II. Case Study on Tg. Priok Redevelopment Project

1. Maritime Transport Situation in Greater Jakarta Metropolitan Area

1.1. Survey on the Trend of Port Cargo Flow and Interest of the Users

A. International Cargo Flow

187. Table 1.1-1 shows the main trading partners of Indonesia based on the national statistics of 2008. Japan is the most significant trade partner in terms of total trade volume. Total trade volume between Indonesia and Japan reached nearly 70 million tons and accounts for 10.2% of the total trade volume of Indonesia. The second is China totaling about 63 million tons. Korea is also an important trade partner with a total of 38 million tons of cargo moving between the two countries.

188. In addition to those countries, trade volume with Singapore, Malaysia, and Taiwan alone exceeded 30 million tons in 2008. The trade volume with the United States was 13.7 million tons and accounts for 2.0% of the total. Trade with the European Union was 26.9 million tons and accounts for 4.0%. Australia is a big neighboring country and one of the important trade partners accounting for 1.6% of the total.

Table 1.1-1 Major Trade Partners

Trade Partner	Volume ('000 M. Ton)	Percentage (%)
APEC	264,128.20	39.4%
ASEAN	84,049.60	12.5%
Thailand	19,146.80	2.9%
Singapore	24,666.40	3.7%
Philippines	7,681.50	1.1%
Malaysia	24,545.40	3.7%
NAFTA	16,659.20	2.5%
United States	13,714.80	2.0%
Japan	68,466.90	10.2%
Hongkong	11,742.90	1.8%
Korea, Republic of	37,894.50	5.7%
Taiwan	27,153.60	4.1%
China	62,607.00	9.3%
Australia	10,832.50	1.6%
European Union	26,922.60	4.0%
United Kingdom	2,578.70	0.4%
Netherlands	4,786.40	0.7%
Total	670,385.70	100.0%

Source: Indonesian Statistic 2008

B. In-land Cargo Flow

189. In 2001, Tanjung Priok port conducted a traffic survey, particularly to find origins and destinations at gates. In 2001, westbound traffic dominated the port gates with 6,772 vehicles moving in this direction (47.2%). Meanwhile, traffic movement to northern DKI Jakarta (depots) was 4.494 vehicles per day (31.3%), while the rest went in other directions (east and south directions).

190. A similar traffic survey was also conducted in 2007. A total of 28,143 vehicles moved through Tg. Priok Port in 16 hours, and drivers were interviewed about the origin and destination of each

vehicle. It was observed that the movement pattern in 2007 had changed from that in 2001. A total of 15,674 vehicles moved to north side depots and accounted for 58.7 % of the total. Meanwhile, the movement to the west side had decreased to 3.216 vehicles (12.0%). The movement to the south and east had increased to 3.374 and 4,400 vehicles, (respectively 12.6% and 16.6%). Table 1.1-2 shows the comparison of vehicle movement from 2001 and 2007.

Table 1.1-2 Comparison of Vehicle Cargo Movement in 2001 and 2007

Origin	Destination	Year 2001	Year 2007
Tanjung Priok	North (Depots)	4,494	15,674
	West	6,772	3,216
	South	1,617	3,374
	East	1,465	4,440
TOTAL		14,348	26,704

Source: Mitra Pacific Consultants, 2009

C. Interview Survey

191. An interview survey was conducted from March 2009 until July 2009. The objective of the survey was to find out what kinds of logistical needs private entities have and what kinds of port services they require. The information obtained through the interview survey will serve as a basic knowledge source for the formation of case studies for Public Private Partnership in port development. This survey shall cover existing and prospective users both of the Tanjung Priok Port and the Bojonegara Port.

192. This Interview survey targeted industrial estate operators, manufacturing companies, trucking and warehousing companies, shipping companies and business organizations. Although many of the direct interviews did not necessarily get satisfactory results because of strict security protection and the unhelpful nature of the interviewees, 46 companies/organizations out of 132 companies satisfactorily responded to the interview survey.

193. The main items surveyed can be summarized as follows;

- Name of interviewee, type and outline of business
- Location and area of industrial estate
- Condition of Infrastructure
- Time required to access Tg. Priok Port
- Transportation cost of container
- Origin and destination of the raw material
- Type of Industries and annual cargo volume
- Number of containers in coming and out going per month through their factory
- Requests or suggestions on port operation and development
- Type of industries and annual cargo volume
- Tariff of container handling
- Main route of transportation
- Opinion about the establishment of PPP
- Suggestions to improve the utilization of Tanjung Priok port service/cargo handling operation

- Comments and requests in the case of development of a new Bojonegara port.
- Other relevant information

194. Comments and opinions of the interviewees can be summarized as follows;

(i) Facilities at Tanjung Priok port

195. More than ninety percent of the total 47 respondents complained about inadequacy in the present state of cargo handling equipment at the Port. Most interviewees expected that the port would increase the amount of modern equipment available, to provide a more sophisticated operation in reducing waiting time for loading/unloading of cargos.

196. Another major issue pointed out by port users is the condition of roads around the port area. They claimed that road traffic congestion occurred every day within/around the Port, and that construction of direct access ways to Tanjung priok port was a must.

197. Some companies suggested that the followings be improved:

- Transit facility for trucks around Port of Tanjung Priok
- Container stocking and handling area
- Warehouse area for non-container stuff
- Container searching system at container stocking yard

(ii) Institutions

198. Although there has been some recent improvement in custom clearance service, many port users still complain about customs clearance practices, saying that Tanjung Priok port is rather bureaucratic, which is very harmful to the shipping and trading companies because bureaucracy introduces ineffectiveness in both time and cost.

199. Inadequacies among institutions is also criticized by port users, including

- Coordination is needed among institutions because permission is not coordinated between each other.
- Each institution insists on its own procedure/system being applied.
- Coordination among institutions is poor and they have different perceptions

200. Introduction and establishment of electric documentation system is proposed;

- Online services by the Ministry of Industry and Trade are not maximized yet
- A fully computerized (on line) one-stop service system needs to be built at the Port

(iii) Port services Cost

201. There are two opposing opinions on the current port service of Tanjung Priok Port;

- Generally, port services costs are deemed reasonable.
- Currently, the service of Tanjung Priok Port has become stagnated, so that alternative development of another Port is needed.

(iv) Bojonegara Port

202. Generally speaking, the development of Bojonegara Port has been anticipated by the majority of those in port-related circles, but people are expecting better coordinated efforts between the governmental institutions and private companies. Opinions include;

- In developing Bojonegara Port, the Government and port operator need to work together with mainline operator, and this needs to be promoted
- It should be promoted by all stakeholders, and be managed professionally for consumer's interests
- Strongly support the development, and additionally build a strong hinterland to develop the port

203. Many people support the project from the regional economic point of view.

204. Development of Bojonegara Port has become one of the priorities to be actualized immediately because it will have a positive impact on the development of the regional economy. It will also expand job opportunities.

- It can be used specially for cargoes shipped to and from Banten.
- Development of Bojonegara Port will support the companies located in Banten, and it will also reduce the burden on Tg. Priok Port.

(v) PPP strategy

205. Based on the preliminary examination of the survey results, the opinions on the PPP strategy can be summarized as follows:

206. People are generally optimistic about the Public Private Partnership because services in Tg. Priok will become more efficient by the introduction of the PPP scheme. The National Single Window (NSW), which will integrate cargo clearance and custom clearance, will enable producers / exporters to know for certain the costs and necessary permissions.

207. The Public Private Partnership will accelerate the development of infrastructure projects in Indonesia. Funding long term large scale infrastructure projects is not easy, especially with the current global economic situation. Consequently, the governance reform is required in order to make the private sector interested in investing in the infrastructure sector.

208. The strategy is good. However, Public Private Partnership Projects should be synchronized with the government's plans. Another important measure in the development project is to include the supply of guarantee funds and infrastructure funds in the preparation phase.

(vi) Related issues

209. In accordance with the results of the survey's 47 respondents, 39 respondents have stated that the Port of Tanjung Priok needs attention from the central government, both in terms of the port's condition, i.e. handling equipment (cranes etc) and human resources, as their efficiency is very low.

- The terms and conditions set by Banking Industries for the financing of ship procurements should be eased.

D. Trucking Freight Rate and Travel Time

210. Many cargoes, especially container cargos, are moving between Tg. Priok Port and Industrial estates in the Greater Jakarta Metropolitan Area because most export-oriented manufacturing companies are located in such established estates. These manufacturing companies usually import industrial parts or semi-finished products from foreign countries and export final products to foreign consumers.

211. Most of these industrial estates are positioned at the northern part of the Jakarta Metropolitan Area in order to reduce the land transportation cost to and from the port. Locations of the major industrial estates are shown in Figure 1.1-2.

212. Industrial areas in Bekasi, Karawang, Cilegon, etc. began to be developed between 1982 and 1990. In the Bekasi region, there are several big industrial estates such as Jababeka Industrial Area, EJIP (East Jakarta Industrial Park) and MM2100. Karawang Industrial Estate Partners is approximately 500 Ha in area, and 60% is currently sold. In the tenant community, Japanese are the majority. In Cilegon Industrial Estate (KIEC), PT Krakatau Industrial Estate Cilegon, is located at about 100 km west of the CBD Jakarta.

213. Typical trucking freight rates between these industrial parks and Tg.Priok Port/Bojonegara Port are shown in Table 1.1-3. Each trucking company has a different tariff for the transportation of containers. Trucking freight rates depend on the distance, the size of container and status of container (filled or empty). In the case of EJIP, which is 52 km away from Tg. Priok port, the trucking freight rate of a 20ft laden container from the industrial park to Tg. Priok port is US$115 - $125 while that to Bojonegara port is US$225 - $230. The difference in the trucking rates is about US$110 per laden 20ft container.

Table 1.1-3 Trucking Freight Rate

(Unit: US$)

Industrial Estate	Port	20 ft (Average)		40ft (Average)	
		Full	Empty	Full	Empty
Karawan	Priok	155-165	45-60	200-225	55-70
	Bojonrgara	390-400	120-125	490-510	155-165
EJIP	Priok	115-125	40-55	155-165	45-65
	Bojonrgara	225-230	65-80	275-310	85-90
JIEP	Priok	115-130	40-50	160-170	45-60
	Bojonrgara	225-240	65-80	275-310	80-90
KIEC	Priok	200-225	75-85	250-275	75-100
	Bojonrgara	115-125	40-45	158-165	45-55

(Source: JICA Study Team)

214. Figure 1.1-1 illustrates the trucking freight rate differences between using Tg. Priok Port and using Bojonegara Port to/from each industrial estate for a 20 foot laden container. For EJI and JIEP, the trucking freight rate to Tg.Priok Port is about US$100 lower than to Bjonegara Port. For manufacturing companies in Karawan, the freight rate difference is widened to about US$200. On the other hand, using Bojonegara Port will save them about US$100 compared to using Tg. Priok Port.

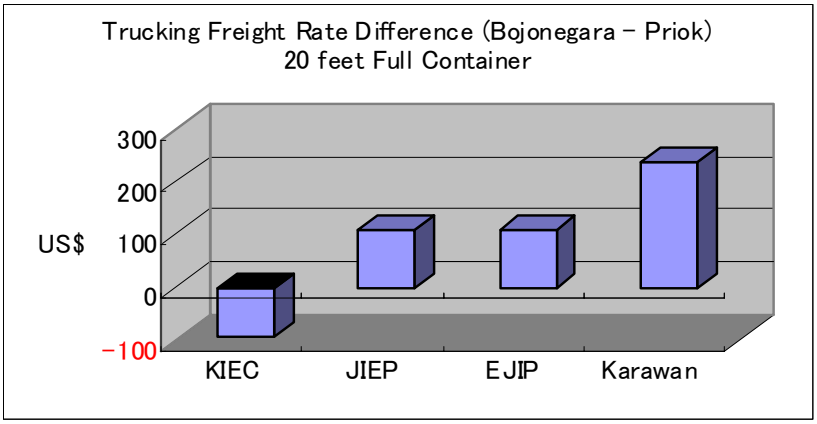


Figure 1.1-1 Trucking Freight Rate Difference for 20 ft Full Container

215. The required travelling time between Industrial Estates and Tg.Priok Port/ Bojonegara Port are summarized in Table 1.1-4. It usually takes about two hours to travel between Tg. Priok Port and the Industrial Estates on the Eastern side of Tg. Priok Port. If trucking to Bojonegara Port is required, then the travel time will become about 6 hours.

Table 1.1-4 Required Time and Distance

Industrial Estate	To Tanjung Priok Port				To Bojonegara Port	
	Main Road		Alternative Road		Main Road	
	DISTANCE (km)	AVERAGE (hour)	DISTANCE (km)	AVERAGE (hour)	DISTANCE (km)	AVERAGE (hour)
JIEP Pulogadung	15	1 - 1.5	20	1.5 - 2	117	4.5 - 6
MM2100 Cibitung	47	1.5 - 2.5	42	1.15 - 2	126	5 - 6
EJIP, JABABEKA,	57	1.5 - 3	52	1 - 2.5	133	5 - 6
KIM Karawang	77	2.5 - 4	72	2 - 3.5	153	6 - 7
KIEC Cilegon	109	6.0 - 8.0	-	-	17	1

(Source: JICA Study Team)

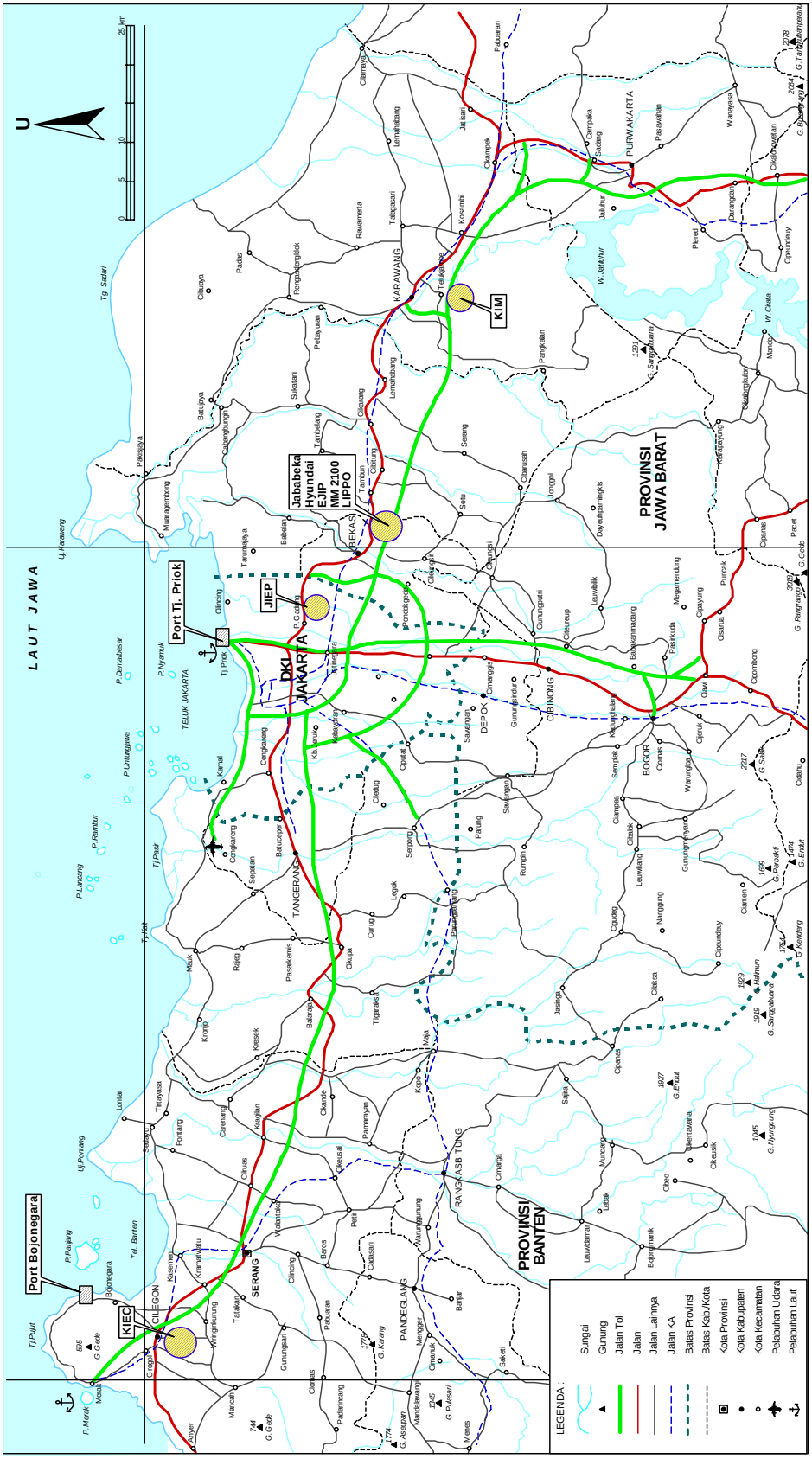


Figure 1.1-2 Map of Port Tanjung Priok-Port Bonjonegara and Industrial Estate

1.2. International Container Movement around Indonesia

A. Status of Indonesian International Container Traffic in the Asian Region

216. The Indonesian government is setting up a National Port System which includes the following classification of ports based on Ministerial Decree(KM No.53/2002), according to the Government Regulation on port affairs;

- International Hub Port, the Primary Trunk Port
- International Port, the Secondary Trunk Port
- National Port, the Territorial Trunk Port
- Regional Port, the Primary Feeder Port
- Local Port, the Secondary Feeder Port

217. There are five major international container ports in Indonesia. Their container throughput for the period 1999 – 2007 is shown in Table 1.2-1.

218. According to this Table 1.2-1, Tg. Priok port is by far the largest container port in Indonesia and handled 4.088 million TEU in 2007. The second largest port is Tg. Perak port and its throughput in 2007 was 1.096 million TEU. These two ports have been playing as gateway ports for Indonesia in International shipping as well as mother ports for local ports in inter-island container shipping.

Table 1.2-1 Five Major Indonesian International Container Ports

(Unit: '000 TEU)

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Belawan	300	330	359	408	427	520	521	568	607
Tanjung Priok	1,418	1,435	2,756	2,534	2,798	3,063	3,327	3,765	4,088
Tanjung Perak	236	1,255	1,268	956	1,080	1,181	632	1,066	1,096
Tanjung Emas	193	248	267	260	270	276	278	279	281
Makassar	129	165	177	207	232	275	222	280	300
Total	2,277	3,432	4,828	4,365	4,807	5,315	4,980	5,958	6,372

Source: DGST

Remarks: The figures include all containers both international/domestic and empty

219. Table 1.2-2 shows the historical growth and present position of container throughput in Asian Countries during the period 2000-2007. In 2000, Indonesian ports handled 3.86% of the total throughput of the whole Asian region excluding Japan, but in 2007 the share dropped to 1.92%. The reason for the decreasing share seems partially to come from the inaccuracy of the container statistics, but remarkable throughput growth of emerging economies is also contributing this tendency.

Table 1.2-2 Historical Change of Container Throughput handled in Asian Countries

(Unit: TEU)

	2000	2001	2002	2003	2004	2005	2006	2007
Taiwan	10,510,762	10,425,733	11,605,254	12,086,734	13,029,492	12,791,429	13,102,015	13,722,313
H.K.						22,601,630	23,538,580	23,998,449
Singapore	17,096,036	15,572,677	16,986,010	18,441,000	21,329,100	23,192,200	24,792,400	27,932,000
S. Korea	9,030,174	9,287,221	11,719,502	13,049,534	14,363,194	15,113,275	15,513,935	16,640,091
Philippines	3,031,548	3,090,952	3,324,796	3,468,471	3,676,456	3,633,559	3,676,133	3,834,616
China	40,984,361	44,726,085	55,717,490	61,898,336	74,725,444	67,245,263	84,810,503	104,559,291
Thailand	3,178,779	3,387,071	3,799,093	4,232,685	4,847,000	5,115,213	5,574,490	6,200,425
Indonesia	3,797,948	3,901,761	4,539,884	5,176,982	5,369,297	5,503,176	4,316,296	4,481,378
Malaysia	4,642,428	6,224,913	8,751,567	10,210,145	11,510,931	12,197,750	13,419,053	14,872,837
India	2,450,656	2,764,757	3,208,384	3,916,814	4,332,863	4,982,092	6,141,148	7,372,467
Sri Lanka	1,732,855	1,726,605	1,764,717	1,959,354	2,220,525	2,455,297	3,079,132	3,381,693
Vietnam	1,189,796	1,290,555	1,771,992	1,904,949	2,273,056	2,537,487	2,999,646	3,937,066
Pakistan	774,943	878,892	965,610	787,559	1,269,373	1,686,355	1,776,939	1,935,882
Total (I)	98,420,286	103,277,222	124,154,299	137,132,563	158,946,731	179,054,726	202,127,838	232,868,508
Increase %	5.8%	4.9%	20.2%	10.5%	15.9%	12.7%	12.9%	15.2%
Japan	13,129,864	13,127,144	13,501,421	15,055,696	16,436,146	17,055,082	18,469,710	19,008,326
Increase %	11.3%	0.0%	2.9%	11.5%	9.2%	3.8%	7.1%	2.9%
Total (II)	111,550,150	116,404,366	137,655,720	152,188,259	175,382,877	196,109,808	220,402,036	251,876,834
Increase %	6.4%	4.4%	18.3%	10.6%	15.2%	11.8%	12.4%	14.3%

Source: Containerisation International

Remarks: Total (I) is Asian Total excluding Japan. Total (II) is All Asian Total including Japan.

220. Ratios of 2007 throughput and 2000 throughput of selected countries are summarized as follows; Vietnam3.309, Malaysia 3.204, India 3.008, China 2.551, and Pakistan 2.498. The same value of Indonesia is only 1.180.

221. The status of Indonesian International Container ports does not seem to be high in the Asian region.

(i) Matrix of World's Container Movement

222. Generally, from a managerial view point, it is shipping lines' preference to solicit containers from port of origin to a final destination port. It is quite natural for a shipping line to try to fill a ship with such containers which bring the highest earnings to the line. Because of this, any port on the way between a port of commencement to a port of completion of a voyage is called a way port.

223. For example, on the East/West trunk line which connects Asia with Europe, or North America, major shipping alliances such as the Grand Alliance, New World Alliance, Maersk-Sealand and CMA CGM are deploying most of their superior container ships and the inter-Asia containers are carried by small regional shipping lines or their subsidiary lines.

224. In order to identify the market characteristics of the Asian region, it is necessary to grasp the container volume of intra-regional movement first, then to look into the trend of the main East/West trunk lines for both North American Trade and European Trade. Table 1.2-3 shows the break-down of container movements throughout the world.

Table 1.2-3 Matrix of World's Container Movement in 2007 (1,000 TEU)

From/To	N. Am.	E.Asia	Europe	S.Am.	M.East	S. Asia	Africa	Oceania	Total
N.America	367	6,444	2,536	2,206	350	321	292	267	12,783
E. Asia	14,910	14,986	12,688	2,186	1,794	1,461	1,720	1,346	51,091
Europe	3,078	4,896	3,662	1,332	2,581	778	1,300	374	18,001
S. America	2,035	1,229	2,500	1,733	196	58	396	63	8,210
M. East	66	339	1,054	17	450	192	313	44	2,475
S. Asia	683	557	1,040	95	463	250	288	37	3,413
Africa	117	475	700	84	156	113	675	45	2,365
Oceania	211	852	255	52	93	65	73	500	2,101
Total	21,467	29,778	24,435	7,705	6,083	3,238	5,057	2,676	100,439

Source: MOL Business Research Division based on Piers/JOC, Conference Statistics

225. Some remarks on the classification of the specific regions of Table 1.2-3 will be necessary. East Asia of the above table covers the Far East including China, South East Asia (Thailand, Malaysia, Singapore, and Indonesia). South Asia covers India, Pakistan, Sri Lanka, Bangladesh, and Myanmar.

226. Intra-regional movement of containers is represented by boxes with bold line in the table. The total container numbers moving in each region account for about 22.5 % of the world total while the share of the intra-East Asia containers is 14.92% and the highest. Intra-East Asia containers represent about two thirds of the total Intra-Regional movement. Therefore East-Asian region is the most active area in terms of intra-regional movement of container traffic. The details are recapitulated as follows:

Table 1.2-4 Intra-regional Container Movement

	1,000 TEU	Share to the World Total of 100,439,000 TEU
Intra-East Asia	14,986	14.92%
Intra-Europe	3,662	3.65%
Intra-South America	1,733	1.73%
Intra-North America	367	0.37%
Intra-Oceania	500	0.50%
Intra-South Asia	250	0.25%
Intra-Middle East	450	0.45%
Intra-Africa	675	0.67%
Intra-Region Total	22,623	22.52%

227. Regarding the main trunk lines, the largest container flow is found on East Asia to North America and the second largest is East Asia to Europe. Both of them originate in East Asia and East/West trunk lines are the main flow in the world container traffic.

228. It is easy to understand that ports in East Asia region play a very important role in the container market.

229. Considering the trading partners of Indonesia, Indonesia's international traffic might be divided into two categories. One is traffic in the intra-East Asia region and the other is East-West traffic.

230. Tg. Priok port, the largest port in Indonesia, is located more than 530 nautical miles away from Singapore port and/or Tanjung Pelepas port, the major hub ports in South-East Asia(around 470 nautical miles away from the East-West main route). This means that shipping lines have to spend almost 2 days more as deviation if their trunk vessels on East-West service call Tg.Priok port.

231. In fact, none of the main trunk line vessels calls the Indonesian ports. Hence, all the containers going to/from Indonesia, from/to North America and/or Europe are transshipped at Singapore port and/or Tanjung Pelepas port by feeder vessels, while containers to/from Indonesian ports from/to ports in Asia Region are basically carried by regional service vessels.

1.3. Major Container Handling Ports Around Indonesia

A. Hong Kong

232. Hong Kong is located on the far south end on the east bank of the Peal river mouth, facing Macao which is located on the opposite bank of the same river. It is the leading gateway port of Hong Kong and South China region. The port of Hong Kong handled 23.9 million TEUs of containers in 2007 and was ranked 3rd among world ports following Singapore and Shanghai in mainland China.

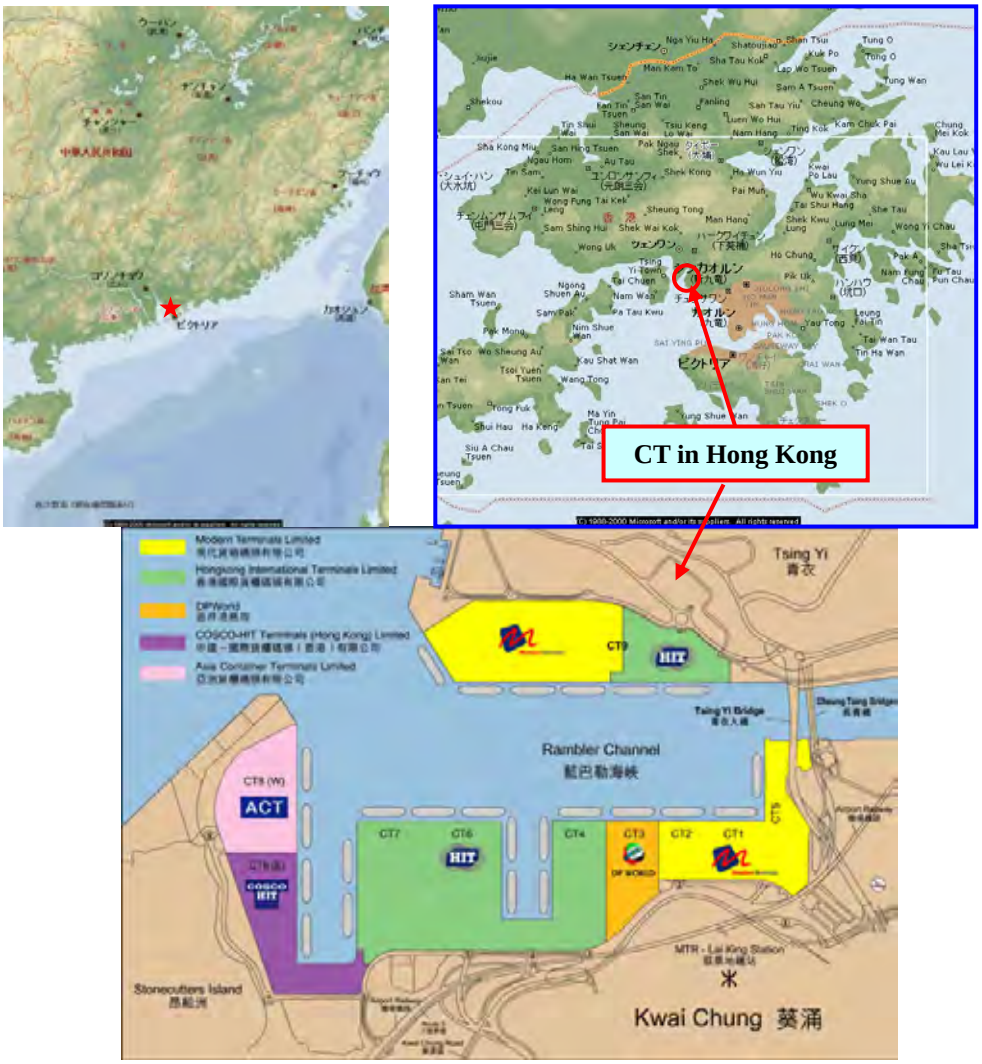


Figure 1.3-1 Location of Container Terminals in Hong Kong

(i) Development and Management of the Port

233. Basic policies related to the development and maintenance of Marine Transportation and Port and Harbor are conducted by the Economic Development and Labor Bureau (EDLB), an organization of Hong Kong Special Administrative Region Government (hereinafter referred to as GOHKG), although decision-making on policies requires the approval of the Port Development Council, Maritime Industrial Council and Logistic Development Council, which are established in EDLB as advisory councils of GOHKG.

234. Port Development Council, one of the advisory councils which formulates policies and plans on Port and Harbor development, is comprised of 17 commissioners chaired by the Minister of Economic Development and Labour of GOHKG. The port development plan in Hong Kong is decided by the Executive Council comprised of related Ministers (Land lease department, Environmental department etc.) of GOHKG, based on a demand forecast as well as a long-term development and investment plans examined by GOHKG which received advice from the Port Development Council.

235. "Port Development Strategy Review 2001", the basic development plan of the Port of Hong Kong now in effect stipulates basic matters on port facility developments such as construction area, berth length, depth of water and completion year of related facilities. After formulating the plan, GOHKG implements public tenders not only for the development of container terminals but also various projects such as filling in land or dredging works based on the plan.

236. In the tendering process, tenderers issue detailed design for the land and facility tendered and a business plan including operation and management programs, and GOHKG gives concession right to the winner (concessionaire) for development and operation of the facility.

237. In addition, GOHKG develops and maintains access roads to terminals as well as water area more than 50 meters from the outer facility of terminals (quay) at his own expense, except in some cases where concessionaires can develop these social infrastructures more economically than GOHKG together with their facilities, and thus are "entrusted" with this work.

238. Such terminals are operated by concessionnaires or by operators under their control, although control on ships navigation and safety within the Port of Hong Kong are managed by the Director of Maritime with the support of the Port Operation Committee, an advisory organization. Port of Hong Kong also established the Maritime Department as public administration office for managing day to day specific management and operation issues of the Port .

(ii) Container Terminals and their Operation

239. Major container terminals in the port are located in Kwai Chung area, North West of Hong Kong, and these terminals are operated by 5 private operators; container handling volume at these terminals represents more than 60% of the total in TEU unit.

Table 1.3-1 Brief summary of Container Terminals in Hong Kong

Terminal Name	Management Body	Operator	Total Area of T'minal	Wharf Depth Berth Length CY Width	Operation System	Vol in '07 (Max Capa.) 000 TEU	Major Users	Major Service Routes
CT1,2,5	HKPDC Hong Kong Port Development Council	Modern Terminals Ltd	43.6ha	-15.5m 1,082m —	RTG System GC×14 RTG×50	5,800 4,000〕	Maersk Line NYK, OOCL MISC Hapag-Lloyd Others	Europe Med'ranean WC & EC of N.Amerika Central/South America Asia Regional Barge Feeder Others
CT,9(S)			49.0ha	-15.5m 1,240m —	RTG System GC×16 RTG×58			
CT4,6,7		Hong Kong International Terminal	92ha	14.2-15.5m 3,292m (Barge-305m) —	RTG System GC×37 RTG×105	,100 8,500〕	MSC CMA-CGM EMC MOL APL HMM K-LINE YANGMING HANJIN Others	Europe Med'ranean WC & EC of N.Amerika South America Asia Regional Barge Feeder Others
CT 9(N)			19ha	-15.5m 700m —	RTG System GC×9 RTG×28			
CT8 (E)		Cosco-HIT Terminals (Hong Kong)Ltd.	30ha	-15.5m 1,088m (Including Barge-448m) —	RTG System GC×9 RTG×32	1,850 〔1,500〕	COSCO CSCL OOCL Zim	Europe WC of North America South America Asia Regional Barge Feeder Others
CT8(W)		Asia Container Terminals Ltd.	28.5ha	-15.5m 740m	RTG System GC×8 RTG×20	,000 〔2,000〕	Alternative Terminal of M T L	Alternative Terminal of M T L
CT3		DP World Hong Kong Ltd.	16.7ha	-14m 305m	RTG System GC×4 RTG×8	90 1,200〕	Hamburg Sud PIL, UASC	—
Total			278.8ha	8,752m	GC-97	7,242 17,200)		

:HKPDC:Hong Kong Port Development Council
Source by OCDI

240. As shown in the Table 1.3-1, scales of these container terminals in Hong Kong are 278.8 hectares in terms of area, 8,752 meters by berth length with 97 units of GCs and a handling capacity of 17.2 million TEU per annum. These terminals handled 17.2 million TEU containers in 2007, thus capacity has almost been reached.

241. On the other hand, from an operational viewpoint, facility's productivity or utilization rate of the terminals in Hong Kong were 177,750 TEU/GC (average container handling volume per GC per annum), 1,970 TEU/berth-meter (same but per berth-meters) and 61,844 TEU/ha (same but per hectare) as mean average in 2007.

B. Singapore

242. Singapore is located on the south-end of the Malacca Peninsula and at the entrance of the eastside of the Malacca Straits. Due to its strategic location on the major East-West trading route, the port has flourished through the ages as a successful transshipment port as well as bunkering port for vessels passing through the Straits.

243. The port, particularly in recent decades since early 1970, has built a strong position in the South East Asia region in line with the growth of containerization in international trade; it has become a major hub port in the region handling millions of transshipment containers carried in and out through not only feeder vessels to/from neighboring ports but also trunk vessels on the East-West trade route.

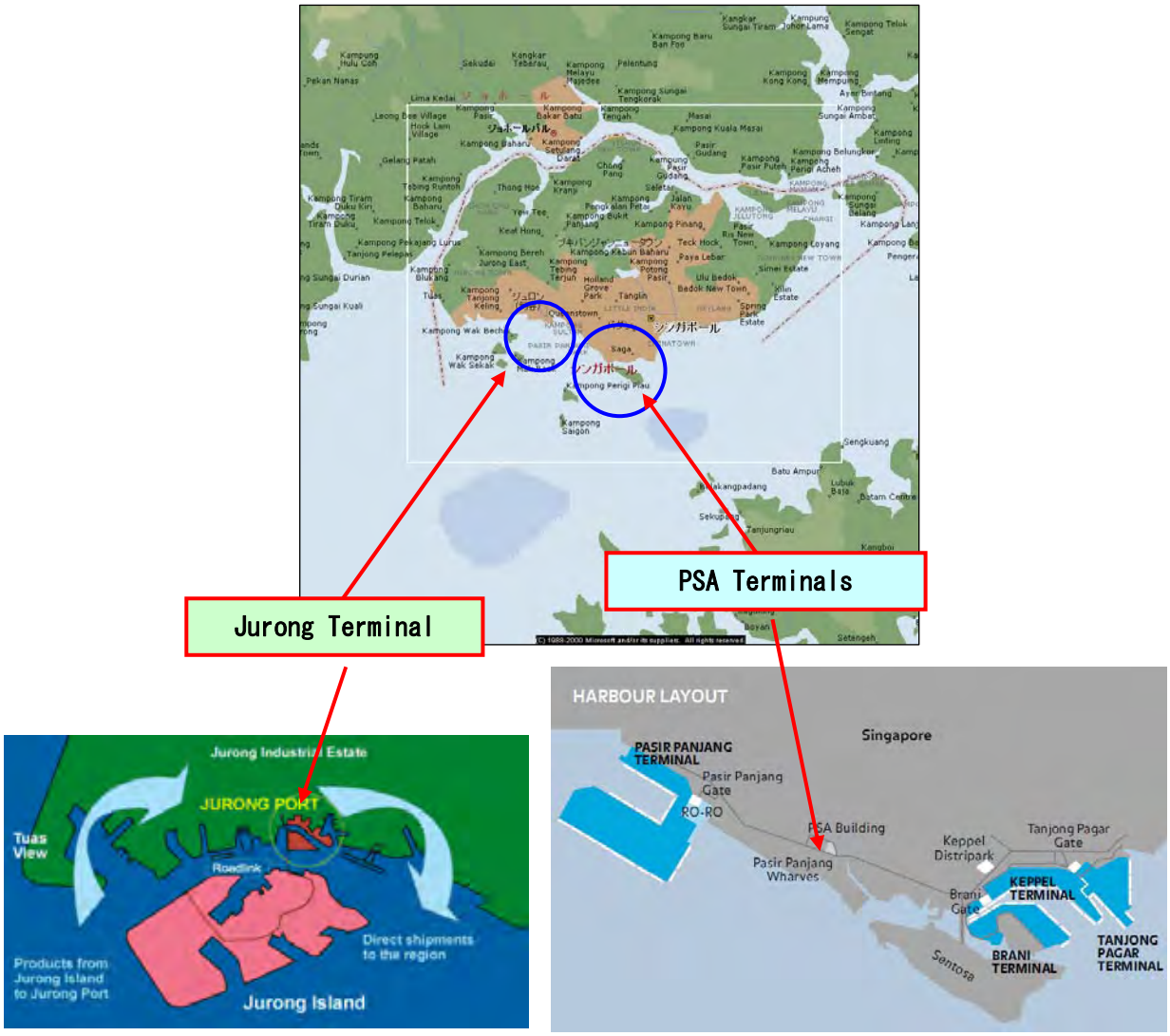


Figure 1.3-2 Location of Container Terminals of Singapore Port

(i) Development and Management of the Port

244. Development, management and administrative authority of the Port of Singapore used to belong to PSA (Port of Singapore Authority). However, since an institutional reform of PSA in 1996, development and operation of the port facilities are carried out by the new PSA (PSA International Pte. Ltd.), a private company owned by Temasek Holding Co., Pte, Ltd under jurisdiction of the Ministry

of Finance of Singapore Government, except Jurong terminal which is owned and managed by Jurong Town Corporation.

245. On the other hand, the Maritime and Port Authority of Singapore (MPA), separated regulatory section from the old PAS, has administrative authority over ships' navigational control, port promotion and so on. However, the development of access roads and highways between port facilities and the existing road network system is the responsibility of the Singaporean Government.

(ii) Container Terminals and their Operation

246. Port of Singapore handled 27.9 million TEU containers in 2007, ranking No.1 in the world, although more than 80 percent of the total was transshipment containers, and 27.1 million TEUs of containers out of 27.9 million were handled at terminals under PSA's control.

247. As shown in Table1.3-2, scales of PSA's container terminals in Singapore are 600 hectares in terms of area, 16,000 meters by berth length with 190 units of GCs and a handling capacity of 35.0 million TEU per annum. These terminals handled 27.1 million TEU containers in 2007, thus its space utilization rate was around 77 percent against its capacity.

248. On the other hand, PAS' terminal facilities productivity or utilization rate were 142,632 TEU/GC (per GC), 1,694 TEU/berth-meter (per berth-meters) and 45,167 TEU/ha (per hectare) as annual average in 2007.

Table 1.3-2 Brief Summary of Container Terminals in Singapore

Terminal Name	M'ment Lessee Operator–	Total area of Terminal	W. Draft B. Length CY Width	Operation System	Vol in '07 Max Capa.〕'000 TEU	Major Users	Major Routes
Pasir Panjang	PSA	335ha	−16m 7,900m —	RTG Sys GC×87	7,936 35,000〕	NYK, Hapag, OOCL, MISC, MOL, APL, HMM, K-Line, COSCO, HANJIN, Yang Ming Maersk MSC, CMA-CGM, ZIM PIL, UASC,CSAV WANHAI, ANL, NORASIA, RCL, TSK etc.	Europe Mediterenian N.Amerina C&S America Africa Australia/NZ Asia Region
Brani		80ha	−15m 2,600m —	RTG Sys GC×32			
Keppel		100ha	−14.6m 3,200m —	RTG Sys GC×42			
Tanjong Pagar		85ha	−14.6m 2,300m —	RTG Mix GC×29			
Total		**600ha**	**Ttl 16,000m**	**GC×190**	**7,100 35,000)**		

Terminal Name	M'ment Lessee	Operator	Total area of Terminal	W. Draft B. Length CY Width	Operation System	Vol in '07 Max Capa.〕000 TEU	Major Users	Major Routes
Jurong	JTC Corporation	Jurong Port Pte Ltd.	※Ground slots 5,070 TEU	15.7m ,410m –	RTG Sys GC×14 RTG×34	32 1,800〕	CMA-CGM CSAV, ZIM,Emirates Gold Star Hanjin, NORASIA, TS Lines, UASC etc.	–

Source: OCDI

C. Port Klang (Malaysia)

249. Klang Port is situated on the west coast of Peninsula Malaysia, about 40 km west from Kuala Lumpur, the capital city of Malaysia, the commercial and industrial hub of the country as well as the country's most populous region. The port is currently developing as the national load center as well as a hub for the region based on the Government's strategy.

250. Klang Port has 3 harbors: South Port, North Port and West Port. South Port handles general and bulk cargoes mainly, while North and West Ports handle container cargoes taking advantage of being located on the East-West trade route.

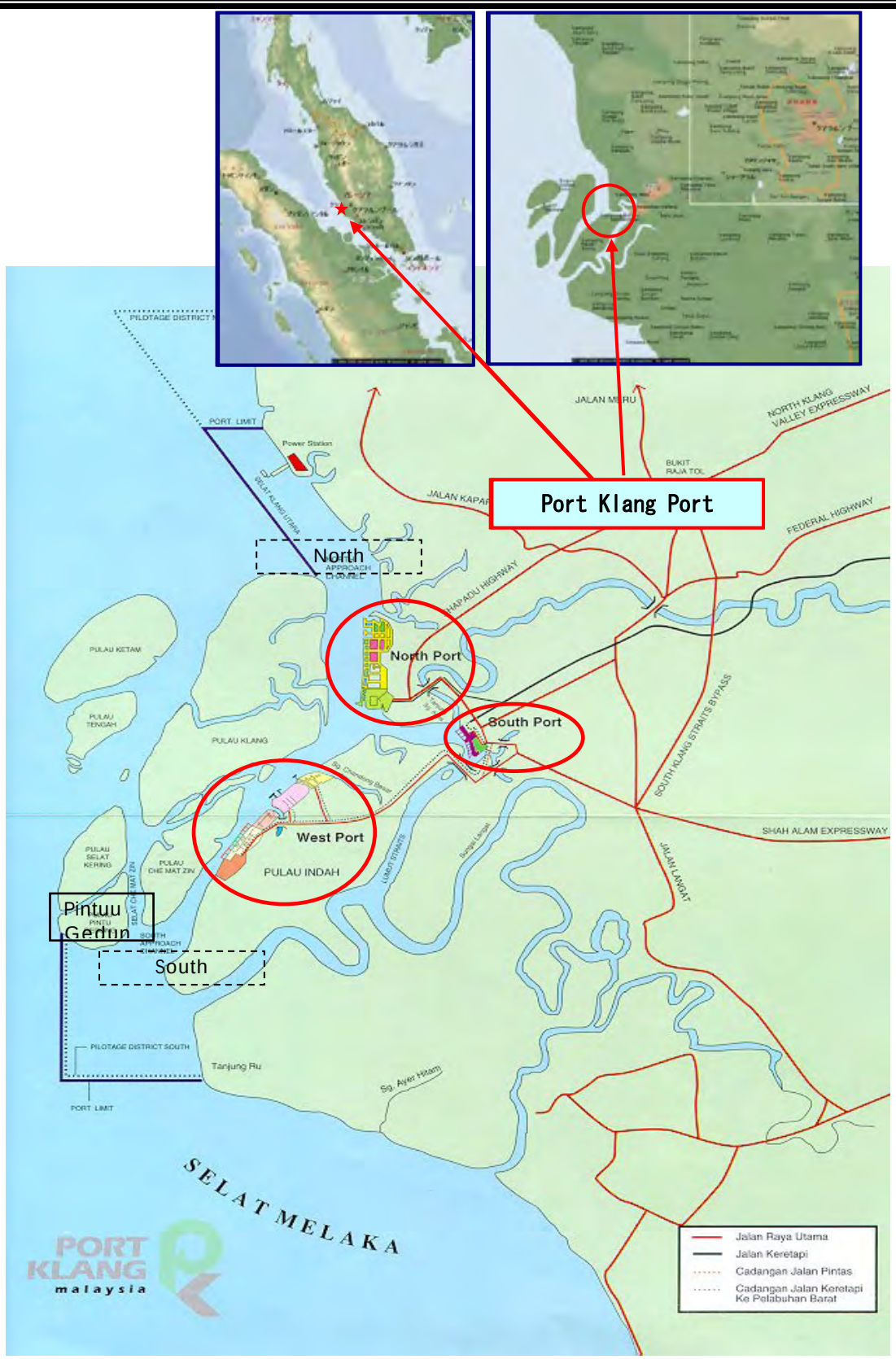


Figure 1.3-3 Port Klang Port

(i) Development and Management of the Port

251. Development, administration, operation and licencing authority of Klang Port used to belong to the Klang Port Authority (KPA), however, because of the Malaysian government's privatization policy, the situation has changed.

252. Development and administration of North port is still conducted by KPA, but the operational services are offered by the Klang Container Terminal and Klang Port Management, joint ventures with some state owned companies. However, terminal facilities in the West port are developed and operated under BOT scheme by Westports Malaysia Sdn Bhd, a private concessionaire, thus the roles of the West Port are undertaken by the company.

253. Administrative roles such as trade facilitation, administration of port property and port development planning are carried out by KPA, a governmental organization.

(ii) Container Terminals and its Operation

254. Port Klang handled 7.1 million TEU containers in 2007, ranking 16th in the world. Scales of the container terminals in Port Klang are 205 hectares in terms of areas, 5,878 meters by berth length with 61 units of GCs and a handling capacity of 12.0 million TEU per annum; thus, the terminals' capacity utilization rate was around 59 percent in 2007.

255. On the other hand, productivity or utilization rate of terminal facilities in Klang port were 116,721 TEU/GC (per GC), 1,211 TEU/berth-meter (per berth-meters) and 34,731 TEU/ha (per hectare) as annual average in 2007, which are similar to Koja Terminal's ones in Tanjung Priok in Indonesia in 2008.

(Koja' factors in 2008 were 119,937TEU/GC, 1,210TEU/berth-meter & 30,010TEU/ha.)

Table 1.3-3 Brief summary of Container Terminal in Port Klang

Port/Terminal Name		Develop ment	M'ment & Operation	Total Area	W. Depth B.Length CY Width	Operation System	′ol in '07 Max Capa.〕 '000 TEU	Major Users	Major Routes
North Port	CT1	KPA	North Port (Malaysi a) Bhd	92ha	10～13.2m 1,079m —	RTG/SC Mix GC×27 RTG×52 SC×68 Trailers×174	2,805 〔5,000〕	APL BTL Hanjin HIC Hapag-Lloy d Heung-A HMM KMTC MISC MOL NYK OOCL PDZ Safmarine, Samudera SCI TSK Yang Ming	Europe N.America S.America Africa Asia Region Australia
	CT2				13m 1,065m —				
	CT3				15m 534m —				
West Port		Westport Malaysia Sdn Bhd		113ha	-15m 3,200m —	RTG Sys GC×34 RTG×102 Trailers×264	4,312 〔7,000〕	ANL CMA-CGM Delmas EMC Hanjin Hapag-Llod HMM, K- Line NYK OOCL UASC Yang Ming	Europe N.America S.America Africa Asia Region Australia
Total				**205 ha**	**5,878 m**	**GC-61**	**7,117 (12,000)**		

Source：KPA、North Port (Malaysia) Bhd、Westports Malaysia Sdn Bhd

D. Tanjung Pelepas (Malaysia)

256. Tanjung Pelepas port is located in the south end of Malay Peninsula, about 25 nautical miles away from Singapore Port and about 18 nautical miles away from the East-West main shipping route in the Malacca Straits.

257. Container terminals in the port were developed for Maersk Line in 2000, though the terminal invited Evergreen Line as the 2nd user in 2002, then MISC in 2008. These shipping lines use the port as their hub port in south-east Asia region instead of Singapore port.

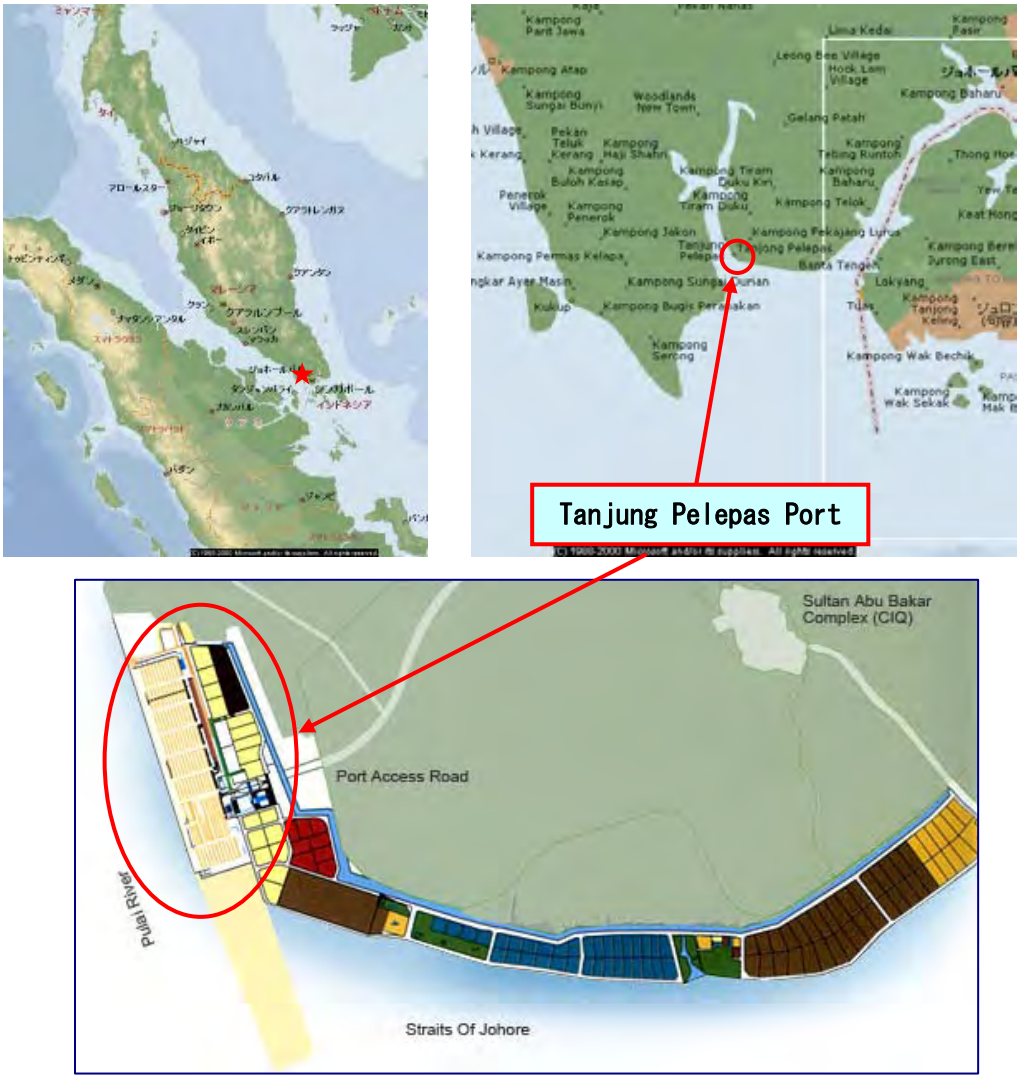


Figure 1.3-4 Tanjung Pelepas Port

(i) Development and Management

258. Development and management of the port including dredging of channel and procurement of container handling equipment are carried out by the Port of Tanjung Pelepas (PTP). Malaysia Mining Corporation (MMC), a state owned corporation, and AP Moller, a parent company of Maersk Line, have a majority stake in PTP although the operation of the terminal is conducted by AP Moller in essence.

(ii) Container Terminals and its Operation

259. Tanjung Pelepas Port handled 5.5 million TEUs in 2007, ranking 18th in the world, although more than 95 percent of the containers were transshipment. Scales of container terminals in the Port were 175 hectares in terms of area, 3,600 meters by berth length with 36 units of GCs on it, and a handling capacity of 8.0 million TEU per annum as of Nov. 2008; thus terminals' capacity utilization rate was around 69 percent in 2007.

260. On the other hand, productivity or utilization rate of terminal facilities in Tanjung Pelepas in 2007 were 152,778 TEU/GC, 1,528 TEU/berth-meter and 31,428 TEU/ha as annual average, which were higher than Koja Terminal's 2008 data by 5 percent to 27 percent.

(Koja' factors in 2008 were 119,937TEU/GC, 1,210TEU/berth-meter & 30,010TEU/ha.)

Table 1.3-4 Brief Summary of Container Terminal in Tanjung Pelepas

T' nal Name	Develo p/Man ageme nt	Lessee	Oper ator	Total Area	W. Depth B. Length CT Width	Operation System	Vol in '07 Max Capa.] '000 TEU	Major Users	Major Routes
Phase-1	PTP	PTP	PTP (AP Moller)	175ha *(250 ha)	-15m 2,160m —	RTG Sys GC×36 RTG×106	5,500 (8,000) *(12,000]	MAERSK EMC Local Feeders	Europe N.America S.America Africa Aust/NZ Asia Region
Phase-2					-17～19m 1,440 m *(2,880m) —				

Source by PTP/OCDI: (*); after fully developed.

E. Laem Chabang Port (Thailand)

261. Laem Chabang port is situated at the far north end of the Gulf of Thailand, 130 km away from Bangkok, the capital city of Thailand. The port was developed as a complementary port of Bangkok since late 1980s, however, the port has become the main gateway port of the country.

Figure 1.3-5 Laem Chabang Port

(i) Development and Management

262. Development and management of phase-1 terminals (total 10) in Laem Chabang port were carried out by the Port Authority of Thailand (PAT), a public corporation under MOT of Thailand. However, PAT has adopted a BOT scheme for the development of phase-2 terminals in the port, although operations of these terminals including phase-1 terminals are conducted by private operators who can better offer efficient and competitive services to the users.

263. Today, PAT concentrates on the development and maintenance of breakwater, navigation system, dredging of channels and land filling since PAT adopted a BOT scheme for the development of phase-2 terminals, and private partners develop profitable facilities such as container terminals or CFS warehouses in the port.

(ii) Container Terminals and their Operation

264. Laem Chabang Port handled 4.6 million TEU containers in 2007, ranking 21st in the world. Scales of container terminals in the port were 186.8 hectares in terms of area, 4,700 meters by berth length with 46 units of GCs, although C1 and C2 terminals are not fully utilized yet.

265. Therefore, productivity or utilization rate of terminal facilities in Laem Chabang port in 2007 were 97,000 TEU/GC, 987 TEU/berth-meter and 4,850 TEU/ha as annual average, which were fewer than Koja Terminal's 2008 data by around 18 percent.

(Koja' factors in 2008 were 119,937TEU/GC, 1,210TEU/berth-meter & 30,010TEU/ha)

Table 1.3-5 Brief Summary of Container Terminal in Laem Chabang

T' nal Name	Devel /Man agem ent	Lessee	Operator	Total Area	W.Depth B.Length CT Width	Operation System	⁄ol in '07 Max Capa.] '000 TEU	Major Users	Major Routes
A0	PAT	LCMT Co., Ltd.	LCMT Co., Ltd.	28.9ha	-14m 950m —	RTG Sys GC×6 RTG×17 RS×3	1,002 〔—〕	Maers k MISC	Europe N.America Asia Region
B1		LCMT Co., Ltd.	LCB Container Terminal 1 Ltd.						
A2		Thai Laemchaba ng Terminal Co., Ltd.	Thai Laemchaban g Terminal Co., Ltd.	17ha	-14m 400m —	RTG Sys GC×8 RTG×20	613 〔800〕 * Total vol; A2/3 & C1/2	—	—
A3		Hutchison Laemchaba ng Terminal Co., Ltd.	Hutchison Laemchaban g Terminal Co., Ltd.	13.7ha	-14m 350m —				
B2		Evergreen Container Terminal (Thailand) Co., Ltd.	Evergreen Container Terminal (Thailand) Co., Ltd.	10.5ha	-14m 300m —	RTG Sys GC×3 RTG×7	— 〔600〕	Ever green	N.America Asia Region
B3		Eastern Sea Laem Chabang Terminal Co., Ltd.	Eastern Sea Laem Chabang Terminal Co., Ltd.	11.5ha	-14m 300m —	RTG Sys GC×4 RTG×10	— 〔600〕	K'Line	N.America Asia Region
B4		TIPS Co., Ltd.	TIPS Co., Ltd.	10.5ha	-14m 300m —	RTG Sys GC×5 RTG×12	680 〔600〕	NYK	N.America Asia Region
B5		Laem Chabang International Terminal Co., Ltd.	Laem Chabang International Terminal Co., Ltd.	40.7ha	-14m 400m —	RTG Sys GC×8 RTG×24	1,160 〔1,800〕	MOL, APL , HMM, ZIM, CSL, NYK, ACL	N.America Red Sea Asia Region
C3					-16m 500m —				
C1/ C2		Hutchison Laemchaba ng Terminal Co., Ltd.	Hutchison Laemchaban g Terminal Co., Ltd.	54ha	-16m 1,200m —	RTG Sys GC×12 RTG×30	_ 〔2,400〕	—	—
Total				186.8 ha	4,700 m	GC-46	-		

1.4. Performance of Mega Container Terminal Operator in The South Asia Region

A. HPH (Hutchison Port Holdings)

266. HPH port network world wide handled 66.3 million TEU in the year 2007, an 8.7% increase over 2006 and was ranked number one among world terminal operating companies as shown in Figure 1.4-1; their financial performances in 2006-2007 were as much as 34.5% and 33.9% respectively in Return on Sales (EBITDA/Revenue) as shown in Figure 1.4-2.

267. Hong Kong, Yantian and Shanghai are the core of HPH's port operation business. Those three ports handled over 32 million TEU, about half of the group's global total. HPH continues to strengthen its position in the key Yantian gateway in Shenzhen province, and the Tantian Port Phase III expansion project is now underway. Four out of six berths are already completed and two more are due to enter service by 2009.

268. Hong Kong used to be the center of their business, but over the years, due to their expansion in other areas in the world, the position of Hong Kong in HPH's business portfolio is getting relatively smaller. Hong Kong accounted for 18.6% of HPH traffic in 2007, compared with 22.5% in 2005.

269. In addition to the Shanghai Container Terminal, HPH is now in the final stage of contracting a joint venture for the investment of the Yangshan deepwater port project which will ensure HPH continuous benefit from the activities of Shanghai.

B. APMT

270. APM Terminal, a subsidiary of Maersk Line, continues to show strong growth, handling 60.3 million TEU in 2007, up from 52 million TEU in 2006 as shown in Figure 1.4-1. This increase of 16% makes it possible for them to maintain their position as the second largest operator in the world in terms of overall throughput.

271. On the other hand, their financial performances in 2006-2007 were 16.1% and 16.0% respectively in Return on Sales (EBITDA/Revenue) as shown in Figure 1.4-2, which are smaller than the ones of other main terminal operators by more than 50%.

272. Volumes in North America, where APMT has a major presence, were decreased but significant increase in other areas helped to maintain its position of the previous year.

273. APMT also built up a strong presence in China. They have major shareholdings in terminals in Qingdao, Shanghai, Dalian, Shenzhen, Xiamen and others.

274. Outside China, Malaysian port Tanjung Pelapas is a major center for APMT, where Maersk Line utilizes them as its hub port in the South East Asia region.

C. PSA

275. PSA handled 54.7 million TEU in 2007 at his terminals world wide, a 15.4% increase over 2006 and was ranked 3rd among world terminal operators; their financial performances in 2006-2007 were excellent as 45.0% and 48.6% respectively in Return on Sales (EBITDA/Revenue) as shown in Table 1.4-1.

276. PSA has the largest share of container handling in South East Asia. The regional dominance is mostly due to Singapore's geographical position as a hub. In addition to its flagship port Singapore, PSA has a significant involvement in Laem Chabang, Thailand.

277. As well as its wholly owned subsidiary terminal operating companies, PSA has a business strategy to form joint ventures with other operators. PSA currently has joint operating terminals with COSCO Pacific and Mediterranean Shipping Company (MSC). They have added another joint venture operation with Pacific International Lines (PIL) in 2008.

D. DPW

278. DPW handled 43.0 million TEU as a worldwide total in 2007, a 3.4% increase over 2006 and was ranked 4th among the operators, showing a well-balanced presence throughout the world, and their financial performances in 2006-2007 were 34.0% and 40.3% respectively in Return on Sales (EBITDA/Revenue) as shown in Figure 1.4-2.

279. Now they are less dependent on business with the UAE than that of several years ago. In 2007 UAE volumes accounted for less than 25% of the total, compared with over 59% in 2005. This is the result of the acquisition of P & O Ports business (including Tanjung Perak Container Terminal) and also by its aggressive expansion in Europe, Africa, India and Southeast Asia.

280. In the Far East and Southeast Asia, DPW has shareholdings in terminal operations in Hong Kong, Tianjin, and Qingdao in China, Busan in South Korea, Laem Cabang in Thailand and Manila in the Philippines. DPW has a strategy to expand its business through investment in existing facilities, by adding to its port network through winning concessions and by acquiring strategic shareholdings in other terminal operating companies.

E. ICTSI

281. Manila-based ICTSI has been gradually building up a global terminal network, handling 3.2 million TEU in 2007, a 45.5% increase over 2006. The company is operating in 12 ports including Japan, China, Syria, Poland, Brazil, and Ecuador.

282. One of the characteristics of ICTSI's port business is to find opportunities in non-mainstream locations and also to go into the countries with a higher risk profile. It is likely that ICTSI will continue with this strategy.

283. ICTSI benefited from recovery in container volumes at its home port Manila International Container Terminal, which handled 1.37 million TEU, a 14% increase over the 2006 level.
The proportion of ICTSI volume moved through its home port Manila is gradually decreasing, which shows the company's efforts to reduce dependence on the relatively volatile Philippines market.

Table 1.4-1 Mega Operators' Throughput ranking world-wide 2006-2007

Ranking			2007		2006	
2007	(2006)		Million TEU	% Share	Million TEU	% Share
1	(1)	Hutchison Port Holdings	66.3	13.3%	60.9	13.8%
2	(2)	APM Terminals	60.3	12.1%	52.0	11.8%
3	(3)	PSA Corporation	54.7	11.0%	47.4	10.7%
4	(4)	DPW	43.0	8.7%	41.6	9.4%
5	(5)	COSCO Pacific	27.3	5.5%	22.0	5.0%
6	(6)	MSC	14.4	2.9%	8.8	2.0%
7	(7)	Eurogate	13.2	2.7%	11.7	2.7%
8	(8)	Evergreen	10.4	2.1%	9.4	2.1%
9	(9)	SSA Marine	7.7	1.6%	7.6	1.7%
10	(10)	HHLA	7.3	1.5%	6.6	1.5%
11	(11)	APL	6.0	1.2%	5.9	1.3%
12	(12)	Hanjin	5.8	1.2%	5.4	1.2%
13	(14)	Dragados	5.8	1.2%	4.7	1.1%
14	(16)	NYK	5.4	1.1%	4.1	0.9%
15	(15)	CMA CGM	4.9	1.0%	4.5	1.0%
16	(17)	MOL	3.4	0.7%	3.3	0.8%
17	(19)	Grup TCB	3.3	0.7%	2.9	0.6%
18	(18)	K Line	3.2	0.7%	3.1	0.7%
19	(20)	ICTSI	3.2	0.6%	2.2	0.5%
20	(13)	OOCL	3.1	0.6%	4.8	1.1%
21	(21)	Yang Ming	2	0.4%	1.8	0.4%
22	(22)	Hyundai	1.3	0.4%	1.3	0.3%
Global Operators Total			352.3	71.0%	312.0	70.7%

(Source: Drewly Shipping Consultants)

Table 1.4-2 Mega Operators' Financial Performance 2006-2007

	Revenue			EBITDA			RoS	
	2007	2006	% change	2007	2006	% change	2007	2006
Operator Name	(million US$)	(million US$)	(2007 vs 2006)	(million US$)	(million US$)	(2007 vs 2006)		
Hutchison Port Holdings	4,864	4,226	15.1%	1,649	1,457	13.2%	33.9%	34.5%
APM Terminals	2,519	2,065	22.0%	404	333	21.3%	16.0%	16.1%
PSA Corporation	3,009	2,470	21.8%	1,462	1,113	31.4%	48.6%	45.0%
DPW	2,731	2,075	31.6%	1,100	705	56.0%	40.3%	34.0%
COSCO Pacific	51	28	79.3%	29	15	88.8%	56.9%	54.0%
MSC	N/A							
Eurogate	972	744	30.6%	276	184	50.0%	28.4%	24.7%
Evergreen	N/A							
SSA Marine	N/A							
HHLA	1,857	1,386	34.0%	597	404	47.9%	32.1%	29.1%
APL	609	582	4.6%	113	104	8.7%	18.6%	17.9%
Hanjin	N/A							
Dragados	N/A							
NYK	1,379	1,067	29.2%	100(*1)	66(*1)	51.5%	4.8%	6.2%
CMA CGM	N/A							
MOL	N/A							
Grup TCB	N/A							
K Line	N/A							
ICTSI	361	249	45.2%	118	82	44.3%	32.7%	32.9%
OOCL	N/A							
Yang Ming	N/A							
Hyundai	N/A							

1. Revenue = Gross Earning from terminal operation
2. EBITDA = Earnings before Interest, Taxes, Depreciation and Amortization
3. RoS = Return on Sales (EBITDA/Revenue)

*1 Profit before tax

(Source: Containerisation International & Drewly Shipping Consultants)

Table 1.4-3: Mega Operators' Performance in South East Asia in 2007

Operator	2007 Total Throughput in Southeast Asia (in '000 TEU)	Location of main terminal operation businrss
PSA Corporation	27,595	Singapore, Laem Chabang
Hutchison Port Holdings	7,765	Laem Chabang, P. Kelang, T. Priok
APM Terminals	6,486	Laem Chabang, Tanjung Pelepas
DPW	3,068	Laem Chabang, Manila, T. Perak
ICTSI	1,875	Manila, Makassar, Subic Bay, Davao

(Source: Drewly Shipping Consultants)

2. Demand Forecast of Port Cargo Flow in Greater Jakarta Metropolitan Area

2.1. Demand Forecast for Tg. Priok Port

A. Socio-Economic Framework

(i) Population

284. According to World Bank Statistics, total population of Indonesia in 2007 is 226 million, which is the third largest in Asia following China and India. Population growth rate nationwide registered 1.66 % during the 1990s, and also decreased from 2000-2007 with the growth rate of 1.37 % per annum. The decline in the population growth rate is the fruit of family planning encouraged by the government. DKI Jakarta registered a population growth rate of 1.13 % per annum during the period 2000-2008.

285. It can be projected that the annual population growth rate will continue to decline in future considering worldwide social phenomena of the decline in birthrates, presumably due to the progress of women's rights and high-level education.

286. The World Bank has been publishing not only the historical trend of population but also a long term population projection of each country. According to this projection, the annual population growth rates in Indonesia will continue to decline, becoming 1.00 % in 2015, and 0.90 % after 2020. The population growth rates will surely decline, however, total population in Indonesia will continue to grow and reach 275 million people in 2025, which is 1.31 times larger than that in 2000.

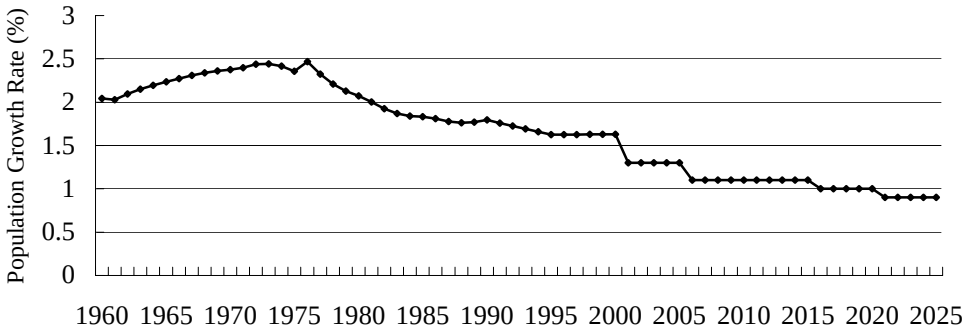
287. Historical trend and future projection of Indonesia's population and its annual growth rates are shown in Table 2.1-1.

Table 2.1-1 Historical Trend and Projection of Indonesia's Population

(Unit: ' 000)

	1980	-1990	-2000	-2007	2006-15	2016-20	2021-25
Population	148,303	178,232	210,421	224,459	250,408	263,181	275,239
Growth Rate		1.84%	1.66%	1.37%	1.10%	1.00%	0.90%

Source: World Development Indicators 2002, World Bank



(ii) GDP (Gross Domestic Product)

a) Indonesia

288. During the Asian economic crisis, Indonesian's GDP growth rate sharply dropped to -13.1% per annum in 1998 and only 0.79 % in 1999. Indonesian economy, however, got back on track in 2000 with the healthy growth rate of 4.9 %. Since then, the national economy has showed steady growth with annual growth rates of about 5 %, in 2007 it registered 6.32 %.

Table 2.1-2 GDP and GNP Growth Rates of Indonesia

Year	2000	2001	2002	2003	2004	2005	2006	2007
GDP (constant 2000 US$)	1.650E+11	1.710E+11	1.787E+11	1.873E+11	1.967E+11	2.079E+11	2.193E+11	2.332E+11
GDP growth (annual %)	4.92	3.64	4.50	4.78	5.03	5.69	5.51	6.32

Source: World Development Indicators 2007

289. Most economists agree that Indonesia needs a sustained period of strong economic growth and low inflation in order to consolidate its recovery from the 1997-98 financial crisis. Indonesia's recent GDP growth rates are still less than the 7.2 % average GDP growth the country experienced during the period of 1990-1996.

290. These positive economic growth rates, however, are not enough to provide working opportunities for Indonesian people since the current unemployment rate is in the vicinity of 10% in Indonesia. Economists calculate that Indonesia's labor force is increasing by 2.2-2.7% a year, a growth rate equivalent to 2-2.5 million new job seekers each year. The National Development Planning Agency (BAPPENAS) in turn estimates that 4% GDP growth translates into an increase in the demand for labor of 2.4%, or 2.2 million new job opportunities per year. These figures make it clear that in order to provide the job seekers with job opportunities, Indonesia needs a sustained period of GDP growth well above 4%.

Table 2.1-3 Macro-economic Indicators

	2000	2002	2004	2005	2006	2007
GDP per capita (constant 2000 US$)	800.0	843.8	904.0	942.6	983.4	1,033.6
GDP per capita growth (annual %)	3.55	3.12	3.62	4.27	4.34	5.10
Population growth (annual %)	1.32	1.33	1.35	1.36	1.12	1.15
Current account balance (% of GDP)	4.84	4.00	0.61	0.10	2.97	2.54
Trade (% of GDP)	71.4	59.1	59.8	63.7	56.7	54.7
Unemployment, total (% of total labor force)	6.10	9.10	9.90	10.30	10.30	
Official exchange rate (LCU per US$)	8,422	9,311	8,939	9,705	9,159	9,141
Inflation, ave. consumer prices (annual % chan	3.77	11.80	6.06	10.46	13.10	6.17

Source: World Development Indicators, and IMF Socioeconomic Indicators

291. Economic growth rate of 5-6% in the middle and long term appears to be an appropriate target when we considered the following points:

- Indonesia needs a sustained period of strong economic growth because a period of sustained GDP growth would provide employment opportunities to Indonesia's millions of unemployed and under-employed workers.
- Economists calculate that Indonesia's labor force is increasing by 2.2-2.7% a year, a growth rate equivalent to 2-2.5 million new job seekers each year. BAPPENAS estimates that 4% GDP growth translates into an increase in the demand for labor of 2.4%, or 2.2 million new

job opportunities per year.

- Rapid and sustained GDP growth is the key to reducing Indonesia's debt/GDP ratio as well as the GOI's debt servicing burden. World Bank report in May 2000 noted that Indonesia could reduce its debt/GDP ratio to approximately 50% with annual GDP growth rates of 6%.

292. In the Greater Jakarta Metropolitan Ports Study in 2003, the JICA study team assumed that Indonesia's GDP growth rate in 2003 will be nearly same as that in 2002, and that a 6 % growth rate will be realized in 2006. It is also assumed that the 6 % growth rate will be maintained afterwards through 2012, and then will slightly decline because the population growth rate has been continuously decreasing as shown earlier.

b) Major Trade Partners

293. Formulating future economic frameworks of trade partners is also one of the important works of the demand forecast.

294. Japan, United States, Singapore, Malaysia and China have been the major trade partners with Indonesia in recent decades. In addition to these individual countries, Asia and Europe as regional economic compounds are also important trade partners.

295. GDP growth rates of these countries and regions after 1990 are shown in Figure2.1-1. Economies of East Asia and Pacific region had shown the highest growth rates of more than 8 % before the year 1997 when the region's economic prosperity collapsed due to the financial crisis..

296. United States has shown steady economic growth for the last decade, with growth rates in the range of 2 – 4 %. On the contrary, Japan has been in an economic slump since 1998, and annual growth rates have been around 1 or 2 % recently. Euro area enjoyed relatively high economic growth near the turn of the century, and recent growth rates are in the vicinity of 2 % per annum.

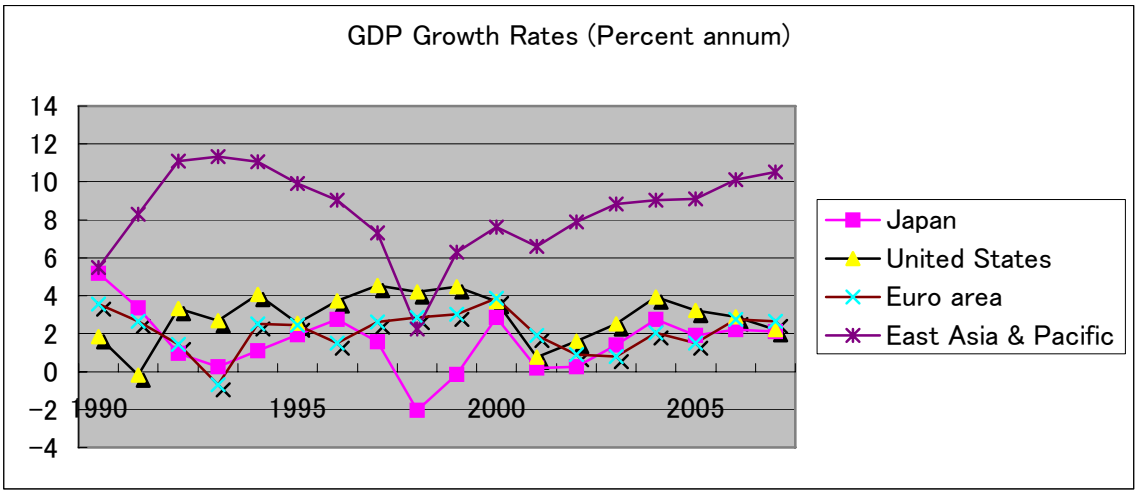


Figure 2.1-1 Growth Rate in Major Trade Partners

297. Future GDP growth rates of the trade partners were taken and extrapolated from the World Bank estimate for 2010. It is assumed in this study that the GDP growth rates of the trade partners' will decrease by one percentage point after 2013 because population growth rates in respective trade partners have been decreasing.

c) GDP Growth Rate (Summary)

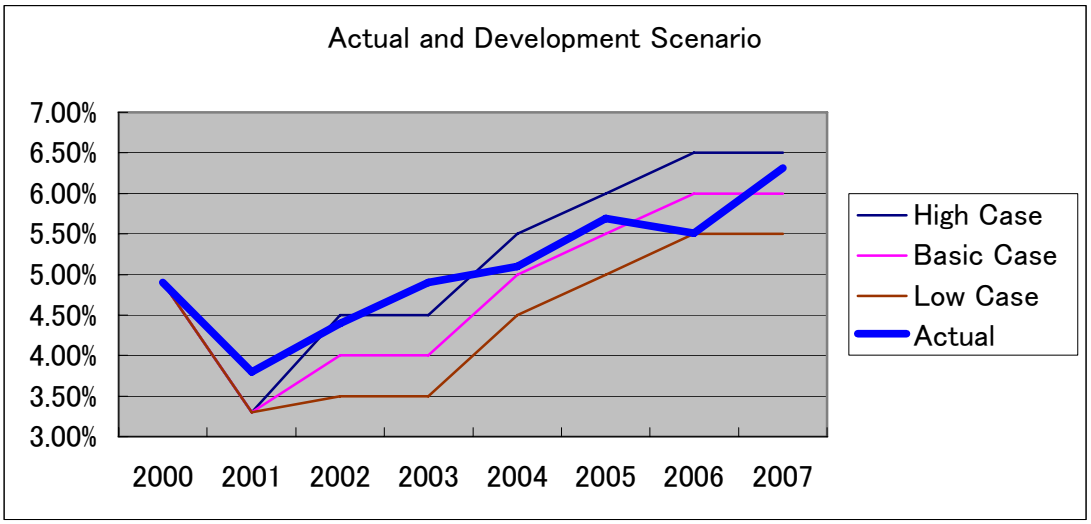


Figure 2.1-2 Development Scenario and Actual Growth Rates of GDP

298. In the JICA Study 2003, three (3) scenarios, namely high, basic, and low case, were used in the socio-economic framework of Indonesia and its trade partners. In order to evaluate the appropriateness of the case setting, actual GDP growth rate of Indonesia after 2001 is shown in Figure2.1-2. The actual annual growth rates fall in the range between the high case and low case. To be more precise, actual GDP annual growth rates follow the basic case or high case. From this analysis, it can be concluded that a significant change in the socio-economic framework setting is not necessary.

299. In the fall of 2008, global economy faced a severe challenge generated from the collapse of the housing market. Economic slump is not limited to US, but the European market and Japan as well. Developing economies including Indonesia are also not immune to the world financial crisis. Facing these challenges, International Monetary Fund responded quickly by releasing a revised future economic forecast. The World Economic Outlook UPDATE estimates the impact to the economies and reveals the updated GDP growth rates of each economy up to 2010. It is true that future economic framework is quite uncertain, but released outlook by IMF is the most reliable one so far.

300. After 2010, JICA Study Team cannot find any reason to alternate the economic framework for the long term utilized in the JICA study 2003. The assumed GDP growth rates of Indonesia and trade partners by case are shown in the Table 2.1-4. The growth rates of the high case are set at 0.5 percentage point higher, and those of the low case are 0.5 percentage point lower, than those of the basic case, respectively.

Table 2.1-4 GDP Growth Rates by Case

High Case

Year	2008	2009	2010-2012	2013-2025	2026-2030
Indonesia	5.4%	4.5%	6.5%	5.5%	4.5%

Year	2008	2009	2010	2011-2012	2013-2030
United States	1.1%	-1.6%	1.6%	3.2%	2.2%
Euro area	1.0%	-2.0%	0.2%	2.8%	1.8%
JAPAN	-0.3%	-2.6%	0.6%	2.5%	1.5%
ASEAN-5	5.4%	2.7%	4.1%	6.5%	5.5%

Basic Case

Year	2008	2009	2010-2012	2013-2025	2026-2030
Indonesia	5.4%	4.5%	6.0%	5.0%	4.0%

Year	2008	2009	2010	2011-2012	2013-2030
United States	1.1%	-1.6%	1.6%	2.7%	1.7%
Euro area	1.0%	-2.0%	0.2%	2.3%	1.3%
JAPAN	-0.3%	-2.6%	0.6%	2.0%	1.0%
ASEAN-5	5.4%	2.7%	4.1%	6.0%	5.0%

Low Case

Year	2008	2009	2010-2012	2013-2025	2026-2030
Indonesia	5.4%	4.5%	5.5%	4.5%	3.5%

Year	2008	2009	2010	2011-2012	2013-2030
United States	1.1%	-1.6%	1.6%	2.2%	1.2%
Euro area	1.0%	-2.0%	0.2%	1.8%	0.8%
JAPAN	-0.3%	-2.6%	0.6%	1.5%	0.5%
ASEAN-5	5.4%	2.7%	4.1%	5.5%	4.5%

B. Forecast of Container Cargoes

(i) International Container

301. A total of 30.7 million tons of international cargo were handled at Tg. Priok port in 2008 in the form of containers, which was equivalent to 3.15 million TEU. There are three dedicated container terminals: JICT I & II, and KOJA terminal. These dedicated container terminals handle mostly international containers. Conventional berths are also used for handling international containers, which account for 13.2% of the total international containers at the port in 2008.

302. A regression model was applied to forecast future port demand taking into consideration the correlation ship between cargo volume and the magnitude of economic activities in the hinterland.

$Y = a + bX$

X is an independent variable .

303. Firstly, future cargo tonnage transported by containers was forecast using the regression model. This work is implemented for export and import cargo individually. Trade partners' weighted GDP was applied as an independent variable for export cargo, and GRDP of the hinterland of Tg. Priok port for import cargo. Correlation coefficient (R) of the model is 0.983 for export and 0.969 for import cargo.

304. Secondly, the number of containers is estimated as follows;

$N = V/W \times 1/(1 - E)$

where N : Number of containers (TEUs/year)
V : Cargo tonnage in containers (tons/year)
W : Cargo weight per loaded 20 ft container (tons/TEU)
E : Percentage of empty container

305. The average cargo weight per loaded 20 ft container (W) is set as 10.58 ton for export containers and 10.79 ton for import containers based on the actual records at JICT in 2008. Although average tonnages per loaded TEU are quite similar for both import and export containers, a total cargo tonnage of imported containers is larger than that of exported. Therefore, import container cargoes need a larger number of laden container boxes (TEU) than export container cargoes. Percentage of empty container among import container is set as 5.5 % based on actual records of JICT in 2008.

306. Considering the fact that a highway network system in Java Island is under development, and that Tg. Priok port is by far the largest container port in Indonesia, it is reasonable to assume that the number of exported containers is same as those of imported containers in the long run. The difference between the number of imported container and that of exported containers calculated from the cargo tonnage will be the number of exported empty containers.

307. Under the three socioeconomic frameworks, container throughputs were forecast. Total tonnage and the number of containers of international trade in the target years for the basic case are calculated at 43.1 million tons, 4.9 million TEU in 2015, and 68.8 million tons and 8.3 million TEU in 2025. Resulting TEU in the high case is 8.5% higher and that in the low case is 7.9% lower than the basic case in 2025, as shown in Table 2.1-5 and Figure 2.1-3.

Table 2.1-5 Forecast of International Container Throughput at Tg. Priok

High Case

	Import		Export		Total	
	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)
2008	16,948	1,625	13,725	1,522	30,674	3,147
2015	25,710	2,521	19,027	2,521	44,738	5,043
2025	46,147	4,526	29,217	4,526	75,364	9,052
2030	58,283	5,716	35,845	5,716	94,129	11,432

Basic Case

	Import		Export		Total	
	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)
2008	16,948	1,625	13,725	1,522	30,674	3,147
2015	24,903	2,442	18,246	2,442	43,148	4,885
2025	42,545	4,172	26,209	4,172	68,754	8,345
2030	52,445	5,143	31,271	5,143	83,716	10,287

Low Case

	Import		Export		Total	
	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)
2008	16,948	1,625	13,725	1,522	30,674	3,147
2015	24,115	2,365	17,479	2,365	41,593	4,730
2025	39,191	3,844	23,399	3,844	62,590	7,687
2030	47,138	4,623	27,101	4,623	74,239	9,246

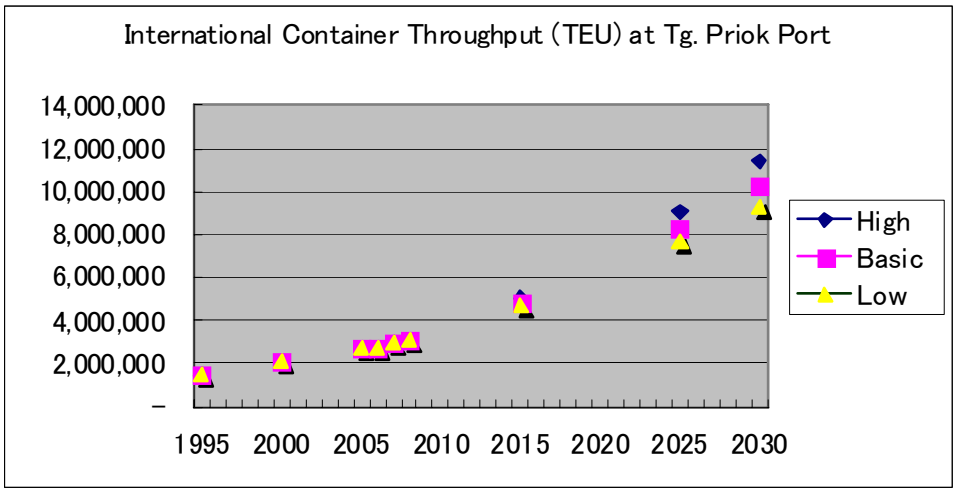


Figure 2.1-3 Historical Trend and Forecast of International Container at Tg. Priok

Table 2.1-6 Historical Trend and Forecast of International Container

(Unit: ' 000)

Year	1991	1995	2000	2005	2006	2007	2008	2015	2025	2030
Loading (Ton)	2,658	5,480	8,111	13,560	13,303	13,195	13,725	18,246	26,209	31,271
(TEU)	356	808	1,018	1,333	1,333	1,399	1,522	2,442	4,172	5,143
Unloading (Ton)	4,148	7,152	10,602	13,371	13,492	15,484	16,948	24,903	42,545	52,445
(TEU)	362	672	1,059	1,374	1,403	1,527	1,625	2,442	4,172	5,143
Total (Ton)	6,806	12,632	18,713	26,931	26,795	28,679	30,673	43,149	68,754	83,716
(TEU)	718	1,480	2,077	2,707	2,736	2,926	3,147	4,884	8,344	10,286

Source: JICA Study Team

(ii) Domestic Container

308. Roughly speaking, total of 7 million tons or 800,000 TEU of inter-island containers were handled at Tg. Priok port in 2008. These inter-island containers are mostly loaded and unloaded at conventional berths. Although dedicated container terminals such as JICT are also used for handling inter-island containers, the volume is minimal.

309. Future demand for inter-island containers is also forecast in the same manner as the international containers. For the forecast of loading containers, Indonesian GDP is used as an independent variable because loading containers are destined for all corners of the archipelagos(R=0.941). For the unloading containers, GRDP of the hinterland serves as an independent variable(R=0.890).

310. The average cargo weight per laden 20 ft container is set as 12.8 tons for loading containers and 13.27 tons for unloading containers based on the actual working records at conventional wharves. Percentage of empty container is set as 3.5% for loading containers based on the actual records.

311. Resulting volumes of inter-island containers handled at Tg. Priok port are estimated at about 16 million tons or 1.7 million TEU in 2015, and about 32 million tons or 3.3 million TEU in 2025. Loading and unloading volumes in the target years are found in Table 2.1-7.

Table 2.1-7 Historical Trend and Forecast of Domestic Container at Tg. Priok

High Case

	Unloading		Loading		Total	
	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)
2008	2,363	413	4,685	425	7,048	838
2015	5,883	868	10,723	868	16,605	1,736
2025	12,336	1,835	22,667	1,835	35,003	3,670
2030	16,168	2,409	29,760	2,409	45,928	4,818

Basic Case

	Unloading		Loading		Total	
	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)
2008	2,363	413	4,685	425	7,048	838
2015	5,628	830	10,251	830	15,879	1,660
2025	11,198	1,664	20,562	1,664	31,760	3,329
2030	14,324	2,133	26,348	2,133	40,672	4,266

Low Case

	Unloading		Loading		Total	
	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)
2008	2,363	413	4,685	425	7,048	838
2015	5,379	793	9,790	793	15,169	1,585
2025	10,139	1,506	18,602	1,506	28,741	3,012
2030	12,648	1,882	23,246	1,882	35,895	3,764

312. Future demands under the different economic frameworks are also forecast. Resulting volumes in the target years are summarized in Table 2.1-8. Estimated demands of the high case and low case are about 10 % larger or less respectively than that of the basic case in 2025.

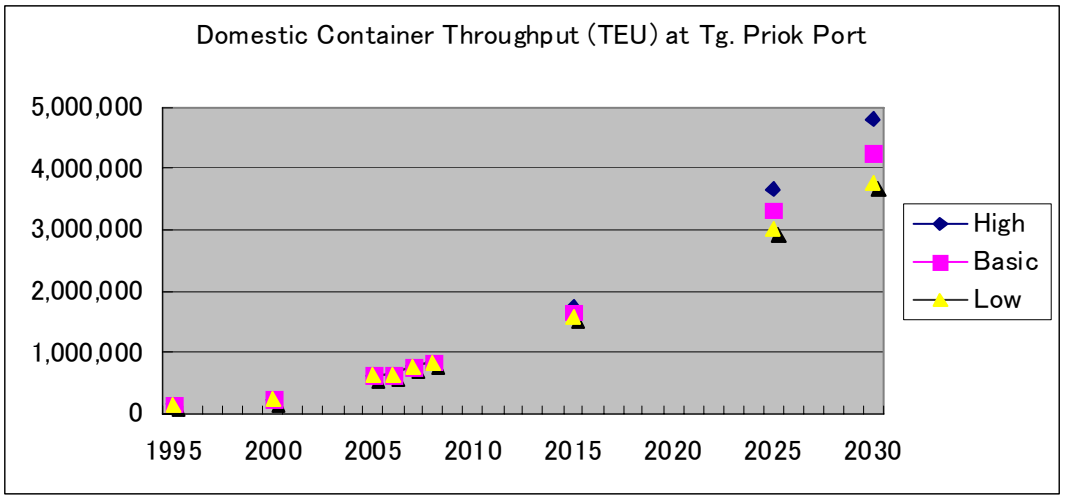


Figure 2.1-4 Summary of Demand Forecast of Domestic Container at Tg. Priok

Table 2.1-8 Historical Trend and Forecast of Domestic Container at Tg. Priok

(Unit: ' 000)

Year	1991	1995	2000	2005	2006	2007	2008	2015	2025	2030
Loading (Ton)	56	543	1,347	3,807	4,031	5,433	4,685	10,251	20,562	26,348
(TEU)	11	69	108	330	320	385	425	830	1,664	2,133
Unloading (Ton)	57	440	891	2,469	2,452	2,795	2,363	5,628	11,198	14,324
(TEU)	8	81	129	293	315	381	413	830	1,664	2,133
Total (Ton)	113	984	2,238	6,276	6,483	8,228	7,048	15,879	31,760	40,672
(TEU)	19	151	237	624	635	766	838	1,660	3,329	4,266

Source: JICA Study Team

(iii) Transshipment Container

313. At JICT and KOJA terminals, transshipment containers are also loaded/unloaded, and empty containers are also transshipped. Based on actual operation records of JICT terminals during the period of 2002 – 2008, transshipment volume in terms of TEU is summarized in Table 2.1-9. The percentage of transship containers among the total throughput is in the range of 5 %, which is not significant from the view point of terminal throughput level and will not affect the result of demand forecast substantially. Throughput of the transship containers is included in the international throughput in this study.

Table 2.1-9 Transshipment Ratio at JICT

Year	Unloading		Loading		Total		
	Total TEUS	Transship TEUs	Total TEUS	Transship TEUs	Total TEUs	Transship TEUs	(%)
2002	780,036	7,455	752,400	8,584	1,532,436	16,039	1.0%
2003	780,658	22,588	722,225	20,841	1,502,883	43,429	2.9%
2004	863,088	60,563	760,647	56,759	1,623,735	117,322	7.2%
2005	802,516	66,984	667,952	59,998	1,470,467	126,982	8.6%
2006	888,036	57,738	735,880	54,021	1,623,916	111,758	6.9%
2007	997,855	59,588	823,471	55,205	1,821,326	114,793	6.3%
2008	1,049,730	45,979	946,052	44,242	1,995,782	90,221	4.5%

(iv) Summary of Container Throughput

314. Total container throughputs at Tg. Priok port, which consist of international containers and domestic containers, are summarized in Table 2.1-10 and Figure 2.1-5.

Table 2.1-10 Total Container Throughput at Tg. Priok

High Case

	International Total		Domestic Total		Grand Total	
	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)
2008	30,674	3,147	7,048	838	37,721	3,985
2015	44,738	5,043	16,605	1,736	61,343	6,779
2025	75,364	9,052	35,003	3,670	110,367	12,721
2030	94,129	11,432	45,928	4,818	140,056	16,250

Basic Case

	International Total		Domestic Total		Grand Total	
	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)
2008	30,674	3,147	7,048	838	37,721	3,985
2015	43,148	4,885	15,879	1,660	59,027	6,544
2025	68,754	8,345	31,760	3,329	100,514	11,674
2030	83,716	10,287	40,672	4,266	124,388	14,553

Low Case

	International Total		Domestic Total		Grand Total	
	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)	Ton ('000)	TEU ('000)
2008	30,674	3,147	7,048	838	37,721	3,985
2015	41,593	4,730	15,169	1,585	56,763	6,315
2025	62,590	7,687	28,741	3,012	91,331	10,699
2030	74,239	9,246	35,895	3,764	110,134	13,009

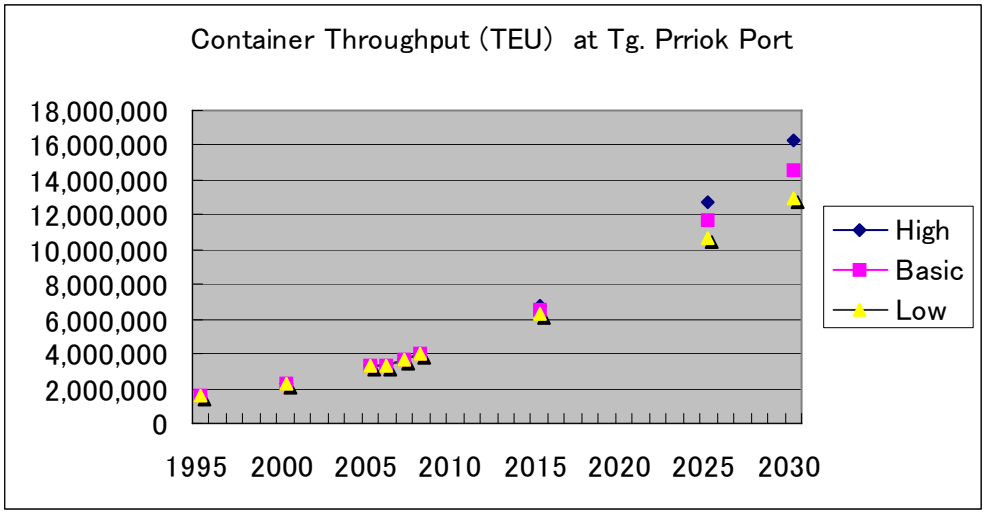


Figure 2.1-5 Total Container Throughput at Tg. Priok

C. Forecast of Cargo demand of other package type

315. Indonesian Port Corporation II prepares several kinds of cargo statistics, and one of them focuses on package types of cargo. Cargo tonnage handled at conventional wharves is disaggregated into package types, which are categorized into the five (5) groups; General cargo, Bag cargo, Liquid Bulk cargo, Dry Bulk cargo, and Container. Cargoes handled at concessioned terminals such as JICT are excluded from these statistics. Information on trade type is not available for this package type based statistics..

316. Historical trend of cargo tonnage by package type from 1991 through 2008 is summarized and shown in Table 2.1-11.

Table 2.1-11 Cargo Tonnage by Package Type at Tg. Priok

(Unit: '000 Ton)

DESCRIPTION	1991	1995	1999	2003	2005	2006	2007	2008
General Cargo	4,077	6,998	6,255	5,952	5,533	7,866	7,890	9,156
Bag Cargo	3,044	3,317	3,263	2,374	1,813	1,160	1,763	1,706
Liquid Bulk Cargo	7,782	8,591	9,258	10,486	9,153	8,614	8,201	7,985
Dry Bulk Cargo	3,410	5,459	5,242	7,107	9,970	10,740	13,636	12,094
Container (Conventional Wharf	781	1,438	2,657	7,391	11,685	10,356	10,491	11,109
Total	**19,094**	**25,803**	**26,675**	**33,310**	**38,154**	**38,736**	**41,981**	**42,050**

Source: Pt. PELABUHAN INDONESIA II

(i) Liquid Bulk

317. Liquid bulk cargo at Tg. Priok port includes “Gasoline and Other fuel” and “Crude Palm Oil”. In 2008, total tonnage of liquid bulk cargo at Tg. Priok port was nearly 8 million tons, out of which 5.2 million tons were gasoline and other fuel. Most of the gasoline and other fuel are unloaded at the dedicated piers located at the eastern side of Koja Terminal, and crude palm oil is unloaded at conventional wharves.

318. As shown in Figure2.1-6、tonnage of liquid bulk cargo had been steadily increasing and reached 11million tons in 2004. Since then, tonnage of liquid bulk cargo has gradually decreased year by year. Tonnage of this type of cargo recorded less than 8 million in 2008, which is about 70 % of the peak level.

319. Indonesian government announced a basic policy on energy through the presidential decree No. 05 of Year 2006 and Blue Print: National Energy Policy 2006 – 2025. According to the government policies, share of petroleum shall decrease from 54.5% in 2005 to 20% in 2025 while that of coal shall increase to 33% from 16.8% at present. Sales of petroleum in the domestic market and import volume of petroleum product have been decreasing since 2004. Therefore, it is likely that tonnage of liquid bulk cargo at Tg. Priok port will not increase in the foreseeable future. Ten (10) million tons would be the maximum volume.

320. Historical trend of cargo tonnage is shown in Figure 2.1-6

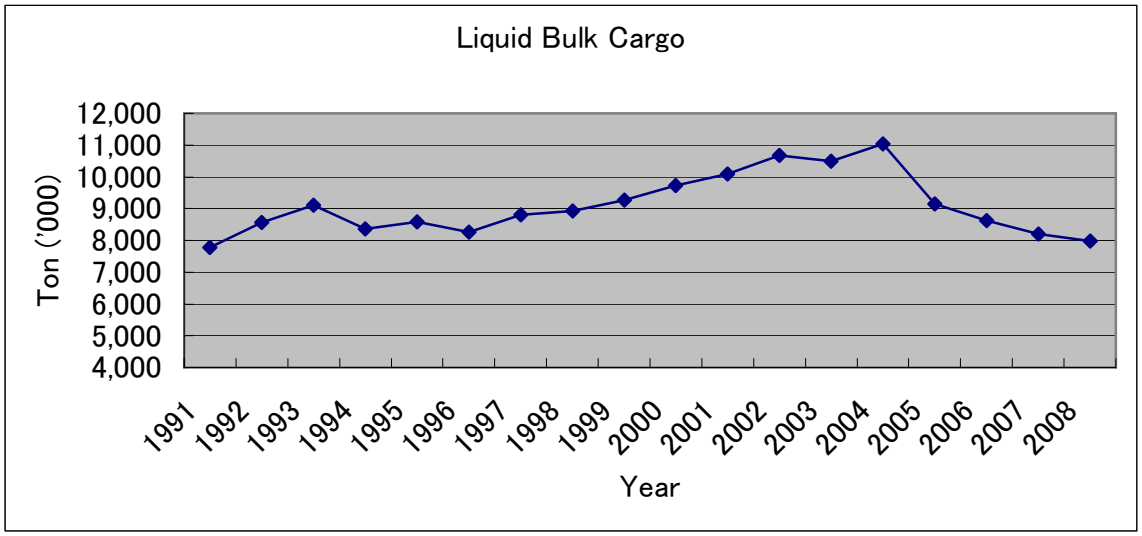


Figure 2.1-6 Liquid Bulk Cargo at Tg. Priok

(ii) Dry Bulk

321. Major commodities of dry bulk cargo at Tg. Priok port are cement, clinker and grain such as wheat. After the Asian economic crisis in 1997/1998, cement and clinker are exported to foreign countries in order to exploit the surplus capacity of the cement production facility. According to the commodity-wise cargo statistics, combined tonnage of bulk cement and clinker handled at Tg.Priok port reached more than three (3) million in 2008.

322. Future tonnage of dry bulk cargo at Tg. Priok port is assessed by a correlation analysis applying Trade Partners' GDP as a repressor. High correlation coefficient is obtained (R=0.932). It is forecast that tonnage of the dry bulk cargo will continue to increase and reach 24 million tons in 2030 in the basic case, which is twice the present level. Historical trend and future prospect of the cargo volume of this package type is shown in Figure 2.1-7.

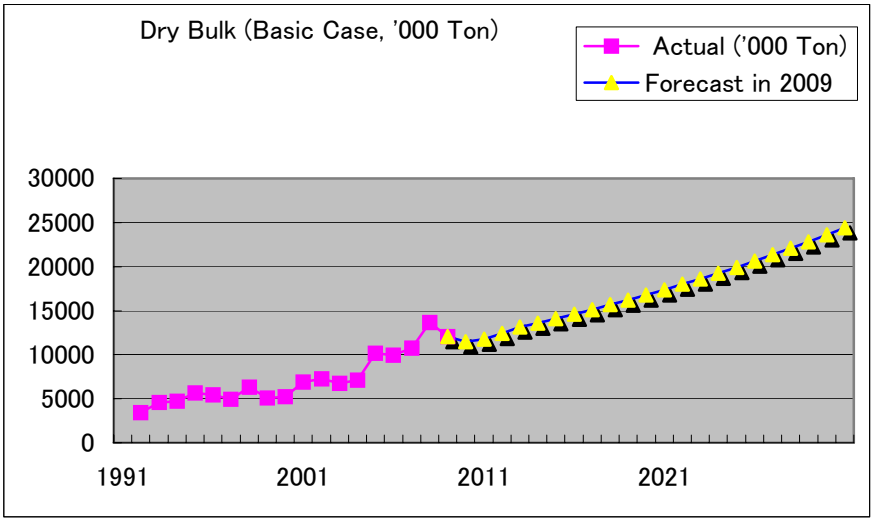


Figure 2.1-7 Dry Bulk Cargo at Tg. Priok

(iii) General Cargo and Bag Cargo

323. **Figure 2.1**-8 shows historical trend of bag cargo and general cargo. General cargo refers to cargo other than container, dry bulk, liquid bulk, and bag cargo, and is sometimes called break-bulk cargo. Tonnage of the general cargo varies widely year by year; it reached nearly ten (10) million tons in 2002, but dropped to four (4) million tons two years later. On the other hand, historical trend of bag cargo shows a decreasing tendency after it reached 3.8 million tons. Bag cement is a typical commodity of this type of cargo and accounts for about 75 percent of the total bag cargo in 2008.

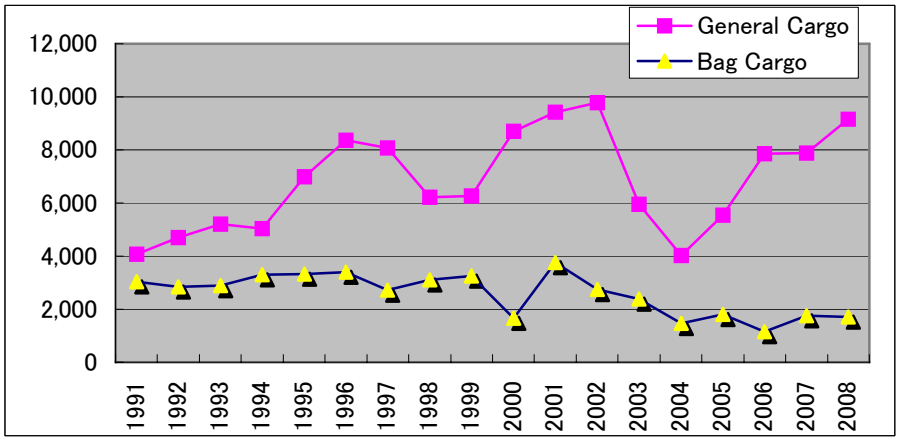


Figure 2.1-8 Historical Trend of General Cargo and Bag Cargo

324. Regarding the "General Cargo" and "Bag Cargo", a unique methodology is adapted in this study because cargoes of these two package type can be containerized. Firstly, container cargo, bag cargo, and general cargo are summed up and future combined tonnage of the non-bulk cargo is forecast by formulating a single regression model(R=0.946). Future container tonnage has been forecast by another regression model(R=0.909). Then the combined tonnage of "General Cargo" and "Bag Cargo" is obtained by subtracting the container tonnage from the total non-bulk cargoes. Resulting combined tonnage of general and bag cargo is shown in Table 2.1-12 and Figure 2.1-9.

Table 2.1-12 General Cargo + Bag Cargo by Case

(Unit: '000 Ton)

	2008	2015	2025	2030
High Case	10,862	11,258	13,765	15,255
Basic Case	10,862	11,159	13,323	14,538
Low Case	10,862	11,062	12,912	13,887

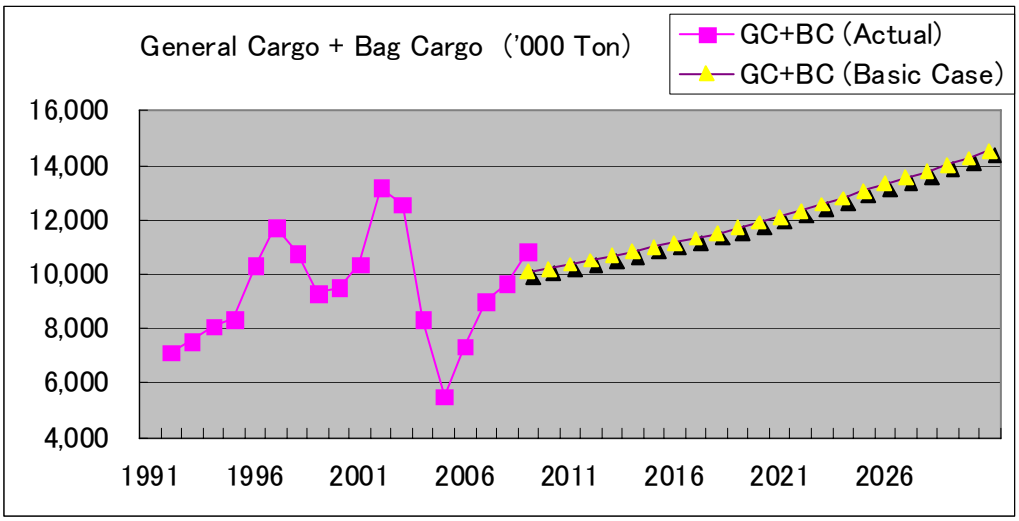


Figure 2.1-9 General Cargo + Bag Cargo in Tg. Priok

(iv) Summary of Cargo Tonnage by Package Type

325. Resulting future cargo tonnage by package type based on Tg. Priok Port cargo statistics is summarized in Table 2.1-13. Percentage of container cargo tonnage among total cargo tonnage continues to increase and will reach about 70 % in 2025 while it is currently at about 56%. Containerization of inter-island shipping is presently premature, but a shift towards containerization will eventually be realized with the progress of infrastructure development and industrialization of the local economy.

Table 2.1-13 Summary of Cargo Tonnage by Package Type

High Case (Unit: '000 Ton)

Year	2008	2015	2025	2030
Container (Tg. Priok)	38,897	61,343	110,367	140,056
General C. + Bag C.	10,862	11,258	13,765	15,255
Liquid Bulk	7,985	11,000	11,000	11,000
Dry Bulk	12,094	15,191	22,886	27,892
Total	69,838	98,792	158,018	194,202

Basic Case (Unit: '000 Ton)

Year	2008	2015	2025	2030
Container (Tg. Priok)	38,897	62,382	100,514	124,388
General C. + Bag C.	10,862	11,159	13,323	14,538
Liquid Bulk	7,985	10,000	10,000	10,000
Dry Bulk	12,094	14,600	20,614	24,437
Total	69,838	98,141	144,451	173,363

Low Case (Unit: '000 Ton)

Year	2008	2015	2025	2030
Container (Tg. Priok)	38,897	59,612	91,331	110,134
General C. + Bag C.	10,862	11,062	12,912	13,887
Liquid Bulk	7,985	9,000	9,000	9,000
Dry Bulk	12,094	14,021	18,492	21,288

326. Table 2.1-14 summarizes methodologies applied for forecasting cargo tonnage by package type.

Table 2.1-14 Methodologies employed for forecasting tonnage by package type

Container	Regression model against trade partners' weighted GDP for export tonnage, then convert to TEU using average weight/stuffed TEU and % of empty container. Number of TEU is assumed as same for export and import. Domestic traffic is forecast in the same way as international traffic. Applied regressor is national GDP for loading containers and hinterland GRDP for unloading containers, respectively.
Bag+General	Combined tonnage of non-bulk cargo at Tg Priok is regressed against national GDP. Subtracting the pre-estimated container cargo tonnage.
Dry Bulk	Single regression model with Trade Partners GDP as an independent variable
Liquid Bulk	Historical tendency of the cargo tonnage and government's policy on energy.

D. Capacity of Tanjung Priok Port

327. Capacity of Tg. Priok is introduced in JICA Study 2003. The quay and yard capacity are calculated on the assumption that the navigation channel is widened and two –way traffic is realized. Capacity of future facilities is shown in Table 2.1-15.

Table 2.1-15 Capacity of Future Facilities (With Navigational Condition Improvement)

	Quay side			Yard side	Capacity
	Ship calls	000TEU		000TEU	000TEU
JICT1	2,200	2,203	<	3,020	2,203
JICT2	485	419	<	436	419
Koja	972	1,021	<	1,132	1,021
MTI	764	199	<	263	199
Conv.	2,538	740	>	286	286
JICT&Koja	3,657	3,643		4,588	3,643
MTI&Conv.	3,302	939		549	485
Total	6,959	4,582		5,137	4,128

Source: Greater Jakarta Metropolitan Ports Study 2003, volume -2, pp. 59.

328. According to the Table shown above, the capacity of JICT & KOJA will reach around 3.6 million TEU and that of MTI & Conventional berths is estimated to be 485,000TEU. As actual throughput at JICT & KOJA in 2008 was reported to be 2.7 million TEU, additional 900 thousand TEU of international containers can be handled at these dedicated container terminals after main and access channels are improved and two-way traffic is realized.

329. According to IPC's statistical report, conventional berths including MTI handle not only domestic cargoes but also international cargoes. In reality, these berths handled 446,000 TEU of international containers as well as 838,000 TEU of domestic containers in 2008.

330. It might be permissible to regard the existing throughput of international containers which is handled at conventional berths including MTI (446,000 TEU) as a part of the capacity of international containers at Tg.Priok port. Then, capacity of international containers of Tg. Priok will reach 4.1 million TEU after the channel is improved.

331. Similarly, the conventional berths including MTI handled 838,000 TEU of domestic containers in 2008, which is by far larger than the estimated capacity of domestic containers in the 2003 report, which is 485,000 TEU.

332. IPC2 has been working seriously to deal with the increasing domestic containers by demolishing warehouses with low utilization to accommodate more containers at conventional wharves. It can be said that the conventional wharves still have extra capacity if an efficient operation and traffic system is realized.

333. Historical trend of the BOR(Berth Occupancy Ratio), BTP(Berth Throughput) and YTP(Yard Throughput) of the conventional wharves are shown in Table 2.1-16. According to these figures, BTP and YTP have been gradually increasing and BOR is not so high.

334. JICA Study Team estimates that an additional 700,000 TEU capacity can be added to the existing capacity by rearranging and developing dedicated domestic container terminals and improving operational efficiency at conventional wharves which are Pier I, Pier II, Pier III and Nusantara.

Table 2.1-16 BOR, BTP and TTP of Conventional Wharves

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
BOR (%)	69.46	71	65.72	71.17	68	66.25	68.9	69.53	65.19	66.45	62.15	63.23	58.81
BTP (Ton/M)	3,366	3,857	3,441	3,705	3,597	3,424	4,187	3,915	4,052	4,483	4,531	4,894	4,900
YTP (Ton/M2)	36.84	16	5.83	3.73	17.03	24.75	30.89	43.54	70.37	86.24	109.4	122.8	141.7

Source: IPC2

335. Container handling capacity at Tg. Priok port is summarized in Table 2.1-17 under the condition that the channel will be improved. As a result, capacity for international containers will be around 4.1 million TEU and that for domestic is around 1.5 million TEU.

Table 2.1-17 Container Capacity of Tg. Priok

		2003 Report Capacity	Throughput in 2008	Revised Capacity
International	JICT & Koja	3,643	2,715	3,643
	Conventional	485	446	446
Domestic	Conventional (Existing)		838	838
	Conventional (to be converted)			700
Total	Total	4,128	3,999	5,627

Remarks: Capacity is quoted from 2003 Report and revized by JICA Study Team 2009

E. Container Demand Forecast for Tg. Priok

336. Container demand forecast has already been examined and summarized in Table 2.1-10, Section 2.

337. It is assumed that container handling capacity at Tg. Priok is limited to a total of 5.6 million TEU, breaking down by trade type 4.1 million TEU for international and 1.5 million TEU for domestic containers.

338. Regarding the international containers, it is forecasted that container throughput will reach the maximum capacity in around 2012. After that, overflowed containers will require facilities and spaces. Therefore, development of Bojonegara port is urgent.

339. On the other hand, regarding domestic containers, Tg. Priok port is expected to continuously accommodate inter-island containers at the conventional terminals where capacity is estimated to be about 1.5 million TEU. Development of dedicated domestic container terminals is encouraged, and improvement of operational efficiency has to be pursued.

340. It is likely that inter-island container traffic demand will reach the maximum capacity of the conventional wharves in around 2015. After the conventional wharves are saturated with the inter-island containers, basic and drastic measures will be needed to handle containers effectively and efficiently.

341. A new reclamation area at the western side of Tg. Priok port has to be ready for accommodating the overflowed portion of inter-island containers. And the Master Plan of Tg. Priok Harbor authorized by MOT has already been prepared. Careful deliberation is required to determine which measures are best for the future of Tg. Priok.

342. Results of the container demand forecast, which is considered to be the container handling capacity of Tg. Priok port is summarized in Table 2.1-18.

Table 2.1-18 Allocated Container Throughput at Tg. Priok

Basic Case (Unit: TEU)

	Total Demand		Tg. Priok		
		International after 2012	Sub Total	Throughput	
				International	Domestic
1991	736,370		736,370	717,563	18,807
1992	866,717		866,717	841,640	25,077
1993	1,054,152		1,054,152	1,012,690	41,462
1994	1,270,094		1,270,094	1,193,115	76,979
1995	1,630,320		1,630,320	1,479,721	150,599
1996	1,606,797		1,606,797	1,466,356	140,441
1997	1,908,716		1,908,716	1,721,876	186,840
1998	1,897,961		1,897,961	1,754,636	143,325
1999	2,118,224		2,118,224	1,909,267	208,957
2000	2,313,272		2,313,272	2,076,181	237,091
2001	2,248,802		2,248,802	2,049,884	198,918
2002	2,568,926		2,568,926	2,212,017	356,909
2003	2,758,809		2,758,809	2,310,017	448,792
2004	3,187,055		3,187,055	2,621,087	565,968
2005	3,330,395		3,330,395	2,706,776	623,619
2006	3,370,729		3,370,729	2,735,774	634,955
2007	3,691,918		3,691,918	2,925,990	765,928
2008	3,984,290		3,984,290	3,146,732	837,558
2009	4,303,470		4,303,470	3,373,038	930,432
2010	4,658,437		4,658,437	3,612,490	1,045,948
2011	5,034,702		5,034,702	3,866,308	1,168,394
2012	5,433,543	4,135,356	5,387,187	**4,089,000**	1,298,187
2013	5,785,852	4,373,014	5,501,838	**4,089,000**	1,412,838
2014	6,155,777	4,622,556	5,622,221	**4,089,000**	1,533,221
2015	6,544,198	4,884,574	5,748,624	**4,089,000**	**1,659,624**
2016	6,952,040	5,159,694	5,881,346	**4,089,000**	**1,792,346**
2017	7,380,274	5,448,569	6,020,705	**4,089,000**	**1,931,705**
2018	7,829,920	5,751,888	6,167,032	**4,089,000**	**2,078,032**
2019	8,302,048	6,070,373	6,320,675	**4,089,000**	**2,231,675**
2020	8,797,783	6,404,783	6,482,000	**4,089,000**	**2,393,000**

Remarks
: Figures in bold in the column of int'l throughput refer to the capacity of Tg.Priok.
: Figures in bold in the right most column refer to the over capacity situation.

2.2. Demand Forecast for Bojonegara Port

A. International Container Demand Forecast

343. It is estimated that the demand for international container cargoes will exceed the capacity of Tg.Priok port in the year 2012. It is reasonable that the excessive containers are regarded as a potential demand of Bojonegara port. Overflowed containers will reach about 800 thousand TEU in 2015.Potential container demand for Bojonegara port is shown in Table 2.2-1.

Table 2.2-1 Container Demand Forecast for Bojonegara Port

Basic Case (TEU)

	Bojonegara Throughput International
2010	-
2011	-
2012	46,355
2013	284,014
2014	533,556
2015	795,574
2016	1,070,694
2017	1,359,569
2018	1,662,889
2019	1,981,374
2020	2,315,783

B. General Cargo and Bag Cargo Demand Forecast

344. Bojonegara port is also expected to handle general cargoes brought about the economic activities in Banten Province.

345. It is assumed in this study that the hinterland of Tg. Priok port is composed of DKI Jakarta, West Java Province and Banten Province. Table 2.2-2 shows GRDP and its annual growth rate of each hinterland province. According to this table, GRDP of Banten province accounts for about ten (10) percent of the total GRDP of the hinterland of Tg.Priok port.

Table 2.2-2 Gross Regional Domestic Product without Oil and Gas at 2000 Constant Market Prices by Province (million rupiahs), 2004-2007

Province		2004	2005	2006	2007
DKI Jakarta	GRDP	277,537,331	294,354,567	311,893,651	332,033,920
	Growth Rate		6.06%	5.96%	6.46%
West Java	GRDP	220,295,697	234,010,928	248,774,393	265,834,045
	Growth Rate		6.23%	6.31%	6.86%
Banten	GRDP	54,880,407	58,106,948	61,341,659	65,046,776
	Growth Rate		5.88%	5.57%	6.04%
	Share of Banten	9.93%	9.91%	9.86%	9.81%
Hinterland	Total GRD	552,713,435	586,472,443	622,009,703	662,914,741
	Growth Rate		6.11%	6.06%	6.58%

Source: Statistical Yearbook of Indonesia 2008

346. Demand forecast of general cargo and bag cargo has been carried out and results are shown in Table 2.1-13 in Section C of this chapter. After Bojonegara port is operational, some portion of the cargo volume will shift from Tg. Priok port to Bojonegara port because of economic benefits such as cost savings in transportation. It is reasonably assumed that the percentage of such a shift is equal to the GRDP share of the hinterland. Accordingly, it is estimated that 10% of general cargo and bag cargo of Tg.Priok port has the potential to shift to Bojonegara port.

347. Table 2.2-3 shows the results of demand forecast of general cargo and bag cargo for Bojonegara port.

Table 2.2-3 Demand Forecast of General +Bag Cargo for Bojonegara port

Year	2012	2015	2020	2025	2030
GC+BC	1,069	1,116	1,211	1,332	1,454

3. Current Condition of Tg.Priok Port

348. Tg.Priok port is the biggest port and handles almost half of the total container throughput in Indonesia. It handled a total of 3,280,000 containers in 2006, ranking 25th among world container handling ports. Because of the insufficient number of berths to accommodate large sized container vessels, shipping service is limited to feeder service and/or intra shipping within the Asian region.

349. Tg.Priok port has four (4) container terminals at present, namely JICTI, JICTII, Koja CT and MTI. Handling capacity for containers, however, has reached the limit due to the lack of berth windows. Furthermore, the container terminals JICTII and MTI, which were originally developed to handle general cargoes and were converted into container terminals, lack a sufficient of stock yard for containers and container vessels are compelled to moor in an outgoing direction because of the narrow basins in front. In addition, aged handling equipment seriously hampers the efficiency of container handling operations.

350. Based on the proposal of the JICA Study 2003, an urgent rehabilitation project in Tg.Priok port, which is a project to widen the navigational channel and financed by JBIC, is in the implementation stage. However, the selection procedure of consultants for engineering service has been delayed. As a result, the project likely won't be completed until around 2013. As the container throughput handled in Tg.Priok port is expected to increase during the project implementation, improving the port function for handling containers in the area of the Greater Jakarta Metropolitan is urgently required.

351. On the other hand, an expansion project to the east side of JICTI , which entails increasing the water depth to 14m below the sea level, the development of an additional gate and parking area, the increasing the number of handling equipment and so on in JICT and Koja CT is planned to be completed by the end of 2010. Furthermore, IPC is demolishing warehouses in the conventional berths and converting them to handle containers. However, even if such efforts are realized, port capacity will be reached again in the near future.

352. Regarding the terminal for automobile exports proposed by JICA Study 2003, IPC completed it on November 2007 using its own finance. This terminal, of which water depth alongside is 12m below the sea level, is equipped with a three-story parking lot and it is expected to improve the port's ability to handle cargoes to some extent. Expanding works of the terminal have already started.

4. Review of Existing Plan

4.1. The Study for Development of the Greater Jakarta Metropolitan Ports in the Republic of Indonesia

353. JICA carried out the Study for the Greater Jakarta Metropolitan Ports in the Republic of Indonesia from year 2002-2003. The purposes of the Study, among others, are:

- To prepare a port development strategy comprising development concept including a role as an international/regional container hub port, administration/ management system, introduction of privatization schemes, and so forth (target year 2025);
- To prepare a master plan for comprehensive development/administration of Tg. Priok Port and Bojonegara Port, taking into account proper functional allotment between the two ports (target year 2025);
- To prepare a short-term development/administration plan for Tg. Priok port and Bojonegara port (target year 2012);

354. The JICA Study Team 2003 identified the following critical issues being faced by Tg. Priok port was facing:

- Lack of speedy and credible cargo transit through the port
- Lack of safe and secure cargo handling
- Lack of available port facilities and space to accommodate the cargo demand
- Lack of fair and transparent dues and charge

355. The JICA Study Team 2003 set the development targets of Jakarta Metropolitan ports as follows;

- To make the Greater Jakarta Metropolitan port function as a "Logistic Center" in the ASEAN region in order to maintain and enhance the competitiveness of Indonesian industry in the region by providing an attractive business /investment environment.
- To make the Greater Jakarta Metropolitan port function as a Regional Hub Port" not only attracting international trunk lines but also linking them to domestic/inter-island lines

356. The proposed development scenario is as follows:

- To increase the port capacity of Tg. Priok port by its urgent rehabilitation up to 2008 with maximum use of the existing port facilities, which will increase the international container handling capacity of the port up to 3.6~3.8 million TEUs against the current capacity of around 3 million TEUs
- To develop a new container handling port in Bojonegara by 2010 as a twin port of Tg. Priok port, considering the following points:

- Spatial constraints for new development in the existing Tg. Priok port and huge cost for new development outside Tg. Priok port.
- Avoiding intensive concentration of cargo traffic especially large container trailers on the roads of the metropolitan area.

357. Basic functions of Tg. Priok port and Bojonegara new port are set as follows, based on the development target and their potentials:

- Tg. Priok
  - Principal international gate-way port supporting industrial development in Western Java area
- Bojonegara
  - Complementary gate-way port of Tg. Priok
  - Basic and strategic logistic infrastructure for regional development of Banten

358. Based on the project concepts shown below, facility layout and land use plan toward 2025 was proposed by the Team while some of the projects were recommended to be developed in the short-term toward 2012;

- Project Concepts:
  - Navigational condition improvement (in terms of capacity & safety)
  - Automobile terminal development
  - Re-organizing land-use of the existing port
  - Development of new port area to appropriately accommodate future demand

- Road improvement in and around the port area
- Environment improvement

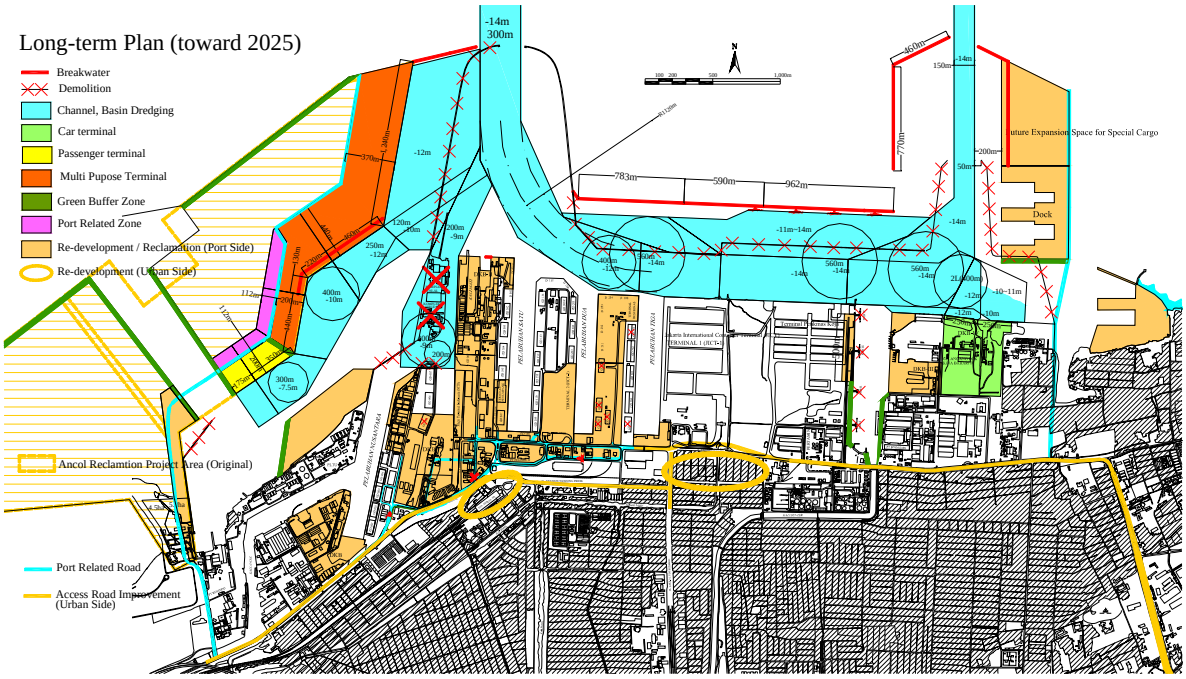


Figure 4.1-1 Long Term Plan of Tanjung Priok port toward 2025

359. Among the projects in the master plan and the short-term development plan, the JICA Study 2003 recommended the following projects to be implemented urgently;

- Widening the Main Channel and expanding turning basin (should be partly realized by 2006)
- Automobile Terminal Development (should be realized by 2006)
- Inter-island Container Handling Improvement in Pier III (Step by step redevelopment together with Ancol development; should be partly realized by 2008)
- Ancol Development including New Passenger Terminal, Multi Purpose Terminal and Access Road (Initial development should be realized by 2010)
- Port Inner Road Improvement (should be realized by 2006)
- Eastern Port Access Highway Development Linking with JORR - This project is urgent but should be implemented by Kimpraswil because the road itself is outside of the port and will be a part of the urban road network.)

4.2. The Master Plan of Tg. Priok Harbor

360. Minister of Transportation issued a regulation regarding Master Plan of Tg. Priok Harbor on 15 November 2007. The basic direction of the Master Plan of Tg. Priok Harbor is in line with that of Study for Development of the JICA Study 2003 explained in the previous section.

361. In the Master Plan, the role and function of Tg. Priok Harbor is defined as an International Hub Port and a logistic center in ASEAN, both of which were slogans stated in the JICA Study 2003.

362. Tg. Priok Harbor now possesses 424 ha of sea area (including port area and breakwater) and 640 ha of land area. In order for the Master Plan to be realized, as much as 1,532.4 ha of land and 19,848.4 ha of sea area are needed.

363. Container throughput is forecast and shown in Table 4.2-1 for international and Table 4.2-2 for domestic.

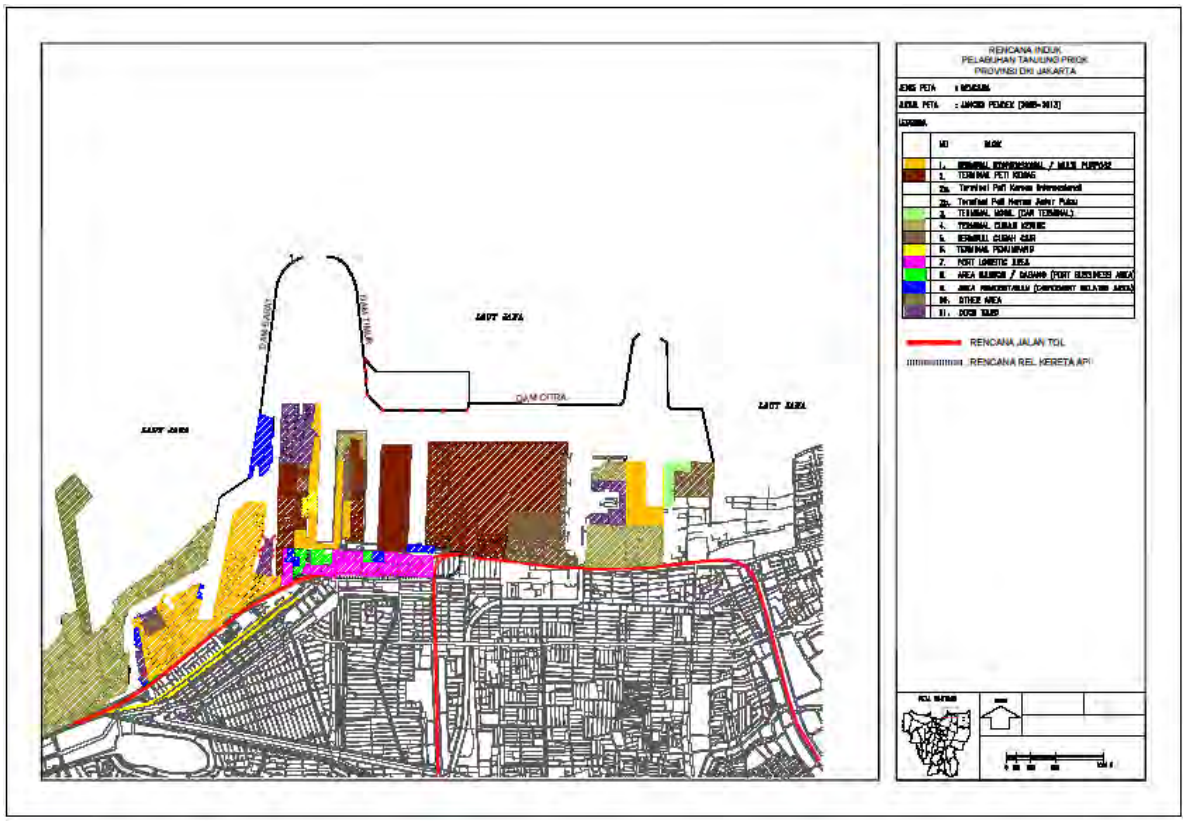
Table 4.2-1 International Container Throughput Forecast

Jangka	Tahun	PDRB	Peti Kemas (Ton)	Peti Kemas (Teu's)
Pendek	2008	111,907,386	34,217,435	3,793,507
	2009	115,893,982	36,112,251	4,003,576
	2010	119,880,578	38,043,546	4,217,688
	2011	123,867,173	40,011,317	4,435,844
	2012	127,853,769	42,015,565	4,658,045
Menengah	2013	131,840,365	44,056,292	4,884,290
	2014	135,826,961	46,133,495	5,114,578
	2015	139,813,557	48,247,175	5,348,911
	2016	143,800,153	50,397,333	5,587,287
	2017	147,786,749	52,583,968	5,829,708
Panjang	2018	151,773,344	54,807,079	6,076,173
	2019	155,759,940	56,434,023	6,256,544
	2020	159,746,536	58,060,966	6,436,914
	2021	163,733,132	59,687,909	6,617,285
	2022	167,719,728	61,314,853	6,797,656
	2023	171,706,324	62,941,796	6,978,026
	2024	175,692,920	64,568,739	7,158,397
	2025	179,679,515	66,195,683	7,338,768
	2026	183,666,111	67,822,626	7,519,138
	2027	187,652,707	69,449,569	7,699,509

Table 4.2-2 Inter-island Container Throughput Forecast

Jangka	Tahun	Peti Kemas Domestik (TEU's)	Jangka	Tahun	Peti Kemas Domestik (TEU's)
Pendek	2008	1,138,052	Panjang	2018	1,822,852
	2009	1,201,073		2019	1,876,963
	2010	1,265,306		2020	1,931,074
	2011	1,330,753		2021	1,985,185
	2012	1,397,413		2022	2,039,297
Menengah	2013	1,465,287		2023	2,093,408
	2014	1,534,373		2024	2,147,519
	2015	1,604,673		2025	2,201,630
	2016	1,676,186		2026	2,255,741
	2017	1,748,912		2027	2,309,853

364. Staged development by three (3) terms was proposed in the Master Plan. Phase I, short term, from 2008 – 2012, shown in Figure 4.2-1, is basically the same as the project components of the short term development plan of the JICA Study 2003. The Phase I plan includes package projects of port inner road improvement, development of flyover, channel and basin improvement, and extension/prolongation of Pasoso-JICT Railway.



No.	Details	Volume	Unit
1.	Structuring of hoarding field/warehouse a. Multipurpose field b. Container field	300,458 90,137 210,321	m^2 m^2 m_2
2.	Development and dredging of the pier/quay	2,541	m^2
3.	Structuring of the land of ex PT Koja Bahari Galangan III	19.97	Ha
4.	Development of Koja Liquid Bulk Terminal	13.00	Ha
5.	Development of CPO	4.70	Ha
6.	Improvement of Line 1 Road	13,380	m^2
7.	Structuring of/the cutting off of Paliat Peninsula	4.50	Ha
8.	Gate in / out line 2	2	unit
9.	Port Inner Road improvement	1	Package
10.	Development of flyover	1	Package
11.	Channel and Basin improvement	1	Package
12.	Extension/prolongation of Pasoso – JICT Railway	1	Package

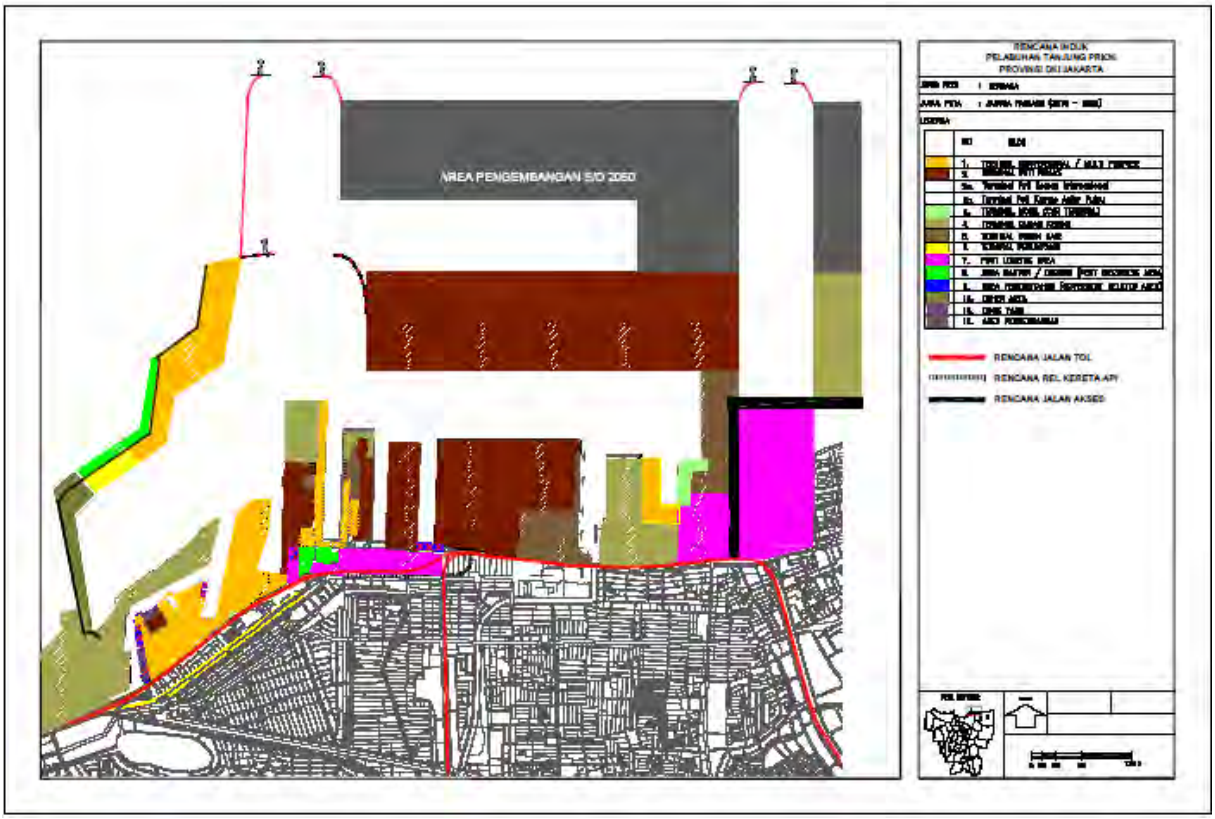
Figure 4.2-1 Short-term Development (2008 - 2012)

365. Phase II, medium term from 2013 – 2017, is a deviation from the development plan proposed by the JICA Study 2003. This Master Plan proposed to develop new container handling space within the Tg. Priok port area. The selected development area is a northern offshore area behind the breakwater. Phase II of the Master Plan proposed reclamation works to the east and north side of the breakwater to obtain a land area of 215ha. The facility layout and project components of the Phase II Plan are shown in Figure 4.2-2.

No.	Details	Volume	Unit
1.	Reclamation of land in East Ancol	125	Ha
2.	Extension of multipurpose quay and passenger terminal	2,200	m
3.	Structuring of the land of ex PT Koja Bahari Galangan II	14.84	Ha
4.	Structuring of the land of PT Sarpindo	3.75	Ha
5.	Reclamation of east and north side of Breakwater	215	Ha
6.	Additional Quay for container and bulk	1,625	m
7.	Causeway	1,500	m
8.	Relocation of Navy, Army, and Police	5.80	Ha
9.	Demolition of the Existing Breakwater	9,964	m
10.	Development of Breakwater	1,985	m
11.	Improvement of Port Logistic Areas in Kalibaru, phase I	32	Ha
12.	Improvement of Office Center	8,000	m^2
13.	Dredging	7,026, 314	m^3

Figure 4.2-2 Medium Term Development (201 3 - 2017)

366. Phase III, long term, from 2018 – 2027, is an extension of Phase II, and includes new reclamation of the North Breakwater to secure 285 ha and an additional quay for container and bulk cargo with about 8 km in length. Facility layout, land use and project components are summarized in Figure 4.2-3.



No.	Details	Volume	Unit
1.	Reclamation of North Breakwater	285	Ha
2.	Additional Quay for Container and Bulk	5,310	m
3.	Additional Multi purpose and passenger Quay	2,300	m
4.	Reclamation of Kalibaru Location	55	Ha
5.	Causeway	1,000	m
6	Demolition of Existing Breakwater	500	m
7.	Development of Breakwater	610	m
8.	Relocation of Navy, Army, and Police	13.44	Ha
9.	Development of Port Logistic Area in Kalibaru, phase II	112	Ha
10.	Dredging	4,359,588	m^3

Figure 4.2-3 Long Term Development (201 8 - 2027)

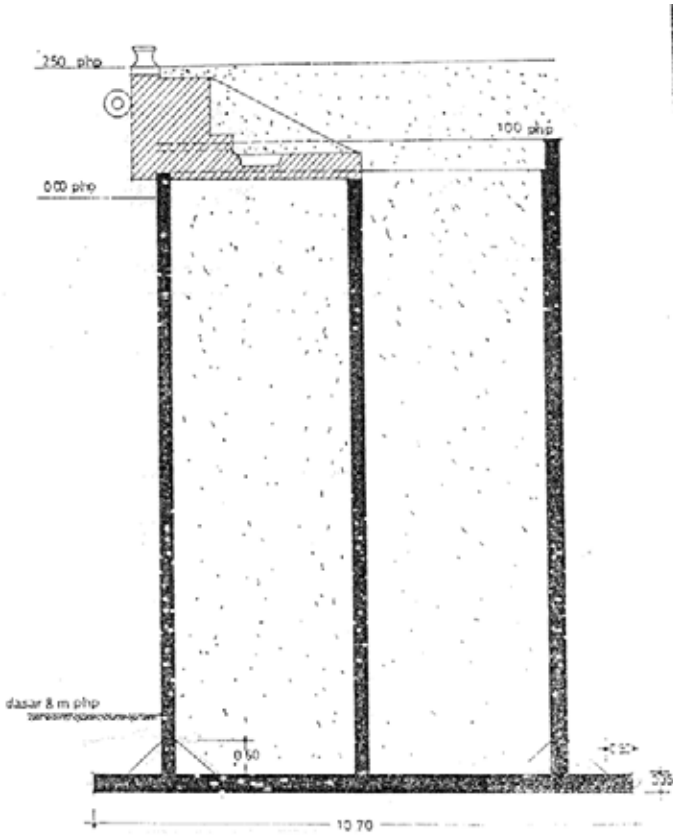
367. Regarding the Master Plan, in-depth feasibility study shall be done prior to implementation of Phase II and Phase III development. Northern area of the existing breakwater is shallow with a water depth of around 5 meters and seabed is composed of very soft sedimentations and material. Consequently, settlement of ground is one of the technical issues and bearing capacity of the foundation also shall be clarified. Calmness of berthing area and turning basin has to be carefully analyzed to provide safe and stable services to the users. Economic and financial viability have to be analyzed and published in the public projects.

4.3. Present Situation of Pier III

A. Existing Wharf Structure

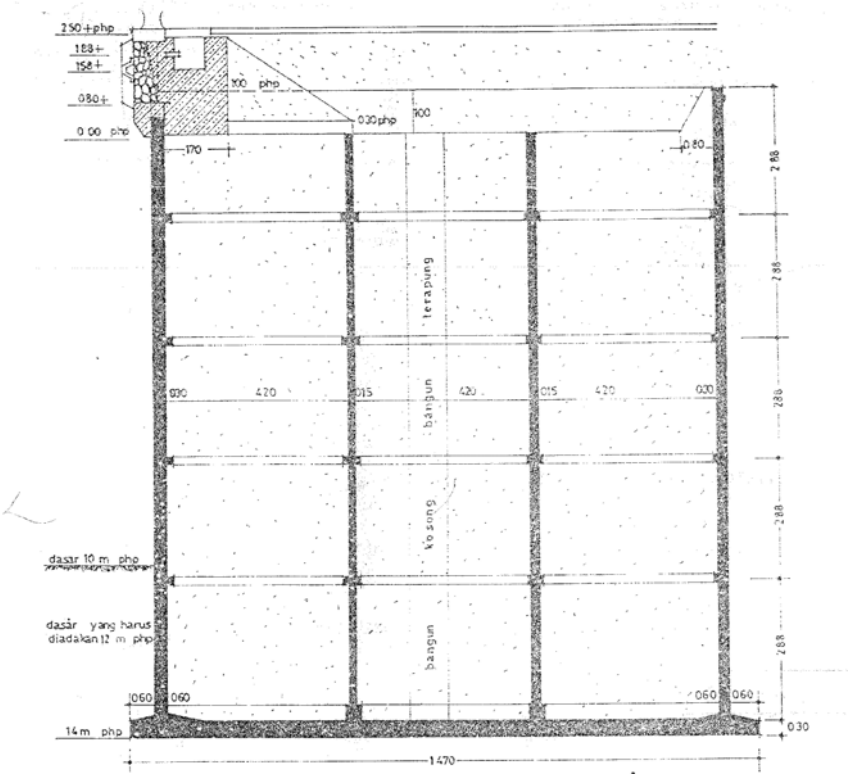
368. Pier III was constructed in 1912 in such way that the east and west quay walls were constructed with concrete caisson structure and the area between both sides of the caisson was filled with sand. Typical cross sections of the east and west side wharves of Pier III are shown in **Figure 4.3-1** and **Figure 4.3-2**.

369. The west side wharf of Pier III was designed with a water depth about -8～-9m and the east side wharf of Pier III was designed with a water depth of about -10～11 m.



Source; Pelanuhan Dua Sebelah Timur；IPC2, Cabang Tg Priok

Figure 4.3-1 Typical Cross Section of PIER III West side Wharf



Source: Pelanuhan Tiga Sebelah Barat; IPC2, Cabang Tg Priok

Figure 4.3-2 Typical Cross Section of PIER III East side Wharf

B. Present situation of PIER III

370. Pier III was originally constructed to handle general cargoes of international trade and export of scrap bulk. Recently, to cope with increasing container traffic, some of the berths have been converted to handle containers and warehouses have also been demolished for container storage yards.

371. Present Utilization Conditions of Berths and Warehouses on Pier III are shown in Table 4.3-1.

Table 4.3-1 Present Utilization Conditions of Berths and Warehouses on Pier III

Berth	Warehouse	Present utilization
Channel I		
No 214/300	Na	International Container Handling
Alongside Port II		Inter-island Container Handling
No. 208	No. 208	Warehouse still used
209/210	209	Warehouse still used
210	210	Warehouse still used
211	Na	Warehouse was demolished
212	Na	Warehouse was demolished
213	Na	Warehouse was demolished
Alongside Port III		Inter-island Container Handling
TBB	NA	Scrap bulk cargo was handled at the TBB; this berth will be converted to a container berth for inter-island containers
No. 301	301	Both warehouses were demolished. Two berths were renovated to handle inter-island containers.
302	302	
303	303	Warehouse is planned to be demolished

		for container handling berth
304	304	Warehouse still used
305	305	Warehouse still used
On the central Part of Pier III		
	213	Two warehouses were demolished and converted into container storage yards
	207X	

372. Present situation of each berth in Pier III is as follows.

373. Northern end of Pier III is Berth 214/300 where MAL is operating container terminals. MAL has installed two sets of gantry cranes on the rails. Quay length is 300 m and water depth alongside is 14 meters below the sea level. Container vessels which deploy between Tg. Priok port and the port of Singapore are mostly using this terminal and container throughput at Berth 214/300 reached 259,220 TEU in 2008.

374. Terminal Besi Bekas (TBB) is a terminal where scrap and steel products are mainly loaded and unloaded. Both ocean-going and inter-island vessels are using this terminal. TBB is 195 m long and alongside water depth is 12 m.

375. Berths 301 ~ 305 are used for handling inter-island containers, dry bulk cargoes and general cargoes. Each berth has about 160m in length and water depth alongside is around 10 m. A variety of cargoes are handled at the berths including containers, general cargo, cement, clinker, soybean, pulp, and pulp.

376. Berths 208 ～213 are also used to handle a variety of cargoes including inter-island containers. Handling volume, however, is not large because of limited space. Total length of the berths is around 1,000m and water depth is around -9m.

377. As explained in Section 4, Chapter II, the JICA Study 2003 recommended the renovation plans of Pier III.

378. Based on the recommendation of the JICA Study 2003, IPC2 started to make re-development plans of Pier III to convert it into a container handling terminal by demolishing some warehouses. IPC2 also extended the top part of Pier III to develop the international container berth as berth No.214/300 with the depth alongside the berth of -14m.

379. IPC2 had already developed the berths 301/302 to handle inter-island containers by demolishing the warehouses 301/302 and installing gantry cranes, which foundation was reinforced with steel pipe piles (dia.600mm)up to the depth of -30m through the existing caisson structure. IPC2 also planned to expand the container handling area to the berth 303.

380. IPC2 had an another plan to accommodate larger international container ships of 40,000 DWT by deepening along the eastside of Pier III (ex TBB berth) up to -14.0m.

381. IPC2 is going to implement the above redevelopment project of Pier III from 2009 by planning and design of the facilities.

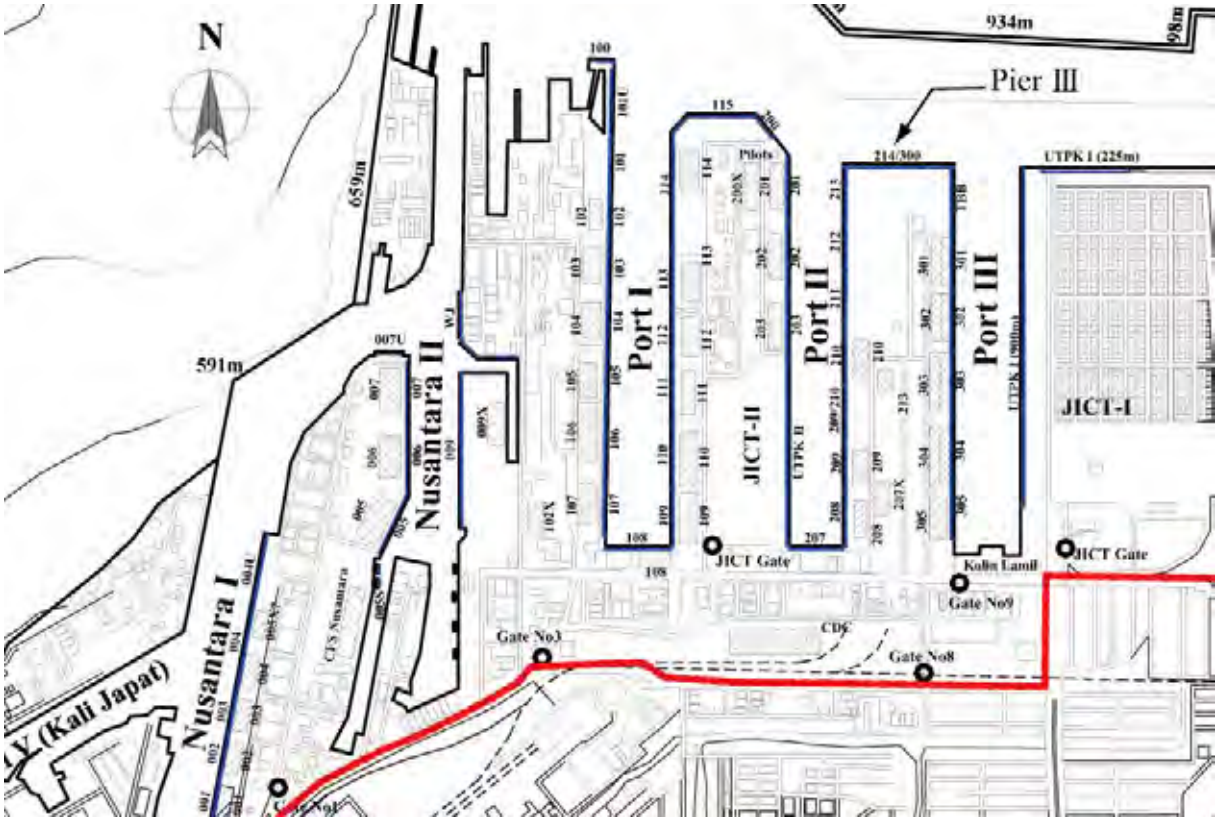


Figure 4.3-3 Conventional wharves Facility Layout.

382. Since the present operational contract of terminal operation at berth 301/302 between IPC 2 and private operator is scheduled to expire in August 2010, the construction works will be started and are scheduled to be completed in 2011. IPC II, which will finance the project itself, plans to operate this part of Pier III as an international container terminal from 2012.

5. Proposed Redevelopment Plan for Case Study

5.1. Necessity of Redevelopment for Container Handling

383. Remarkable developments have been observed in interisland container throughput at Tg. Priok port.. Figure 5.1-1 shows the rapid increase of inter-island container traffic.

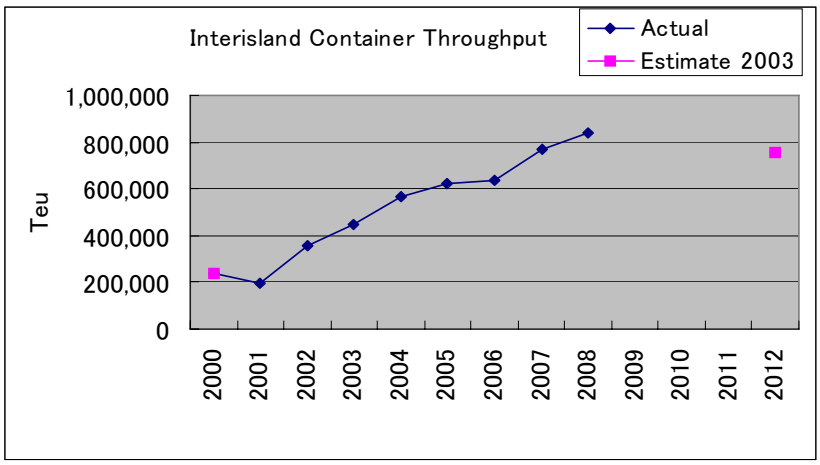


Figure 5.1-1 Inter-island Container Throughput at Tg. Priok

384. It is likely that interisland container traffic will continue to grow as the economic activities are progressing in the islands. It is estimated, as explained earlier, that volumes of inter-island containers handled at Tg. Priok Port will reach about 16 million tons or 1.7 million TEU in 2015, and about 32 million tons or 3.3 million TEU in 2025. Table 5.1-1 shows inter-island container demand at Tg.Priok.

Table 5.1-1 Demand Forecast of Inter-island Containers at Tg. Priok

(Unit: ' 000)

Year	1991	1995	2000	2005	2006	2007	2008	2015	2025
Loading (Ton)	56	543	1,347	3,807	4,031	5,433	4,685	10,251	20,562
(TEU)	11	69	108	330	320	385	425	830	1,664
Unloading (Ton)	57	440	891	2,469	2,452	2,795	2,363	5,628	11,198
(TEU)	8	81	129	293	315	381	413	830	1,664
Total (Ton)	113	984	2,238	6,276	6,483	8,228	7,048	15,879	31,760
(TEU)	19	151	237	624	635	766	838	1,660	3,329

Source: JICA Study Team

385. The rapid growth of the interisland container flow at Tg. Priok port has surely affected both port operation and land use of the port area.

386. These inter-island containers are mostly loaded and unloaded at conventional berths. Container throughput at convention terminals is shown in Table 5.1-2.

Table 5.1-2 Container Throughput at Conventional Terminals in 2008

	Ocean Going			Interisland			Total		
	Box	TEU	Ton	Box	TEU	Ton	Box	TEU	Ton
Pier 1 (Excluding No009)	0	0	0	181,235	190,516	1,597,756	181,235	190,516	1,597,756
Pier 2 (Excluding JICT2)	214	216	1,994	177,043	197,854	1,639,388	177,257	198,070	1,641,382
Pier 3(Excluding No214)	15,075	17,037	177,241	294,730	329,778	2,782,506	309,805	346,815	2,959,747
Nusantara	439	483	5,295	113,405	118,903	1,022,266	113,844	119,386	1,027,561
MAL (214)	167,551	258,751	2,407,543	389	469	5,544	167,940	259,220	2,413,087
MTI (009)	119,226	169,842	1,469,566	20	30	150	119,246	169,872	1,469,716
Total	302,505	446,329	4,061,639	766,822	837,550	7,047,610	1,069,327	1,283,879	11,109,249

387. Besides handling containers, conventional terminals have been accommodating every kind of cargoes such as general cargo, bag cargo, solid bulk and liqid bulk.

388. Some cargoes require a covered storage area while other types of cargoes may need wide open space for marshalling. Conventional terminals were constructed and have been used for handling conventional types of cargo. Therefore, many warehouses and storage facilities such as tank and silo are located near the quayside, and open spaces for handling containers and storage are limited in the area. It is difficult to increase operational efficiency if mixed cargo handling continues.

389. The conventional berths including MTI handled 838,000 TEU of domestic containers in 2008, which is far larger than the total capacity of 485,000 TEU estimated by the JICA Study 2003.

390. Increasing the capacity for handling inter-island containers should be given the first priority. Dedicated inter-island container terminals have to be developed in order to accommodate the increasing inter-island container traffic.

391. The JICA Study 2003 proposes that Pier III should be developed into a dedicated inter-island container terminal considering the depth of each berth, existing warehouses and gantry cranes.

392. It is recommended that the Directorate General of Sea Transport, Ministry of Transport, clearly states that Pier III shall be converted into container terminals to be mainly used for inter-island traffic in the medium and long term from the view point of national welfare.

5.2. Case Study Pier and Facilities

393. The JICA Team designates the northern half of Pier III as a case study area for PPP scheme analysis taking into account the working plan of IPC2 and actual implementation schedule of demolishing works of warehouses and so on. The area is 600m in length from the top of Pier III and 300m in width from east to west.

394. Following redevelopment plan of the facilities in Pier III is proposed.

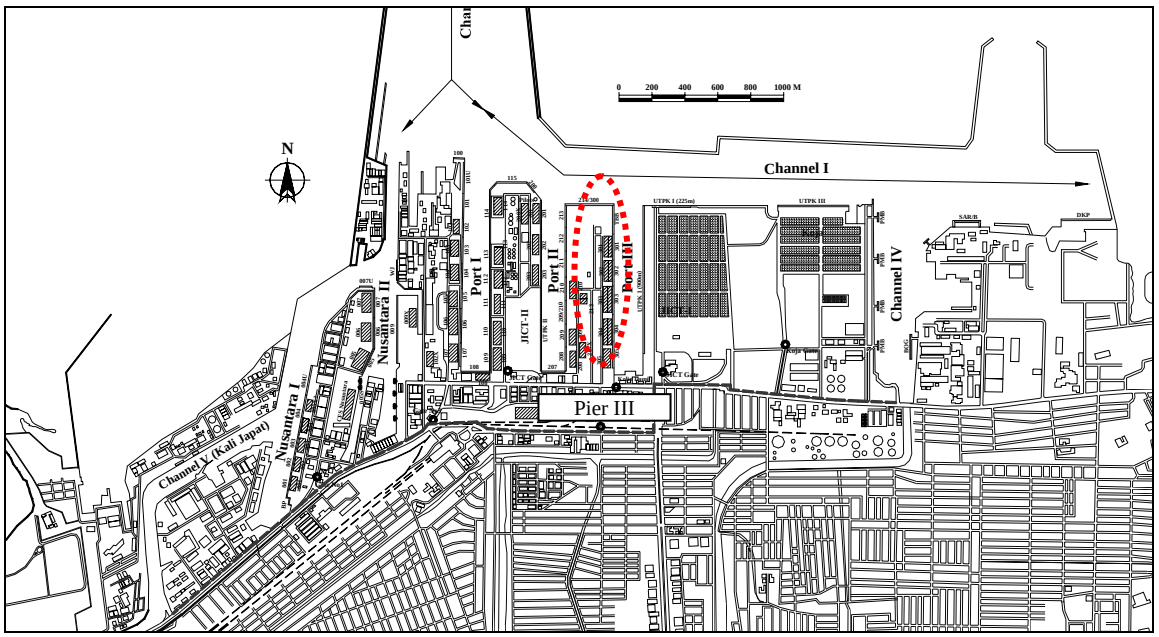


Figure 5.2-1 Location of the Case Study Area

395. Northern end of Pier III shall be utilized as an international container terminal. In the case study, a 300 m long berth with 200 m wide stocking yard shall be used as an import and export terminal.

396. This berth can accommodate a vessel with a full draft of around 12.7m because it has a depth of -14m. The length of the berth is 300m. Therefore, it is possible that planned maximum vessel is set as around 40,000DWT with length of 237m and draft of 12.0m.

397. Actual ship size distribution at Berth 214 in 2008 is shown in Table 5.2-1. Maximum draft of the vessel is registered as 11.5 meters and maximum vessel size is 27,103 GRT. .

Table 5.2-1 Ship Size Distribution at Berth 214 in 2008

GT	～3.5	～4	～5	～6	～7	～8	～9	～10	～11	～12	Total	(%)
0～4,999	1			1							2	1.2%
5,000～9,999					1	8					9	6.7%
10,000～14,999				2	9	18	28	3			60	43.3%
15,000～19,999			1	3	16	13	15	27	6	1	82	93.3%
20,000～								3	7	1	11	100.0%
Total	1	0	1	6	26	39	43	33	13	2	164	
(%)	0.6%	0.6%	1.2%	4.9%	20.7%	44.5%	70.7%	90.9%	98.8%	100.0%		

398. Eastern waterfront of Pier III including the berth 303, which is facing JICT, shall be utilized as dedicated inter-island container berths. Warehouse 303 will be demolished and the existing rail shall be extended to the south by 50m. Planned ship size of inter-island container vessels is set as 10,000GT with 8.4m draft considering the scale of the berths and the previous study.

399. Western waterfront of Pier III in this case study shall not be used for mooring container ships because of the limited yard space.

400. Required cargo handling equipment for the redevelopment of Pier III is as follows;

- Quay Gantry Cranes: 6 units (to be covered by existing cranes)
- Rubber-tired Gantry Cranes: 15 units7 units out of 15 to be covered by the existing RTG cranes of MTI.
- Side Lifter for empty container handling: 6 units (to be procured newly)
- Tractor and Chassis: 23 setsto be covered by the existing vehicles of MTI and OJA
- Terminal Management System: 1 set (to be procured newly)

5.3. Capacity Improvement

401. As discussed in Section 2 of Chapter II, Tg. Priok port is expected to have a maximum capacity of 1.5 million TEU for inter-island containers after renovation and redevelopment of conventional wharves.

402. By redevelopment of the dedicated inter-island container terminal at the case study area, it is estimated that considering storage space and handling equipment, 300,000 TEU of inter-island containers will be handled in addition to 200,000 TEU of international containers at Pier-end berth. The area of the southern half of the pier III is almost same as the case study area. Therefore, total capacity of 600,000 TEU for inter-island containers can be achieved.

403. When the above measures are taken, the resulting increase in capacity will meet the realized demand in around 2015, but not afterwards. To cope with the demand after 2015, more dedicated inter-island container terminals are needed. A new reclamation area in East Ancol of Tg. Priok port proposed by the JICA Study 2003 is a candidate for the said terminals.

404. Planned layout of the case study area of Pier III is shown in Figure 5.3-1.

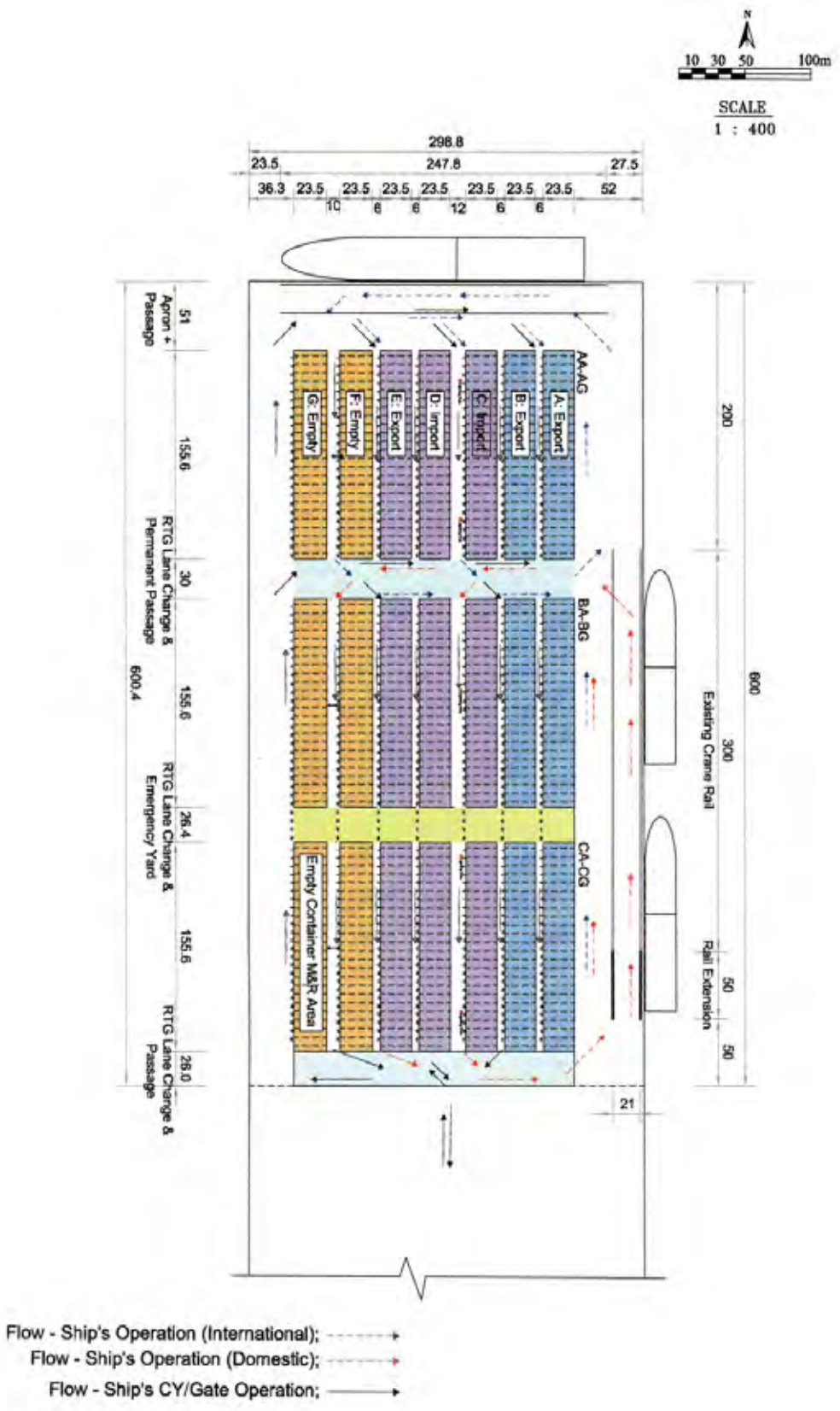


Figure 5.3-1 Facility Layout Plan of the Case Study Area of Pier 3

6. Preliminary Design and Cost Estimate

6.1. Preliminary Design of Facilities

A. Present Condition of the Planned Area

405. The present condition of the planned area for redevelopment is as follows;

406. Structure of TBB berth was constructed with concrete blocks foundations, while berths 301 to 303 were constructed with caisson foundation. The existing ground floor of the stock open yard area behind TSS is paved with concrete and asphalt.

407. Container gantry cranes (4 units) are installed on the rail placed on berth 301/302. Assuming that the same type and capacity of cranes would be used berth 303, the foundation of berth 303 should be reinforced because the crane rail will be extended to warehouse 303.

408. The facilities redevelopment of Pier III for the inter-island container handling terminal as the case study are planned and designed based on the design criteria as below.

B. Design Criteria

409. The design criteria of marine and civil works conform to the following design standards and reference:

- Indonesian Standard PBI (Peraturan Beton Indonesia 90-91) 80, Indonesian Concrete Design;
- Standard National Indonesia 1991-63 Design Standards of Concrete Structure;
- Standards Design Criteria for Ports in Indonesia, 1984;
- Technical Standards and Commentaries for Port and Harbor Facilities in Japan, 2002;
- Indonesia Highway Capacity Manual in 1997 Ministry of Highways and Public Works.

(i) Design container ships;

410. The dimensions of the ships used for the design of redevelopment facilities are summarized in Table 6.1-1.

Table 6.1-1 Objective Ship Size of the Redevelopment Plan

Project Port	Type of Vessel	DWT (GRT)	LOA (m)	Draught (m)
Tg. Priok Port	Container ship			
	International	40,000	237	12.0
	Domestic	10,000	144	8.4

(ii) Natural Conditions for Preliminary Design of Project Facilities

411. The criteria and parameters for the preliminary design are determined based on the results of the last field surveys, the national conditions of the West Jawa province and the project area as described in Chapter 8 of the JICA Study 2003 and other references such as Manual for Port and Harbor Facilities of the Design Standards and Commentaries of Port Facilities in Japan. A summary is shown below.

(1) Tide, Current and Wave Conditions

Table 6.1-2Tide, Current and Wave Condition of Tg.Priok

	Tg. Priok Port
Tide (cm)[1]	
High Water Level (HWL)	+91.00
Mean Sea Level (MSL)	+48.00
Design Low Tide Level (DLT)	0.0
Current (m/sec)[2]	
Maximum velocity	0.50
Wave at Berth,	
Significant Wave Height $H_{1/3(m)}$	0.50
Significant Wave Period $T_{1/3}$	Less than 2 sec
Wave at Breakwater	
Significant Wave Height $H_{1/3}$ (m)	3.00
Significant Wave Period $T_{1/3}$	Around 8 sec

Source 1, 2: Dinas Hidro-Oseanografi, Indonesia

(2) Design Wind

Table 6.1-3 Design Wind

Item	Design Value	Remarks
Wind Velocity	V = 49 m/s	West Java area, 20 m/sec Max. for last 30 years
Wind Pressure	p = 245 kg/m^2 p = 196 kg/m^2 p = 147 kg/m^2	h > 30m 9 m < h < 30m 0 m < h < 9m

(3) Subsoil Condition

412. According to the geotechnical investigation in the west side of the Tg. Priok port area, the following parameters are used for the preliminary design for the new port facilities.

	West side Area
-17.0 m	Clay N = around 10 or less
-25.0 m	Sand clay N = around 50 or more c = 30 kPa, ϕ = 30°, γ' = 0.9 tf/m^3
-34.0 m	Dense to very dense sand N = around 45 to 50 or more c = 0 kPa, ϕ = 35°, γ' = 1.5 tf/m^3

	Inside Basin Area
-15.0 m	Clay N= 0 - 20
-22.0 m	Silty Clay, N = 24 - 30 c = 30 kPa, ϕ = 30°, γ' = 0.9 tf/m^3
-30.0 m	Dense to very dense sand N = more than 50 c = 0 kPa, ϕ = 35°, γ' = 1.5 tf/m^3

(iii) Design Conditions of Berthing Structure

(1) Crown Height

413. The crown height of the berth is normally determined by the following formula:

H = HWL + (1.0 to 2.0 m);
(large vessel with a water depth of 4.5 m or more and tidal range smaller than 3.0m)

H = HWL + (0.5 to 1.5 m);
(small vessel with a water depth less than 4.5 m and tidal range smaller than 3.0m)

414. The crown height greatly affects the construction cost of the port. The strength of the quay wall structure and reclamation volume are proportional to the crown height. On the other hand, as it becomes lower, the chance of the berth being flooded by high waves becomes larger.

415. As a preliminary design of the container wharf structure at Tg. Priok port, the crown height is fixed at 3.5m from MLLW considering the ship size and required efficiency of cargo handling operation.

$$HWL + 2.0\ m + H_{1/3} = +\ 3.5\ m$$

(2) Surcharge on the Wharf;

416. On the apron of the berths of the port, the following surcharge is considered as a dead load by assuming temporary stack of containers;

- Normal condition: 2.5 tf/m²
- Seismic Condition: 1.0 tf/m². (50% of the normal condition)

(3) Seismic Coefficient

417. The seismic coefficient for the proposed port facility is computed by applying the above factors as follows:

- West Jawa Province is located in zone 3 of the regional seismic coefficient under stiff soil, C = 0.05
- Stiffness Factor of structures; K = 1.0
- Importance Factor; I = 1.5
- K_h = K x C x I = 1.0 x 0.05 x 1.5
  = 0.075 (for the Bojonegara and Tg. Priok port facility)
- K_v = not considered = 0

418. In case of Koja container terminal extension project K_h is 0.18 for sea wall design (Earthquake coefficient 0.09, Importance factor 2.0 and Structure factor 1.0). It is, therefore, recommended to adopt 0.1 for K_h at Tg. Priok port.

(4) Wheel Load as live loads by gantry crane on the Wharf

419. Quay wall structures of container berth are designed to sustain the following container cranes with the provisions of their foundation:

- Rail Gauge : 30 m
- Overall Weight : approximately 750 tf/unit;
- Nominal rated capacity : 41 tf under spreader.

420. In the design of the apron, only trailer trucks and standard trucks with fully loaded containers are considered as handling equipment; the following wheel loads are considered:

- Standard Truck (H22 - 44) : 8.0 tf/wheel
- Tractor Trailer (40') : 5.8 tf/wheel

(5) Tractive Force and Berthing Force

Mooring

421. Tractive force acting on mooring bitts is set at 100 tf per unit for the vessels from 10,000 to 50,000 DWT which are spaced at 35 m.

Fender System

422. In designing the fender system to absorb the shock of ship berthing energy, berthing speed of vessels to be adopted is as follows:

- 10,000 ~ 20,000 DWT 0.15 m/sec.

423. Maximum berthing angle is 10 degrees. Spacing of rubber fenders is installed from 10 to 15.0 m. Fender frame is attached as part of the fender system.

(iv) Design Yard and Pavement

(1) Pavement

424. Based on the operation planning inside the container terminal of the new yard on Pier III and selection of the pavement type, the wheel loads shown in Table 6.2-4 are the critical condition for each type and area of the pavements, on which the design will be conducted:

425. Special provision of pre-stressed concrete block slab pavement is adopted for the track of rubber transfer cranes (RTG), whose wheel loads exceed 40 tf/wheel.

426. The pavement of the parking lots on the reclaimed land for container terminal will consist of interlocking concrete blocks.

Table 6.1-4 Critical Wheel Load for Pavement Design

Area Particulars	Access / Service Road	Container Terminal Area		Stock Yard		Multipurpose Berth	
		Berth / Apron	Road way	RTG passage way	Stock yard	Berth/ Apron	Yard Area
Critical Wheel Load Type	Standard Truck (H20-44)	Standard Truck (H20-44)	Forklift Truck (25 tf)	RTG (40ft)	Reach stacker (4.5 tf)	Standard Truck (H20-44)	Forklift Truck (25 tf)
Critical Wheel Load (ton)	8.0	8.0	12.8	40	8.1	8.0	12.8
Pavement Type	Concrete	Concrete	Concrete	PC slab	Inter-lock block	Concrete	Concrete

PC slab: pre-stressed concrete block slab

6.2. Major Facilities Design

427. The redevelopment of Pier III for the case study area requires the following works to handle the domestic container.

- Removal of the existing scrap handling cranes (2 units) and a warehouse (GD 303).
- Extension of existing crane rails by 50m to warehouse 303, which is planned to be demolished in 2009.
- Reinforcement of the crane rail foundation by steel pipe piles (diameter 700mm, driving 5 m interval up to -30m) , which will be driven through the existing caisson. It is

reported from IPC2 that the SPP for crane foundation at the berth No 301/302 were able to be driven through the bottom slab of the existing caisson and gravel stone mound.

- Installation of new fenders along the berth according to the designed ship size.
- Concrete slab foundation in thickness of 35 cm is placed on the apron area for installation of crane rail on the existing caisson structures.
- Reinforced concrete (thickness of 35 cm) is overlaid on the apron part.
- Different types of yard pavement are introduced according to the kind of vehicles running on the container yard.
- Installation of drainage system in the container yard.
- Storage area of containers will be paved with interlock concrete blocks.
- Provision of utility supply system (water supply, electric power supply, light bulbs on the container storage yard).
- Gate control system with parking area for trucks and terminal administrative office building.

6.3. Cost Estimate

A. Cost Hearings and Collection of Information

428. The redevelopment project of Pier III of Tg. Priok port is planned to be carried out, as mentioned above, with the reinforcement and improvement of the existing facilities, and will be achieved by the civil works of comparatively small dimensions.

429. To carry out the cost estimate of those reinforcement works and improvement works, information concerning the improvement programs and actual contract records in recent years was collected from project offices. The project offices visited by the Study Team were as follows.

i) IPC2, Cabang Tanjung Priok (Technical Division)

Re-development projects of Pier II (Dermaga 114, Dermaga 115) and Pier III

ii) Jakarta Fishing Port

Rehabilitation and Improvement Project of Jakarta Fishing Port (November 2008)

430. According to the hearings in the field study, it is understood that the local construction companies in Indonesia have technical and financial capability to carry out the port construction, and most of the construction materials can be procured locally in Indonesia (except for fenders installed on quay walls).

B. Unit Prices of Labor, Material and Equipment

431. Unit prices of each element of construction works such as labor, construction material and construction equipment are determined on the basis of the information collected from the major local construction companies in Jakarta obtained in the field study (March 2009).

432. The basic wages of construction laborers and unit prices of construction materials are summarized in Table 6.3-1 and

433. Table 6.3-2.

Table 6.3-1 Basic Wages of Construction Labors (West Java Area)

Item	Unit	Basic Wage (Rupiah)
Engineer (expatriate)	month	80,000,000
Engineer (local)	month	9,000,000
Assistant Engineer	month	6,000,000
Supervisor	month	7,600,000
Office Manager	month	6,300,000
Accountant	month	5,400,000
Typist	month	4,200,000
Foreman	day	69,000
Skilled Labor	day	62,000
Common Labor	day	55,200
Mechanic	day	75,900
Electrician	day	75,900
Welder	day	69,000
Operator	day	75,900
Truck Driver	day	52,000
Surveyor	hour	49,200
Assistant Surveyor	hour	12,000

Table 6.3-2 Unit Prices of Construction Materials (West Java Area)

Item	Unit	Basic Price (Rupiah)
Steel Bar	kg	8,640
Structure Steel	kg	10,200
Steel Sheet Pile	kg	14,000
Steel Pipe Pile	kg	10,200
RC Pile; D 500~600 mm	m	600,000
Portland Cement	ton	1,260,000
Ready-mixed Concrete		
Strength: 220 kg/cm^2	m^3	690,000
Strength: 290 kg/cm^2	m^3	762,000
Strength: 340 kg/cm^2	m^3	792,000
Fine Aggregate	m^3	270,000
Coarse Aggregate	m^3	240,000
Local Sand	m^3	240,000
Crushed Stone	m^3	234,000
Rock for Rubble Mound	m^3	210,000
Asphalt	kg	5,600
Gasoline	litre	5,000
Diesel Oil	litre	4,500

C. Currency Component

433. Each unit price was split into foreign currency and local currency portions (both indicated in Rupiah) as follows;

- The foreign currency component consists of:
  - Imported construction materials
  - Foreign components of depreciation and operation/maintenance cost for construction equipment and plant
  - Foreign component of domestic materials
  - Salaries and costs of foreign personnel

- The local currency component consists of:
  - Local construction materials
  - Local components of depreciation and operation /maintenance cost for construction equipment and plant
  - Salaries and costs of local personnel
  - Import duty on imported materials
  - Indonesian taxes

434. The basic prices are as of April 2009 and the foreign exchange rate is given as follows considering the current trend in the market as of March and April 2009. Reference is made to Figure 6.3-1 for the fluctuation of the exchange rate between the Indonesian Rupiah and US Dollar

1 USD = 11,000 Rupiah = 100 Yen

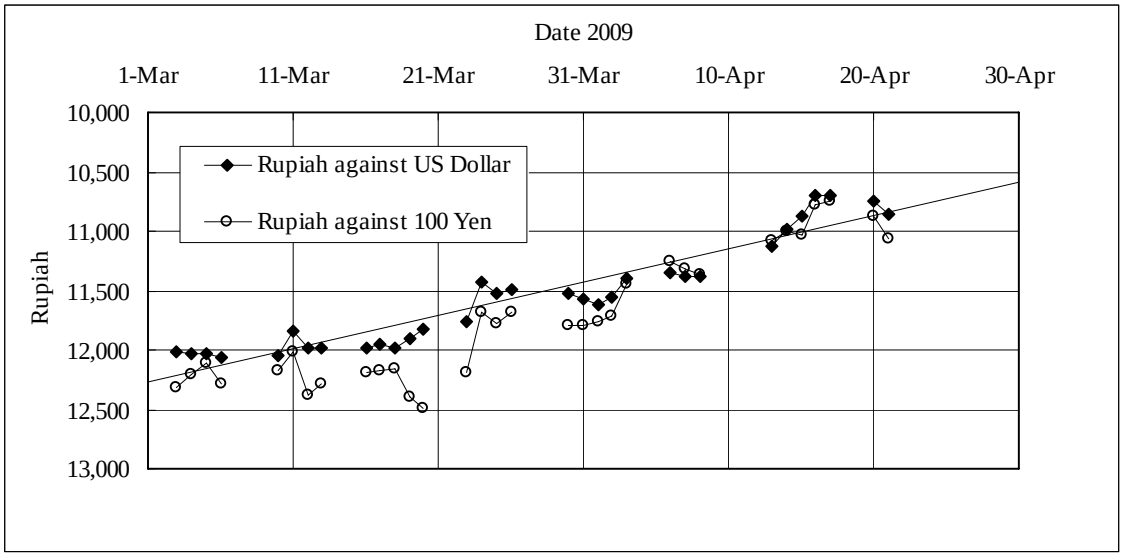


Figure 6.3-1 Exchange Rate of Indonesia Rupiah against US Dollar

D. Combined Cost for Major Works

435. The breakdown of unit costs of the construction works are prepared by accumulating costs of labor, materials, equipment and also the indirect costs such as mobilization, general temporary works, overheads profit and so on.

436. While, the cost of the works such as building works, fabrication of cargo handling equipment, supply of utilities and demolition works are hindcasted on the basis of the empirical prices collected from the major contractors which have experiences in the fields.

437. Price of imported products such as cargo handling equipment, fender systems, bollard and navigation aids are to be estimated based on the CIF Jakarta price and adjusted considering import tax and some mobilization fee to the construction site.

438. The combined costs for major construction works are estimated from the costs of labor, required materials, required construction equipment, and the site expense of labor and equipment. Table 6.3-3 presents the combined cost of major work items for the re-development of Pier III, Tg.Priok port.

439. These combined costs for the construction works were verified by the collected information of the contract prices in the very recent years in the region based on the hearings mentioned above.

Table 6.3-3 Combined Cost for Major Construction Works (Pier III)

Work Item	Description	Unit	Unit Price
Crane Rail Foundation	Steel Pipe Pile, D600, t=16 mm, up to 30 m depth	m	5.5 million Rp
Yard Pavement	Container Stacking Area	m^2	865,000 Rp
Passage Pavement	Yard passage and apron	m^2	575,000 Rp
Quay Fittings	Fender, bollard	set	180 million Rp
Building		m^2	400 USD/m^2

E. Project Cost

440. Project cost for the re-development of Pier III in Tg. Priok port is estimated in Table 6.3-4.

Table 6.3-4 Estimated Project Cost

Description	Unit	Quantity	Local Portion (1,000 Rupiah)		Foreign Portion (1,000 Rupiah)		Remarks
			Unit Price	Amount	Unit Price	Amount	
1. General Cost (GC)				**3,169,002**		**2,080,601**	Total 4 % of the DC
(1) Mobilization / Demobilization	l.s.	1		792,250		520,150	1.0 % of the DC
(2) Temporary Work Yard	l.s.	1		1,188,376		780,225	1.5 % of the DC
(3) Benchmark and Preparation Works	l.s.	1		792,250		520,150	1.0 % of the DC
(4) Testing Laboratory	l.s.	1		316,900		208,060	0.4 % of the DC
(5) Submittals	l.s.	1		79,225		52,015	0.1 % of the DC
2. Quay and Apron				**20,050,000**		**13,140,000**	600 m
(1) Demolition Works	l.s.	1		6,336,000		1,584,000	Existing cranes (2), warehouse (150 x 55 m^2)
(2) Crane Rail Extension	m	50	2,500	250,000	1,500	150,000	2 x 50 m x 300 USD/m
(3) Piling for Crane Rail Support	m	660	3,000	1,980,000	2,500	1,650,000	5-meter interval x 30 m depth, 5.5 million Rp/m
(4) Apron Pavement	m^2	31,200	360	11,232,000	240	7,488,000	W:52 m x L:600 m; 50 USD/m^2
(5) Quay Accessories	unit	14	18,000	252,000	162,000	2,268,000	Fender, Bollard, etc.(15 m interval for 200 m)
3. Container Yard				**57,795,039**		**38,530,026**	
(1) Pavement for Container Stacking Area	m^2	76,789	540	41,465,844	360	27,643,896	
(2) Pavement for Passages	m^2	9,251	360	3,330,187	240	2,220,125	50 USD/m^2
(3) Access Road Reinforcement	m^2	4,000	360	1,440,000	240	960,000	Gate House / Container Yard; L: 400 m x W:10 m
(4) Utility Facilities	l.s.	1		11,559,008		7,706,005	Power supply, lighting, drainage, etc.
4. Buildings				**1,380,000**		**345,000**	
Gate House	m^2	375	3,680	1,380,000	920	345,000	25 m x 15 m; 400 USD/m^2
Direct Construction Cost (DC)				**79,225,039**		**52,015,026**	**Total of 2.+ 3.+4.**
5. Total Construction Cost (TC)				**82,394,041**		**54,095,627**	**TC = GC + DC**
6. Project Related Expenses							
(1) Administration Cost	l.s.	1		823,940		540,956	1 % of TC
(2) Engineering Fee (EF)	l.s.	1		4,943,642		3,245,738	6% of TC
Total Project Related Expenses (PE)				**5,767,583**		**3,786,694**	**9,554,277**
7. Total Project Cost				**88,161,623**		**57,882,321**	**Sum of 5.+ 6.**
VAT (10 %)				8,816,162		5,788,232	**14,604,394**

7. Preliminary Implementation Schedule

7.1. Investment Plan for Redevelopment of Pier III

441. The financial source of the re-development of Pier III shall be borne by IPC2, and the budgetary procedures for the project shall start from the year 2009.

442. After promulgation of new shipping law and its G.R., IPC2 will lose its current status as the conceding authority. Hence, PPP scheme should be the case where the new port authority will become the conceding authority.

7.2. Preliminary Implementation Schedule

443. A preliminary implementation schedule of the redevelopment project of Pier III is presented in Table 7.2-1. The schedule is planned based on the following assumptions.

- Construction work will get started after August 2010 when the present contract between IPC2 and PT PBM Olah Jasa Andal (OJA) will be terminated, and the construction duration will be about one and half years.
- The re-developed container terminal will become operational from the beginning of 2012.

444. The selection procedure for the operator of Pier III will be conducted during the construction period and the operator should be determined before the Pier is in operation.

Table 7.2-1 Preliminary Implementation Schedule of Pier III, Tg. Priok

Description	Unit	Quantity	2009	2010	2011	2012	2013
Process of Finance							
Survey / Detailed Design				Contract of PT OJA terminated (August 2010).			
Tender Process / Contractor Selection							
Construction (Quay 200 m)							
Construction (Apron 400 m and Yard; PT OJA)							
Operation of PIER 3							
1. Quay Improvement (200 m)							
(1) Apron Pavement	m^2	10,400					
(2) Fender and Bollard	unit	14					
2. Quay Improvement (400 m)							
(1) Demolition Works	l.s.	1					
(2) Crane Rail Extension	m	50					
(3) Piling for Crane Rail Support	m	660					
(4) Apron Pavement	m^2	20,800					
3. Container Yard							
(1) Pavement for Container Stacking Are	m^2	76,789					
(2) Pavement for Passages	m^2	9,251					
(3) Access Road Reinforcement	m^2	4,000					
(4) Utility Facilities	l.s.	1					
4. Buildings							
Gate House	m^2	375					
Fences	m	300					

8. Possible PPP Schemes and Financial Analysis

8.1. Premises on Project

A. Initial Investment Costs

445. Initial investment costs are estimated in Table 8.1-1.

Table 8.1-1 Initial Investment Costs

	Item	Total Cost '000 US$
	Construction Cost for Tanjung Priok	31,621
	1. General Cost	477
	2. Quay and Apron	3,031
	3. Container Yard	9,027
	4. Buildings	157
	5. PA Equipment (used)	18,930
	7. Price Escalation	632
	TJP Total Construction Cost	32,254
	8. Engineering Fee	1,897
	Total Construction Cost & Consulting Services	34,151
	9. Interest During Construction (IDC)	-
	TJP Total Direct Project Cost-1	34,151
	6. Physical Contingency	3,415
	TJP Total Direct Project Cost	37,566
	10. Equipment (other than PA equipment) inc. VAT	*23,656*
	11. Local Cost (Adiministration Cost + VAT)	3,788
	TJP Total Project Cost	65,010

Notes. 1US$=100Yen, 1US$=11,000Rp

446. Additional equipment to be invested by the terminal operator is shown in Table 8.1-2.

Table 8.1-2 Expected equipment to be installed by the TOC

Equipment Item	Required nos.	Remarks
Quay cranes plus	0	lease from PA
RTG plus	8	
Yard Tractor	0	lease from PA
Yard Chassis	0	lease from PA
Top Handler	1	
Side Handler (Picker)	6	
Tank Lorry	1	
Bus for Worker	1	
M/R Service car	1	
Forklift 10t	1	
Forklift 3t-5t	1	
Forklift for CFS	3	
Yard Vehicle	8	
Fire Fighting Vehicle	1	
PC & Fitting	1	
CPU System	1	For Operation

B. Management and Operation Costs

447. Manning schedules of the Port Authority and terminal operator are shown in Table 8.1-3 and in Table 8.1-4.

Table 8.1-3 Manning schedule of PA

PA Staff		
PA Staff		
General Manager		1
Deputy General Manager		1
Secretary		2
Manager		2
Assist. Manager		3
Stuff		5
Total		14

Table 8.1-4 Manning schedule of TOC

Office		
Concessionair (Office)		
CEO (office manager)		1
CFO (treasurer)		1
Corporate Secretary		1
Operation Stuff		
Manager		2
Stuff		12
Maintenance & Repair		
Manager		1
Assist. Manager		2
Administrative Dep.		
Manager		1
Stuff		5
Labor Management		
Manager		1
stuff		5
Total		32

Labour Cost		
Concessionair (Worker)		
Ship,Yard Operation		
Boss		15
G.C.Operator		25
RTG & Heavy		50
Lift Equip. Operator		
Tractor Driver		40
Longshore Worker		80
Marine Clerk		40
Lift Equip. Operator		
Boss		4
R Stacker driver		30
Electrician		5
CFS Operation		
Boss		1
Driver & Worker		30
Clerk		10
Total		330

448. Management and operation costs of the port authority and the terminal operator are shown in Table 8.1-5.

Table 8.1-5 Operation Cost

	PA	TOC
Number of Person	14 Persons	Operational office: 32 Persons Operational Labor: 330 Persons
Personnel Cost	37,500,000 Rp/person/year	Manager class: 150,000,000 Rp/person/year Stuff class: 52,500,000 Rp/person/year Skilled Labor: 75,000,000 Rp/person/year

		Unskilled labor: 37,500,000 Rp/person/year
Administration and Other Cost	-	100% of Personnel cost
Maintenance Cost	Infrastructure: 1% of the total project cost Equipment: 3% of the equipment cost Electric, fuel & utilities: 2% of the equipment cost	
Depreciation	Civil structure: 40 year, Equipment: 20 year	

C. Tariff and Dues

449. Tariff and dues are set as in Table 8.1-6 and in Table 8.1-7 taking the current level into consideration.

Table 8.1-6 Tariff set by the Government

Port Tariff		International (US$)	Inter-island (Rp)
PA	Light Due	0.027/GRT-arrival	250/GRT-arrival
	Harbor Due	0.092/GRT-arrival	73.0/GRT-arrival
	Anchorage service	0.092/GRT- call	73.0/GRT- call

Table 8.1-7 Samples of Terminal Charges

Container Handling Charge: TOC	International		Inter-island	
	20ft	40ft	20ft	40ft
Stevedoring charge, QGC	L: US$ 66.0/box E: US$ 49.5/box	L: US$ 99.0/box E: US$ 74.25/box	L: Rp 415,000/box E: Rp 312,000/box	L: Rp 632,500/box E: Rp 467,000/box
Opening/closing ship hatch	US$ 30.77/hatch-cover		Rp 250,000/hatch-cover	
Wharfage for vessel	US$ 0.122/GRT-day		Rp 68.0/GRT-day	
Lift on/off charge	L: Rp 187,500/box E: Rp 93,700/box	L: Rp 281,300/box E: Rp 140,600/box	L: Rp 90,000/box E: Rp 60,000/box	L: Rp 200,000/box E: Rp 100,000/box
Container storage charge	L: Rp 27,200/box E: Rp 13,600/box R: Rp 62,900/box	L: Rp 54,400/box E: Rp 27,200/box R: Rp 125,800/box	L: Rp 6,500/box E: Rp 6,600/box *R: Nill*	L: Rp 13,000/box E: Rp 13,000/box *R: Nill*
Reefer service	Rp 200,000/8-hour	Rp 300,000/8-hour	Rp 320,000/24-hour	Rp 480,000/24-hour
Mooring/unmooring service	US$ 33.8/movement		Rp 388,700/movement	

Notes, L: Laden container, E: Empty container, R: Reefer container.

D. Estimated scale of business

450. Maximum capacity of the terminal is presumed as 500,000TEU/year (see Table 8.1-8), considering the scale of the terminal and estimated vessel type (see Table 8.1-9) and productivity of the terminal is shown in Table 8.1-10.

Table 8.1-8 Demand of Container

	Type	International(IN)		Inter-island(IS)	
		20ft	40ft	20ft	40ft
2012-2031	TEU	200,000		300,000	
2012 | 2031	Box	59,740 | 42,424	70,130 | 78,788	226,316 | 94,737	36,842 | 102,632

Note: TEU/ Box rate increasing 0.02 per year, as of year 2012 set its 1.54 (IN) and 1.14 (IS)

Table 8.1-9 Vessel Type and Calling Number

	Year	Ship size (GRT) Vessel number		
International vessel	2012-2031	1500TEU (16,000) 52	2000TEU (22,000) 104	2500TEU (27,000) 52
Inter-island vessel		300TEU (3,000) 312	500TEU (5,000) 416	750TEU (8,000) 260

Table 8.1-10 Tg. Priok Port Productivity

Productivity: International (IN)	No-working hours	No.Crane	Productivity(Box/hour)
Average Ship Size(2,500TEU)	3	3	25
Average Ship Size(2,000TEU)	3	3	25
Average Ship Size(1,000TEU)	3	2	25

Productivity: Inter-island (IS)	No-working hours	No.Crane	Productivity(Box/hour)
Average Ship Size(750TEU)	3	2	22
Average Ship Size(500TEU)	3	2	22
Average Ship Size(300TEU)	3	1	22

8.2. Possible PPP Schemes for Remodeling of Pier III of Tg. Priok Port

451. During the implementation of the Project by IPC2, GOI has promulgated new Shipping Law which stipulates that IPC2's role will be changed from port management to operator. The regal status of IPC2 as the project owner of existing terminals including their rehabilitation project is not clear in the current government regulations.

452. IPC2 is insisting that ongoing projects are continuously under the ownership of IPC2 while DGST is insisting that new projects will be under the authority of Port Authority to be established.

453. According to the new Shipping Law, it is clear that IPC2 will not have an authority to lease out or concession any more and have only the status of port operator.

454. Considering the situation above, two types of PPP scheme are considered to be possible;

(i) Case-1:

- Port Authority will purchase the Project from IPC2 at the costs spent by IPC2 by the fund from government and then terminal operator (TOC) will be selected following the regulations stipulated by the GOI.
- PPP scheme applied will be the concession of the terminal facilities for 20 years term to the TOC and TOC will purchase additional equipment for its operation.

(Duration of the concession period should be decided based on the financial assessment under relevant concession conditions such as initial investment, reinvestment for renewal of equipment and facilities, maintenance obligation and concession fee etc. A 25~30 year period or more is common, however, regarding the Pier III redevelopment project, duration of the concession period of case-1 and case-2 is set at 20 years considering the regulated life time of used assets because that this project is a form of improvement for the existing berth and yard.)

(ii) Case-2

- IPC2 will continue to develop the project on BOT base while the Port Authority will hold the authority of concession as a conceding authority
- The Port Authority as a representative of the Government holds the proprietorship of the port water and port land

8.3. Financial Conditions of Port Authority and Terminal Operator

455. For the purpose of financial analysis, financial conditions of Port Authority and Terminal Operator are set as shown in Table 8.3-1Table 8.3-1.

Discount rates of all cases are set as follows;

Port Authority: 0.0% (the interest rate of government funds)

Terminal Operator: 10.5% (calculated from market interest rates (15.0%) of Indonesia and debt-equity ratio (70:30))

（One of the criteria for evaluating the financial viability of a project is that the FIRR which is one of the financial indicators should exceed the discount rate.）

Table 8.3-1 Financial Conditions of Port Authority and Terminal Operator

Case-1	Port Authority	Terminal Operator (Concessionaire)
1. Cost Allocation	rehabilitation costs of pier III including equipment under use	cost for additional equipment
2. Financial Resource	Government fund (repayment from the year of terminal operation for its principal for 20 years term)	70% from bank (15% interest loan term 10 years) and 30%=$71.mill from its equity
3. Tax and Duties	non tax	20 % income tax
4. Maintenance	Maintenance Dredging	Facilities and equipment maintenance
5. Depreciation	facilities and equipment of P.A.	additional equipment
6. Concession Fee	Fixed fee for facilities equivalent to repayment to Government + variable fee of 5% revenue share + land rent and water rent	
7. Renewal cost for equipment	bank loan	bank loan
Case-2	Port Authority	Terminal Operator (Concessionaire)
1. Cost Allocation	no initial investment	all the project cost
2. Financial Resource	not applicable	70% from bank (15% interest loan term 10 years) and 30%=$20mill from its
3. Tax and Duties	not applicable	same as case-1
4. Maintenance	same as case-1	same as case-1
5. Depreciation	not applicable	all the facilities and equipment
6. Concession Fee	15% revenue share + land and water rent	
7. Renewal cost for equipment	not applicable	bank loan

8.4. Evaluation of PPP Scheme

A. Table of Financial Indicators and Financial Statements for the concession evaluation

456. Regarding the financial viability of the concession, the financial soundness of the whole project is first analyzed by evaluating the financial indicators such as Financial Internal Rate of Return (FIRR), Return on Net Fixed Asset, Operating Ratio and Debt Service Coverage Ratio (DSCR) etc. to determine whether these indicators satisfy the criteria.

Next, the financial situation of the operator will be analyzed through the concession period by using Financial Statements such as Income Statement, Cash Flow and Balance Sheet.

457. The financial statements are not attached in the case that the financial situation of the operator is satisfactory (e.g. the financial situation of the operator becomes normal 5 years from the commencement of operation). In the case that each of the financial indicators shows an unusual/extreme numerical value, however, the financial statements will be attached.

458. By analyzing the effects to the concession conditions such as the concession fee, taxes and other public charges, obligatory investment and so on during the concession period by using the financial statements, reasonable conditions for the concession can be set.

459. In the case of the Pier III redevelopment project, the results of the financial analysis show that the financial condition of both cases are relatively sound and hence tables of the financial indicators are attached in the report.

B. Result of Evaluation

460. Tg. Priok Port has been the dominant commercial port in Indonesia favored with concentrated shippers and consignees facing the metropolitan area and hence demand for the port has been ever increasing. In this context, there is no commercial risk. The project needs less investment costs than other project because of its nature of rehabilitation of existing facility and hence it involves no project risk.

461. The terminal can expect full demand for its capacity from the initial stage of the operation, and hence it shows very favorable financial conditions both for the terminal operator and the port authority under any possible scheme of PPP.

462. Major reason of resulting favorable financial condition for case-1 lies in the financial resource for the port authority which depends on government fund with non-interest loan and rather small amount of initial investment cost (see Table 8.4-1).

463. As to the case-2, it is assumed that IPC2 will invest 30% of the project costs from its own equity favored with the current status of SOE which has endowed credibility from the bank. In addition to the small amount of initial investment costs, it leads to the favorable financial condition of IPC2 (see Table 8.4-2).

464. From these analysis, it can be said that in case of rather favored market condition and continuation of the existing operation by expanding similar terminal capacity corresponding to the ever increasing demand, no risk is involved in the project.

465. In such a case, it is highly possible for the port authority to succeed the operation of the terminal with minor renovation after transfer of the terminal from the concessionaire and hence it is also probable for the concessionaire to require the extension of concession period.

466. Taking into such a situation as this case study, concession scheme should includes the possible case of either extension of concession period for the current concessionaire or succession of terminal operation by the port authority itself.

Table 8.4-1 Result of Financial Analysis (Case-1): Tg. Priok Port

OUTPUTS

Year of No.4-6 Q. Crane added	2012		
Concession Fee	1st Prd	2nd Prd	3rd Prd
Fixed	1,121	1,121	1,121
Variable	5,358	5,253	5,186

	1000$		1000$
Used RTG, Tractor&Chassis Rental	0	RTG Rental (from 2022)	0
Used GT Crane lease	1,787	GT Crane lease (from 2022)	2,382

		Financial Indicators		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
TOC	PROFITABILITY (Net Operating Income/ Net Fixed Assets)																			
	Rate of Return on Net Fixed Assets (Criterion: over %)		8.00%	0.00%	38.13%	40.74%	43.84%	33.80%	36.38%	39.95%	44.43%	33.29%	36.54%	37.33%	31.69%	29.03%	34.82%	38.16%	20.10%	16.91%
	OPERATIONAL EFFICIENCY																			
	Operating Ratio (Criterion: under 0.7- 0.75)			0.00	0.68	0.68	0.69	0.70	0.71	0.71	0.71	0.71	0.71	0.71	0.80	0.80	0.80	0.80	0.80	0.80
	Working Ratio (Criterion: under 0.5- 0.6)			0.00	0.62	0.62	0.62	0.62	0.63	0.63	0.63	0.63	0.63	0.63	0.67	0.68	0.68	0.68	0.68	0.68
	LOAN REPAYMENT CAPACITY																			
	Debt Service Coverage Ratio (Criterion: over 1.0)			0.00	1.70	1.87	1.97	2.08	1.64	1.75	1.87	2.02	1.53	1.68	1.52	2.98	2.24	2.44	2.32	1.27
		concessionn fee rate (fixed)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		concession fee rate (variable)		20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
		total concession fee/revenue		0%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	39%	39%	39%	39%	39%	40%
	MAXIMUM CONCESSION FEE RATE	NPV(Profit/Revenue)	75.38%																	

		Financial Indicators		2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
	PROFITABILITY (Net Operating Income/ Net Fixed Assets)																				
	Rate of Return on Net Fixed Assets (Criterion: over %)		8.00%	18.73%	21.03%	24.03%	20.88%														
	OPERATIONAL EFFICIENCY																				
	Operating Ratio (Criterion: under 0.7- 0.75)			0.80	0.80	0.80	0.81														
	Working Ratio (Criterion: under 0.5- 0.6)			0.68	0.68	0.68	0.68														
	LOAN REPAYMENT CAPACITY																				
	Debt Service Coverage Ratio (Criterion: over 1.0)			1.05	1.14	1.22	1.48														
	FINANCIAL INTERNAL RATE OF RETURN		36.9%																		
		concessionn fee rate (fixed)		100%	100%	100%	100%														
		concession fee rate (variable)		20%	20%	20%	20%														
		total concession fee/revenue		40%	40%	40%	40%														
	MAXIMUM CONCESSION FEE RATE	NPV(Profit/Revenue)	75.38%																		
	Retained Earnings Total		60,816	($1,000)																	

		Financial Indicators		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
PA	PROFITABILITY (Net Operating Income/ Net Fixed Assets)																			
	Rate of Return on Net Fixed Assets (Criterion: over %)		1.59%	0.00%	19.78%	21.12%	22.68%	24.50%	26.66%	29.25%	32.43%	36.50%	41.72%	9.19%	10.03%	10.46%	10.93%	11.45%	12.01%	12.64%
	OPERATIONAL EFFICIENCY																			
	Operating Ratio (Criterion: under 0.7- 0.75)			0.00	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.31	0.31	0.31	0.31	0.31	0.31
	Working Ratio (Criterion: under 0.5- 0.6)			0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	LOAN REPAYMENT CAPACITY																			
	Debt Service Coverage Ratio (Criterion: over 1.0)			0.00	2.61	4.95	4.94	4.93	4.91	4.90	4.89	4.89	4.88	4.87	1.28	1.28	1.28	1.28	1.28	1.28

		Financial Indicators		2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
	PROFITABILITY (Net Operating Income/ Net Fixed Assets)																				
	Rate of Return on Net Fixed Assets (Criterion: over %)		1.59%	13.34%	14.13%	15.02%	16.03%														
	OPERATIONAL EFFICIENCY																				
	Operating Ratio (Criterion: under 0.7- 0.75)			0.31	0.31	0.31	0.31														
	Working Ratio (Criterion: under 0.5- 0.6)			0.02	0.02	0.02	0.02														
	LOAN REPAYMENT CAPACITY																				
	Debt Service Coverage Ratio (Criterion: over 1.0)			1.28	1.28	1.28	1.27														
	Retained Earnings Total		153,390	($1,000)																	
	FINANCIAL INTERNAL RATE OF RETRUN		17.9%																		

Table 8.4-2 Result of Financial Analysis (Case-2): Tg. Priok Port

OUTPUTS

Year of No.4-6 Q. Crane added	2012		
Concession Fee	1st Prd	2nd Prd	3rd Prd
Fixed	0	0	0
Variable	4,086	4,007	3,957

	1000$		1000$
Used RTG, Tractor&Chassis Rental	0	RTG Rental (from 2022)	0
Used GT Crane lease	0	GT Crane lease (from 2022)	0

TOC

		Financial Indicators		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
PROFITABILITY (Net Operating Income/ Net Fixed Assets)																				
	Rate of Return on Net Fixed Assets (Criterion: over %)		8.00%	0.00%	15.19%	16.51%	18.13%	16.85%	18.82%	21.50%	25.19%	23.89%	28.84%	7.78%	7.09%	7.25%	7.80%	8.26%	7.36%	7.28%
OPERATIONAL EFFICIENCY																				
	Operating Ratio (Criterion: under 0.7- 0.75)			0.00	0.66	0.66	0.66	0.68	0.69	0.69	0.69	0.69	0.69	0.69	0.74	0.74	0.74	0.74	0.74	0.75
	Working Ratio (Criterion: under 0.5- 0.6)			0.00	0.45	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.47	0.47	0.47	0.47	0.47
LOAN REPAYMENT CAPACITY																				
	Debt Service Coverage Ratio (Criterion: over 1.0)			0.00	3.22	3.38	3.36	3.33	2.88	2.89	2.87	2.86	2.47	2.49	1.02	1.31	1.26	1.26	1.23	1.12
		concessionn fee rate (fixed)		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		concession fee rate (variable)		15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
		total concession fee/revenue		0%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
	MAXIMUM CONCESSION FEE RATE	NPV(Profit/Revenue)	74.50%																	

		Financial Indicators		2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
PROFITABILITY (Net Operating Income/ Net Fixed Assets)																					
	Rate of Return on Net Fixed Assets (Criterion: over %)		8.00%	7.86%	8.55%	9.39%	9.49%														
OPERATIONAL EFFICIENCY																					
	Operating Ratio (Criterion: under 0.7- 0.75)			0.75	0.75	0.75	0.75														
	Working Ratio (Criterion: under 0.5- 0.6)			0.47	0.47	0.47	0.47														
LOAN REPAYMENT CAPACITY																					
	Debt Service Coverage Ratio (Criterion: over 1.0)			1.07	1.07	1.07	1.13														
FINANCIAL INTERNAL RATE OF RETURN			14.9%																		
		concessionn fee rate (fixed)		0%	0%	0%	0%														
		concession fee rate (variable)		15%	15%	15%	15%														
		total concession fee/revenue		17%	17%	17%	17%														
	MAXIMUM CONCESSION FEE RATE	NPV(Profit/Revenue)	74.50%																		
	Retained Earnings Total		121,798	($1,000)																	

PA

		Financial Indicators		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
PROFITABILITY (Net Operating Income/ Net Fixed Assets)																				
	Rate of Return on Net Fixed Assets (Criterion: over %)		1.59%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
OPERATIONAL EFFICIENCY																				
	Operating Ratio (Criterion: under 0.7- 0.75)			0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	Working Ratio (Criterion: under 0.5- 0.6)			0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
LOAN REPAYMENT CAPACITY																				
	Debt Service Coverage Ratio (Criterion: over 1.0)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		Financial Indicators		2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
PROFITABILITY (Net Operating Income/ Net Fixed Assets)																					
	Rate of Return on Net Fixed Assets (Criterion: over %)		1.59%	0.00%	0.00%	0.00%	0.00%														
OPERATIONAL EFFICIENCY																					
	Operating Ratio (Criterion: under 0.7- 0.75)			0.03	0.03	0.03	0.03														
	Working Ratio (Criterion: under 0.5- 0.6)			0.03	0.03	0.03	0.03														
LOAN REPAYMENT CAPACITY																					
	Debt Service Coverage Ratio (Criterion: over 1.0)			0.00	0.00	0.00	0.00														
	Retained Earnings Total		102,499	($1,000)																	
FINANCIAL INTERNAL RATE OF RETRUN																					