 2000 showed cargo throughput of 2,770 thousand tons including container throughput of 111 thousand TEUs and 532 calling vessels. The figures had 25 percent of cargo throughput and less than 50 percent of container throughput out of the maximum capacity at the present conditions, and also less than 20 percent and 25 percent of cargo throughput and container throughput respectively out of the maximum capacity at the improved conditions in the Table 10.4.2 (4). The table figures show container throughput without RTG at the present conditions and with RTGs at the improved conditions, though the container yard of 78,000m2 is not paved yet at this time. Therefore the scale of maximum container throughput will become larger as shown in the improved conditions of the Table, when the port will pave the container yard and introduce four (4) to five (5) RTGs, and then the port will be able to play an important role as " Entrepot Port".

4) VICT

As a result of the calculation, maximum port capacity is expected as the following figures.

Table 10.4.2 (5) Expectation of Maximum Port Capacity (VICT)

No.	Item	Present Condition	Improved Condition
		Container Ship	Container Ship
1	Cargo throughput (Thousand Tons)	2,000	2,200
2	Container (Thousand TEUs)	180	200
3	Maximum number of calling vessels	450	450

Remark: This port has 303m quay and two (2) quayside container cranes. Then an average number of the cranes to be attended on ship operation is assumed to be 1.5 units per ship. The final phase (715m quay) on the port plan is not included in this study.

The statistics of this port in 2000 showed cargo throughput of 1,363 thousand tons (130 thousand TEUs) and 266 calling vessels. The figures occupied more than 70 percents out of maximum port capacity at the present conditions in the Table 10.4.2 (5). The port is expecting container throughput in 2001 will reach 200 thousand TEUs due to the current increase. To cope with the increase, the port shall expand container yard toward upstream of Sai Gon River and reduce container dwelling time as soon as possible.

(4) Summary of Four (4) Major Port Capacity

The total maximum capacity of the four (4) major general ports in HCMC is expected as the following figures.

Table 10.4.2 (6) Summary of Four (4) Major Port Capacity in HCMC

No.	Item	Statistics in 2000 for total number in 4 major ports	Total maximum port capacity in 4 major ports at present conditions	Total maximum port capacity in 4 major ports at improved conditions
1	Cargo throughput (Thousand Tons)	17,542	25,000	36,000
2	Container (Thousand TEUs)	857	1,100	1,700
3	Maximum number of calling vessels	2,205	5,700	7,400

As a result of this study, maximum port capacity of the four (4) major general ports will be approximately 1.4 and 1.3 times of total cargo and container throughput respectively, and 2.5 times of number of calling ships in 2000 at the present conditions, and also two (2) times of total cargo and container throughput and more than three (3) times of number of calling ships in 2000 at the improved conditions in the Figure 10.4.2 (6), though the situation of maximum capacity for each port is different.

The following issues will be considered for the improved conditions.

1) To improve cargo handling productivity on ship operation.
2) To reduce cargo dwelling time in port.
3) To increase or introduce number of cargo equipment, especially RTGs and quayside container cranes.
4) To convert existing general cargo stockyard into container yard paved for RTG to cope with the future increase of container throughput

5) It is assumed the volume of handling cargo per ship will increase at the improved condition.

(5) Conclusion

The maximum port capacity of the four (4) major general ports will be cargo throughput of 36 million tons including containers of 1.7 million TEUs at the improved conditions, in terms of port capacity by the above study. However, the capacity is examined in consideration of the above issues to be improved, in which a considerable investment is included such as introduction or addition of container equipment and construction of container yard. On the other hand, there is a rigorous restriction of road transportation due to heavy traffic in HCMC, which will disturb cargo flow to come out and in port.

In conclusion, the maximum port capacity of the four (4) major general ports in HCMC might be realistically up to cargo throughput of 25 million tons including containers of 1.1 million TEUs at the present conditions.

10.5 Port Administration, Management and Operation

10.5.1 Port Administration

(1) Participation of Many Different Ministries/Public-organizations to the Port Administration

MOT certainly has overall administrative power and state management responsibility on the port administration. On the other hand, MPI has overall responsibility in foreign investment matters including large-scale port projects. Moreover, VINALINES under the Prime Minister's Office, and other central ministries also participate partially to the port administration.

Thus, in Vietnam, many different central ministries/public-organizations participate to the port administration. The participation of plural central ministries, in itself, is not a big problem in the sense that the same situation can be observed in other foreign country including Japan. In order for each ministry having a different administration field to use the authority, it is a matter of course that they participate to the port administration individually. However, the problem in Vietnam is that two or more central ministries exercise their authority and responsibility through the same administration acts such as decision-making, supervision and guidance for the port investment, port management and so on.

Such a situation may allow some rooms to cause inadequate coordination and discordant decision-making and supervision, in the process of performing the port administration.
The main ministry that has the greatest responsibility for port administration needs to be clarified.

(2) Existence of Many Different Supervisory Public Organizations for Port Activities

In the study area, a large number of ports are supervised not only by MOT/VINAMARINE but also the many other central and local government agencies concerned (see Figure 10.5.1). The port is an important social infrastructure being directly concerned with national interest. So, it is considered that the confusion of port management caused by lacking in coordination among their supervision and guidance shall seriously have a bad influence upon the national interest.
Adequate supervising system to each port by public organization needs to be established, at least, for the national major ports as soon as possible.

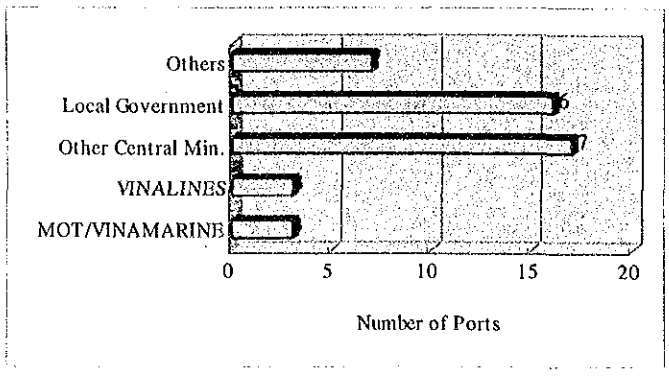


Figure 10.5.1 Supervisory Public Organizations for Port Activities in Study Area

(3) Diversity of the Organizational Type of PMB

At almost all Vietnamese ports, port management and operation is performed by enterprises including SOE, public cooperation organized by provinces/cities and joint-venture companies. They earnestly play a role of "port management body" through daily own business activities. Among these, joint-venture companies such as FLDC (First Logistics Development (JV) Company) of VICT can almost be considered to be a private sector. On the other hand, SOEs such as Sai Gon Port Company are an organization having the character as semi-public sector.

Thus, the present situation concerning port management body of Vietnamese ports is indistinct because of the mixture of sectors having different characters.
The discussion for improving this situation needs to be performed as soon as possible.

(4) Insufficient Institutional Framework for the Performance of the Adequate Port Development and Management

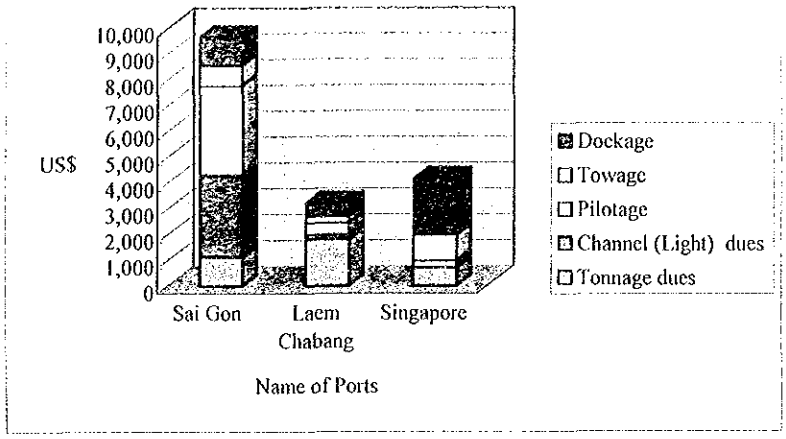
In 1999, Vietnamese port development plan up to 2010 was announced by MOT/ VINAMARINE. It can be greatly appraised that the Government has announced the unified and planned direction for the future port development. However, if the nations will and concrete measures toward the realization of this master plan cannot be prepared, it is regarded as only a plan.
The further improvement of the institutional framework, which includes the formulation of individual port development plan and investment plan, etc, is indispensable. Moreover, it is necessary to examine and establish the effective procedure for coordination among relevant organizations.

(5) High-priced Port Entry Due compared with Neighboring Asian Ports

The total entry due for the foreign vessels calling Sai Gon Port is estimated approximately three times higher than that of Laem Chabang Port in Thailand by using latest each port tariff (see Figure 10.5.1). While it is understandable that this fact may come from the effect of the cost of maintaining the long bending river channel to the port, the large difference of port entry due between Vietnamese ports and Neighboring Asian ports means that Vietnamese ports would hold the following handicaps in future:

a) Vietnamese ports shall be not able to win the game of gaining the position of major transshipment ports for worldwide container cargoes among competitive Asian ports.
b) It is a big problem from a view point of the nation's economy that high-priced charge and due shall directly be reflected in the cost-up of foreign trade goods.

Figure 10.5.1 Comparison of Entry Due of Three Ports



Source: Estimation by OCDI

The current port tariff system needs to be improved appropriately in future.

10.5.2 Port Management and Operation

(1) Delay of Computerization for Port Management and Terminal Operation

The procedures necessary for port management and terminal operation have been computerized rapidly in the world leading ports. In major overseas ports, EDI for necessary procedure for arrival/departure vessels has been introduced, and "Paperless Procedure" and "One Stop Service" has been implemented. Though Sai Gon Port and VICT have introduced the sophisticated computer systems for their terminal management and operation, the full scale EDI on-line operation is not available under the systems used in their ports.

To raise the international competitiveness and provide the user-oriented services, it is necessary for Vietnam to promote the implementation of EDI, which would simplify and improve efficiency of port management and operation.

(2) Insufficiency of the Stock for Port-related Data and Information

Port statistics are very important as a tool for nationwide port development. It is essential to make full use of port statistics for recognizing present situation on port activities nationwide in establishing basic policy. The port statistics are composed of the data and information related to port administration, management and operation such as cargo handling volume by port, and by handling shape. Especially cargo handling data are required in details in examining designing port facilities, procuring handling equipment and yard arrangement etc.
In Vietnam, there is only a very little data and information which is actually edited and opened to the public as a port statistics. And, there are some inconsistencies among the different data sources. It is indispensable that the Government and ministerial agencies concerned prepare the adequate port statistics, on which useful information is compiled, as soon as possible.

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