

2.5. Status Quo and Development Trend of Ports in South-eastern Indochina

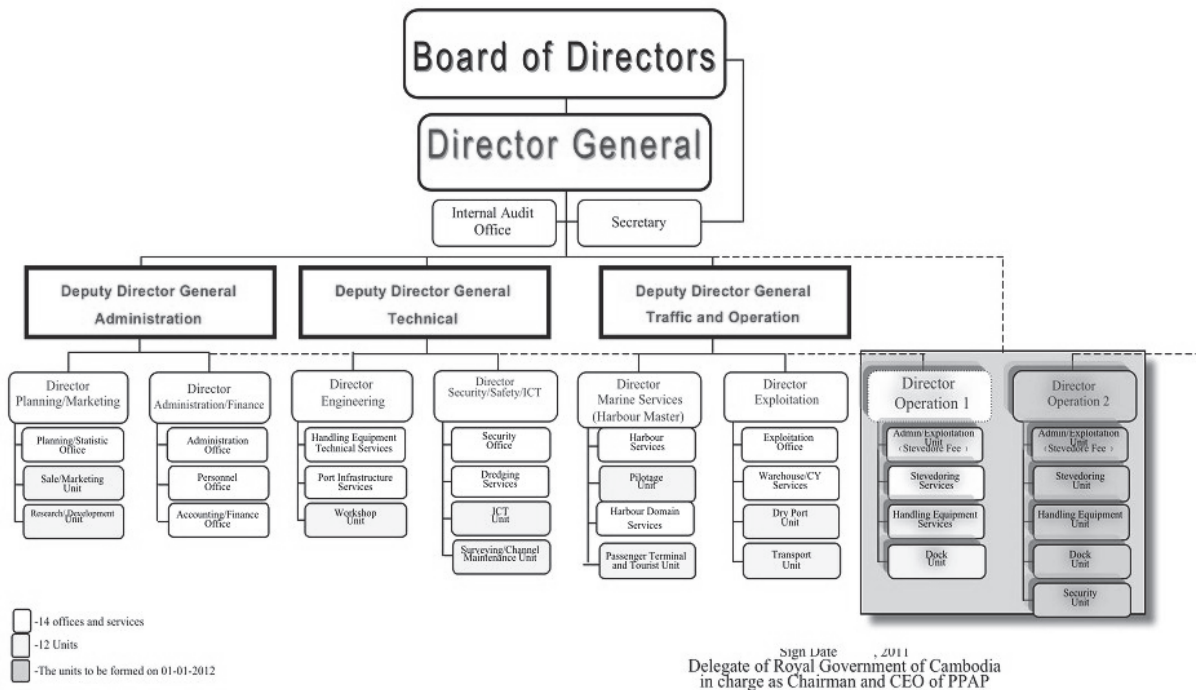
2.5.1 Phnom Penh Port

(1) General

Phnom Penh Port is the second largest port in Cambodia. The present port facilities are located on the western bank of the Sap River, 2 km from the Chak Tomouk confluence of the Mekong River. The access distance to the port is about 332 km from the Cuu Tieu entrance mouth of South China Sea, and about 100 km from Kaam Samnar, Cambodia-Vietnam border gate.

(2) Port management and operation

Phnom Penh Port is managed and operated by Phnom Penh Autonomous Port (PPAP) which is under the supervision of the MPWT and MEF. The organization chart of PPAP is shown in Figure 2.5-1. PPAP is managed by the Director General, three Deputy Director Generals and eight Directors. The Operation Department was divided into two departments when the new container terminal commenced operation in 2012.



Source: PPAP

Figure 2.5-1 Organization chart of PPAP

Basically, cargo handling is carried out by employees of PPAP; however floating cranes provided by a barge operator are operated by the company's employees.

The current productivity of container handling by mobile and floating cranes is 15 units per hour for unloading and 10 units per hour for loading.

The business zone of PPAP covers the 160 km long Mekong basin from Neak Leung to Kompong Cham province. Prior consultation with PPAP is required when any third parties intend to develop ports in this zone..

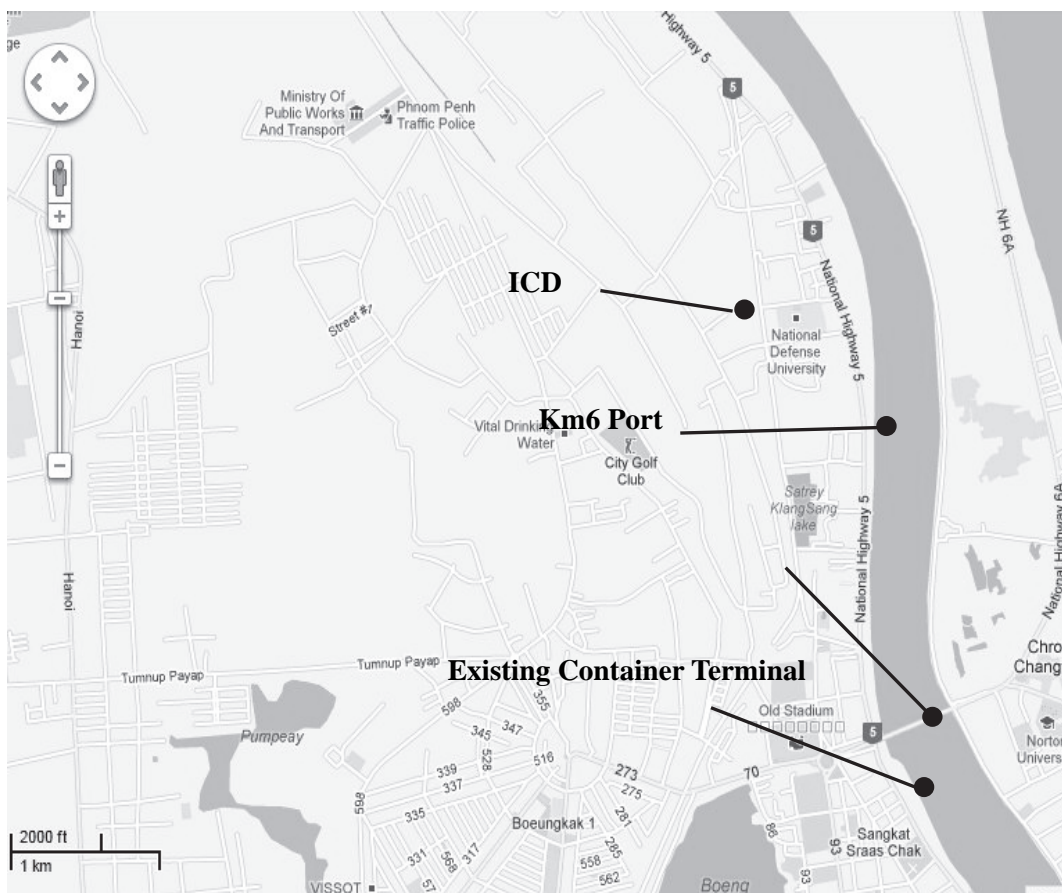
(3) Facilities and equipment

Phnom Penh Port has three terminals as follow:

- Container Terminal
 - Quay: 20m x 300m, Berthing capacity: 3 barges at one time
- Domestic Port:
 - Length 333m, For inter Provincial service
- Passenger Terminal:
 - 2 Pontoons of 15m x 45m each

Besides above-listed river terminals, PPAP has an ICD. The area of ICD is 92,000 m². Since the area of river terminal is limited, PPAP promotes the utilization of ICD.

Maintenance dredging of the Kaorm Somnor-Phnom Penh-Kompong Cham channel is carried out each year for 2 or 3 months in the dry season by dredgers owned by PPAP. The annual dredging volume is around 100,000 m³. Sometimes the dredgers of PPAP are hired by a private company to conduct land reclamation, etc.



Prepared by Project Team

Figure 2.5-2 Location of the container terminal in Phnom Penh Port

(4) Road and railway access

The port faces to NR5, but capacity of the section of NR5 in downtown Phnom Penh is limited. Therefore the port introduced a traffic monitoring system using CCTV cameras in order to alleviate traffic congestion as described in 2.4.1.

Railway access is not available at present. PPAP plans to construct an intermodal terminal connecting railway/road transport and waterborne transport in Kilometer 6 Port at a point 6 km from the Chak Tomouk confluence and 4 km from the main port.

(5) Cargo/passenger traffic and vessel call

Table 2.5-1 shows the time series of vessel calls of Phnom Penh Port. Change in the number of vessel calls at the port in the last ten years is rather small. The number of calls of domestic barges showed a continuous decline since 2003 and actually ceased in 2007. The number of calls of international vessel/barge has been increasing; however, the increase rate is rather moderate compared with that of cargo throughput due to increase of vessels' dimensions.

Table 2.5-1 Vessels calls of Phnom Penh Port

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
International Vessel/Barge	209	107	87	109	210	254	377	484	387	318
Oil Vessel	573	522	592	639	708	831	894	951	1,026	657
Domestic Vessel	38	21	89	124	158	147	125	108	107	82
Domestic Barge	257	281	305	222	110	32	2	0	0	0
TOTAL	1,077	931	1,073	1,094	1,186	1,264	1,398	1,543	1,520	1,057

Source: PPAP

As shown in Table 2.5-2, the major cargo of the port is imported liquid bulk (oil products from Viet Nam), which accounts for more than 60% of total cargo throughput and 70% of imported cargoes. The cargo throughput of Phnom Penh Port has been increasing rapidly in line with the development of the Capital City and the growth of the country's industry. In particular, remarkable growth was seen in container traffic. As shown in Table 2.5-3, the port was being used mainly for import, but since 2009 export containers have been increasing, and in 2010 more export containers were handled than import containers. This would be due to the diversion of a part of garment export containers for USA from Sihanoukville Port by the commencement of operation of Cai Mep Port and the increase of rice export.

Table 2.5-2 Cargo throughput of Phnom Penh Port

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Imported Cargo	462,471	403,870	495,295	557,634	678,159	880,126	1,020,391	1,168,556	1,192,429	1,100,227
General Cargo	61,267	32,893	29,217	22,561	41,031	3,845	50,695	105,485	96,600	67,324
Containers	154	2,202	46,802	74,421	172,762	229,956	265,195	283,035	227,887	255,035
Liquid Bulk	401,050	368,775	419,276	460,652	464,366	646,325	704,501	780,036	867,942	777,868
Exported Cargo	33,646	12,117	24,589	23,867	31,964	52,465	44,894	42,971	79,458	159,029
General Cargo	33,646	10,370	1,122		225	600			671	7,628
Containers		1,747	23,467	23,867	31,739	51,865	44,894	42,971	78,787	151,401
TOTAL	496,117	415,987	519,884	581,501	710,123	932,591	1,065,285	1,211,527	1,271,887	1,259,256

Source: PPAP

Table 2.5-3 Container throughput of Phnom Penh Port

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Import									
Empty	100	306	985	867	477	1,126	1,387	3,769	5,940
Laden	242	4,134	7,054	14,077	18,099	23,783	23,623	16,735	21,369
Export									
Empty	167	1,118	4,250	11,570	14,316	16,653	16,754	11,033	10,671
Laden	237	2,072	3,237	3,767	5,341	5,942	5,743	11,775	24,276
Total Throughput	746	7,630	15,526	30,281	38,233	47,504	47,507	43,312	62,256

Source: PPAP

Table 2.5-4 shows the passenger traffic of Phnom Penh Port. The total number of passengers had been decreasing due to the decline of inter-provincial transport by the improvement of the road network. However, an upward tendency is now observed due to an increase of international passengers and tourists.

Table 2.5-4 Passenger traffic of Phnom Penh Port

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Inter-provincial Ferry	184,420	110,115	58,949	34,722	35,463	36,277	28,674	20,019	18,527
Ferry to Chau Doc (VN)	3,789	3,847	5,943	6,173	9,235	12,862	14,803	12,860	15,618
Tourist in Town	7,205	2,386	2,663	820	746	1,013	350	866	5,231
Tour to Viet Nam		466	1,985	2,812	2,156	3,065	3,083	4,390	9,738
TOTAL	195,414	116,814	69,540	44,527	47,600	53,217	46,910	38,135	49,114

Source: PPAP

(6) Development plans

Responding to the rapid growth of container traffic, PPAP is developing a new container terminal in Kien Svay District, Kandal Province, 30 km east of Phnom Penh along the Mekong River and the National Road No. 1. The development project is being implemented in three phases.

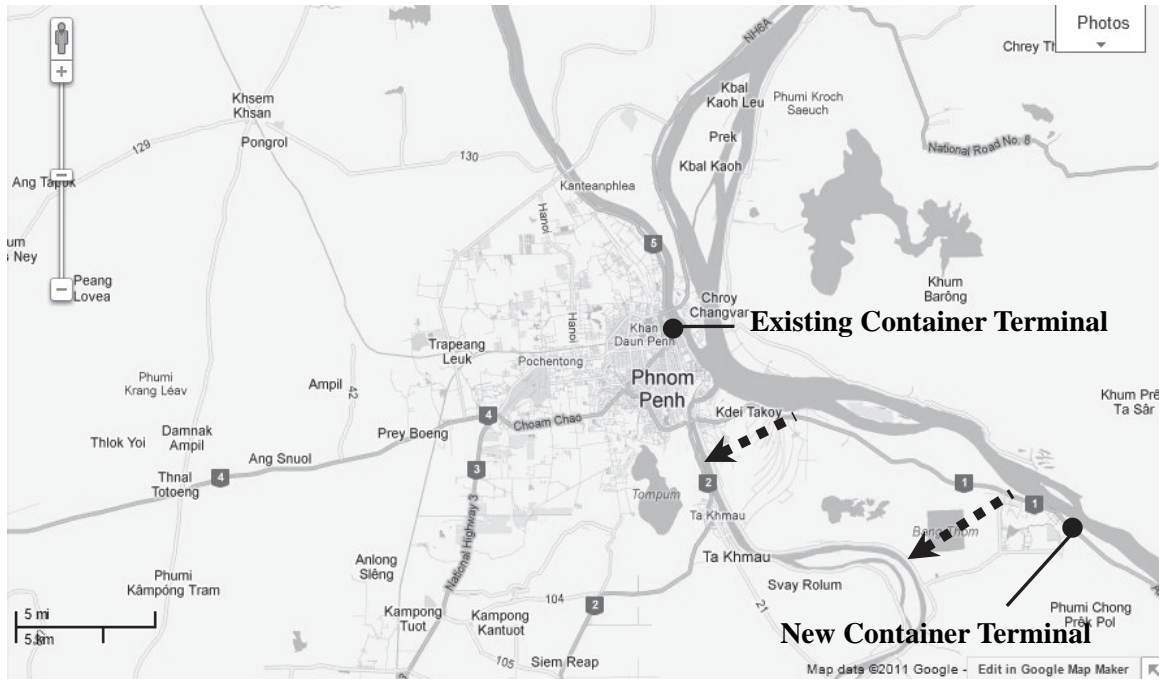
The annual handling capacity of the new terminal is 500,000 TEU. In the phase 1 development which will be completed in June 2012, a terminal with the capacity of 120,000 TEU was constructed. The length of the quay is 300m and the port area is 20 ha. Up to 5,000 DWT vessels can be accommodated at the new container berths. In the second phase development the handling capacity of 180,000 TEU will be added and the total capacity will be increased to 300,000 TEU. The detail of the second and the third phase development will be studied after the commencement of operation of the first phase terminal. Land for the second and the third phase development has been acquired by PPAP and the reclamation work of this area is being implemented in advance. The length of the acquired land along the river is 1,500 meters. PPAP foresees that the container handling volume will increase up to 300,000 TEU before 2020; therefore the second phase development is scheduled to be completed by then.

The first phase development project is financed by a soft loan from the Government of China. The Chinese soft loan project covers only construction of infrastructure and buildings. The new container terminal is planned to be equipped with quay cranes and RTGs, which are planned to be financed by Cambodian public agencies such as KAMSAB. The installation of rails for gantry crane is included in the Chinese soft loan package; however, it is not decided yet whether PPAP will purchase quay gantry cranes or mobile harbor cranes. The second phase development is planned to be implemented by PPAP's own budget, whereas external funding is expected for the third phase development.

The new administration building will be dedicated only for the management of the new container terminal. The headquarters of PPAP will remain in the present main building in Phnom Penh Port.

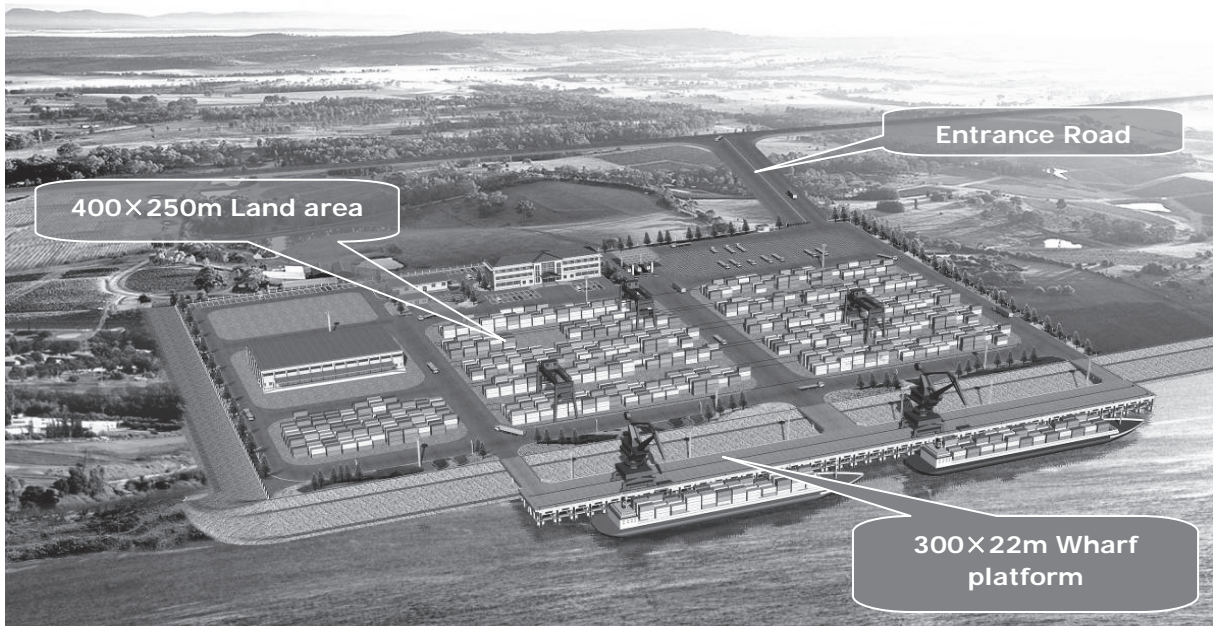
A new bypass road directly linking the new terminal and the National Road No.2 and No.3 is under construction. A railway link is not planned so far.

According to the explanation by PPAP, the new terminal will be operated by PPAP directly.



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Figure 2.5-3 Location of New Phnom Penh Port



Source: PPAP

Figure 2.5-4 Development plan of New Phnom Penh Port (phase 1)



Prepared by Project Team

Figure 2.5-5 Phnom Penh New Port (under construction (Feb. 2012))



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Figure 2.5-6 Reclaimed land for the third phase development of Phnom Penh New Port

2.5.2 Provincial and private ports in Cambodia

(1) Provincial ports

There are five provincial seaports in Cambodia, namely Koh Kong Port, Stueng Hav Port, Tomnop Rolok Port, Kampot Port and Kep Port. Generally the scale of provincial seaports is very small and they are furnished with poor facilities such as wooden deck and un-paved yard without modern handling equipment. These ports are used mainly for coastal shipping linking the eastern coast of Thailand.

Tomnop Rolok Port is located inside the breakwater of Sihanoukville Port as shown in Figure 2.5-7, where reclamation was planned for industrial development in the original masterplan of Sihanoukville Port. Construction started in 1989 by the government (DPWT and the Sihanoukville Municipality). The port has an un-paved yard of 700 m², one warehouse (161 m²) and one crane (25 tons). The current water depth is from 4 m to 6 m. During low tide, depth ranges from 2.8 m to 3.9 m, and in the high tide from 5m to 6m. The port had been state-owned under the DPWT until 1995. From January 01, 1996, DPWT went forward with privatizing operations through a bidding process. Cargoes consist of conventional cargoes such as construction materials, and consumption goods. They are all imported from Thailand by barges or wooden boats. Cargo volume handled during six months from October 2010 was 80,000 tons. All cargoes handled in the port were imported cargoes. The number of vessels' calls in the same period was 136.

Kampot Port is located on the left bank of Kampot River, 12 km from the open sea, although the port is classified as a seaport. The port was constructed in 1922, and since then the port had been the main seaport located in the present Cambodian territory until the opening of Sihanoukville Port. The port is very small with primitive facilities which accommodate small wooden boats and barges. The port doesn't have cargo handling equipment. The water depth in the access channel was originally 5.5 m, but presently the depth ranges from 1.5 m to 3.5 m. The port used to be state-owned, but the bidding for private management was launched by the Provincial DPWT in 1995; however, it is still under the technical inspection of the provincial DPWT of Kampot. The cargoes transported through the port are sugar, bricks, fibro, steel bars, etc. They are mainly imported from Thailand though a small portion comes from Vietnam. Some sugar imported from Thailand is transshipped at Kampot Port and re-exported to Vietnam. The quantity of cargoes imported from Thailand is about 20,000 tons per year. Cargoes are transported from Thailand by wooden boats or barges of 500 tons to 1,000 tons and transferred to wooden boats of 50 tons off the coast of Kampot.

A deep water port is planned along the coast of Kampot by a private SEZ developer. Originally it was announced that the new port and SEZ would be completed in 2010, but as of the date of the Project Team's investigation in July 2011, only embankments for the reclamation for the land of SEZ

was under construction. Construction of berthing facilities has not commenced.

Stueng Hav is located on the northern shore of Preah Sihanouk Province, around 20 km from Sihanoukville Port and 30 km from Veal Renh on the National Road 3 and 4. At present, except oil products handled at a dedicated jetty, few cargoes are handled at Stueng Hav Port. The port is principally utilized as a fishing port. In the vicinity of the existing port facility, construction of a SEZ with container port is planned by Attwood Investment Group. The planned development area for SEZ and port is 520 ha with 400 ha of basin protected by breakwaters of more than 7.6 km in length as shown in Figure 2.5-10. The planned maximum depth of water alongside quays is 12 m. The volume of materials dredged for the basin and approach channel (in case that the dimension of the channel is 3.7 km in length and 300 m in width) is estimated at about 21 million m³. The ground breaking ceremony was held in 2009. The plan is phased into four stages and the first phase project which includes construction of port facilities is scheduled to be completed in two or three years after commencement of the project. However, the port facilities were still under construction when the Project Team visited the site in November 2011. The port facilities constructed in the first phase seem to be designed considering traditional coastal shipping, which would not be convenient for SEZ factories. A new road which connects Stueng Hav with National Road 4 was opened in April 2007.

Koh Kong Port is located in front of the city center of Koh Kong before crossing the bridge leading to Koh Kong SEZ and the border check point. The quay length is about 50 m, where cement imported from Thailand by barges is handled. Cement is unloaded by mobile cranes. However, the cement is a temporally cargo for the construction of a power plant in the hinterland. No cargo is handled constantly in the port. The development of a new port with 18 m deep quays is planned at 100 km south-east of Koh Kong by a SEZ developer.



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Figure 2.5-7 Location of Tomnop Rolok Port



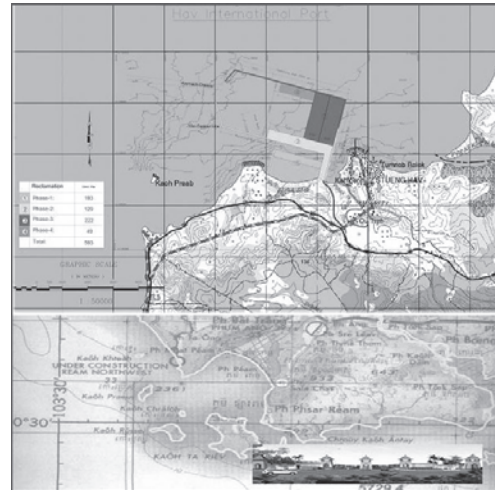
Prepared by Project Team

Figure 2.5-8 Kampot Port



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Figure 2.5-9 Construction site of Kampot New Port



Source: Attwood

Figure 2.5-10 Development Plan of Stueng Hav Port



Source: Attwood

Figure 2.5-11 Construction of a new port in Stueng Hav



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Figure 2.5-12 Koh Kong Port

(2) Oknha Mong Port

Oknha Mong Port is the first private sea port in Cambodia, located at Stung Hav district, Preah Sihanouk Province. The port was inaugurated and commenced its operation in 2004. At present, the port is owned by a joint venture of Cambodian and Thai company. Land area of the port is 64 ha (of which 26 ha is used as a port terminal), total berth length is 1,111m berth with a width of 200 m and the water depth is 5.5 m. The port has 6 warehouses (1 unit of 1,200 m², 3 units of 5,600 m², and 2 units of 7,000 m²) and open storage areas of 3 ha. It has 5 cranes (2 of 25-ton capacity), 5 forklifts and 15 trucks (for operating at the port area) and 2 dredging barges.

Most of the transport is carried out by barges or wooden boats with the capacity of 300 tons, which carry cargoes from Thailand. During a six-month period from October 2010, the port handled 371,860 tons of cargoes (of which 368,258 tons were imported cargoes and 3,602 tons were exported cargoes), and received 541 vessels. Cement and sugar from Thailand are the major commodities of import goods. Crude palm oil is the only export cargo, which is transported to Malaysia.

(3) Sre Ambel Port

Sre Ambel Port is located in Sre Ambel District, Koh Kong Province, 99.69 km from Preah Sihanouk. The privately owned 10 ha port terminal lies along the channel about 12 km from the open sea. Total berth length is 500 m with a width of 30 m and a water depth of 5 m. Without dredging,

only boats of a maximum of 180 tons can navigate the channel, however, there is plan to secure a depth of 6m through dredging which will allow the channel to accommodate ships loading from 2,000 to 3,000 tons. The port has 5 cranes and 2 dredging barges. There are 3 warehouses, a transit shed of 48m² and an open storage area of 3 hectares.

Most of the cargoes come from Thailand. Annual import volume through Sre Ambel Port ranges from 4,000 to 5,000 tons.

Cargo handling operations within the terminal are performed by the terminal's temporary labors and are directly unloaded to trucks, which is arranged by the cargo owners or consignees.

2.5.3 Ports in the Gulf of Siam and southern Viet Nam

(1) Cai Mep - Thi Vai International Port

1) Background of the development

Major port facilities of Ho Chi Minh City (HCMC) are located at both banks of the Saigon River at a distance of about 85 km from the river mouth and adjacent to a busy downtown area.

In accordance with the recent economic development of Vietnam, cargo traffic has been increasing tremendously. This has resulted in very heavy traffic congestion and associated air pollution. In order to transport the increased cargo without hindering city traffic and reducing air pollution, waterborne transport may play an important role. However, there are no sufficient areas for development of new port facilities for the waterborne transport along the Saigon river banks.

Under this circumstance, the Government decided to develop a new deepwater port at the mouth of Thi-Vai River in 1999. This area is located about 77 km away from HCMC by roads. This area has a sufficient depth for receiving deep draft container vessels.

In 2000, the Government applied Japanese ODA to make a feasibility study of a new deepwater development. After the completion of the study, the Government applied again for Japanese ODA financing for the project.

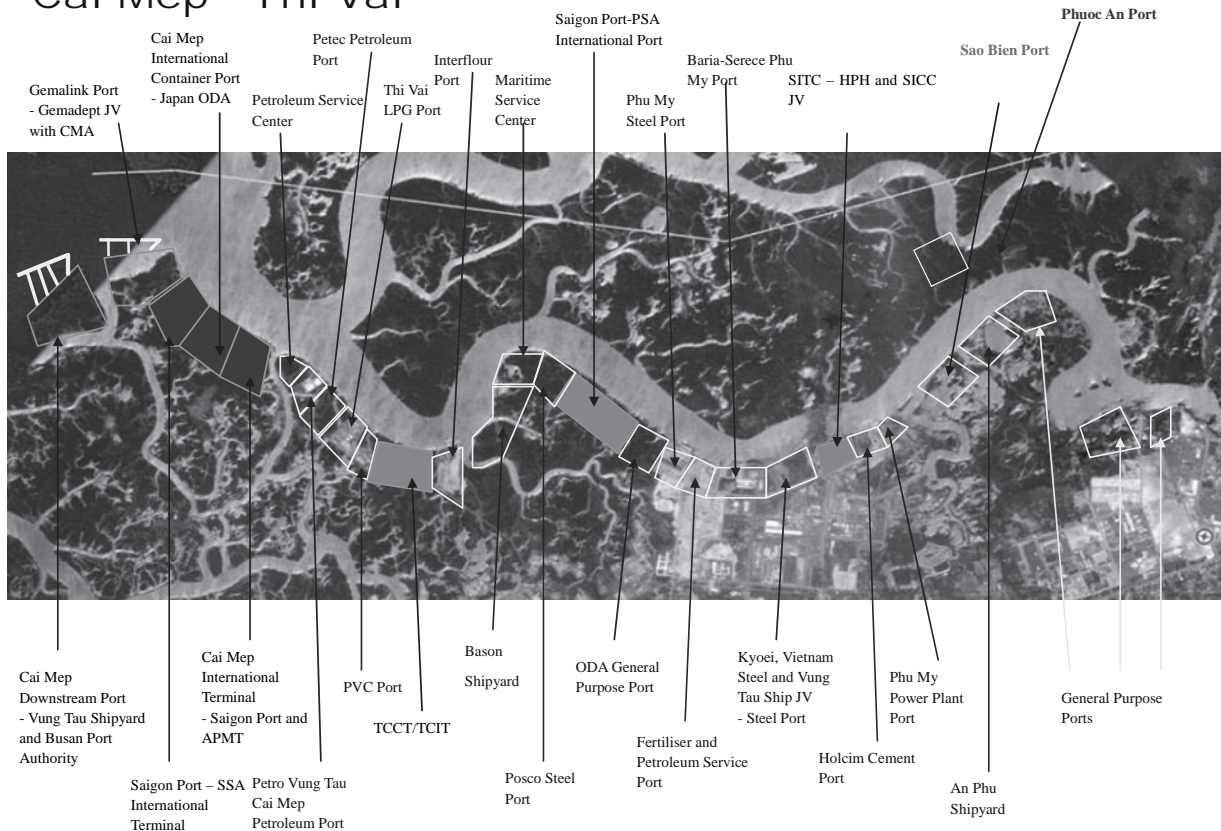
Corresponding to the progress of the development project, foreign terminal operators and shipping companies started investment in a container terminal development and port operation and management business by establishing joint venture companies with Vietnamese corporations.

2) Location and overall layout of CTs and the access

River waterfront spaces are allocated for the development of bulk cargo terminals area and container terminals at Cai-Mep Thi-Vai area as shown in Figure 2.5-13. In this Figure, underlined terminals are container terminals. Among the terminals, the Japan ODA Terminal and the Saigon Port-SSA Terminals will become operational in 2012. Construction of the Germalink Terminal has been postponed while the Cai-Mep Downstream Terminal project has been canceled.

Industrial parks are located behind or adjacent to the waterfront area in order to make use of port facilities for their products transport. The width of the river is between 400m and 600m in the vicinity of CTs. The depth is 14m at the down-stream of TCCT/TCIT and 12m at the up-stream.

Cai Mep - Thi Vai



Source: VICT (Vietnam International Container Terminal)

Figure 2.5-13 Location of Terminals at Cai-Mep Thi-Vai area

Road access from HCMC is provided by Route 1 and Route 51, as indicated by the thick line (see Figure 2.5-14), with the total distance of about 77 km. Parts of Road 51 are under improvement for widening the lanes from 4 to 6. However, the pavement of the roads is not properly maintained. As a result, container trucks take about 3 hours from HCMC to Cai-Mep Thi-Vai area. For the effective utilization of Cai-Mep Thi-Vai Port, upgrading of the access roads is indispensable.

Barges travel a distance of about 65 km through rivers from HCMC to the port as shown in the Figure 2.5-14. Currently, 80 % of containers to be loaded on container vessels at the port are transported by barges with carrying capacity of about 50 TEUs. This is because the road condition is poor and truck restrictions in the central part of HCMC are in place during the morning from 6:00 to 9:00 and the afternoon from 16:00 to 21:00.



Source: VICT

Figure 2.5-14 Access to Cai-Mep Thi-Vai port

3) Operation of terminals and the involvement of Saigon New Port Corporation

Table 2.5-5 shows name of holders, particular and capacity of container terminals at Cai-Mep Thi-Vai port. Public enterprises such as Saigon New Port, Saigon Port and Vinalines operate these container terminals solely or as a member of joint venture with private terminal operators. Total container handling capacity at Cai-Mep Thi-Vai port after the completion of 2 terminals under construction is expected to reach at least 6.75 million TEUs.

Table 2.5-5 Container terminals in Cai-Mep Thi-Vai port

Particular of Container Terminals at Cai Mep-Thi Vai Area										
No	Name of Terminal	Name of Holders	Operation Year	Length	Berth Depth	Channel Depth	Area	Max. Ship Size	Capacity (TEU/year)	
1	Saigon International Terminal Vietnam (SITV)	Saigon New Port Co. (30%) / Hutchison Port Holdings (HPH) (70%)	August 2010	730 m	14 m	12 m	33 ha	80,000 DWT	na	
2	Saigon Port-PSA International Port (SP-PSA)	Saigon Port / Vinalines/ PSA	2009	600 m (600 m extension)	14.5 m	12 m	na	80,000 DWT	2 m TEU/ 1,200 m Record, 96,000 TEU (2009) 293,912 TEU (2010)	
3	Tang Cang Cai Mep Container Terminal (TCCT) / Tan Cang Cai Mep International Container Terminal (TCIT)	Saigon New Port (100%) (TCCT) / Hanjin (20%) / MOL (20%) / Wan Hai (20%) / Saigon New Port (35%) (TCIT)	June 2009 / March 2011	300 m / 590 m	14 m / 14 m	12 m / 12 m	na / 40 ha	na / 10,000 TEU	0.6 m TEU / 1.15 m TEU	
4	Cai Mep International Terminal (CMIT)	Vinalines-Saigon Port (51%) / APMT (49%)	March 2011	600 m	16.5 m	14 m (16.5 m future)	36 ha	15,000 TEU	1.1 m TEU	
5	Cai Mep International Container- Japan ODA	Ministry of Transport	Under construction	600 m	15 m	14 m	76 ha	80,000 -100,000 DWT	0.7 m TEU	
6	Saigon Port-SSA International Terminal (SSIT)	Saigon Port/ SSA/ Vinalines	Under construction	600 m	14 m	14 m	na	10,000 TEU +	1.2 m TEU	

(Source: Project Team)

Prepared by Project Team

(2) Ports in Ho Chi Minh

1) Outline

Port terminals in Ho Chi Minh are located along the river system in Ho Chi Minh, around 45 nautical miles from the sea. In the French colony time of 1860, Saigon Commercial Port was established, and since then the port has been serving for the large hinterland including Saigon (Ho Chi Minh), its adjacent provinces and the Mekong Delta Area. Before independence from France, the port was the main gateway of French Indochina including Cambodia.

The location of the major container terminals in Ho Chi Minh are shown in Figure 2.5-15. Cat Lai Terminal operated by the navy-origin Saigon New Port is the largest terminal in Ho Chi Minh as well as in Viet Nam. VICT is the first private container terminal in the port. Saigon Port is operated by Saigon Port Company. Ben Nghe Port located next to VICT mainly handles domestic containers. Hiep Phuoc Terminal is the newest terminal and will be the terminal with deepest berths in Ho Chi Minh. All terminals in Ho Chi Minh except Hiep Phuoc use Long Tau access channel with the draft of 8.5m, whereas Hiep Phuoc Terminal plans to use Soai Rap channel by dredging it up to -9.5m (tidal -12m).

As mentioned in the previous sub-section, ICDs located along the river play a very important role in container transportation in the southern Viet Nam. Due to the poor road condition in Cai Mep Thi Vai area and restriction of transit of container trucks in the urban center, a considerable amount of containers are handled in ICDs and are transported between ICDs and Cai Mep or terminals in Hochiminh by barges.

Table 2.5-6 shows the total container throughput of ports in Ho Chi Minh. Ho Chi Minh ports handle much greater number of containers than Cai Mep Thi Vai port. It should be noted that the statistics include the volume of containers transported by barges. Therefore, the net flow of containers through Ho Chi Minh ports is smaller than the volume listed in the table.

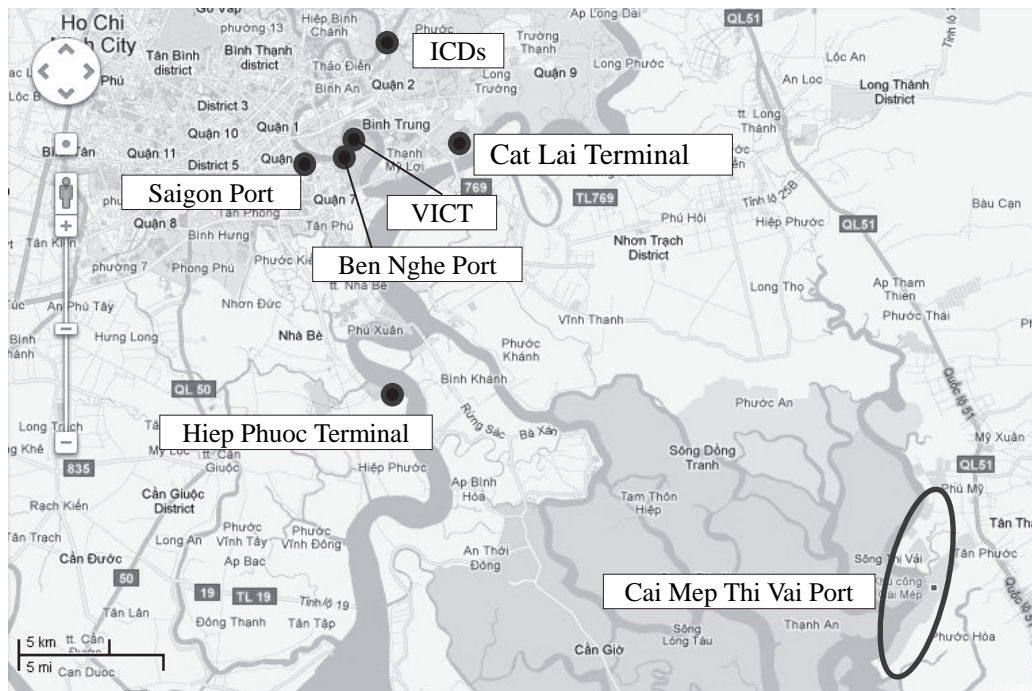


Figure 2.5-15 Port terminals in Ho Chi Minh

Table 2.5-6 Container throughput of port terminals in Ho Chi Minh

Year	Throughput (TEU)
2006	2,327,831
2007	3,172,000
2008	3,432,000
2009	3,563,246
2010	3,856,000

Source: ci online

2) Cat Lai Port

Cat Lai Port operated by Saigon New Port is the largest container port in Viet Nam in terms of container handling volume. The port is connected to the open sea by a 43 nautical mile access channel with the depth of 8.5 m. Utilizing the average tidal range of 4 m, the channel can accept up to 30,790 DWT vessels with the maximum draft of 11 m.

The total area of the port is 80 ha. As shown in Figure 2.5-16, the port has two terminals, namely 303 m long Terminal A and 670 m long Terminal B. The water depth alongside the quay of both terminals is 11.5 m. The area between the two terminals is occupied by an oil jetty and oil storage tanks at present. The oil facilities will be dismantled in 2012 and the site will be developed as a container yard and container quay.

The current capacity of the port is 2.5 million TEUs.

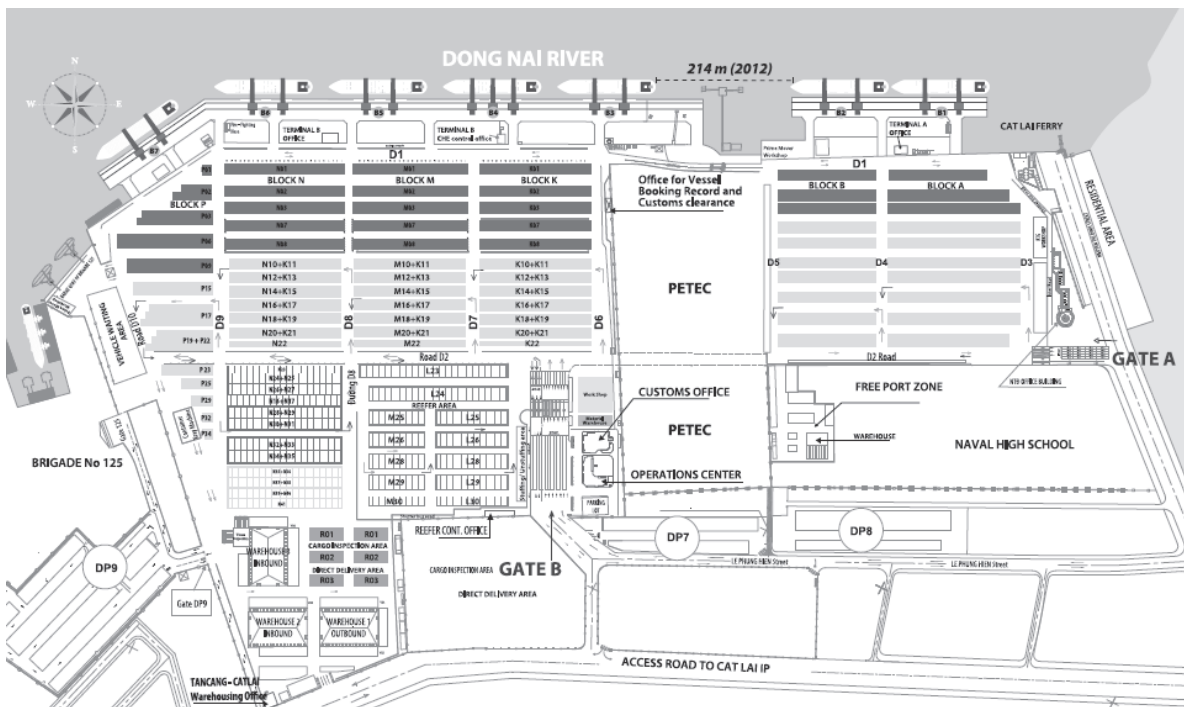


Figure 2.5-16 Layout of facilities in Cat Lai Port

3) Viet Nam International Container Terminals

Viet Nam International Container Terminals (VICT) is located adjacent to the Tan Thuan Export Processing Zone, at 6 km downstream of Saigon River from Ho Chi Minh City.

Unlike other container terminals in Ho Chi Minh Port, VICT is wholly owned and operated by a private company, operating under the Foreign Investment Law of Vietnam. It is the first dedicated

container port project in Vietnam with the participation of foreign partners.

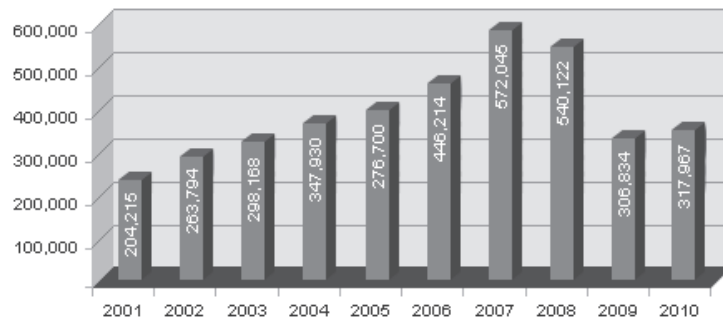
The terminal area is 20 ha with a 678 m long quay. The depth alongside the quay is 11.2m, which accommodates 25,000 DWT container vessels. The terminal is furnished with seven quay gantry cranes and 17 RTGs. The construction was completed in 2009.

Figure 2.5-18 and Figure 2.5-19 show container throughput and vessel calls respectively. Until 2007 the throughput had been increasing constantly; however, after a slight decrease in 2008, the port lost a considerable volume of container traffic in 2009 due to restriction of port access caused by a bridge construction over the channel. The bridge was completed in 2010, but the port has not recovered the container traffic.



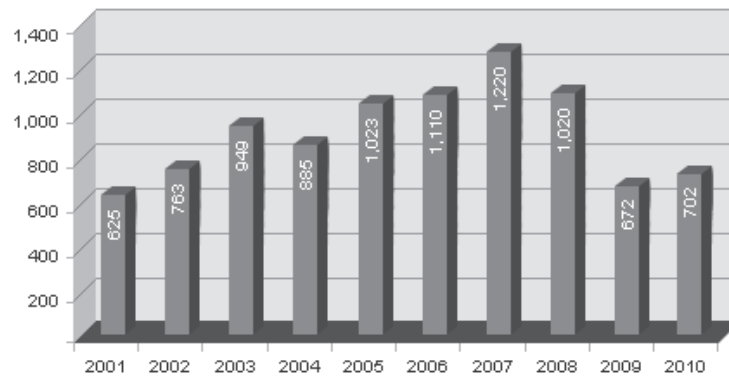
Source: VICT

Figure 2.5-17 Layout of facilities in Viet Nam International Container Terminals



Source: VICT

Figure 2.5-18 Container throughput of VICT



Source: VICT

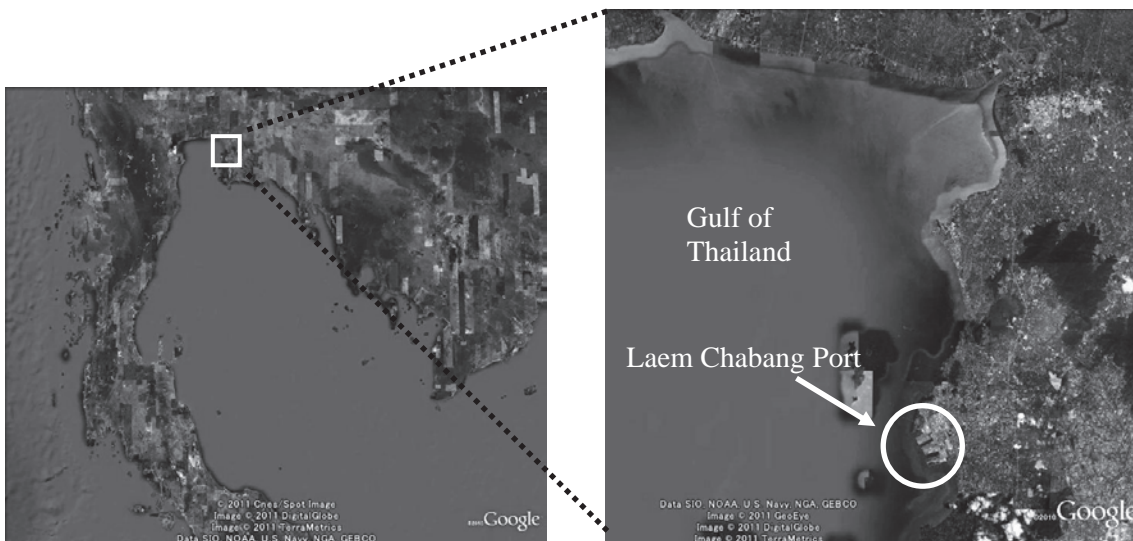
Figure 2.5-19 Annual vessels call of VICT

(3) Laem Chabang Port

1) Outline

Laem Chabang Port is in Chonburi Province of Thailand, located approx. 130 km southeast of Bangkok. The port is situated on the coastline of the Eastern Seaboard; the most emerging economic region in the country. Having been the largest port in the country since its commencement of operation in 1991, the port now ranks 22nd in the world in container throughput.

Lat Krabang ICD, located in between Laem Chabang Port and Bangkok Metropolitan Area, is functioning as a supplemental dry port. The details of the ICD are stated in 6) below.



Source: Google, Prepared by Project Team

Figure 2.5-20 Location of Laem Chabang Port

2) Background of the development

The need to develop a new deep sea port at Laem Chabang was realized by the Thai government in the early 1960's, being aware that Bangkok Port would not be able to meet the long-term economic needs of the country.

The master plan of "Eastern Seaboard Development Programme" including the development of Laem Chabang Port was approved by the cabinet in 1982. Under this master plan, "Eastern Seaboard Development Committee (ESDC)" was formed as a cabinet-level national committee in the recognition that the port should be developed together with the industrial areas in its hinterland and

transportation infrastructures to connect the Eastern Seaboard Area with the Bangkok Metropolitan Area.

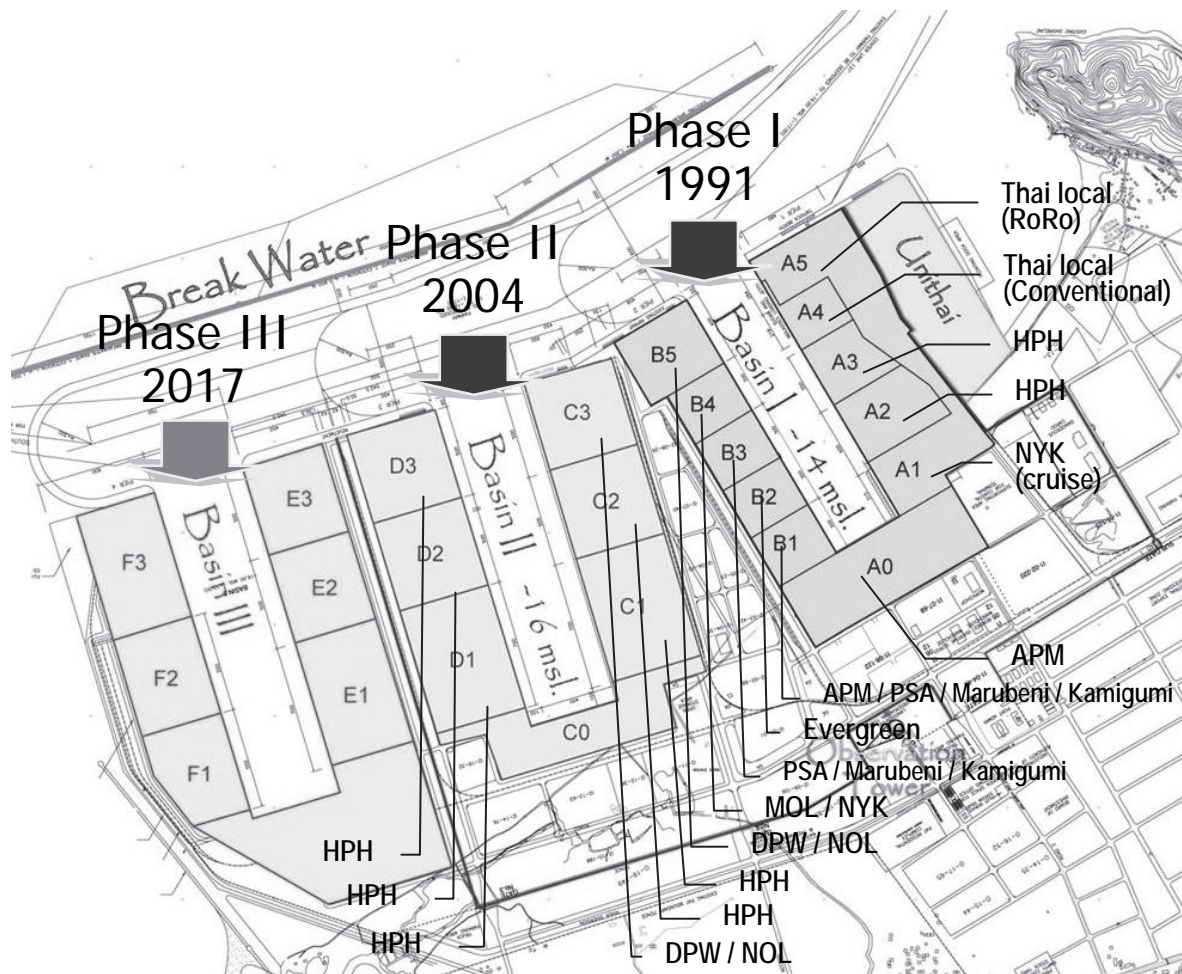
Private enterprises were invited to join in the operations of the terminals under the overall port governance by Port Authority of Thailand.

3) Facilities

Layout of the berths currently in operation and for future expansion is depicted in Figure 2.5-21 (the foreign shareholders in each concessionaire are also indicated in the figure).

Eleven berths surrounding Basin I and 4 berths (C0, C1, C2, C3) surrounding Basin II are currently in operation. Basin I, constructed as Phase I of the development plan, commenced operation in 1991 with the capacity of 4 million TEUs per annum. In the case of Basin II, planned as Phase II, all civil works were done by Hutchison Port Holdings; the single concessionaire and delivered to the same company as the first case of the port, while 3 berths (D1, D2, D3) are still under construction in spite of the original assumption of the concession contract to inaugurate the full berths within the year of 2011. With the full utilization of Basin II, the total capacity of the port will increase to 10.8 million TEUs per annum.

Foreign investors are entitled to form the concessionaire companies with majority shareholdings given to local companies registered in Thailand. Figure 2.5-21 indicates the layout of the basins and berths with the name of the foreign shareholders. Details of the concessionaires and facilities are shown in Table 2.5-7.



Prepared by Project Team

Figure 2.5-21 Layout of the berths and foreign shareholders of the concessionaires

Table 2.5-7 Facilities and concessionaires of the terminals

Basin	Terminal	Type of Terminal	Facilities			Concessionaires		
			Length (m)	Depth (m)	Number of gantry cranes	Name of Company	Contract effected	Valid years
I	A0	Multi Purpose	590	10	—	LCMT Co., Ltd.	2004	30
	A1	Cruise ships & RoRo	365	14	—	Laem Chabang Cruises Center Co., Ltd.	2000	30
	A2	Containers	400	14	} 8	Thai Laem Chabang Terminal Co., Ltd.	1996	30
	A3	Containers	350	14		Hutchison Laem Chabang Terminal Co., Ltd.	2004	30
	A4	Conventional	250	14	—	Aawthai Warehouse Co., Ltd.	1996	25
	A5	RoRo	450	14	—	Namyong Terminal Co., Ltd.	1996	25
	B1	Containers	300	14	6	LCB Container Terminal 1 Co., Ltd.	1995	27
	B2	Containers	300	14	3	Evergreen Container Terminal (Thailand) Co., ltd.	1993	27
	B3	Containers	300	14	4	Eastern Sea Laem Chabang Terminal Co., ltd.	1995	27
	B4	Containers	300	14	5	TIPS Co., ltd.	1995	27
B5	Containers	400	14	4	Laem Chabang International Terminal Co., ltd.	1996	30	
II	C0	Containers	400	16	—	—		
	C1	Containers	700	16	} 12	Hutchison Laem Chabang Terminal Co., Ltd.	2004	30
	C2	Containers	500	16		Hutchison Laem Chabang Terminal Co., Ltd.	2004	30
	C3	Containers	500	16	4	Laem Chabang International Terminal Co., ltd.	2003	30
	D1	Containers	500	16	—	Hutchison Laem Chabang Terminal Co., Ltd.	2004	30
	D2	Containers	500	16	—	Hutchison Laem Chabang Terminal Co., Ltd.	2004	30
	D3	Containers	500	16	—	Hutchison Laem Chabang Terminal Co., Ltd.	2004	30

Source: PAT

4) Cargo throughput

Table 2.5-8 shows the historical throughput growth of the port.

Table 2.5-8 Handling volume of Laem Chabang Port

Description	Unit	2005	2006	2007	2008	2009	2010
Number of vessel calls	calls	5,112	6,149	6,645	7,012	6,288	n/a
Total volume of cargoes							
Import	million tons	12,604	13,415	15,478	20,150	15,791	n/a
Export	million tons	22,891	24,907	29,114	34,411	31,190	
Transshipment	million tons	239	134	272	276	107	
Total	million tons	35,734	38,456	44,864	54,837	47,088	
Container throughput							
Import laden	'000 TEUs	806	842	975	1,266	990	1,312
Export laden	'000 TEUs	1,877	2,037	2,311	2,614	2,272	2,673
Empties (Import+Export)	'000 TEUs	1,082	1,244	1,355	1,360	1,360	1,205
Total	'000 TEUs	3,765	4,123	4,641	5,240	4,622	5,190
Number of vehicles handled							
Import	'000 units	38	42	54	62	43	n/a
Export	'000 units	410	525	643	799	534	
Total	'000 units	448	567	697	862	577	

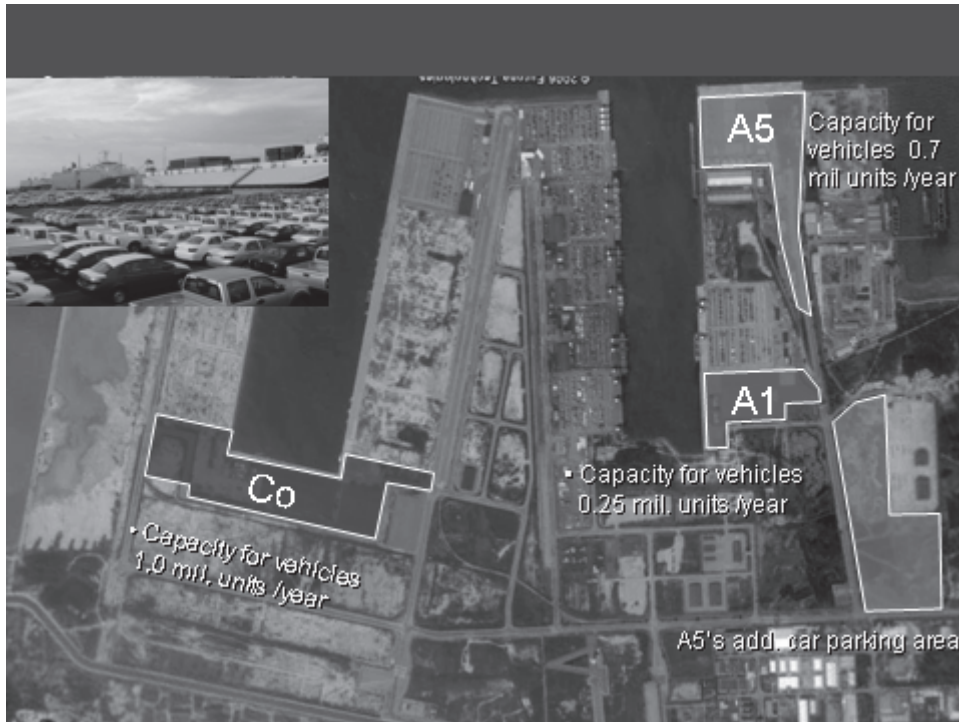
Note: The year represents the fiscal year of PAT from October 1 st to September 30 th except 2010.

Source: PAT, Bangkok Shipowners & Agent Association

It is worth noting that the port is handling considerable units of export vehicles. Benefited by the integration with highly-developed and closely-located component parts suppliers, the automobile manufacturers in Thailand are rapidly expanding their counterpart countries of exports all over the world.

A total of 577 thousands units of vehicles were exported from the port in 2009, while the number of units is still less than its peak of 2008. The vehicles are manufactured in the assembly

plants located in the industrial estates in Eastern Seaboard and suburban area of Bangkok, the farthest one being 250km from the port. The facilities of the port for vehicles, composed of RoRo berths and parking area with Pre-Delivery Inspection (PDI) functions are shown in Figure 2.5-22 below.



Source: PAT

Figure 2.5-22 Layout of the berths and storage areas for vehicles

5) Development plan

The development plan for Phase III is currently in progress to construct an additional basin (Basin III) with 6 berths. The basic infrastructures will be developed by PAT and the superstructures will be prepared by the concessionaires. The plan will be approved by the cabinet by the 3rd quarter of 2012, followed by the open bid for the concessionaires by the middle of 2013. After 3.5 years of construction works, the Basin III will be in service in 2017. After the launch of Basin III, the total handling capacity of the 3 basins will be enlarged to 20 million TEU per annum; as much as 4 times the current throughput. PAT forecasts that the throughput of the port will reach 10 million TEUs in 2019 and be growing thereafter at 8-10% per annum.

6) Lat Krabang ICD

The Inland Container Depot (ICD) at Lat Krabang is located approx. 30 km east of Bangkok Port and 110 km to Laem Chabang Port. The ICD was implemented by the State Railway Authority of Thailand (SRT) under the master plan of the Eastern Seaboard Development Program.

The ICD is a bonded area where shipping lines receive/deliver FCL/LCL cargoes as an extension of Laem Chabang Port. Main shippers/consignees using this ICD are the manufactures located at the various industrial estates in northern suburb of Bangkok; rather remote from Laem Chabang.

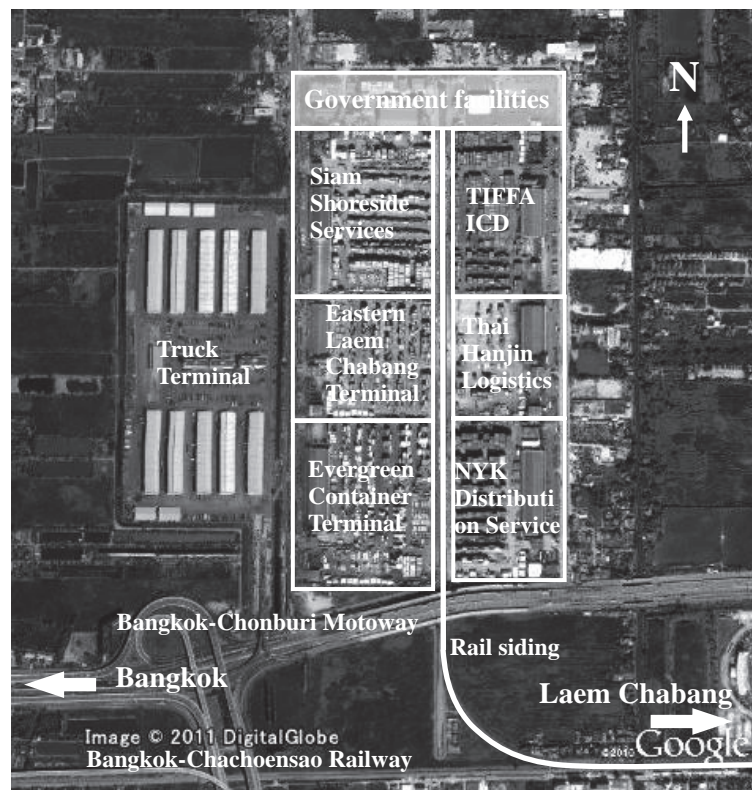
The ICD has a rail siding branching from the SRT's main line of Bangkok-Chachoensao Railway, as well as an access to the main expressways linking Laem Chabang Port with Bangkok Metropolitan area and the northern industrial areas. Suvarnabhumi Bangkok Airport is also in the proximity.



Source: Eastern Sea Laem Chabang Terminal Co. Ltd.

Figure 2.5-23 Location of Lat Krabang ICD

The ICD has an area of 2.6 km² which is divided into 6 modules, leased out to 6 different private operators. The rail siding penetrates at the center of the area so that each module can access the container wagons for lift on/off.



Source: Google, Prepared by Project Team

Figure 2.5-24 Layout of the modules and traffic access

Table 2.5-9 shows the historical throughput of the ICD by transport mode. The ICD handled 1.5 million TEUs in 2010, which amounted to approx. 30% of the total throughput of Laem Chabang. Out

of 1.5 million TEUs, 0.4 million TEUs (26%) were carried by railway. Daily 24 rail trips (12 trips for outbound/inbound respectively) with 30 wagons (60 TEUs) for each trip are available by SRT. The transit time by railway from ICD to Laem Chabang is 3 hours 10 minutes, and 2 hours by truck. The prevailing transportation cost by rail is approx. Baht 2,000/20' and Baht 3,100/40', while the cost by truck is Baht 3,100/20' or 40'. Those costs are borne by shipping lines.

Table 2.5-9 Handling volume of Lat Krabang ICD

(unit:'000 TEUs)

		2005	2006	2007	2008	2009	2010
Import	By Rail	178	195	181	198	149	162
	By Truck	431	513	598	566	531	530
	By Truck (Other Port)	29	29	43	37	23	24
	Sub Total	638	737	822	800	704	716
Export	By Rail	230	238	239	239	227	238
	By Truck	420	542	629	675	587	578
	By Truck (Other Port)	12	14	17	14	15	12
	Sub Total	661	794	886	928	830	828
Total		1,300	1,532	1,707	1,728	1,533	1,544

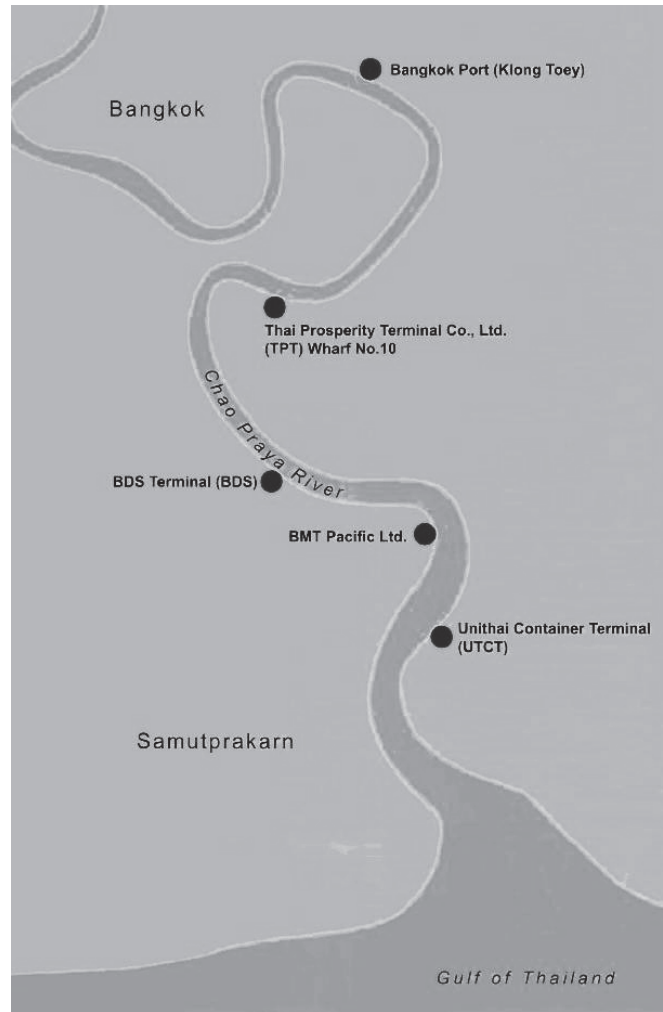
Source: Bangkok Shipowners & Agent Association

(4) Bangkok Port

1) General

“Bangkok Port” denotes port terminals located along Chao Phraya River in Bangkok, which include PAT terminals (Khleng Toey Port) and some private terminals. The location of major terminals is shown in Figure 2.5-25. Bangkok Port was the main port of Thailand before the opening of Laem Chabang Port which was developed to compensate for the weak points of Bangkok Port: the insufficient land area and the shallowness of basin. Although the gateway port function of the country has already moved to Laem Chabang Port, located in the metropolitan area, Bangkok Port still handles a considerable amount of containerized cargoes and bulk cargoes.

Bangkok Port is one of the important ports for Sihanoukville Port because both ports share some common liner networks and the intensification of linkages with Bangkok Port is expected to further increase liner service frequency of Sihanoukville Port.



Source: BSAA

Figure 2.5-25 Location of terminals in Bangkok Port

2) Port management and operation

Each terminal in Bangkok Port is operated and owned by a different entity. Khlong Toey Port is owned and operated directly by the Port Authority of Thailand (PAT). Other terminals are owned and operated by private companies. The access channel connecting the port with the open sea is maintained by PAT.

3) Facilities and equipment

a) PAT terminal

PAT terminal is located on the left bank of Chao Phraya River between the kilometer 26.5 and 28.5 in Klong Toey District. The depth of water in the port area varies from 8.5 to 11 m below MSL. The MSL is 1.72 meters above the Lowest Low Water Level (LLW). The approach to the port is made through an 18 km long and 150 meter wide bar channel.

The terminal has two terminals, namely West Terminal with 1,660 m long quays and East Terminal with 1,528 m long quays. The level of quays in West Terminal is 1.85 m above MSL, and that in East Terminal is 2.06 m. The East Terminal is equipped with 14 quay gantry cranes, whereas container loading and discharging in West Terminal is carried out by ships' cranes.