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Sabang Free Trade Zone and Free Port Authority
(BPKS)

Weh Island Transshipment Port Feasibility Study

FINAL REPORT

November 2008

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ASSOCIATES

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INTRODUCTION

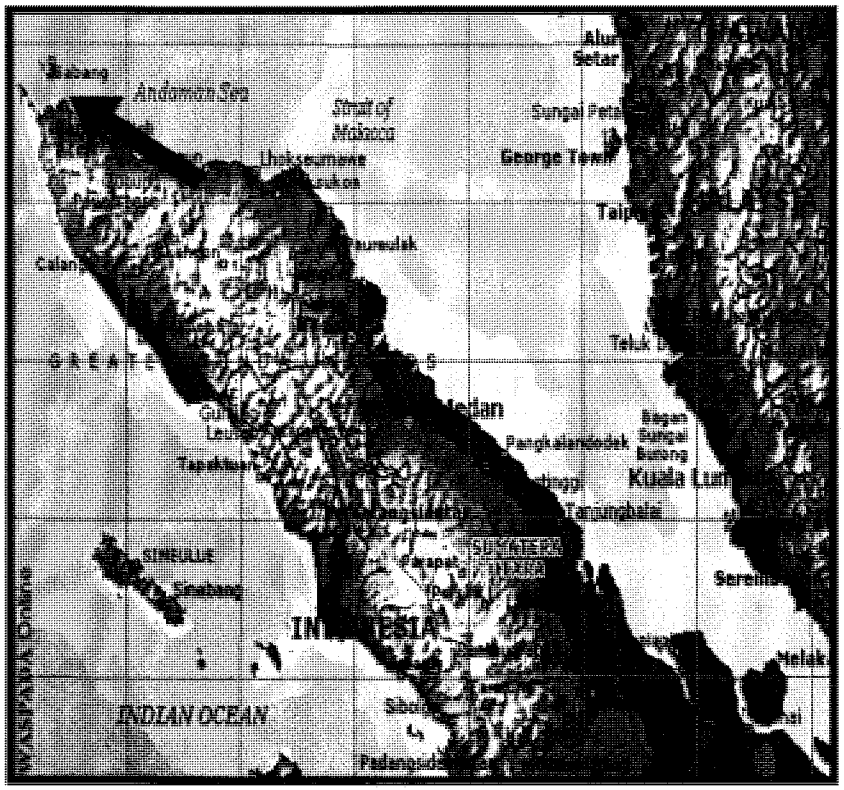
The challenges of globalization and the growth in demand are causing the cargo and petroleum industries to change their methods of operation. With the introduction of the Super Post-Panamax container vessel (over 10,000 TEUs) and the near-exclusive use of supertankers (Very Large Crude Carriers (VLCC), up to 500,000 dwt), shipping companies are increasingly looking at deep water "transshipment" terminals to optimize shipping and vessel costs. The purpose of this document is to summarize the results of a Feasibility Study prepared in 2008 that examined the technical, economic, legal, environmental, and financial requirements for establishing a combined container and oil transshipment port facility on Weh Island in Aceh Province, Indonesia. The proposed new terminals on Weh Island would provide the international shipping industry with a strategic location to transfer cargo and petroleum to and from smaller, regional vessels serving local markets throughout South and Southeast Asia. The Feasibility Study, conducted by an outside team of technical experts, as well as the recommended projects that flow from the team's recommendations, are intended to assist the Management Board of Sabang Free Port and Free Trade Zone (the local government entity which manages all of Weh Island's planned developments, including port projects) in its efforts to develop transshipment facilities for Weh Island.

As will be shown, the project is "market driven", in that the primary focus at the outset was to determine if the market exists for such a terminal at this location. The Market Analysis is followed by evaluations of the technical, legal, and financial requirements for developing the terminals.

INDONESIAN BACKGROUND

Aceh Province, Indonesia is located at the northern part of Sumatra Island. Weh Island is one of the largest of the 132 islands in the province and is located just to the north of the regional capital, Banda Aceh. The island is locally known as Sabang (named after the largest city on the island). Aceh has a strong and rich maritime tradition because of its strategic location at the northwestern end of the Malacca Straits, one of the busiest shipping corridors in the world. It is approximately 245 square kilometers in size and borders the Bay of Bengal in the North, the Malacca Straits in the East, and Indian Ocean in the West.

Figure 1 Location of Weh Island



The Port of Sabang was established as a free port after the Second World War, but the status of Sabang as a free port was revoked by the Central Government in 1985. This move sent both the port facilities and the economy of Sabang Island into a state of steady decline. Prior to the 2004 Tsunami, however, the Government had re-established Sabang as a commercial port and was actively supporting several port improvement projects with the hopes of rejuvenating the economy of the island and the region.

MARKET ANALYSIS

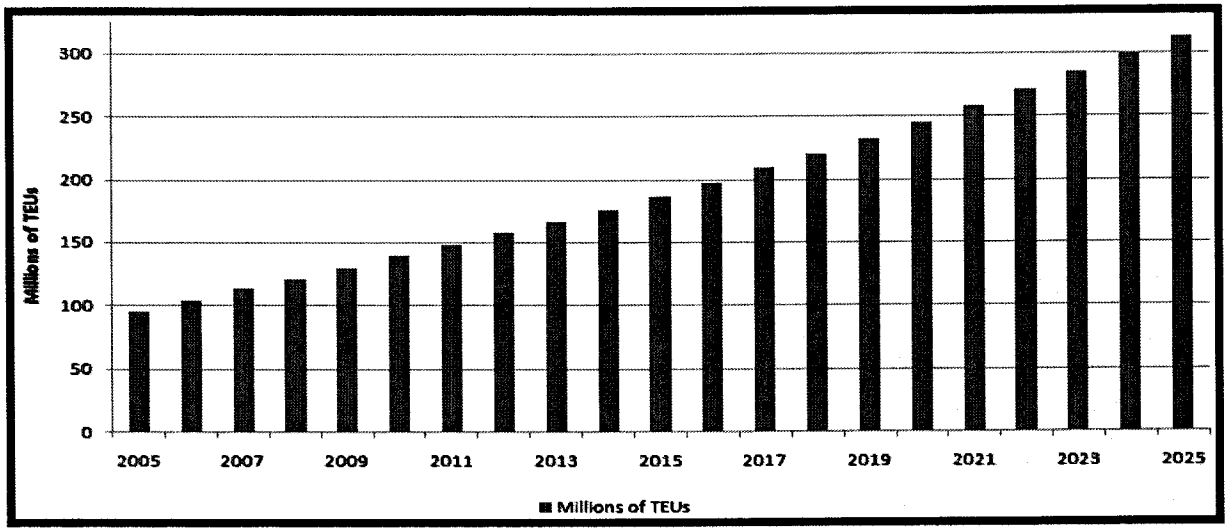
A Market Analysis examined and established the technical and capacity requirements for development of new port facilities. The purpose of this analysis was to identify the potential regional competition for transshipment ports on Weh Island to support both the container and oil industry, and identify potential clients and investors that would benefit from terminals of this type at this location. The Market Analysis section of this document provides a detailed overview of the world's economy and economic growth outlook, followed by an overview of regional economic conditions and specifically the projected evolution of the container cargo business, and to a lesser extent, the petroleum industry.

CONTAINER TRAFFIC

Because of the downturn in world economies, container trade, measured in TEUs, is projected to grow at a much slower rate in the foreseeable future. Yet, despite the deceleration in the percentages of cargo growth, **container traffic will continue to grow**, and at a rate faster than any other segment of ocean cargo shipping. Global Insight's World Trade Service forecast, shown below in Tables 1 and 2, indicate that, despite sluggish economies, an annual average increase in TEUs of 6.4 percent per year can be anticipated by 2015.

Table 1 Total Container Trade

(Millions of TEUs)



As the U.S. economy slides into a recession, U.S. consumer demand for foreign goods is also projected to decrease. As inflation erodes income gains, consumer spending growth in the U.S. is also expected to decrease. Container traffic to North America is therefore projected to decrease by as many as 300,000 TEU yearly in the near term. Conversely, the North America to Far East container trade growth is forecast to increase, with this route remaining strong in

2008, and the ratio of westbound to eastbound TEU volumes remaining at about 2:1 in 2008. Table 2 illustrates these container projections.

The container volumes projected for the Weh Island development are based on the forecast growth rates from Global Insight's World Trade Service, and on a review of actual port statistics in the region. ***A high growth scenario suggests that there will be significant shortages of capacity in Southeast Asia by 2015, and the Region will therefore require new port and terminal development beyond those currently under construction or consideration in order to meet this increased demand.***

Table 2 Projected Changes in Container Trade

Trade Direction	Annual Growth Rate					Average Annual Growth Rate		
	2006	2007	2008	2009	2010	2010-2015	2015-2020	2020-2025
Southeast Asia to Europe	7.4%	10.5%	8.4%	4.8%	4.0%	4.3%	5.0%	4.7%
Europe to Southeast Asia	5.7%	4.8%	4.9%	4.9%	5.4%	4.4%	2.9%	2.3%
Far East to Europe	16.3%	18.4%	12.0%	8.4%	7.9%	6.8%	6.6%	6.0%
Europe to Far East	5.3%	5.9%	5.3%	7.2%	7.1%	5.7%	4.6%	3.4%
Southeast Asia to North America	2.7%	3.9%	2.9%	4.3%	6.7%	5.0%	5.1%	5.0%
North America to Southeast Asia	1.2%	28.1%	18.4%	6.5%	4.3%	3.9%	3.0%	2.8%
Far East to North America	11.3%	2.2%	-1.3%	7.1%	9.2%	7.0%	6.3%	5.9%
North America to Far East	5.4%	14.4%	10.5%	8.5%	5.6%	4.8%	4.1%	3.2%

The growth rates beyond 2010 for container vessels will be dominated by Ultra Large Container (ULC) Ships. Many companies are shifting to larger vessels in order to reduce slot costs (time at berth) as a means of dealing with increasing expenses that are not readily recoverable. The trend towards continued growth in vessel sizes is illustrated in the increase in average TEU capacity as indicated in Table 3 below.

Table 3 Actual Growth in Container Trade per Vessel

Rank (03/07)	Parent/Main Company	Growth %	2008 Ø TEU	1999 Ø TEU
1	Maersk Line	71%	3,600	2,100
2	MSC	106%	3,300	1,600
3	CMA CGM	50%	2,400	1,600
4	Evergreen	67%	3,500	2,100
5	Hapag-Lloyd	38%	3,600	2,600
6	China Shipping	520%	3,100	500
7	Coscon	107%	3,100	1,500
8	APL	23%	3,200	2,600
9	NYK	57%	3,300	2,100
10	Hanjin	45%	4,200	2,900
11	MOL	63%	3,100	1,900
12	K" Line	57%	3,300	2,100
13	Zim	53%	2,600	1,700
Total		100%	4,000	2,000

The container cargo industry has changed to meet the challenges of globalization and the near continuous growth in demand. In addition to the shift to larger vessels, there is an on-going consolidation of the industry through mergers and acquisition. The trend has been and will continue to be, for Carriers to work together in joint services and alliances that offer "strings" of services across a larger number of ports than they could service individually. This will increase the use of hub ports as the ULCs must minimize their number of port calls to stay efficient.

The last two decades have seen remarkable growth from China's mainland ports. Preliminary 2007 numbers indicate that the five busiest container ports (Singapore, Shanghai, Hong Kong, Shenzhen, and Busan) are all located in Asia. Four of these five ports are major Asian transshipment hubs, as seen in Table 4. China and Southeast Asia will continue to dominate container shipper for the foreseeable future.

Figure 2 below displays the locations of the key deep sea transshipment ports in Asia, and details the number of berths at each.

Table 4 Asian Transshipment

Port	Millions of TEUs		
	2006 Total	Transshipment	% Share
Singapore	24.8	21.1	85%
Hong Kong	23.5	9.6	41%
Shanghai	21.7	5.4	25%
Busan	12.0	5.2	43%
Kaohsiung	9.8	5.4	55%
Qingdao	7.7	2.0	26%
Port Kelang	6.3	3.3	52%
PT Pelepas	4.8	4.5	94%
Laem Chabang	4.1	1.1	27%
Colombo	3.1	2.4	77%
Kwangyang	1.8	0.4	25%

Source: Dynamar

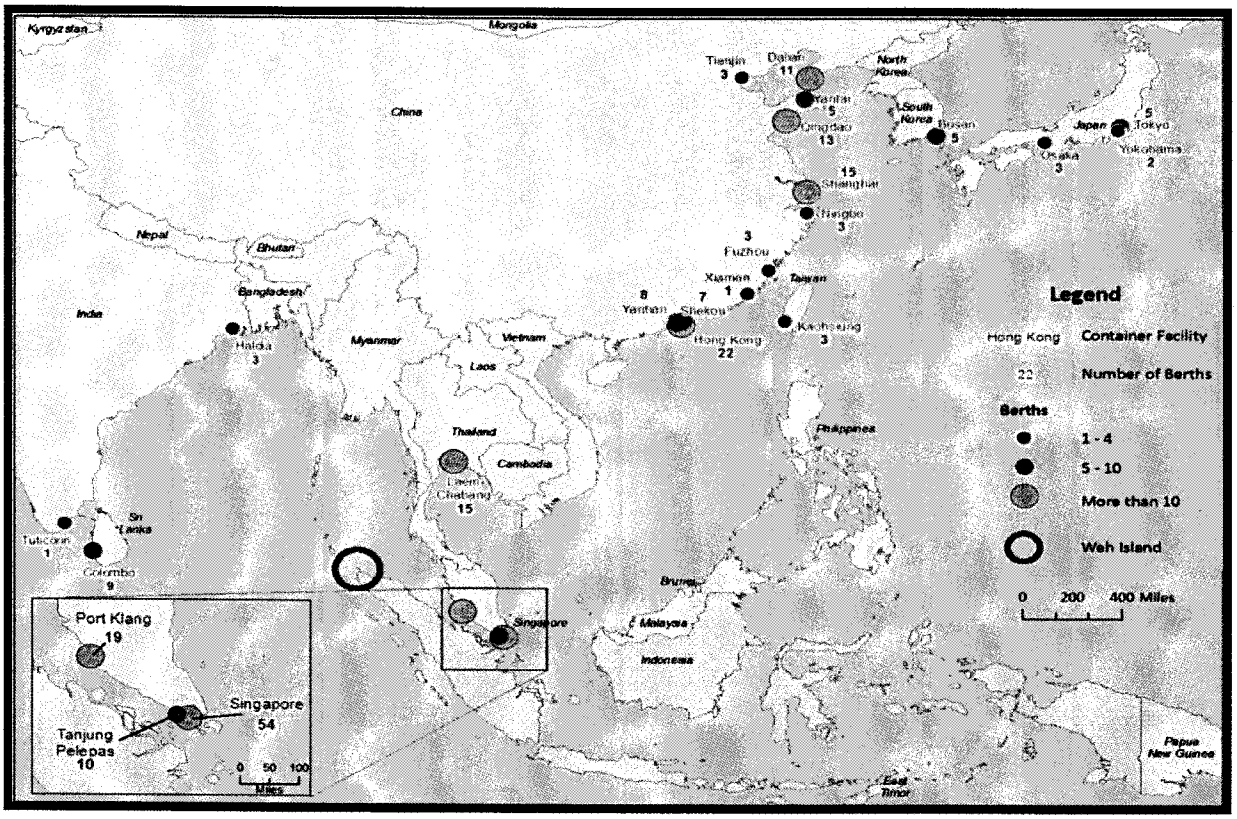


Figure 2 Map of Key Asian Deep Sea Transshipment Ports

Notes: Hong Kong values include mainland China-related transshipments, but not Pearl River Delta transshipments. Shanghai's transshipment volume is exclusively made up of domestic boxes, which may or may not include Yangtse River business.

		Period : May 2008					Period : May 2007		Progression	
Rank	Carrier	TEU Weekly	kTEU Annual	Share FE-Eur	Share World	Weight FE-Eur/Wld	TEU Weekly	Share FE-Eur	Progress per annum	Gain/Loss in share
1	Maersk	79,830	4,151	19.1%	16.4	1,16	66,400	20.6%	20.2%	-7.3%
2	MSC	48,996	2,548	11.7%	10.4	1,13	35,475	11.0%	38.1%	6.5%
3	CMA	42,404	2,205	10.1%	7.4%	1,37	34,845	10.8%	21.7%	-6.1%
4	Evergree	27,918	1,452	6.7%	5.1%	1,31	20,953	6.5%	33.2%	2.8%
5	COSCO	24,508	1,274	5.9%	3.7%	1,58	18,695	5.8%	31.1%	1.1%
6	Hanjin	20,706	1,077	4.9%	2.9%	1,71	16,702	5.2%	24.0%	-4.4%
7	Yang	19,865	1,033	4.7%	2.3%	2,06	12,399	3.8%	60.2%	23.6%
8	Hapag-	19,048	991,	4.6%	4.2%	1,08	15,247	4.7%	24.9%	-3.6%
9	NYK	17,873	929	4.3%	3.3%	1,29	12,375	3.8%	44.4%	11.4%
10	CSCL	17,123	890	4.1%	3.6%	1,14	15,750	4.9%	8.7%	-16.2%
11	APL	11,911	619	2.8%	3.5%	0,81	8,352	2.6%	42.6%	9.9%
12	K Line	11,897	619	2.8%	2.5%	1,14	11,530	3.6%	3.2%	-20.4%
13	MOL	11,114	578	2.7%	3.1%	0,86	9,664	3.0%	15.0%	-11.3%
14	Zim	11,078	576	2.6%	2.3%	1,15	5,953	1.8%	86.1%	43.5%
15	CSAV	10,831	563	2.6%	2.3%	1,12	10,342	3.2%	4.7%	-19.3%
16	Hyundai	10,494	546	2.5%	1.9%	1,32	6,800	2.1%	54.3%	19.1%
17	OOCL	10,150	528	2.4%	2.9%	0,84	9,818	3.0%	3.4%	-20.2%
18	MISC	6,424	334	1.5%	0.8%	1,92	3,839	1.2%	67.3%	29.0%
19	UASC	5,407	281	1.3%	1.0%	1,29	1,652	0.5%	227.3%	152.3%
20	Wan Hai	3,481	181	0.8%	1.2%	0,69	2,126	0.7%	63.7%	26.3%
21	PIL	3,186	166	0.8%	1.4%	0,54	1,979	0.6%	61.0%	24.4%
22	IRIS	2,662	138	0.6%	0.7%	0,91	634	0.2%	319.9%	222.9%
23	Hamburg	1,353	70	0.3%	2.3%	0,14	1,208	0.4%	12.0%	-14.0%
24	DAL	211	11	0.1%	0.1%	0,68	-	-	n/a	n/a
25	Marfret	93	5	0.0%	0.1%	0,31	93	0.0%	0.0%	-20.3%
	Total	**418,562**	**21,765**	**100.0%**	**85.3%**	**1,17**	**322,831**	**100.0%**	**29.7%**	**0.0%**

Table 5 Cargo Market Share by Shipper

The capacity analysis used to establish the potential supply side in terms of capacity and to identify potential users of Weh Island is sourced from AXS-Alphaliner. Table 5 above is based on the nominal capacities of all ships employed on regular (full) container liner services on the Far East-Europe route, irrespective of the origin and final destination of the containers. The figures are adjusted to reflect the duration of ship loading and off-loading rotations at the various ports of call in order to calculate the respective operators' actual total capacities. This analysis aims to provide an appraisal of the slot capacity deployed on routes linking the Far East/Australasia sector and the Med/Europe sector.

Annual capacity values detailed in the tables that follow are extrapolations from current tonnage deployment, made under the assumption that the fleet will continue to trade "as is" for 52 weeks,

basically freezing the status quo. Services calling en route or serving South Asian or Middle Eastern ports have been considered for their whole capacity.

The growing number of transshipment hubs in Asia, the projected need for additional transshipment capacity, and the strategic location of Weh Island along the Far East to Europe route, indicate the suitability of the island for the development of a new hub. Table 5 lists absolute capacities as well as market shares for all operators that have active container cargo services between Europe and the Far East.

POTENTIAL WEH ISLAND CARRIERS - The list below identifies all potential carriers that could be interested in a transshipment port in Weh Island based on their existing route structure and historical increases in shipping volume. The numbers of carrier vessels that carry more than 7,500 TEUs with a Far East to Europe service string include:

- Maersk Line 5
- MSC 3
- CMA CGM 2 (including one with CSCL)
- CSCL 2 (including one with CMA CGM)
- Evergreen Line 1
- CKYH 3
- Grand Alliance 3
- New World Alliance 1

* (Excluding double count CMA CGM / CSCL half VLCS loops)

Source : Alphaliner

As seen from Table 5 and the list of 7,500+ TEU vessels above, the dominant world carriers are fully represented in this region. The reality is that the market is, and will remain, highly concentrated in a mixture of three to four large independent carriers (increasingly working together in joint services) and three large alliances. This means that the potential client base for Weh Island is fairly restricted. Of the carriers and groupings listed above, Maersk and Evergreen are tied to Tanjung Palapas and Singapore and cannot be seen as prime candidates, and the three alliances have such a large number of services using Singapore, it is not realistic to consider them as viable candidates.

Given this situation, the focus of the Weh Island development in attracting new clients and potential investors must be on the next tier of carriers within the top 20 - those that have sufficient capacity and cargo flows to sustain the development of the project. The potential carriers that can be attracted to Weh Island are listed to the right, along with their current market share in 2008.

MSC	11.0 %
CMA CGM	11.0%
China Shipping (CSCL)	4.1%
Gold Star Line	4.0%
CSAV	2.6%
UASC	1.6%
IRIS Lines	0.6%

LOCAL CARRIERS AND FEEDERS - Added to this list of potential primary clients would be some local carriers and feeders, and the consideration that in the future, as cargo volume

growth reaches terminal capacity at Singapore, the top 3 carriers may consider switching their service strings to other area ports with more modern and efficient facilities.

TERMINAL OPERATORS - A further critical factor that will aid in the attraction of customers will be to establish a partnership with a terminal operator. The choices of major world class companies available are:

- DP World
- Hutchison Port Holdings
- APM Terminals
- ICTSI
- SSA
- PSA
- Port of Rotterdam
- Shanghai International Port Holdings (includes China Merchants as shareholders)

In addition, a number of carriers are increasingly investing in new terminal facilities as a means to achieving guaranteed berths and cost efficiencies. Amongst these are:

- CMA CGM
- NYK
- ZIM
- MSC
- APL
- Evergreen
- COSCO

The combination of the data analysis of the existing fleet, the new vessel orderbook, carriers projections and statistics, and the service patterns within the Southeast Asian region with the macro forecast and cargo projections of Global Insight, has allowed projection of volumes out to 2025 that are solidly based on realistic industry practices.

The potential customers that are considered to be "free" to switch from existing terminals and/or that are not tied up in alliances, have been identified above. There are seven immediate carriers providing a total capacity of 36 percent of the Southeast Asian throughput. This market share is extrapolated forward, based on actual 2007 liftings, to 2025.

It is then assumed that not all of these will become customers, but that some combination of these carriers will transfer their business to a new terminal by 2015 as existing and planned capacity fails to meet new demand.

Table 6 Total Potential Market for Weh Island

Container Lifts	2007	2010	2015	2020	2025
Baseline 7.9%	1,741,185	2,187,305	3,199,016	4,678,684	6,842,754
Low Case 5%	1,741,185	2,015,639	2,572,523	3,283,264	4,190,369
High Case 10%	1,741,185	2,317,517	3,732,385	6,011,043	9,680,845

Source: HA Analysis

This translates into a potential market for Weh Island. It is assumed that at a minimum Weh Island will achieve a 35 percent market penetration of the total estimated market outlined above. Table 6.6 below shows this in annual lifts as well as weekly lifts to allow for terminal planning and berth calculations.

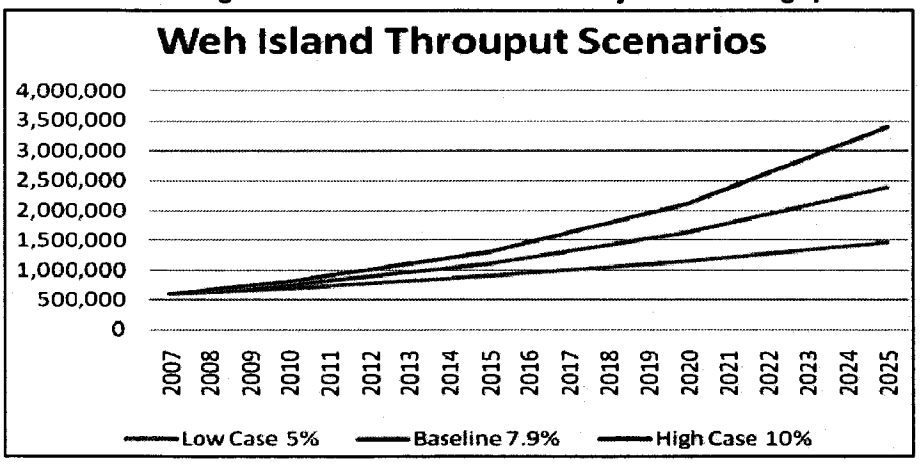
Table 7 Weh Island Annual Container Lifts with 35% Market Share

Lifts	2007	2010	2015	2020	2025
Annual Lifts					
Baseline 7.9%	609,415	765,557	1,119,656	1,637,539	2,394,964
Low Case 5%	609,415	705,474	900,383	1,149,142	1,466,629
High Case 10%	609,415	811,131	1,306,335	2,103,865	3,388,296
Weekly lifts					
Baseline 7.9%	11,720	14,722	21,532	31,491	46,057
Low Case 5%	11,720	13,567	17,315	22,099	28,204
High Case 10%	11,720	15,599	25,122	40,459	65,160

Source: HA Analysis

The market share assumed is 35 percent, which provides a base case volume of 1.1 million lifts in 2015, expanding to 1.6 million lifts by 2020. Two additional scenarios (Low Case and High Case) were developed to provide a range of projections. These are shown in Figure 3.

Figure 3 Weh Island Terminal Projected Throughput



The development and success of the Weh Island container terminal will be based on attracting a customer base that is looking for a cost effective operation and its own guaranteed priority berthing in combination with an efficient terminal productivity that maximizes the economies of scale for container vessels over 10,000 TEU capacity.

The most important issue regarding the potential development of the market for Weh Island is that there must be a partnership between the new port - and ideally the customer - and a world

class terminal operator. The rationale for this is that to do otherwise will require the developers to find their own funds which will be difficult, if not impossible, without customer commitments.

PETROLEUM PRODUCTS TRAFFIC

The Straits of Malacca, linking the Indian and Pacific Oceans, is the shortest sea route between three of the world's most populous nations--India, China, and Indonesia--and is considered as the key chokepoint in Asia. The narrowest point of this shipping lane is the Phillips Channel in the Singapore Strait, which is only 1.5 miles wide at its narrowest point. This creates a natural bottleneck with the potential for a collision, grounding, or oil spill.

More than 50,000 vessels transit the Straits of Malacca per year. Although the Straits of Malacca are generally know for the shipment of cargo (mainly containers) from China and the Far East, according to Energy Information Administration (EIA) of the US Department of Energy (DOE), as many as 15 Million barrels a day (bbl/d) of crude oil transit the Straits to China and other commodity producers from the Middle East and West Africa. This amounts to nearly half the world's total sea-bound oil production.

If the Straits were blocked by a natural disaster or major ship catastrophe, tankers and container vessels would reroute around the Indonesian archipelago through Lombok Strait, located between the islands of Bali and Lombok, or the Sunda Strait, located between Java and Sumatra. If the Straits were closed due to war or other imposed international decision, vessels would be required to sail further, generating a substantial increase in the requirement for vessel capacity. All excess capacity of the world fleet might be absorbed, with the effect strongest for crude oil shipments and dry bulk such as coal. Closure of the Strait of Malacca would also immediately raise freight rates worldwide. With Chinese oil imports from the Middle East increasing steadily, it will "grow" in strategic importance.

Piracy is also a regular occurrence in the Singapore Strait. Recent reports by the *International Chamber of Commerce* show that piracy, including attempted theft and hijackings, are a constant threat to tankers in the Strait of Malacca. Because of this, Malaysian, Indonesian, and Saudi companies signed a contract in 2007 to build a $7 billion pipeline across the north of Malaysia and southern border of Thailand to reduce 20 percent of tanker traffic through the Straits.

Indonesia itself is a net oil importer. According to the Indonesian President in a May 2008 speech, Indonesian oil output has declined steadily from the 1.5 million to 1.6 million barrels produced a day in the mid-1990s. It produced only 860,000 barrels a day of crude oil in May 2008 and recorded a deficit of $794 million in its oil trade accounts. Raising output could take "one to three years."

With proper development, the Weh Island facilities could prove to be a key element in the transshipment of oil into Indonesia, Thailand, Malaysia, and Burma, by providing a off-loading and storage point prior to entry of the busy Straits. The development and success of the Weh Island petroleum terminal will be based on attracting a customer that is looking for a cost effective operation and its own guaranteed priority berthing and storage in combination with an efficient terminal productivity that maximizes the economies of scale for VLCC vessels.

TECHNICAL ANALYSIS

CONTAINER TERMINAL

The Weh Island Container Terminal will serve vessels ranging in size from 500 TEUs for feeder vessels up to 12,000 TEUs for Super Post-Panamax ships. To optimize the wharf length and to ensure the facility is not oversized, it is necessary to consider the median ship size, as well as the largest vessels likely to call at the port. A single straight-line wharf with an appropriate number of Ship-to-Shore cranes allows the operator to accommodate ships of varying length simultaneously. The initial wharf requirements include a 500 meter wide Terminal, containing 3 berths for a total length of 1150 meters. This includes provisions for (1) Super Post-Panamax vessel, (1) 8,000 TEU vessel, (1) feeder vessel, and some additional space allocated for line handling and movement. Phase 1 has the capability to perform 1.5 million lifts per year. A second phase of development requires an additional 800 meters for two berths, each sized to accommodate 10,000-TEU capacity vessels. By phasing the development, the initial capital costs for the construction of the facility are limited to meeting the demands for the near future. As demand is projected to increase, planning for the second stage of development would begin. Currently the market projections indicate that Phase 2 development would conceivably begin around 2020.

The consultant Team studied three potential locations for the proposed Terminal. The three primary goals of the site selection process were to identify a site that offers protection from wind and waves, provides adequate and efficient access for Super Post-Panamax vessels, and limits excessive cut and fill requirements when constructing the new wharf.

Based on a weighted ranking system of 10 criteria, which included the water depth close to shore, the amount of cut and fill required, the proximity to local and infrastructure services, the environmental impacts, and the potential cosos of development, three most probable sites on Weh Island were evaluated. All three areas have the necessary deep water to support the largest ships, but the results of the selection process indicate that the Teluk Balohan location is the most viable site. The Balohan site offers a large protected Bay with easy access to infrastructure and services, without causing much disruption to the adjacent community. Whereas the coastline of Weh Island is dominated by steep slopes, the Balohan Bay area additionally offers some relatively level areas, which is another key factor in the financial viability for the construction of the terminal.

The defining characteristics of a Transshipment Container Terminal are:

- Capability - to accept ships of the type employed in the trade routes on which Transshipment represents a viable business opportunity;
- Serviceability - the ability to load and unload containers quickly and efficiently;
- Supportability - the availability of ancillary services such as fresh water supply, bunkers, Surveyors and representatives of Classification Societies, ship-side and topside repair;
- Availability - of communications, access to airports, and value added services.

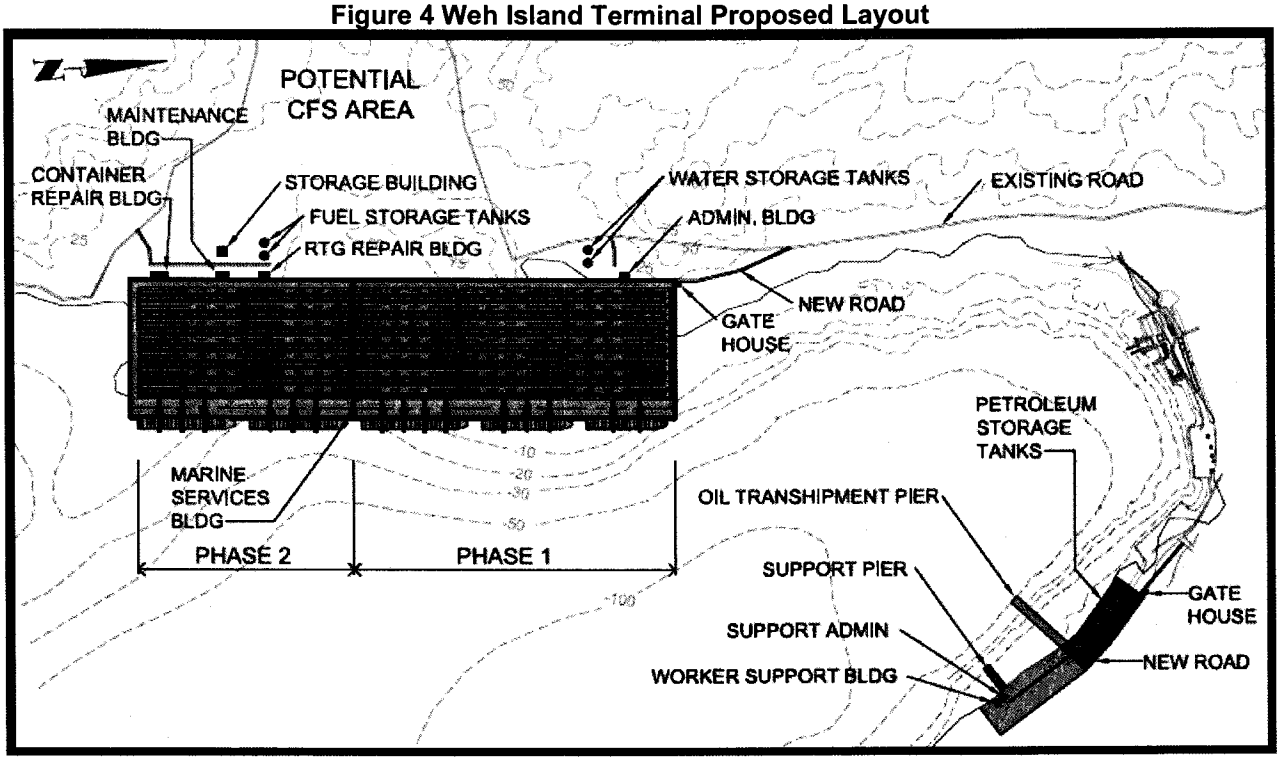
PETROLEUM TERMINAL

The Weh Island Petroleum Terminal will serve VLCC supertankers as well as feeder vessels. The optimal pier length is estimated to be 200 meters in order to reach the 30 meters of water depth necessary to simultaneously unload the largest petroleum vessels one on each side of at the western end of the pier, and to load 2 regional feeder vessels on each side of at the east end. A single straight-line pier with an appropriate number of petroleum offloading pumps and manifolds allows the operator to accommodate ships of varying length simultaneously. The initial backlands requirements include a 200 meter wide Terminal, containing 10 (1,000,000 barrel) storage tanks as well as fuel spill containment, and fire suppression systems.

In order to maximize the benefits of the support facilities, Balohan Bay is the optimum location for the proposed Petroleum Terminal. Construction on the eastern side of the Bay, which is isolated from population centers, protected from waves, and already the subject of some development, will limit excessive cut and fill requirements when constructing the Terminal.

The Technical Analysis used these guidelines to determine the number and placement of equipment and support structures, and evaluate the adequacy of existing infrastructure. The figure below (Figure 4) illustrates the proposed wharf, as well as the new road alignment and necessary support buildings (gate house, administration, maintenance, storage, repair, etc.). The Oil Transshipment and Support Facilities are also shown in their proposed locations.

Figure 4 Weh Island Terminal Proposed Layout



As mentioned previously, the development is proposed in phases so that the costs are proportionally divided between the two phases, which allows a substantial portion of the capital cost to be delayed until the terminal has been in operation for a number of years and is making

a profit. However, since the terminal will require most of the support facilities at start-up, the associated capital costs for these facilities will be required in Phase 1.

Phase 1 Development Plan

Phase 1 development is projected to begin in 2010. The basic planning criteria for the first phase development are to provide:

- Maximum unbroken length of marginal wharf to permit high levels of berth occupancy and flexibility in development
- Minimum fill requirements for the initial development
- Centralized port services within a manageable initial development area
- Maximization of initial land area in terms of port and port related development

Phase 2 Development Plan

The planning and phasing of the second stage of development of the port will immediately precede demand. Currently, the market projections indicate that Phase 2 development will begin around 2020. If the actual market growth tracks more closely to either the "Low Growth" scenario or "High Growth" scenario, the Phase 2 development schedule will need to be modified accordingly.

Phase 2 also includes the development of the petroleum transshipment facilities.

Table 8 Costs of Container Terminal Development

DESCRIPTION	Costs in US Dollars		
	PHASE 1	PHASE 2	TOTAL
Project Planning	250,000	150,000	400,000
Permits and Approvals	100,000	75,000	175,000
Environmental Studies	250,000	150,000	400,000
Project Mob/Demob	1,000,000	$250,000	1,250,000
Dredging	13,000,000	9,500,000	22,500,000
Hillside Excavation	25,500,000	21,500,000	47,000,000
Transshipment Container Wharf	84,033,950	58,458,400	142,492,350
Container Terminal	61,078,000	60,078,000	121,156,000
Support Boat/Wharf	2,488,750	0	2,488,750
Administration Building	1,908,000	0	1,908,000
Worker Support Building (Mess Hall and Bunk House)	948,000	948,000	1,896,000
Maintenance Building	1,010,000	0	1,010,000
Storage Building	864,000	864,000	1,728,000
Marine Services Building	464,000	0	464,000
RTG Building Repair	328,000	0	328,000
Container Repair Building	492,000	0	492,000

Main Gate/Security	132,000	0	132,000
General Site Improvements	14,407,500	3,242,500	17,650,000
Road Connections	2,020,000	170,000	2,190,000
Equipment and Systems	145,500,000	101,300,000	246,800,000
CONTAINER TERMINAL PROJECT SUB-TOTAL	**$ 355,774,200**	**$ 256,685,900**	**$ 612,460,100**
Environmental Mitigation	7,115,484	5,133,718	12,249,202
Other Project Costs	110,772,076	79,920,438	190,692,514
TOTAL	**$ 473,661,760**	**$ 392,740,056**	**$866,401,816**

The total cost estimate for the container port development at Balohan Bay is nearly $870,000,000, of which $474,000,000 is required for the Phase 1 development and $393,000,000 for Phase 2. As seen in Table 6, more than $390,000,000 in capital costs can be delayed until the second phase of development, allowing the initial startup of the terminal to be more financially viable.

Table 9 Costs of Petroleum Terminal Development

DESCRIPTION		Costs in US Dollars	Costs in US Dollars
	PHASE 1	PHASE 2	TOTAL
Petroleum Transshipment Pier with Pipe and Manifolds		15,000,000	15,000,000
Petroleum Storage Tanks and Containment		20,000,000	20,000,000
Fuel Transfer and Fire Suppression Equipment		5,000,000	5,000,000
Road Connections		200,000	200,000
Security and Gate House		500,000	500,000
Hillside Excavation		10,300,000	10,300,000
PETROLEUM TERMINAL PROJECT SUB-TOTAL	**$**	**$ 51,000,000**	**$ 51,000,000**

As shown in Table 9, the total cost estimate for the petroleum port development at Balohan Bay is approximately $50,000,000, of which all is dedicated to the Phase 2 development (or later as the market determines).

LEGAL ANALYSIS

There are complex institutional and legal issues including the regulatory, foreign investment, taxes, land ownership, free trade, political, and investment risks, that are associated with any terminal development in Indonesia. There is also new legislation that has been passed within the past few years, promoting foreign investment. This section provides a summary of the main legislation affecting investors with an interest in the development of a private port on Weh Island, and a general project risk assessment of the regulatory and legal environment in

Indonesia. Finally, the section recommends strategies to minimize the legal and regulatory risks for investors, and specific measures to mitigate any undue risk for investors.

General Legal Considerations

Foreign and domestic investment in ports In Indonesia is regulated by the Law of Capital Investment and the New Investment Law (Law 25/2007) replacing previous investment laws that have been in place for the last 4 decades. The Law is intended to promote the following goals:

- Foster a better climate for investment;
- Simplify the investment licensing process by offering one-stop services;
- Grant tax-related incentives;
- Grant a longer ownership period for land rights;
- Simplify the immigration related processes; and
- Provide clearer rules regarding nationalization.

Investment Considerations

The Indonesian Government has also agreed to settle any investment dispute with foreign investors through international arbitration. In order to implement the New Investment Law, the Badan Koordinasi Penanaman Model, or the Indonesian Investment Coordinating Board, (BKPM) has been created. Under the New Investment Law, it is no longer necessary for foreign investors to obtain approval for investments. If a line of business is open for investment, the investor can establish a company immediately, and after establishment, the company obtains all the requisite licenses to carry out its activities.

Incorporation Considerations

Another of the key provisions within the Law of Capital Investment is that all Foreign Investors in Indonesia must conduct their activities through a limited liability company. As such, the entity incorporated in Indonesia must comply with the new Indonesian Company Law (Law 40/2007) regarding limited liability companies. The new law incorporates new requirements for business plans, corporate social responsibility, and business segregation.

Port Development Considerations

Private Port Development in Indonesia is governed by the Shipping Law (Law 17/2008), which was amended in 2008 ending the state monopoly on port ownership. The Bill allows foreign and domestic entities to operate ports in Indonesia without having to partner or seek the aid of the state port operator (and sometimes port regulator) PELINDO. The Law is expected to take effect gradually over 3 years as the various implementing regulations are drawn up and approved. The law is seen to be more comprehensive than the previous 1992 law and integrates regulations covering areas of labor, investment, regional autonomy, and taxation.

Land Ownership Considerations

Since terminal port development requires a significant amount of time for planning and implementation, The New Investment Law allows for extended land ownership for up to 95 years, and updating the previous maximum period for land ownership of 30 years. Under the classifications for land ownership in Indonesia, investors may be granted the following land titles:

- The Right to Use for Business (Hak Guna Usaha - HGU) – immediate initial ownership term of 65 years; renewable for another 35 years.
- The Right to Build (Hak Guna Bangunan – HGB) – immediate initial ownership term for 50 years; renewable for another 30 years.
- The Right to Use (Hak Pakai - HP) – immediate initial ownership for 45 years; renewable for another 25 years.

The extension provisions are granted following an evaluation that the land is still being used for the purpose of the land title.

Free Trade and Free Port Considerations

Free trade activities in Indonesia and Aceh Province are controlled by the Sabang Integrated Economic Development Zone comprised of the Sabang Free Port and Free Trade Zone (Sabang Zone) established by Laws No 36/No 37/2000. The Sabang Zone includes the Town of Sabang, the Island of Weh, and all the adjacent minor islands. It is approximately 245 square kilometers in size and shares borders with Benggala Bay in the North, Indonesian Ocean in the South, Malacca Strait in the East, and Hindia Ocean in the West.

The Sabang Zone is governed by the laws of Indonesia; however as a separate economic free trade zone and customs area, it is exempt from import duties, sales tax on luxury goods, and excise taxes. The Sabang Zone is guaranteed to exist by law for a period of 70 years.

Legal Recommendations

In summary, there are multiple inherent legal and financial risks for foreign investors, and investors adopt prudent measures to mitigate these risks. Specific recommendations include the following:

- Contract with a qualified local law firm with strong Indonesian affiliations;
- Identify a joint venture partner with strong local political connections;
- Maintain some local governmental involvement in the project structure,
- Maintain the interest of the state owned PELINDO in the project structure;

- Appoint a local lobbyist to liaison with all relevant government agencies;
- Establish generous lead times to allow for a complex approval process; and
- Establish a strategy to reduce the political risks for potential institutional investors.

FINANCIAL ANALYSIS

There are various alternative options to finance a new terminal project in Indonesia. Since Indonesian law limits foreign ownership to 49 percent, the Feasibility Study investigated alternative options for concessions, or allowable foreign investments, to be developed. The example of the Port of Salah, Yemen, was presented, and the changing roles of the public and private sectors in port development are explained.

Brief General Financial Organization Options

There are basically four types of organizational models that can be used to manage port operations. The models range from purely public control to mainly private control. Given the very large investment needed and the lack of local hinterland cargo, the Private Service Port option for the terminal facility on Weh Island at Balohan Bay is best. The facility is proposed to be a pure transshipment port with possible free zone activity alignment. The total investment requirement for this project is estimated to be just over US$900 million in present day dollars (excluding financing charges), and as such is classified by the authors as a relatively high risk venture for a "greenfield" development.

Before 1980, terminal ports were financed mainly by governments and the public sector as part of their infrastructure development plans and regional economic policies. As such, the general infrastructure was typically financed jointly by the Government and the Port Authority, and the terminal superstructure and equipment was typically financed by private operators. Fully privatized ports were the exception.

Currently, there is increasing involvement of the private sector in terminal development, including the emergence of Public Private Partnerships (PPP). This has given rise to a large variety of financing and management options including:

- Build, Operate, Transfer (BOT);
- Build, Own, Operate, Transfer (BOOT); and
- Build, Own, Operate (BOO).

Recommended Financial Organization

Each of these options is designed to mobilize private capital while balancing public and private interests. The advantages of each option are explained in the Study, which recommended the Build, Own, Operate (BOO) investment structure for the Terminal on Weh Island, modeled on the example of the Port of Salah in Yemen. In other words, the Federal and State Government, together with domestic Indonesian investors should jointly shoulder the responsibility of developing the terminal infrastructure. A foreign terminal operator, ideally linked with one of the major shipping lines, should then be contracted for operations. The selected terminal operator can also be a shareholder in the infrastructure part of the enterprise.

However, given the current financial crisis, the severe restriction of available credit, and the resulting global recession, funding for ports worldwide has evaporated. Container shipping lines have seen heavy losses in 2008 and are facing similar situations in 2009 and possibly 2010. As

explained in the recent 'Way Forward' presentation, foreign investors no longer have the cash, nor the credit, to develop the Weh Island port terminal on either a BOO, or BOT, basis. As a result, a different strategy is needed. The Government must be prepared to assist with the funding of infrastructure for the terminal, and a creative financial organizational structure must be established to overcome the current financial realities.

The Study recommends the Public Private Partnership (PPP) as the organizational option to encourage potential investors in the project, and introduces a table of potential investment partners, shown below. The Study explains that the ideal financial organization and investment solution for the proposed terminal would be a consortium of investors who would respond to a mix of opportunities for private equity participation. This ideal organization structure would require finding terminal operators (one for the container terminal and another for the petroleum terminal) looking for investment vehicles to place their profits from existing facilities, and shipping lines looking for opportunities to utilize guaranteed space while obtaining reasonable returns on investment. The transaction structure to implement this recommendation is presented in Figure 5.

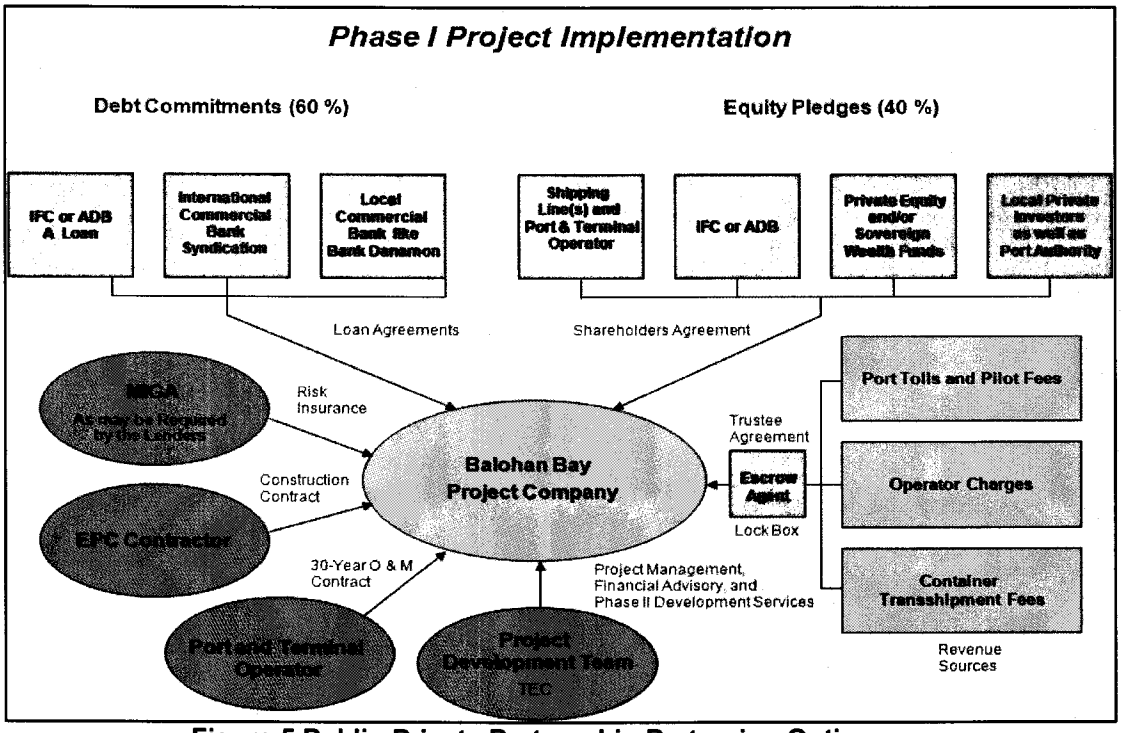


Figure 5 Public-Private Partnership Partnering Options

In addition, the Study proposes the following specific recommendations:

- Create a corporate Development Company to organize project financing under the PPP organizational structure and within Indonesian Port Laws;
- Confirm full Government participation in the funding of port infrastructure;
- Obtain a commitment via a letter of agreement with an established inter-national terminal operating company willing to guarantee a cargo market; and

- Obtain a commitment via a letter of agreement with an established international shipping line that can guarantee a throughput of at least 1 million TEU for Phase 1, and at least 2 million TEU for Phase 2.

Financial Pro-Formal

The Feasibility Study includes a Financial Pro-Forma to estimate realistic costs for both the revenue and the operation of the proposed terminal. The Pro-Forma is included in Appendix E and the model was used to generate the following table:

FACTOR	UNITS	2015	2025	2035	NOTES
Revenue to Operator	$ Millions	**$66M**	**$190M**	**$491M**	**1.1M boxes => 4.6M boxes**
Rent and Fees to Owner	$ Millions	**$22M**	**$52M**	**$87M**	**110 => 466 Ship Calls**
Labor Cost	$ Millions	**$11M**	**$28M**	**$69M**	**581 => 2314 Staff**
Equipment Cost	$ Millions	**$15M**	**$25M**	**$10M**	
O&M Cost	$ Millions	**$13M**	**$29M**	**$42M**	**3% Growth/Year**
Operator Profit	$ Millions	**$6M**	**$56M**	**$286M**	
Debt Service	$ Millions	**$17M**	**$56M**	**$21M**	

- Total Capital Costs are estimated at $569 million ($329 Million for Phase 1 and $240 Million for Phase 2);
- Total Financing is estimated at $329 million ($66 Million in Private Equity, $66 Million in Public Equity, and $197 Million in PPP Debt); and
- Total Annual Cost for Administration is estimated at $10 Million per year for the first year of operations in 2015, increasing by three percent per year in each following year.
- Job Creation grows from 581 to 2300 during the projected life of the Terminal

The Pro-Forma indicates that the Weh Island Terminal operations will begin operations in 2015 with a negative cash flow of $11 Million, however will achieve profitability in 2019 and achieve an $65 million net cash flow by 2034.

Financial Model

The Feasibility Study also includes a financial model to estimate a series of realistic cost projections for both the development and the operation of the proposed terminal ports. The model was used to generate the following figures:

- Total Capital Costs are estimated at $487 million;
- Total Borrowing for Capital Costs is estimated at $678 million (with total repayment equating to $1,056 million);

Total Annual Cost for Administration is estimated at $1,008,000 per year for the first year of operations in 2015, increasing by three percent per year in each following year.

The Cash Flow Model and the Pro-Forma results compared well indicating a very viable investment opportunity.

MARKETING EFFORTS

The Feasibility Study described the market for potential investors in a port terminal project at Weh Island, and the feasibility of obtaining investor commitments for the project. In summary, a marketing presentation was prepared and presented to a select group of 12 potential investors. The basic results of the market study are:

- Existing port operators emphasize the importance of having the commitment of a major shipping line that can guarantee throughput to the proposed port;
- Existing carriers were reluctant to consider this type of venture based upon several considerations including financial requirements, logistics, and competing commitments with the Port of Singapore; and
- Investment institutions were generally reluctant to consider "greenfield" sites for investment unless the project included a partnership with a major carrier, a qualified management team, and an exit strategy.

Based upon the changing and deteriorating global market, a single container carrier (Terminal Link) and a single financial institution (International Finance Corp of The World Bank Group) expressed reserved interest in the project. The Study found that the global financial crisis has undermined the "build it and they will come" concept. Alternatives to this concept and a way forward are presented for the organization of a Public Private Partnership.

DEVELOPMENTAL AND ENVIRONMENTAL ANALYSIS

The likely impact of the project on the local economy and environment within the project's most likely physical area of influence is also to be considered. The review identifies potential negative impacts, discusses mitigation efforts, and proposes plans for full environmental impact assessment in anticipation of the Project moving forward to the implementation stage. The review includes identification of the steps that will need to be undertaken subsequent to the completion of the study and prior to project implementation. The Study recommends a thorough review to include analyses of any impacts attributable to offsite infrastructure that may be required by the project. Specific areas of environmental concern would include: geology,

marine biology and ecology, climate, oceanography, hydrology, water resources and water quality, air quality, noise, solid waste management, socio-cultural impacts.

In summary, the construction and operation of the proposed terminal port on Weh Island at Balohan Bay should not pose a significant threat to the local environment. In addition, significant employment opportunities will be created by the proposed terminal which would translate into positive economic growth for Weh Island, as well as the Aceh Province and the entire Region.

CONCLUSION

This Feasibility Study presents compelling evidence that a modern transshipment container terminal, capable of handling the largest container vessels, could be constructed on Weh Island. Such a terminal could subsequently provide substantial profits for terminal operators and shippers, greatly expand economic opportunities in Aceh Province, and position Indonesia to be in an enviable position to handle surplus regional capacity when the world economy increases. This potential situation is not without economic, political, and financial risks of varying degrees. These risks need to be addressed to the satisfaction of the various potential contractual parties before any agreement to design and build the facilities can be reached.

SECTION 1
INTRODUCTION

1.1 STUDY OBJECTIVES

The purpose of the Feasibility Study for a Transshipment Port on Weh Island is to examine the technical, economic, legal, and financial requirements for establishing combined oil and container transshipment port facilities on Weh Island in Indonesia. These proposed new terminals would provide the international shipping industry with a strategic location to transfer cargo and petroleum to smaller, regional vessels serving local markets throughout South and Southeast Asia. The rationale of this study is to assist the Management Board of Sabang Free Port and Free Trade Zone - BPKS (Badan Pengusahaan Kawasan Perdagangan Bebas Dan Pelabuhan Bebas Sabang--the local government entity which manages all of Weh Island's planned developments, including port projects) in its efforts to develop such facilities.

To-date, much work has been done to evaluate the potential opportunities for a cargo terminal facility at both the historic Sabang Harbor (the location of the existing commercial port facilities at Sabang) and at Balohan Bay, the location of the current ferry service terminal connecting Weh Island with the Aceh Provincial capital of Banda Aceh. The purpose of this section is to document these efforts and to summarize the work completed to-date regarding the planning for the development of a major international transshipment port on Weh Island.

The objectives of this task as presented in the Terms of Reference were to:

1. Collect and review current studies and data including: economic trends in the region; relevant studies and all information concerning ports and potential port development data; information from other port/shipping studies recently conducted concerning Indonesia and the region; and other existing port planning documents as available[1], and;
2. Hold a kick-off meeting with the client to discuss the goals and objectives of this study, and review current and past studies prepared by BPKS concerning the development of port complexes in the region;
3. Hold additional meetings, as necessary with other government and international agencies to ascertain the current stage of other port planning projects in the region, and to obtain a general understanding from these agencies of their views on the potential public-private port opportunity[2].

The initial kick-off meetings for the project were held in BPKS's offices in Banda Aceh during the week of 18-22 February 2008. Activities completed during this initial trip included discussion of the scope of the work and overall objectives of this Study with the Client and to review the Study schedule. Discussions were also held regarding the goal of the Study to

[1] Some of this information, including data collected on other regional ports and regional economic issues are presented in Section 2 – Market Analysis.
[2] Meetings with the International Developmental Banks and other international financing institutions will be presented in Section 5 – Financing and Implementation Plan.

eventually identify potential BOT (Build-Operate-Transfer) or BOO (Build-Own-Operate) Concessionaires for the project.

A site visit was made to Weh Island to view the proposed locations for the transshipment port terminals and to gain a sense of the level of current and on-going infrastructure development occurring on the Island. A photo log documenting this trip is included at the end of this section.

1.2 BACKGROUND

The Aceh Province is located at the northern part of Sumatra Island, and includes 132 islands around the northern, western, and southern coastline. Weh Island is one of the largest islands in the province and is located just to the north of Banda Aceh. It is locally known as Sabang (named after the largest city on the island). Aceh has a strong and rich maritime tradition because of its strategic location at the northwestern end of the Malacca Straits, one of the busiest shipping corridors in the world.

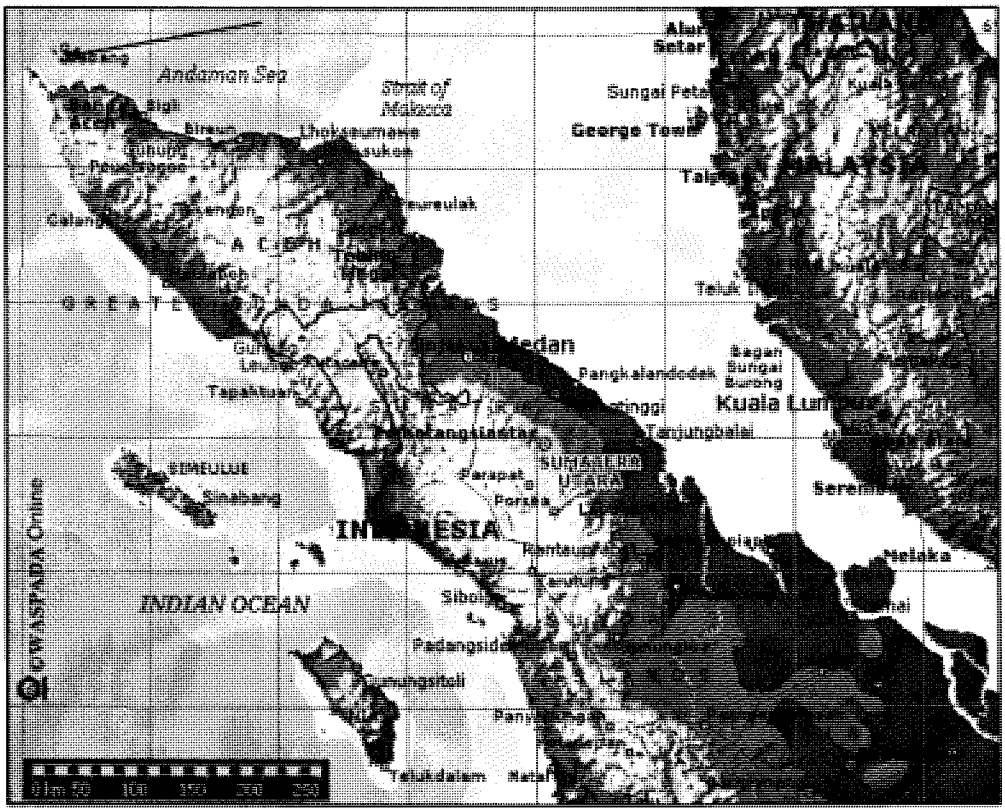


Figure 1.1 Location of Weh Island

As shown in Figure 1.1, Weh Island (Sabang) and the other surrounding islands are located off the Northern coastline of the province of Aceh, North Northeast of the city of Banda Aceh. The Port of Sabang on Weh Island was traditionally the most significant port within the Province of Aceh. Because of its strategic location at the western end of the Malacca Straits, in 1881 the Dutch Colonial Government established the port. The port served as a refueling and re-supplier port for the many ships that traveled through the region. It became the center of trade for the region.

The Port was closed during the Second World War and reopened again as a free port soon after the war was over. The status of Sabang as a free port was revoked by the Central Government in 1985. This move sent both the port facilities and the economy of Sabang Island into a state of steady decline. Prior to the 2004 Tsunami, the Government had re-established Sabang as a commercial port and was actively supporting the redevelopment of the port with several port improvement projects with the hopes of rejuvenating the economy of the island.

As recently as 2000 the establishment of a major international port complex at, or near Sabang was identified as one of the government's top priorities. Among the reasons was that such a port has long been recognized as a critical element in supporting the goal of both promoting privatization opportunities in Aceh and also providing facilities that can enhance the overall economic growth of the Province. Recently, after the Earthquake and Tsunami in the region, a new "hub port" on Sabang (Weh Island) became a regional development priority.

Weh Island is strategically located at the northwestern entrance to the Malacca Straits. The 1996 statistics from the Singapore Port Authority showed that there was an average of 323 ships per day passing through the Straits, making it one of the two major shipping channels in the world.

The management of the Straits is through a tri-national agreement between Malaysia, Indonesia, and Singapore. Several actions are planned by this agreement to assist in developing a vessel management plan for vessels using the channel. Under this management plan, Sabang is proposed as an alternative port to divert some of the heavy shipping traffic out of the narrow Straits.

Weh Island has several natural deep-water harbors that could be developed as transshipment facilities. The current harbor at Sabang, a small village on Weh Island, has an average water depth of –24 meters and the average depth of the ocean around Weh Island is 100 to 600 meters. However, the backland topography surrounding the existing Sabang harbor does not lend itself to development of a major container or crude oil transshipment facility. The harbor and topography around Balohan Bay on the southeastern edge of the island, on the other hand, is bettersuited for the proposed development, as it is not as developed, has a backland that is somewhat level, and also has a well protected and deep (-24 m) harbor.

The proposed project is to develop an international transshipment port complex on Weh Island. Preliminary plans have been developed for such a facility at both Sabang Harbor and for Balohan Bay. Both locations on Weh Island have naturally deep harbors, but the other critical element for development as an international shipping transshipment hub is to provide a cost-efficient backland area that is capable of handling the largest Container vessels coming on the market (over 13,000 TEU capacity and greater) plus facilities for Very Large Crude Carriers (VLCC), up to 500,000 dwt. The topography and development adjacent to these harbors will be essential in determining the best location that will allow such a facility to be constructed with relative ease and once constructed the harbor can be maintained at the required depth without requiring any annual dredging operations, unlike many similar ports that have been developed in river delta type locations.

The long-term plan for the BPKS is to establish major container and petroleum transshipment terminals. The Balohan Bay area of Weh Island has the necessary geographic features to develop such a complex, namely relatively flat upland areas adjacent to a naturally deep water harbor.

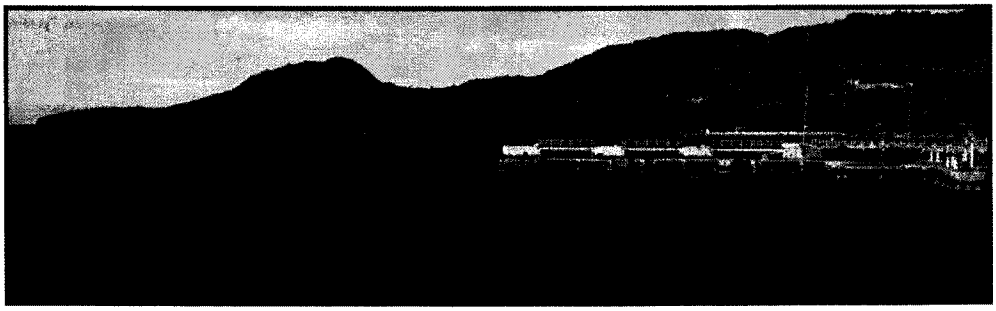


Figure 1.2 Balohan Bay Shoreline

1.3 CURRENT PORT PLANNING ON WEH ISLAND

1.3.1 MASTER PLAN FOR SABANG 2007-2021

BPKS has developed a comprehensive Master Plan for Sabang (Weh Island) for the period 2007 - 2021 and an accompanying Business Plan. In these documents, four priority sectors and two strategic sectors are identified. The four priority sectors are: port services, trading and industry, tourism, and fishery. The two strategic sectors are institutional and infrastructural development. The goal of the Business Plan is to be able to develop these four priority and two strategic sectors to appropriate "international standards so Sabang will become competitive with other areas internationally and globally"[3]. English presentations on both the Master Plan and the Business Plan were provided to the Consulting Team. (See Current and Exiting Studies portion of this section).

For the Port Sector, the Master Plan calls for two potential port developments. The International Transshipment Port to be located in Sabang Harbor and a National Port to serve a planned Industrial Development area on the east side of Balohan Bay.

Because of the dimensional restrictions at the existing Sabang Harbor, the International Hub Port is planned as a series of quays that form a rectangular shaped harbor as shown in Figure 1.3. This arrangement presents three major difficulties. The first is relatively limited backland storage areas due to dense existing development in the Sabang City. The second basic concern with respect to this plan is the desire to have at least 2 shipping berths in a marginal configuration (a straight length) of 800 meters total length. This length can then accommodate two large Super Post-Panamax Container vessels. The straight (marginal) quay also allows for the terminal operator to make efficient use of the rail mounted Ship-to-Shore (STS) container cranes that will to be located on the quay. Table 1.1 shows that none of the proposed marginal quays can ideally accommodate an 800 meter, two-VLC, operation.

A final issue with the Sabang Harbor terminal location is the potential hazards associated with a petroleum storage and transshipment terminal located in close proximity to a densely

[3] Statement from the Chairman on BPKS, in October 5, 2006, English translation of Business Plan for Sabang.

populated area. With relocation of population, there does not appear to be an obvious site in Sabang Harbor for the required petroleum storage facilities.

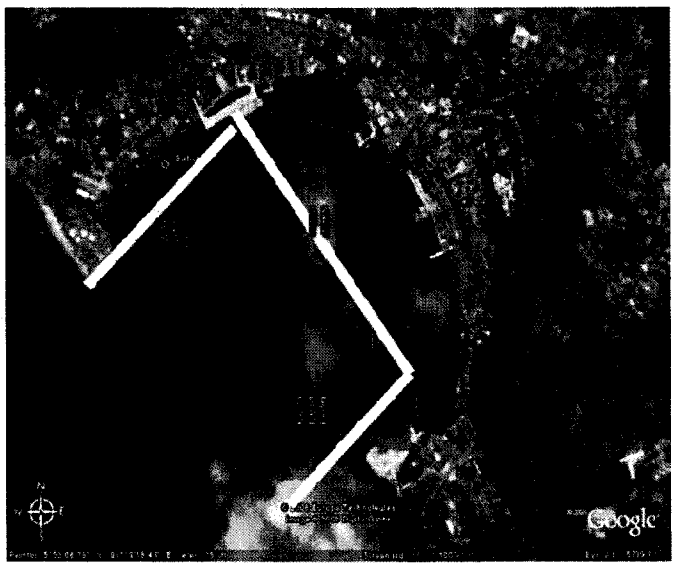


Figure 1.3 Master Plan Concept for Sabang Port Development

The planned development program, as presented in the 2007 Master Plan calls for the following phased development.

Table 1.1 Planned Phases for Sabang Port Development

	Phase I	Phase II	Phase III	Phase IV
Quay	180 x 25m	770 x 110m	720 x 100m	620m x 100m
Capacity	Small Vsl	Large Vsl	Large Vsl	Large Vsl

There appears to be no documentation in the Master Plan on the planned size of the backland storage areas to be located behind these berths. However, under a dense storage operating system (such as using RTGs – Rubber Tried Gantry Cranes), a practical storage capacity of around 750 TEUs per hectare can be achieved. Under such a system, to store 10,000 TEUs (from a Super Post Panamax vessel), the backland storage areas would need to be approximately 17 ha. including space for circulation, maintenance, etc. This raised the concern of having adequate storage areas behind the quay. The existing area around the harbor is mostly developed and because of the deep water depth in the harbor, it is assumed that it would be very costly to develop the required container storage areas in a seaward direction. The issue of the size and cost of developing the planned Container Terminal in Sabang Harbor will need to be thoroughly examined.

The Master Plan also calls for the development of a National Port Terminal at Balohan Bay. That will serve a planned Balohan industrial development zone and would provide for direct shipping between Banda Aceh and other ports in Aceh, North Sumatra, and other regional ports. Figure 1.4 shows the conceptual layout of the port. The current plans include the development of a small container terminal along the east side of Balohan Bay--some of which is currently under construction. (See photo log at the end of this section)

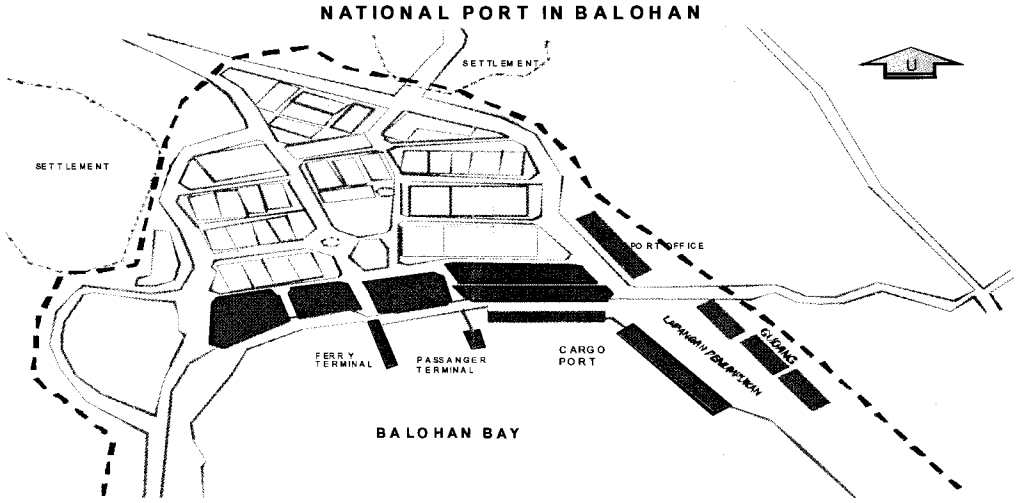


Figure 1.4 Master Plan for National Port at Balohan Bay

1.3.2 ADDITIONAL DEVELOPMENT PLAN FOR SABANG HARBOR

There also appears to be a current revision to the Sabang International Port Plan resulting in a developmental program for Sabang Harbor that differs from that presented in the Master Plan. Figure 1.5 shows the conceptual layout of the port. The various documents that described the current planning and designs for the port improvements taking place in Sabang Harbor were not made available to the Consulting Team. Based on information gathered from a presentation given by the Governor of Aceh while on a tour of ports in the United States during September 2007, however, and observations of the on-going construction project observed during the site visit, it now appears that a five-to-six terminal container complex is being planned for Sabang Harbor.

Again, the details of this current plan were not made available to the Consultant Team, but the proposed layout and operation of the container terminal complex appears to be more for a group of smaller terminals that might not be attractive to shipping companies looking to perform transshipment functions.[4]

[4] Section 3 of this report - Technical Analysis will detail the functional requirements for a major international transshipment terminal.

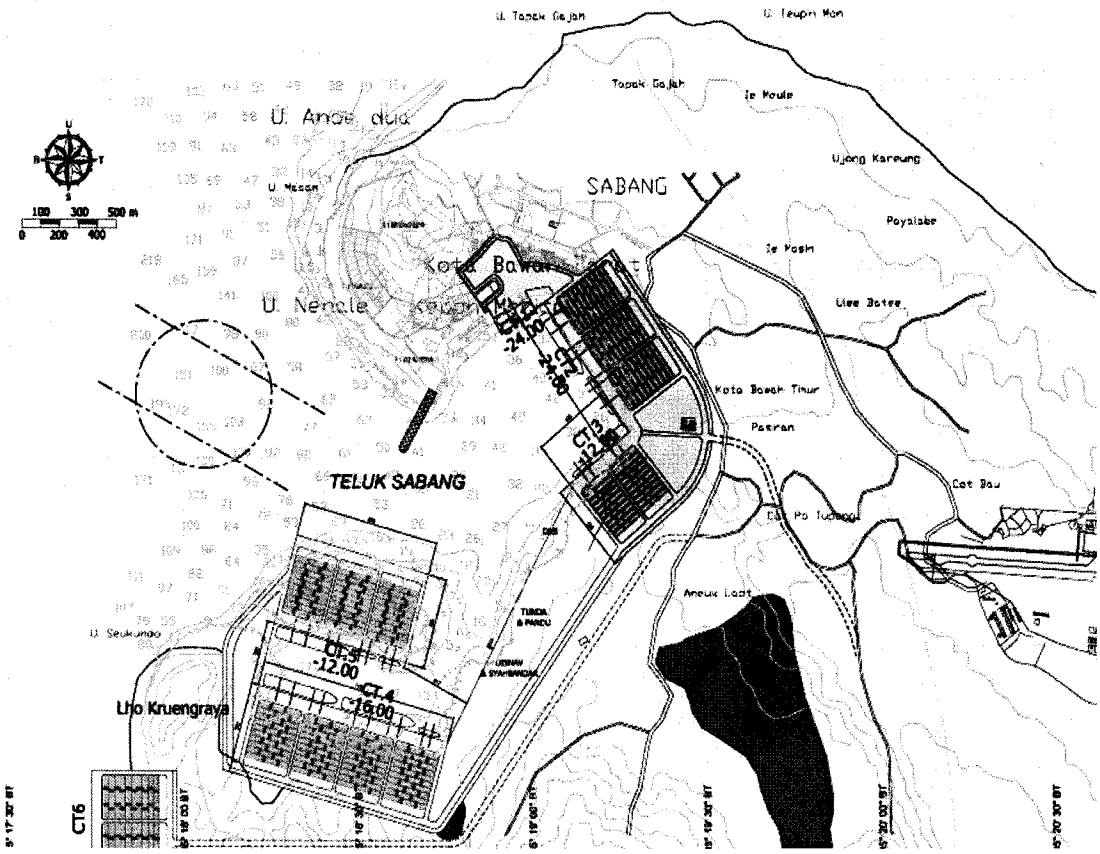


Figure 1.5 Current Plan for Sabang Harbor as Presented During Governor's Trip to US, Sept 2007
(Note: based on the site visit, Terminal CT-4 now appears to be under construction)

1.3.3 AGREEMENT WITH DUBLIN PORT AUTHORITY

In addition to the port planning and development being carried out by the BPKS, there is also a "draft" agreement to form a Joint Venture with the Dublin Port Corporation. Details of the agreement were not provided to the Consulting Team, but according to news reports, the Irish State-owned Dublin Port Company has signed an agreement to form a joint venture to develop the container port in Sabang Harbor. The Joint Venture will be with the Government of Aceh via BPKS, and will be a 50-50 joint venture that will set up a new company, Sabang Hub International Port.

The current status of the actual Joint Venture agreement is un-clear to the Consulting Team, but all indications are that the actual Joint Venture is not yet officially signed.

1.4 DEVELOPMENT OF A TRANSSHIPMENT PORT AT BALOHAN BAY

In addition to the port planning concepts presented in the Master Plan and the current port developmental work under construction at both Sabang Harbor and Balohan Bay, a private company has proposed a port concept for Weh Island. Under this plan, presented by PT. Balohan Bay Resources (BRR), a large container and crude oil transshipment hub could be developed at Balohan Bay.

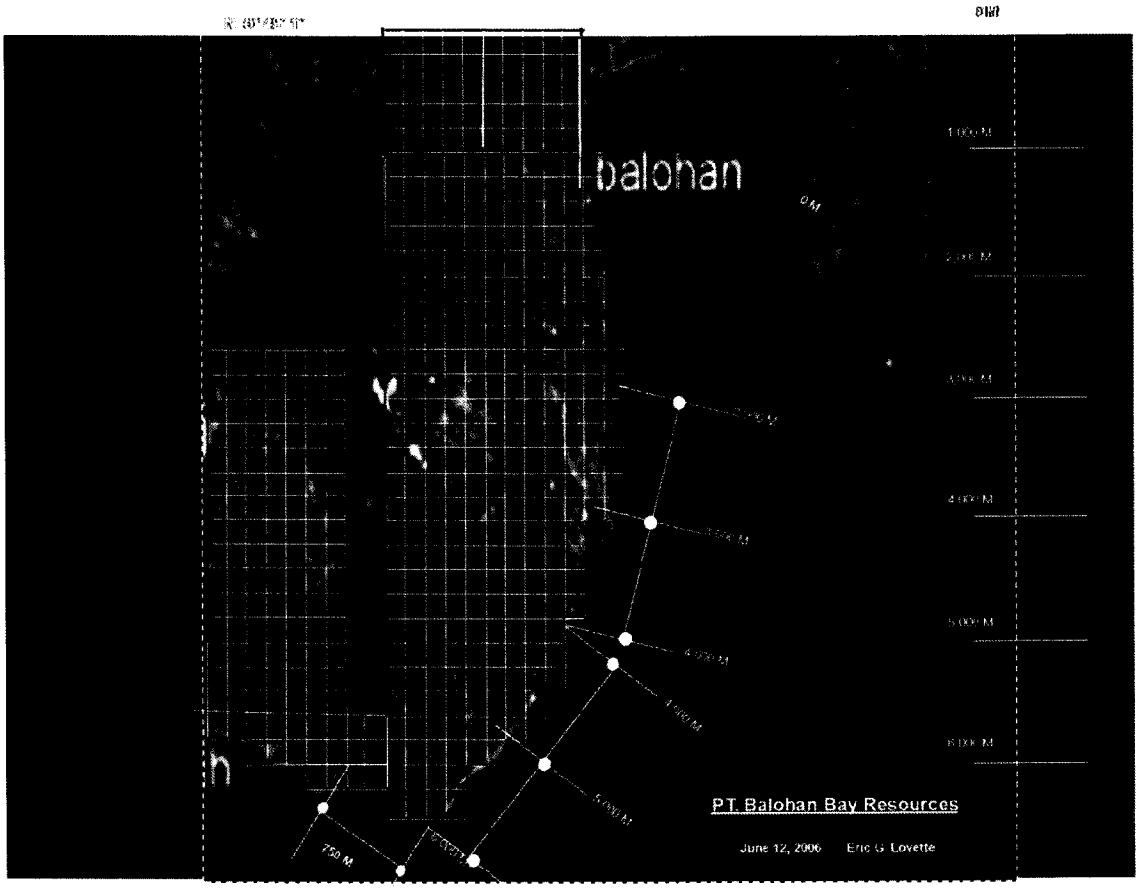


Figure 1.6 Proposed Location of Balohan Bay Transshipment Port

Details of the plan were not provided to the Team, but the possibility of building a functional transshipment terminal at Balohan Bay appears to be more reasonable than at Sabang Harbor. While both locations have the required water depth, Balohan Bay seems to be better suited for development of the landside storage areas because the existing terrain appears to be relatively level. In addition, the west side of Balohan Bay could provide several kilometers of marginal berth line, that could accommodate several large vessels simultaneously and in a configuration that would allow for more efficiency in the berthing process and in the utilization of the STS Gantry Cranes.

Details on the ability of both sites to provide the type of facilities needed to attract international shipping lines will be presented in Section 3 of this report.

1.5 ADDITIONAL MEETINGS AND DATA COLLECTED/REVIEWED

During the data collection phase of the project, the Consultant team had several meetings with various governmental agencies and officials as required by the Terms of Reference.

Ministry of Transportation – A meeting was held with Ir. Tundjung Inderawan, MSi, and Head of the Planning Bureau for the MOT. Ir. Tundjung was very familiar with the project location, having spent 5 years as the MOT's Regional Coordinator in the Aceh Region. He was personally very enthusiastic about the project. He stated that it is MOT's goal to promote more private opportunities in infrastructure investment, especially in the area of port development. He mentioned that just this year, the Government passed a new law (Law

17/2008 – Sea Transport Law) that will make it easier for private corporations to develop and operate private marine terminals. (Note: the details of this Law will be presented in Section 4, the Legal and Regulatory Section of this report. Ir. Tundjung stated that the intent of the new law was to "provide more opportunities for BOT for new "Greenfield" ports. He stated that there are already 15 BOT type opportunities that have been identified throughout the country and that descriptions of these opportunities could be found on the MOT web-page. Ir. Tundjung stated that he would support any private concession opportunity on Weh Island.

Indonesia Port Corporation II – The Consulting Team had the opportunity to meet with Soepadi SW, Marketing and Business Development Director, and Ir. S. Yuwono Yoni. MM; Senior Manager Facilities for Pelindo II. Both gentlemen were very interested in the project, but stated that Pelabuhan I is the State Port Company that serves Aceh. That said, they commented that there is a new emphasis of private port concessions being developed in Indonesia. They themselves have a new 'greenfield" port that is currently undergoing the concession process. This is the new container terminal at Banten. They stated that they had 6 potential owner/operators submit Letters of Interest and Pre-Qualification documents and at least one is going ahead with the tender. They stated that, in general, the government of Indonesia and the State port companies (the Pelabuhans) are very supportive of private port concessions.

1.5.1 CURRENT AND EXISTING STUDIES

The Consulting Team was able to collect and review numerous documents that have been prepared for the various alternatives. Following are the documents reviewed for this study.

1. General Planning Documents Received During Kick-off Meetings (19 & 20 Feb., 2008):

   - BPKS Business/Master Plan – January 2007 (Hard and Soft Copy received 19/2/08);
   - Master Plan for Balohan Bay - December 2007 (Hard copy received 20/2/08)
   - Presentation (Power Point) Business And Investment Opportunity In Sabang Free Port and Free Trade Zone, 2007 (Received 19/02/08)
   - Sabang Master Plan document 2007-2021, Dated 2006 (Received 19/02/08)

2. Other Data:

   Existing Mapping and Technical Data:
   - Existing Topographic Mapping of Weh Island (AutoCAD and/or GIS electron version,
   - Current Bathymetric Mapping or Navigational Charts
   - Mapping and/or information on existing Infrastructure on Island, (roads, power grid, description of power generation source, water distribution systems, etc.);
   - Met-Ocean Data, i.e., winds, waves, currents, sedimentation, etc.

3. Current Marine Terminal Port Studies:

   - Planning documents for Marine terminals planned for Balohan Bay, Sabang Harbor, other marine terminal planning studies;
   - Existing marketing studies or Feasibility studies; (not provided)

- Site and layout plans for current marine construction projects, reclamation project at Balohan Bay and current Quay Construction at Sabang Harbor; (not provided)

4. Other General Planning and Legal Documents:

   - Copies of Legal documents and Laws concerning the legal status of Sabang Free Trade Zone and free port;
   - Other Legal Documents of importance to Study;
   - Any other General Planning document of importance to Study

5. Specific Data and Documents Reviewed:

   Legal:
   - Regulation – Free Trade and Free port Zone of Sabang, Law of the Republic of Indonesia No. 36/2000; Law of the Republic of Indonesia No. 37/2000;

   - Legal review of 2008 Shipping Bill

   Business Planning Presentations (in English)

   - Presentation on BUSINESS AND INVESTMENT OPPORTUNITY IN SABANG FREE PORT AND FREE TRADE ZONE From: WORK VISIT OF GOVERNOR NANGGROE ACEH ;DARUSSALAM PROVINCE *In America, on September 2007;*

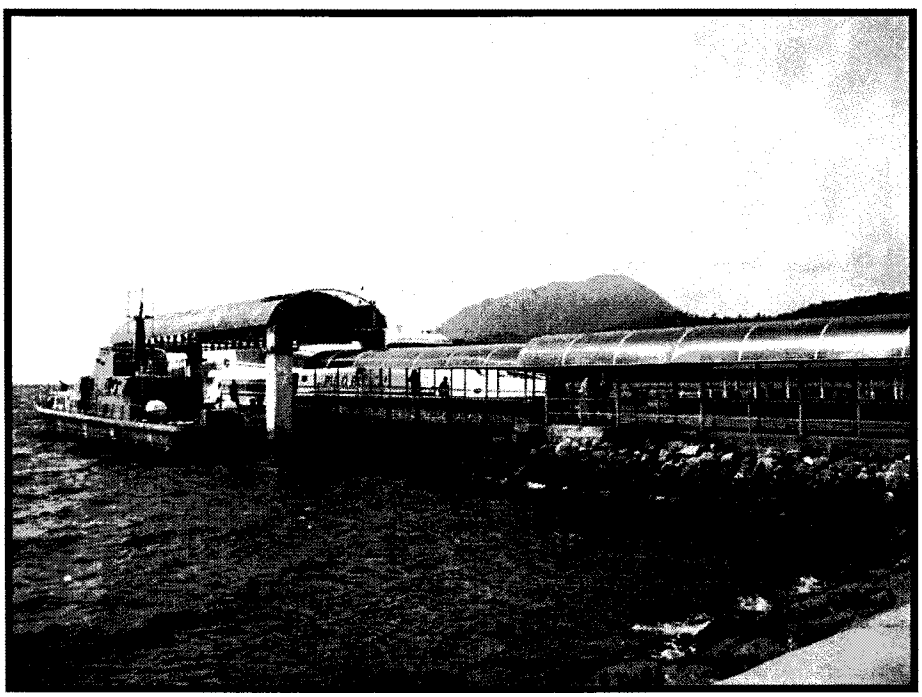
   Presentation peta Biz Plan – In English
   - Power Point Presentation on Sabang Business Plan dated 05 Oct 2006;
   - Cash Flow Investments for Projects in Sabang 2007 – 2012 (Excel Workbook)

6. Additional Data Collected and Reviewed:

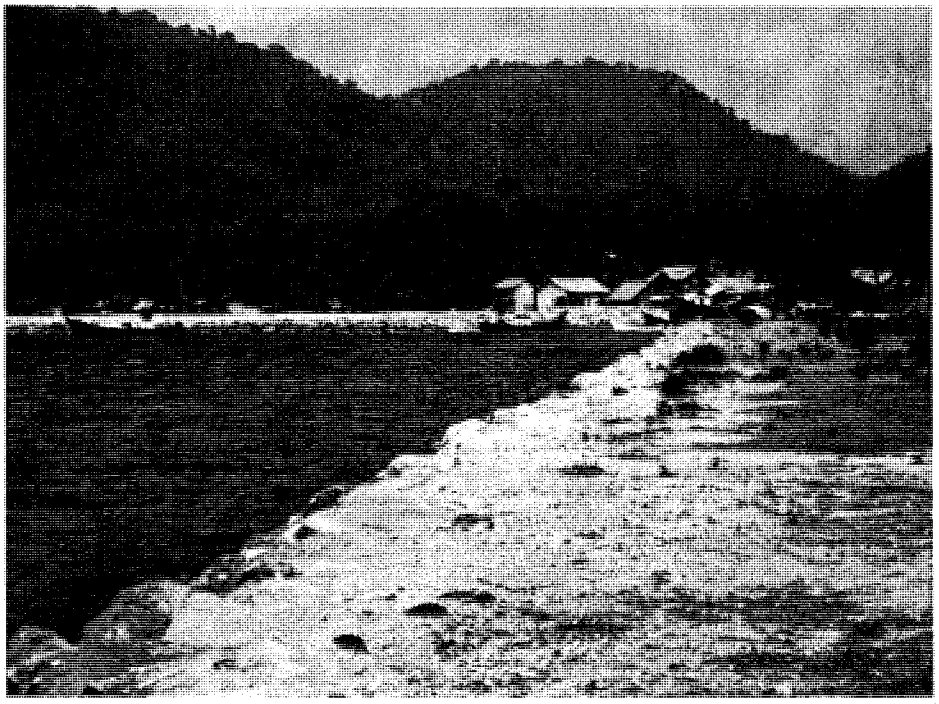
   - Indonesia Foreign Trade Statistics "Import", Volume I and II-Annual (Last Edition is Year 2005). Volume I contains Import by Country of Origin, Port of Importation, HS Section and Chapter, and Commodity (HS) by Country of Origin; Volume II contains Commodity (HS) by Country of Origin (continued), Import by SITC Section, SITC Division, SITC Group, Country of Origin, and Province.
   - Foreign Trade Statistical Bulletin "Import" Monthly (Last Edition is February 2006) Import by HS Commodity Group, SITC Commodity Group, Commodity (HS), Country of Origin, and Province/Port of Importation.
   - Foreign Trade Statistics "Export", (Volume I and II)-Annual (Last Edition is Year 2002) Volume I contains of Indonesia's exports by HS (Harmonized System) codes and country of destination; Volume II contains of Indonesia's export by HS and port of exportation. In addition, it contains Indonesia's export by country of destination and SITC codes (3 digits level).
   - Foreign Trade Statistical Bulletin "Export"-Annual (Last Edition is April 2003) Indonesia's export by HS codes, by SITC codes (1, 2, and 3 digits level), by country of destination, by port of exportation.

1.6 PHOTO LOG OF SITE

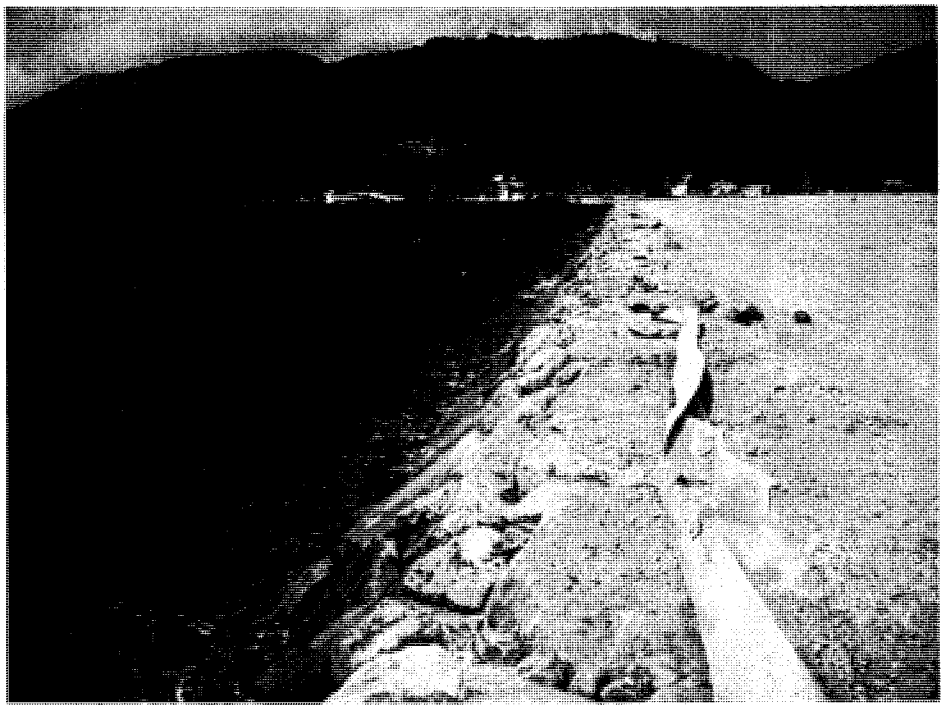
The following pictures were taken February 20, 2008 during a site visit to Weh Island.



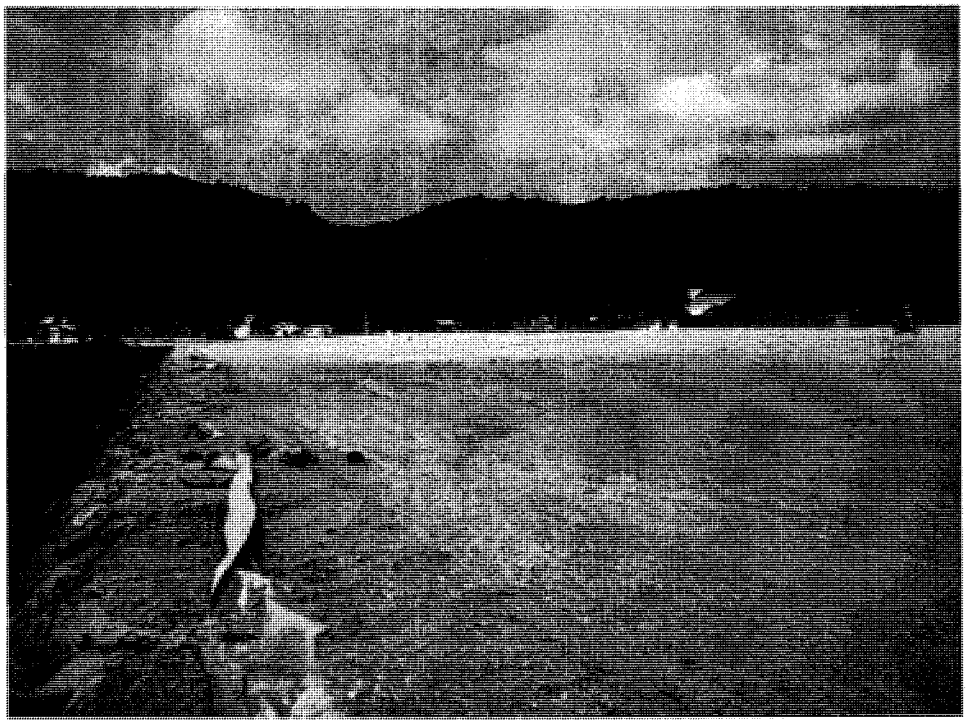
Balohan Bay Ferry Terminal



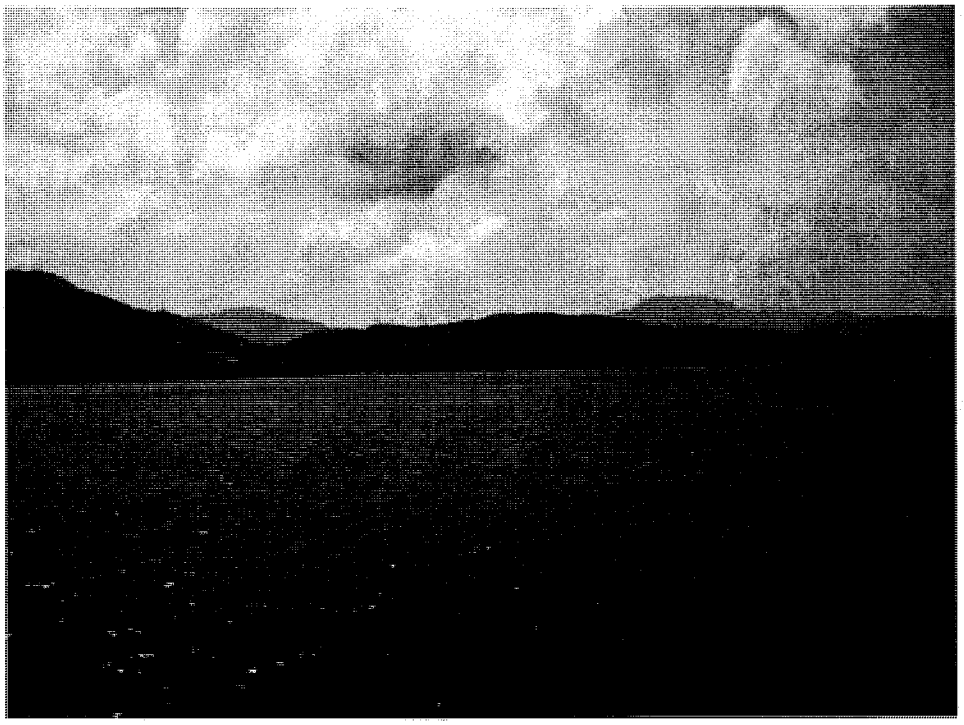
Balohan Bay National Port Terminal Under Construction



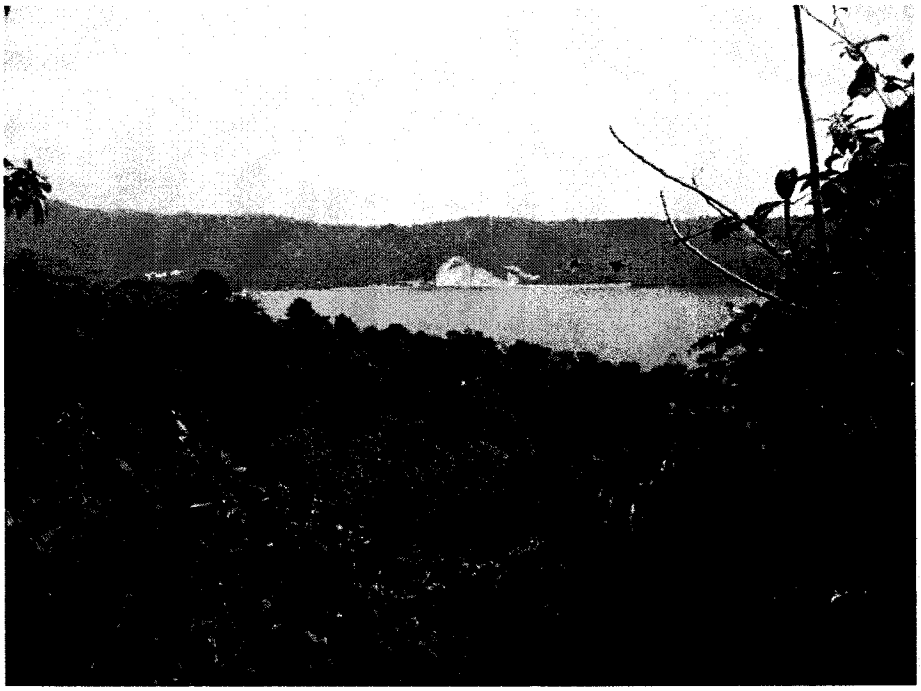
Balohan Bay National Port Rock Revetment



Balohan Bay National Port Under Construction



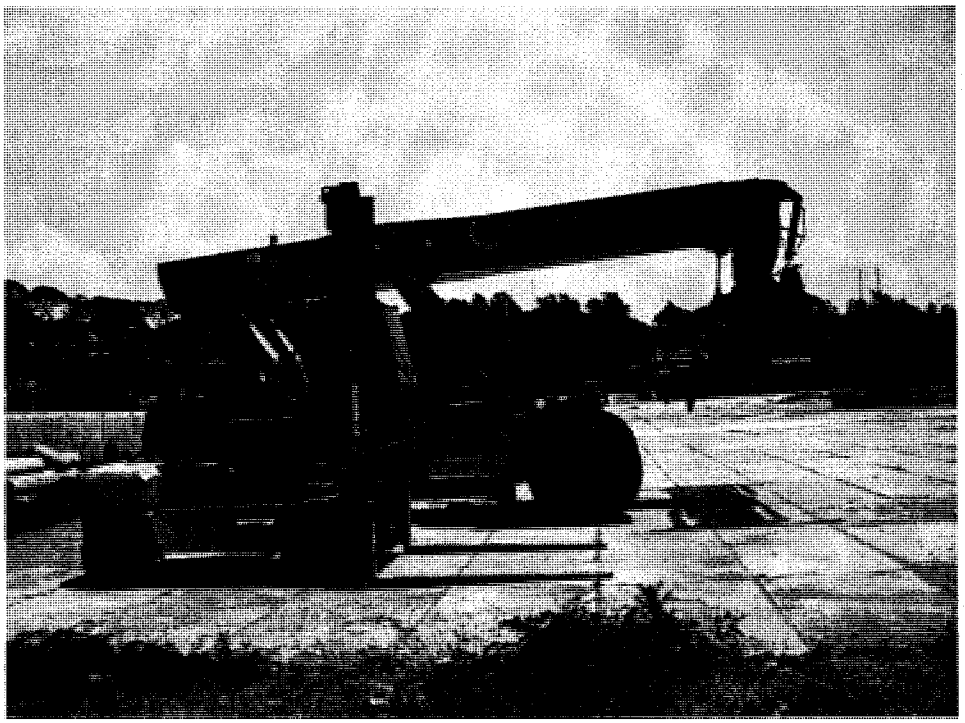
View Across Balohan Bay from National Port Terminal



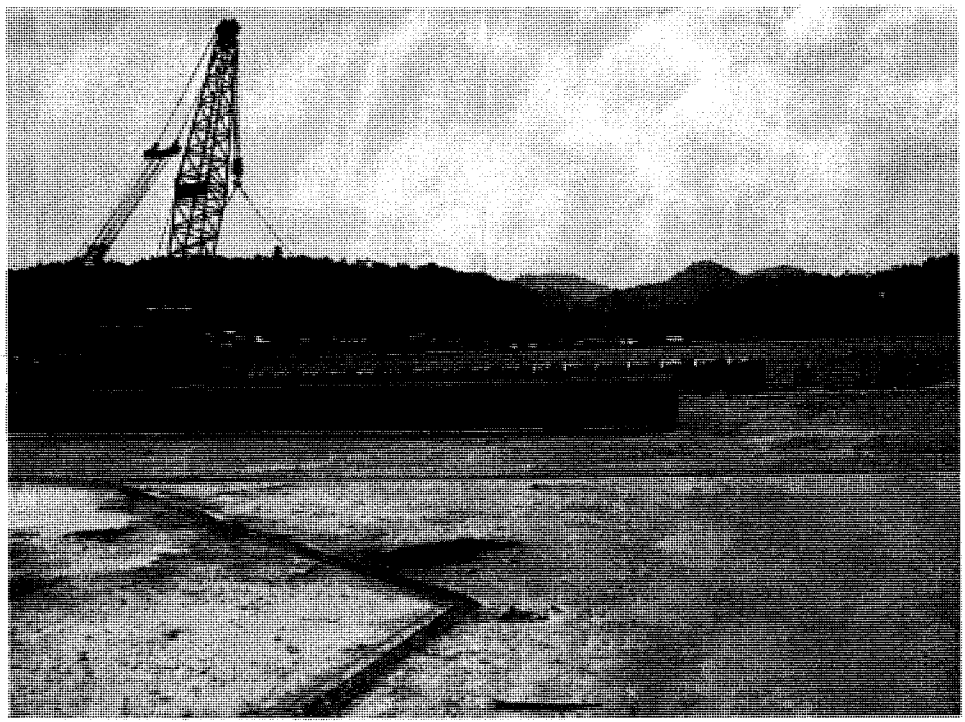
View from West Side of Balohan Bay

Existing Roadway Along Balohan Bay

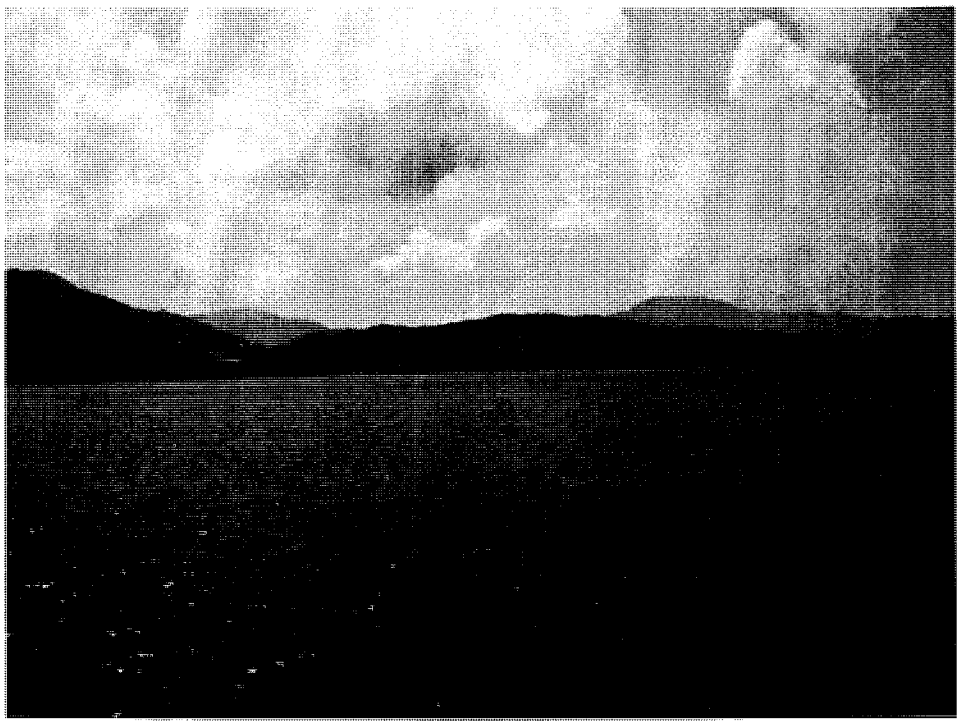
Entrance Into Town of Sabang



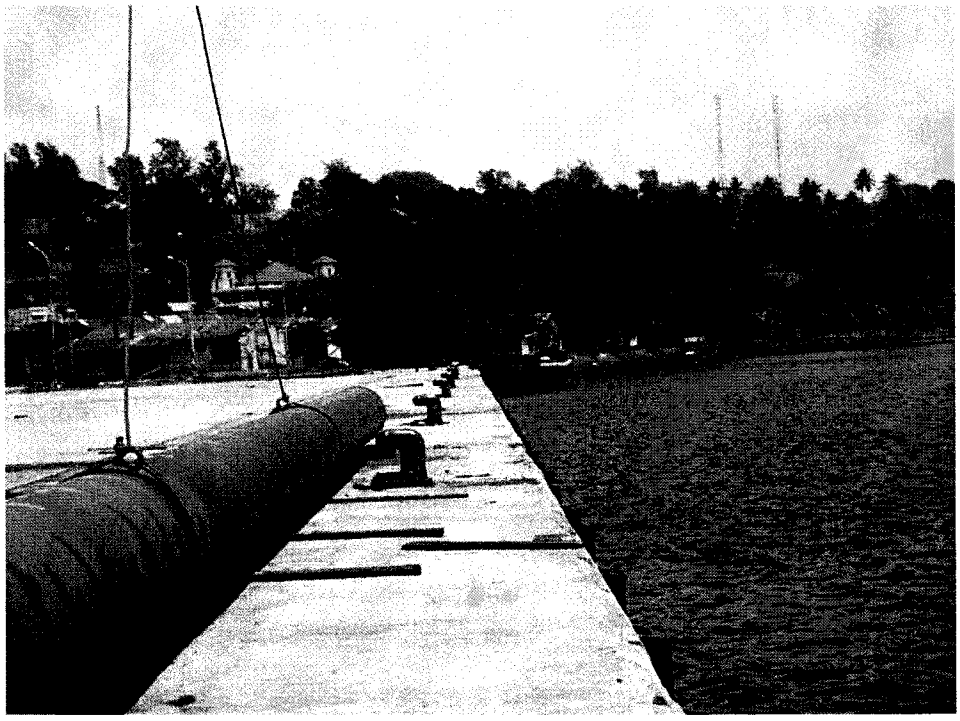
Existing Port Equipment – Port of Sabang



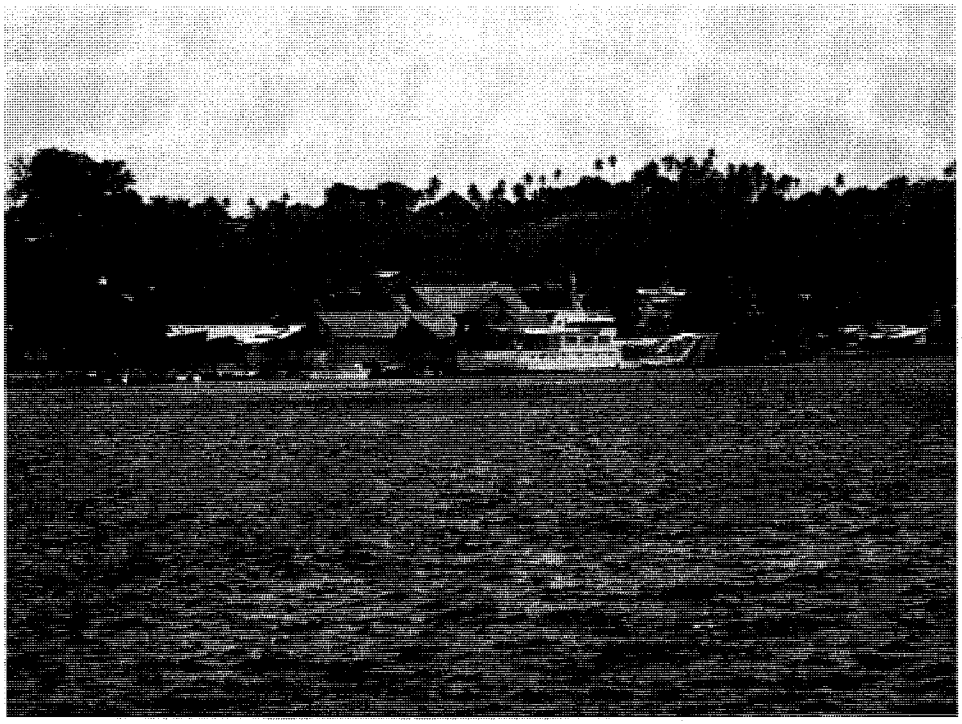
Port of Sabang Storage Yard and Mobile Harbor Crane



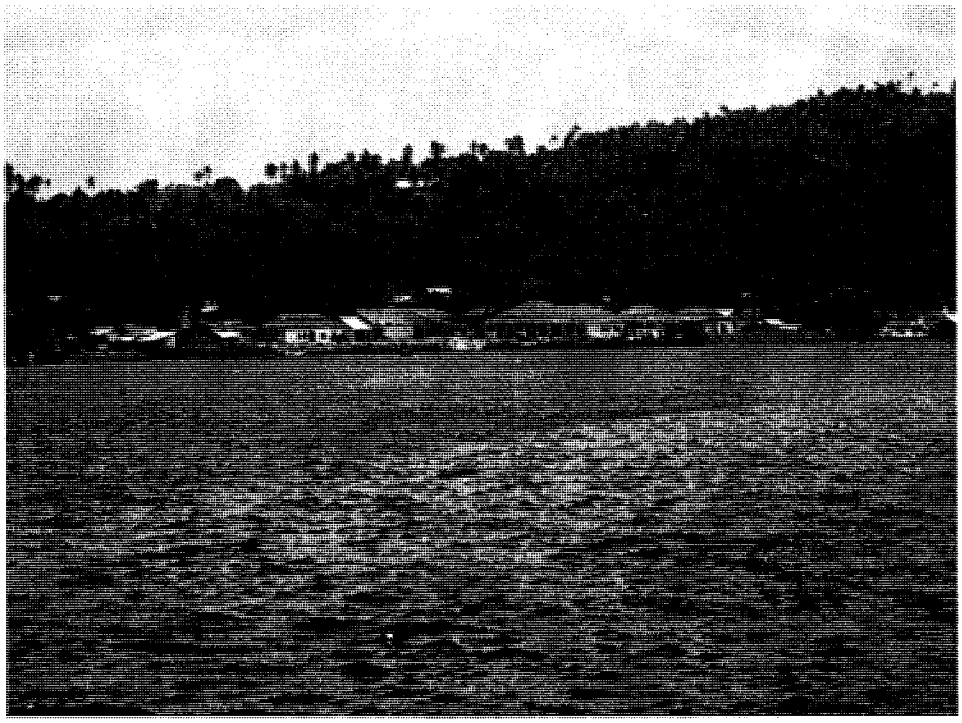
Looking Across Sabang Harbor



Existing Port of Sabang Quay

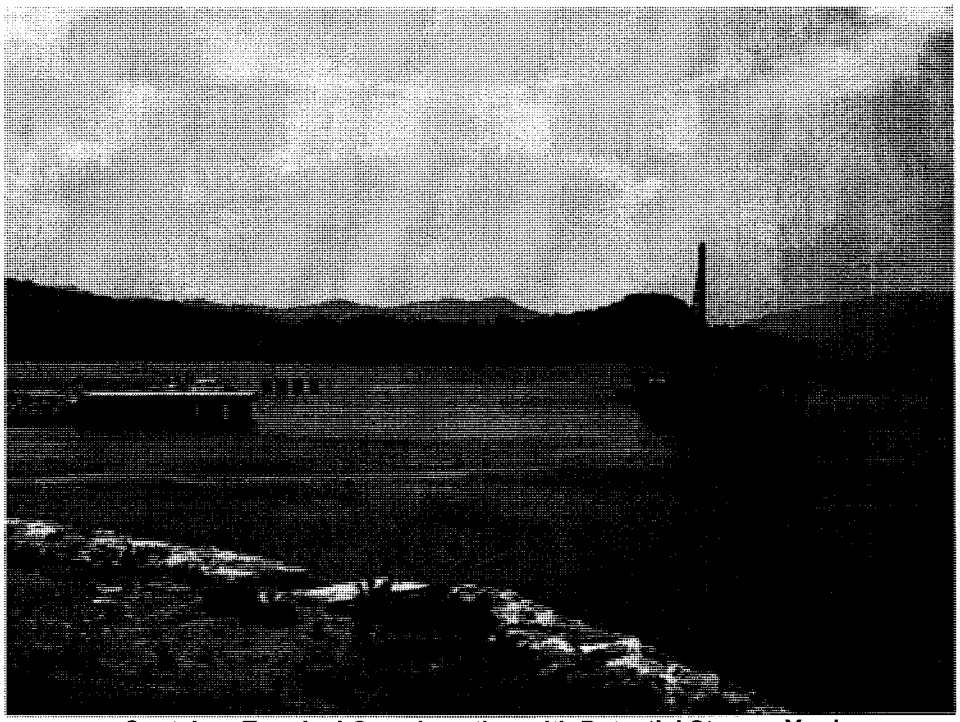


Existing General Berthing Quay at Port of Sabang



Town of Sabang from Waterside

New Container Terminal Quay Under Construction - Sabang Harbor



Container Terminal Quay Location with Potential Storage Yard Behind Sabang Harbor

Small Islands in Sabang Harbor from Hillside (note existing port in background)

West Side of Sabang Harbor

View of Gapang Harbor from the South End

View of Gapang Harbor with Hills Along the East Side of Harbor

SECTION 2
ECONOMIC OVERVIEW AND MARKET ANALYSIS

This report is the second task in the Weh Island Transshipment Port feasibility study, and provides a market analysis of the global economic and trade outlook that would affect the operations of the proposed ports.

Specifically, the following topics are addressed in the subsequent sections of this report:

- **Overview of current global economic conditions.** Section A provides an overview of current global macro-economic conditions and risks, and details the outlook for the future. The conditions and outlook for Asia, Europe, and North America in particular are described.

- **Review of select Asian economies, trade, and infrastructure.** Section B provides a more detailed examination of a number of Asian countries that could be potentially served by a new transshipment facility, including Indonesia, Thailand, Singapore, Malaysia, Vietnam, and India. In each case, details are provided on economic indicators, growth outlook, key areas of risk, trade activity and relations, and existing infrastructure.

- **Review of existing trade.** Section C examines the current level of global trade, and includes a discussion on the impact of the U.S. economy. Particular focus is paid to trade between Asia and Europe and between Asia and North America.

- **Overview of carriers and service strings.** Section D details the makeup and operations of the primary global carriers that serve Asia, and examines how fleets and routes will change in the future.

- **Review of key Asian ports and transshipment hubs.** Section E provides insight into regional Asian trade routes and activity, and details current activity and future expansion plans at a number of key ports and transshipment hubs. Details are also provided on the feeder regions that serve these ports.

- **Discussion of Weh Island's transshipment potential.** Section F details the current and forecast container volumes and clients that would affect a transshipment port on Weh Island, and highlights potential targets for marketing initiatives.

NOTE - The Weh Island facilities are being developed as potential container and petroleum products transshipment terminals. The container markets are well established at this time, and long-term predictions are both possible and reasonably accurate. However, global and dramatic variances in the petroleum markets, the viability and changeability of the OPEC Cartel, major world-wide alternate energy initiatives, and the on-going planning and construction of major Far Eastern oil pipelines, all make an accurate long-term prediction of the petroleum market as it relates to the Malacca Straits extremely difficult. For this reason, the project includes the siting and basic requirements of the terminal, but the actual market study and physical planning has been left for a future effort. This document therefore exclusively concentrates on the container terminal potential.

A-GLOBAL ECONOMIC OVERVIEW

Financial news remains bleak, with credit availability continuing to tighten as financial distress spreads well beyond the mortgage market. Financial institutions taking heavy losses in the mortgage market are reducing their risk exposures across the board, and the availability and costs of financing for businesses, consumers, and state and local governments have deteriorated to such a point that lower interest rates to the banks do not translate to lower rates to borrowers but instead quite the reverse, with higher rates and an unwillingness to lend. We are experiencing a true credit crunch as has not been seen in decades. A credit crunch is a sudden reduction in the availability of loans or a sudden increase in the cost of obtaining a loan. It is often caused by a sustained period of lax and inappropriate lending, which results in losses for lending institutions and investors in debt when the loans turn sour and the full extent of bad debts becomes known. This is the situation today, although it is a cyclical event on the economic landscape. The longer term out to 2025 should see a return to the growth in trade that has been generated by globalization, albeit at lower levels than in the last 10 years as the shifting in resourcing balances out. This fact is inherent to the forecasts in this report.

With an estimated 70 percent of the U.S. gross domestic product (GDP) linked to consumption, the impact on trade is being felt, with repercussions for its trading partners.

The declining dollar has investors shifting to the commodity markets, pushing up the price of oil to an unsustainable level that is creating increasing pressures on inflation. Other commodities have also increased in value dramatically, reaching record highs, particularly grains and other foodstuffs. The countries least able to deal with rising prices are those that are hit the hardest. Much of this is due to the policies of the U.S. Federal Reserve, which lowers interest rates as its primary tool to stave off a recession. It appears as if the Fed does not care about a weak dollar for now. The European Central Bank is complaining about excessive exchange rate moves with the dollar having depreciated 33 percent against the Euro since November 2005.

Global Insight is projecting world GDP to decline from nearly four percent last year to closer to three percent in 2008: a quarter less growth. The impact on global industrial production will be felt increasingly in the second half of the year. The impact on global container trade and the three East-West "Headhaul" routes is highlighted in the graphic and chart below. The weakness of U.S. imports in 2007 and 2008 impacts the Headhaul routes significantly, but recovery is projected for late in 2009.

2.1 WORLD MACRO ECONOMIC OUTLOOK

The mood in 2008 has been far from upbeat. The rest of the world will not be able to avoid a significant deceleration in growth—talk of decoupling from the United States has been premature. The world's real GDP growth is projected to slow from 4.0 percent in 2006 and 3.8 percent in 2007 to 3.2 percent or less in 2008. Last year, the slowdown was concentrated in North America, as other regions temporarily decoupled from the U.S. locomotive. In 2008, however, all major regions except the Middle East and Africa will experience a deceleration.

Economically, the United States is entering a danger zone and is, in fact, in recession, with GDP at a standstill in the fourth quarter of 2007 and forecast to be very weak throughout 2008. This will make the United States, and by extension much of the global economy, extremely vulnerable to another shock. GDP growth in the fourth quarter of 2007 (0.0 percent) and first

half of 2008 (0.1 percent in the first quarter and 0.9 percent in the second quarter) is expected to be very weak or on the verge of recession.
Growth in Western Europe and Japan will slow substantially. Global Insight has adjusted the Eurozone outlook for 2008 to 1.6 percent down from 2.7 percent growth in 2007. The U.K. economy is also predicted to slow from a growth rate 3.1 percent in 2007 to only 1.8 percent in 2008. Japanese growth in 2007 came in at 2.1 percent, down slightly from 2.4 percent in 2006. Nevertheless, Global Insight believes that Japan's growth is weakening significantly; growth is projected at 1.5 percent in 2008.

The global banking system has seen its capital base damaged by the U.S.-led housing and mortgage crisis and its credibility has come under question as a result of inadequate transparency and imprudent investment decisions. In 2009, the deteriorating global economic outlook and uncertainties on the extent of damage to financial institutions' balance sheets will keep lending activity subdued, risky assets out of favor, and investors skittish for at least the first several quarters. Despite pockets of weakness in some G7 economies, notably in the United States, Japan, and Italy, the global economy as a whole remains in decent shape. Indeed, most emerging-market economies still have a considerable head of steam and are unlikely to falter as a result of the ongoing financial turmoil.

2.1.1 KEY RISKS

Global Credit Crunch
Although liquidity remains plentiful in many regions, the financial panic that set in last August has effectively tightened credit conditions and increased risk aversion. Deteriorating real estate and mortgage market conditions will put further downward pressure on prices and ratings of asset-backed securities, impairing bank capital. This impairment could lead to a generalized tightening of credit conditions with adverse effects on business hiring and investment, as well as consumer spending.

Deeper U.S. Recession
Because the U.S. economy has been the primary engine of global growth in recent years, a deeper recession could darken the global outlook considerably. In the U.S. "Double-Dip Recession" scenario (40 percent probability), the housing downturn is even more severe, with further erosion of home prices and household net worth. An erosion of bank capital exacerbates the credit crunch, restraining business and consumer spending. On an annual basis, U.S. real GDP has fallen at a 2.4 percent annual rate. After a slight pickup in the summer, induced by tax rebates, the economy dipped further in late 2008 and this will continue into early 2009. Annual economic growth may remain near zero for two years, then rebound to an average of three percent in the 2010-12 period. Such a scenario would cut global growth by 0.8-1.0 percentage point this year and next year, compared with the Global Insight baseline.

Housing Market Crashes
Over the past decade, home prices have more than doubled in Ireland, the United Kingdom, Spain, Australia, France, Sweden, Denmark, and South Africa. Such high asset prices can only come about through excessive liquidity growth and debt accumulation, which have led to other problematic macroeconomic imbalances. Significant home price corrections could undermine consumer spending through a negative wealth effect. The most vulnerable economies are Spain, Ireland, the United Kingdom, and, to a lesser extent, France and the Netherlands.

Asset Price Corrections
In recent years, rapid money supply growth has fueled asset price inflation around the world, but especially in Asia, the Middle East, and other emerging markets. The Morgan Stanley Capital

International (MSCI) emerging markets stock price index climbed 30 percent in 2006 and 35 percent last year. In 2008, global stock markets have retreated, with the MSCI world and emerging markets indexes down 11 percent and 15 percent, respectively, year-to-date. Distress in financial markets has sent investors to commodities, pushing prices to unsustainable levels. A price correction is likely in 2008-10 as supply outpaces demand growth. If China's growth slows abruptly, commodity prices are in danger of collapsing—falling 50 percent or more. Regions that depend primarily on commodities for their export earnings would be hard hit, including Africa, the Middle East, South America, and the Commonwealth of Independent States. A meltdown in commodity prices would also put downward pressure on currencies of commodity exporters, such as Canada, Australia, New Zealand, and South Africa. On the positive side, it would reduce inflationary pressures and improve the terms of trade for commodity-importing nations.

Oil Prices

After soaring to a record US$120/barrel in April 2008, oil prices have retreated significantly. Continued strong demand in the emerging world and restrained OPEC production mean supply/demand conditions will remain tight. Recent history suggests that there are substantial upside risks. Two-thirds of current global oil production is concentrated in countries with either declining production or significant political and economic instability. Iran, Turkey/northern Iraq, Nigeria, and Venezuela remain potential locations of friction. A series of geopolitical shocks could send prices to new heights, dampening growth in the oil-importing countries.

China Hard Landing

China's extended investment boom is creating excess capacity and accentuating credit risks in the state banking sector. Incremental policy tightening has been insufficient to contain the boom, leading to greater imbalances and inflationary pressures. Yet, the government will be reluctant to rock the economy with aggressive austerity measures. In the hard-landing scenario, Global Insight estimates China's real GDP growth would subside to around five percent in early 2009, a pace that would lead to rising unemployment. Structural weakness in consumer demand precludes an immediate switch from investment-led growth to consumer- led growth. A China hard landing (35 percent probability) would trigger a slide in commodity prices, adversely affecting exporting nations but cushioning importing countries. A five-percentage-point reduction in China's growth would reduce global growth by about one percentage point. The Asia-Pacific economies would be hit hard, and suppliers in the Middle East, Africa, and Latin America would experience significant losses in export earnings.

2.2 ASIA REGIONAL

The regional economy of Asia will continue to record steady growth in 2008, although momentum will moderate as the U.S. economy continues its downturn. Growth will slow from the multi-year highs recorded in 2007 as the net export position is undermined by decelerating exports in the wake of the U.S. downturn and global electronics demand remains soft; imports will continue to be inflated by high global commodity prices. Support to exports will continue to be provided by demand from within the region and in expanding markets in the world's commodity exporters. Growth in China is expected to slow as authorities implement more aggressive tightening measures in the second half of the year with the potential risks of a hard landing accentuated by unresolved structural imbalances in the economy. Impetus in regional growth will shift to recovering domestic demand with the resilience of investment and consumption remaining the key variable in the near-term outlook. Concurrently, the exposure of the region's financial system to the subprime loan crisis so far remains limited, with liquidity growth sustaining, while strong external positions provide insulation against potential volatility in

foreign capital flows. The declared exposure of Asian banks to subprime loan losses remains comparatively limited while property price inflation has been broadly in line with fundamentals with the possible exception of heated real estate markets in Australia and New Zealand. Continued, if softening, business investment should support consumer spending as employment and income growth remains stable. Given the current balance of forces, Global Insight currently shows aggregate growth in Asia (ex-Japan) slowed to 7.2 percent in 2008, from the 13-year-high rate of 8.0 percent hit in 2007.

Accelerating inflation remains a key risk in the outlook for the Asia Pacific region. Inflation has surged amid intensifying supply constraints in the context of robust domestic demand growth. Rising input costs, compounded by wage inflation, will exert pressure on company profit margins while higher staple prices will undermine household purchasing power. Fiscal strain could be exerted in countries that operate extensive subsidy systems, reducing resources for public investment while monetary tightening targeted at demand pressures also fuels inflation.

Export dependency increases exposure to prolonged U.S. downturn. Undeniably, the region's growth still remains skewed to exports and to demand sourced outside the region. Much has been made about rising volumes of inter-regional trade anchored on the emerging markets of China and India. Nevertheless, the intra-regional production chain that this trade reflects remains overwhelmingly dependent on the United States and Europe as the source of final-stage demand even as consumer markets in India and China grow. Any severe or prolonged downturn in U.S. demand would subsequently result in an attrition of growth with the risks exacerbated if the G3 economies enter a synchronized downturn. Commodity exporters ranging from Australia and Papua New Guinea to Mongolia could witness deterioration in multi-decade high terms of trade, which have supported robust growth. Domestic demand growth would atrophy in turn as business investment retracts in the face of falling export earnings, with the effect cascading down to consumers as labor markets slacken. Past instances of crisis ranging from the Savings and Loans crisis of the early 1990s to the tech downturn of 2001 highlight a close correlation between Asian growth and U.S. growth, although the negative impact is usually short-lived. The key variable remains the length and depth of any U.S. downturn. Concurrently, demand in China and India is expected to cool as authorities in both countries implement measures to stabilize liquidity growth with risks of a hard landing accentuated in China.

2.3 EUROPE REGIONAL

2.3.1 EUROZONE

Global Insight projects that Eurozone growth will slow markedly to a five-year low of 1.4 percent in 2008, from 2.6 percent in 2007. Growth is forecasted to moderate in all of the major Eurozone economies, including Germany (from 2.6 percent to 1.4 percent) and France (from 1.9 percent to 1.4 percent). Italian GDP growth is particularly muted at 0.3 percent in 2008, while Spanish expansion is projected to slow markedly from 3.8 percent in 2007 to a 15-year low of 1.8 percent in 2008. Following robust growth between mid-2005 and third-quarter 2007, Eurozone economic activity has come under increasing pressure from the combined influence of tighter credit conditions; a very strong euro; elevated oil, commodity, and food prices; lower equity prices; slowing growth in key export markets; and higher interest rates. Indeed, Eurozone GDP growth halved to 0.4 percent quarter-on-quarter in fourth-quarter 2007, and latest data and survey evidence clearly point to faltering activity.

On the positive side, higher and still-rising employment, and some limited pickup in wage growth across the Eurozone are supportive to consumer spending, although purchasing power is being squeezed by elevated inflation. Meanwhile, business investment intentions currently remain relatively strong, benefiting from generally healthy corporate finances and recent extended healthy demand. Nevertheless, financial-market turmoil poses a serious threat to Eurozone growth, particularly as Global Insight suspects it will persist in varying degrees for some considerable time to come. Eurozone equity markets have lost substantial ground overall recently, while tighter lending conditions are damaging for Eurozone domestic demand through restricting loans to some consumers and businesses, and by exerting upward pressure on market interest rates. Business and consumer confidence have been hit markedly, which is likely to undermine prospects for investment, employment and consumer spending. Meanwhile, weakening global growth is likely to increasingly hit Eurozone exports, which have made an important contribution to the region's growth.

On top of this, Eurozone exporters continue to face a strong euro. Indeed, the euro hit an all-time high of US$1.59 in March, and it seems likely to make further gains against the dollar. Meanwhile, significant corrections in overvalued housing markets in Spain and Ireland, and possibly, to a lesser extent, in France and the Netherlands, are likely to have marked dampening effects on the rest of the economy.

Global Insight forecasts real Eurozone export growth to moderate from an estimated 5.9 percent in 2007 to 3.5 percent in 2008. Real Eurozone import growth is set to dampen, from 5.4 percent in 2007, to 4.3 percent in 2008, as Eurozone domestic demand slows relatively gradually and the euro's strength enhances imports' competitiveness. Additionally, oil prices are expected to remain relatively elevated through 2008, which will limit the Eurozone's trade surplus. With the Eurozone's deficit in net transfers remaining substantial in 2008, the Eurozone's current account is projected to move from a surplus of 15 million euro (0.2 percent of GDP) in 2007, to a deficit of 10.0 billion euro (0.1 percent of GDP) in 2008.

2.3.2 UNITED KINGDOM

The UK lost momentum as GDP growth slowed to 0.6 percent quarter-on-quarter in the fourth quarter of 2007, from 0.7 percent quarter-on-quarter in the third quarter and 0.8 percent quarter-on-quarter in both the second and first. The economy is expected to lose further momentum in 2008. Muted real disposable income growth, tighter lending practices, heightened debt levels, a slowing housing market, and the still-marked overall rise in interest rates since August 2006 will increasingly pressure consumer spending. Consequently, Global Insight forecasts GDP growth to slow markedly from 3.1 percent in 2007 to 1.8 percent in 2008, which could be the weakest equal level since 1992.

Consumer price index (CPI) inflation is likely to trend significantly higher for next several months, after rising to a nine-month high of 2.5 percent in February. Elevated oil and food prices continue to exert upward pressure on inflation over the next few months at least. Indeed, oil prices reached record highs around US$120/barrel in April.

Total investment growth is projected to decrease to 1.5 percent in 2008 with business investment growth moderating significantly to 1.3 percent. Business investment should be scaled back in the face of tighter lending conditions and increased pessimism and uncertainty over the economic outlook. Furthermore, elevated concern about the commercial property sector and the housing market seems certain to depress construction investment. In addition,

public spending and investment will start to become less supportive to growth in 2008, having made a significant contribution in recent years.

Despite the remaining significant inflation pressures, the Bank of England cut its key interest rate from 5.75 percent to 5.25 percent in February in response to the growing risks of a sharp U.K. economic slowdown. The Bank is expected to trim interest rates gradually but steadily down to 4.50 percent by end-2008.

U.K. exports seem likely to come under increasing downward pressure during 2008 from softer growth in key markets. It now seems likely that the United States will suffer recession in 2008, with domestic demand muted. As a result Global Insight forecasts Eurozone GDP growth to moderate from an estimated 2.6 percent in 2007 to 1.6 percent in 2008. Although U.K. exporters should benefit from a significantly softer pound in 2008, it may not be sufficient to offset weaker demand in important foreign markets. Consequently, U.K. export growth is forecast to be limited to 2.4 percent in real terms in 2008. Slowing U.K. domestic demand means that imports will also be limited, and Global Insight projects that imports will grow by 2.3 percent in real terms in 2008.

2.4 NORTH AMERICA

2.4.1 UNITED STATES

The U.S, economy slipped into a recession for the first half of 2008. It is expected that GDP will decline 0.4 percent in the first quarter of 2009 and 0.5 percent in the second. The Federal Reserve Bank has jumped to action, cutting interest rates sharply, and may take the federal funds rate down to record lows. Growth should improve in the third and fourth quarters (to a 2.2 percent average) when monetary and fiscal stimulus kicks in more strongly.

The downturn is spreading beyond housing as credit tightens and soaring commodity prices squeeze spending power. Financial institutions taking heavy losses in the mortgage market are reducing their risk exposures across the board, and the availability and costs of financing for businesses, consumers, and state and local governments have deteriorated. Alarmingly, employment growth has continued to fade, removing the last support under consumption.

The export outlook looks positive, and it must remain so if the economy is to avoid a deeper recession. Global growth is slowing but, along with a weakening dollar, is still supporting U.S. export growth. European growth is losing steam, partly because U.S. goods are gaining at Europe's expense as the dollar slides, and partly because some housing markets there are also experiencing a downturn. Falling interest rates and slowing U.S. growth have sent the greenback to new lows. This is bad news for U.S. consumers, but it is dramatically improving the competitiveness of U.S. producers. Domestic spending contracted in the fourth quarter of 2007, Global Insight projects that domestic spending growth will be just 0.2 percent in 2008. Overall GDP growth in 2008 is expected to be approximately 1.2 percent, helped by an export gain of around eight percent, but most of the positive growth comes in the second half of the year, following the recession in the first quarter.

2.4.2 CANADA

Overall the Canadian economy grew at a commendable 2.6 percent in 2007. However, growth was more sluggish in 2008 at 1.6 percent. Weak economic growth in the U.S. coupled with the

strong appreciation in the Canadian dollar, caused net exports to become a significant drag on Canada's growth in 2008.

Inflation remains a concern for Canada. The core CPI had hovered consistently above 2.0 percent. Although especially notable in the energy-related areas and in Alberta, inflation has been fairly broad-based. Global Insight expects inflation to be two percent over the medium-term.

The Canadian dollar reached a three-decade high of almost 109 U.S. cents in early November. This was a very brief spurt, however, since the Canadian dollar fell quickly to slightly below par by 1 December 2007 and has remained near par in mid-March 2008. This appreciation was largely due to stronger commodity prices, particularly oil. The Bank of Canada, concerned that the financial turmoil and housing sector collapse in the United States may spread to Canada, lowered its policy rate in early December and again in January. From here on, Global Insight expects the bank to reduce rates further, and then sit tight for at least several months as the current financial turmoil works itself through the system.

Export volumes will be stuck in slow motion in 2009, as they were in 2008, again rising only about two percent in real terms in 2009. Weak exports and negative foreign investment will move the current account towards a deficit. Although exports have been sluggish, imports have been anything but. Against the weak trend in real exports, import growth did outpace export growth 5.7 percent to 0.9 percent. Canada's economy has displayed a strong appetite for a wide range of imports, from machinery and equipment to consumer goods.

B-ASIAN COUNTRY REVIEW

2.5 INDONESIA

2.5.1 ECONOMIC INDICATORS

Outlook

Despite turbulence in global financial markets and an economic slowdown in the U.S., Indonesia's near-term growth prospects remain favorable. Investment and consumer spending rebounded in 2007 and are likely to retain sufficient momentum this year to preclude a significant slowdown in growth. Stability on the inflation front, coupled with lower interest rates and the lack of social/political instability bodes well for private consumption—the economy's largest sector—as well as for investment spending. Recent data indeed support this assertion, with both private consumption and fixed investment growth accelerating steadily through the end of 2007. Other high-frequency data confirm this improving trend, such as vehicle sales, which are up 40 percent year-on-year in November 2007. All in all, following 6.3 percent growth in 2007, Global Insight forecasts only a mild slowdown to 6.1 percent in 2008 and 6.0 percent in 2009.

Monetary easing might be extended into 2008. Having kept interest rates unchanged since last summer, Bank Indonesia announced a 25-basis-point cut in December 2007. While a bit of an inflation flare-up has since prevented further cuts, Global Insight believes that a deteriorating growth picture globally, coupled with aggressive monetary easing by major central banks, suggests that Bank Indonesia will be able to extend its own easing cycle into 2008. At this time, Global Insight only expects a total of 50 basis points in additional cuts, which will bring the policy rate to 7.5 percent by year-end.

External balances will remain strong despite slower exports. Building on stellar export performance in 2006–07, Indonesia will continue to build up its foreign-exchange reserves while also lowering its external debt stocks. Debt-service costs are expected to decline quite sharply over the next two years, resulting in an improvement across most financial ratings and a likely sovereign credit upgrade.

Table 2.1 below details the compound annual growth rates for a number of key indicators. The forecasts project that Indonesia will experience a decrease in annual GDP and population growth rates, with population growth rates between 2020 and 2030 forecast to be almost half of current levels.

Table 2.1 Comparison of Indonesia's Key Economic Indicators

(Percent Change)

Key Compound Annual Growth Rates	2000-08	2010-20	2020-30
Gross Domestic Product (GDP)	5.2%	4.7%	4.2%
Exports of Goods & NF Services	7.4%	4.9%	4.8%
Imports of Goods & NF Services	8.1%	6.2%	5.1%
Total Population	1.3%	0.9%	0.7%
Real Per-Capita GDP	3.9%	3.8%	3.5%

Source: Global Insight

Domestic Assumptions

- Financial-market volatility and tighter credit conditions worldwide weaken external demand over coming quarters.
- Domestic political stability is maintained over the forecast horizon; there will be no major outbreak of ethnic or religious violence.
- Progress on structural reforms (regulatory and legislative overhaul) is incremental and rather slow.
- Oil production accelerates somewhat over the medium term, but there are no new major discoveries.
- Having improved steadily over the course of 2007, consumer confidence gains will slow this year because of negative news on the external front.
- New tax and investment legislation was approved in 2008 that would help improve the business and regulatory environment. In conjunction with new investment incentives, this will lead to a notable increase in foreign-direct-investment approvals during the next several years.

2.5.2 ECONOMIC GROWTH OUTLOOK

Short-term Outlook

Domestic demand will offset weaker exports. Whereas the good economic performance in 2006 was almost entirely linked to exceptionally good net exports, growth has become much more balanced during 2007. Domestic demand has strengthened across the board, with private consumption and fixed investment growing at the fastest rates since 2004–05. This news is a welcome development, given worsening economic conditions in key export markets such as the U.S. and Japan.

Economic growth is expected to stay at 6.1 percent in 2008. While the headwinds facing the U.S. economy will undoubtedly reverberate around the world and undermine economic performance in most of Asia, Global Insight remains optimistic about Indonesia's near term economic outlook in 2008. That said, Global Insight is not as optimistic as the Indonesian government, which continues to target a 6.4 percent annual growth (down from an originally approved target of 6.8 percent) in this year's budget. Nevertheless, thanks to ongoing strength and momentum in domestic demand, the economy should be able to achieve a 6.1 percent expansion.

Medium- and Long-Term Outlook

Global Insight expects Indonesia to grow by an average of 4.5 percent annually in 2007–37. This would be about two percentage points lower than the average growth rate prior to the Asian crisis, but still a respectable performance by any standard. Global Insight's projection rests on several assumptions, of which continued economic openness is perhaps the most crucial.

The country's positive outlook is supported by its superior factor endowment, including abundant natural resources and favorable demographics. Proximity to Asia's largest sources of capital (Japan, China, and Singapore) and to the region's fastest-growing markets is another valuable asset. Finally, economic openness has been one of the main reasons for strong growth in the past and should remain an important advantage in the future.

Indonesia is rich in natural wealth and has significant deposits of oil and gas, minerals, and agricultural resources. As OPEC's only Asian member, it produces about 1.0 million barrels per day of crude oil, but proven reserves have fallen by half over the past two decades. The

country's main strength lies in natural gas exports (reserves are the sixth-largest among OPEC members), which are directed mainly to regional powerhouses like Japan and Singapore. Indonesia is also actively seeking to secure long-term contracts to supply liquid natural gas (LNG) to China's growing market. Other exports include tin, nickel, timber, bauxite, and copper, as well as precious metals like gold and silver. The country is also among the top three exporters of cocoa and natural rubber in the world.

Indonesia's insular structure (there are over 15,000 islands forming the largest archipelago in the world) means that most urban and manufacturing centers have easy access to ports. This tends to lower transport costs and improve export competitiveness. Moreover, fish stocks and some of the largest coral reefs in the world add to the country's natural resources. Many small islands are currently uninhabited, but hold tremendous tourism potential, and niche tourism could become a growing industry in the future.

With the world's fourth-largest population, Indonesia has an abundant labor supply, and in fact has been exporting labor to countries like Malaysia and Singapore for many years. This could become an even greater advantage in the future, given graying populations in some regional economic powerhouses. At the same time, however, recent developments highlight new risks. After decades of little labor-market regulation and union activism under former President Suharto, labor has become increasingly organized and vocal. Sometimes violent protests over the past few years have helped push through substantial wage increases and generous severance packages. With a general shift toward more direct political participation, organized labor's political influence will probably increase over time. This could result in excessive regulation and diminished competitiveness.

One characteristic setting Indonesia apart from other developing countries is the presence of a large and highly entrepreneurial Chinese community within its borders. Despite a period of heightened anti-Chinese sentiment and even violence in the second half of the 1960s, relations have improved greatly since then. Indonesia's Chinese community has historically been a source of innovation and entrepreneurship, and has acted as a bridge to China's business community. This has made Indonesia a preferred destination for Chinese investment, with highly beneficial effects on economic growth.

Yet, it was economic reform and liberalization in the aftermath of the second oil crisis that set the stage for two decades of rapid economic growth. Under IMF/World Bank supervision, the government decided to diversify the economic base, open up most sectors to foreign participation, and limit the state's economic role. These policies have helped Indonesia avoid the fate of other OPEC countries and instead grow into one of Southeast Asia's largest and most dynamic economies. The ability to retain openness in trade, further deregulate its markets, engender savings growth, and provide a suitable environment for technology transfer and investment will determine Indonesia's future advancement.

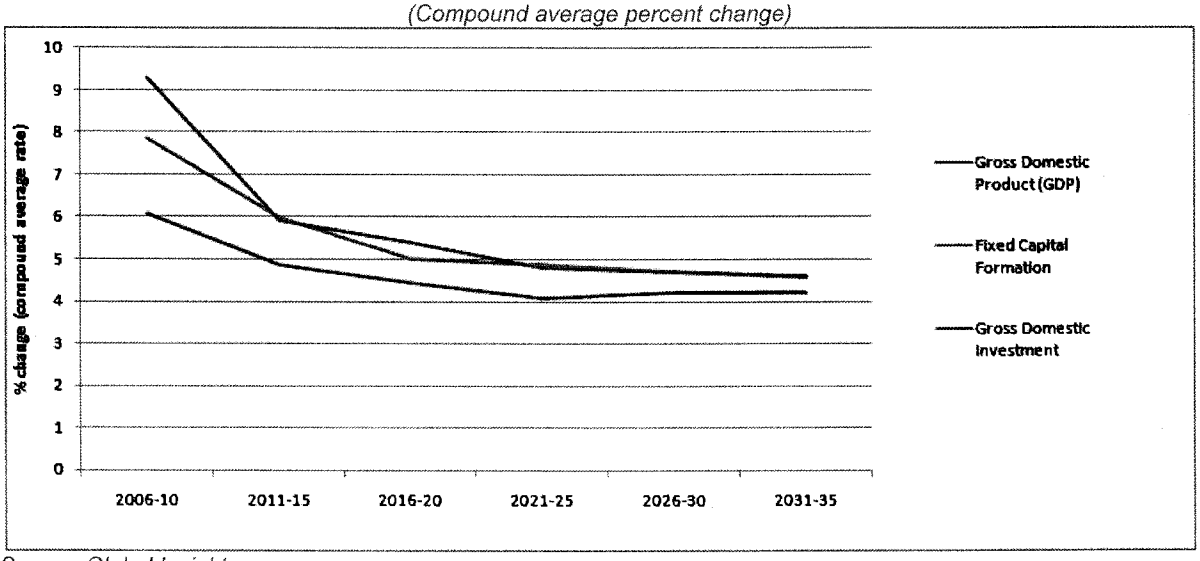
Some medium- and long-term constraints to growth include rising Islamic militancy and terrorism, potential for ethnic violence and political instability, and a lackadaisical approach to needed economic reforms. The weak legal system and opaque regulatory environment are a major long-term risk, threatening a decline in investment inflows and international competitiveness. The country's shaky transition to democracy, after more than three decades of authoritarian rule, will also shape its long-term potential.

The following chart (2.1) compares the compound average percent change over five year increments for GDP, fixed capital formation, and gross domestic investment. All three growth

rates are forecast to decrease in the near-term before leveling out in the range of a four to five percent increase per year.

Chart 2.1 Comparison of Change between GDP, Fixed Capital Formation and Gross Domestic Investment in Indonesia

(Compound average percent change)

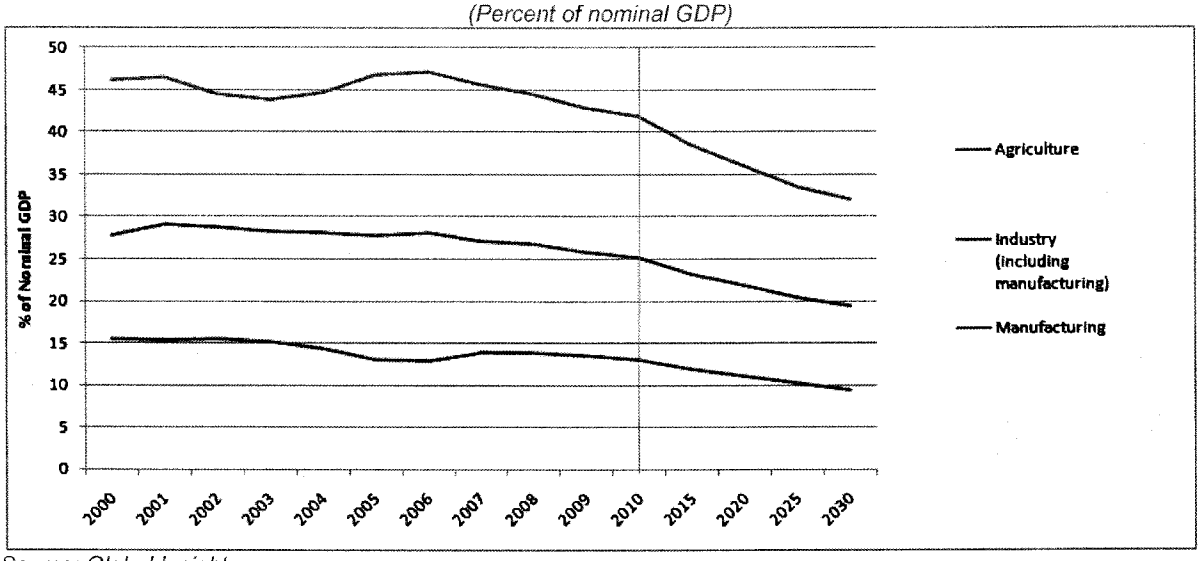


Source: Global Insight

Chart 2.2 below compares the percentage share of nominal GDP that is attributable to the agriculture, industry, and manufacturing sectors. Note that the manufacturing sector is a subset of the industry sector, in which it accounts for about two-thirds of the total. All three sectors are forecast to decrease by approximately one-third from current shares by 2030.

Chart 2.2 Indonesia's Sector Share in GDP Factor Cost

(Percent of nominal GDP)



Source: Global Insight

Current Economic Conditions

Following a weak 2006, investment spending gathered momentum in 2007 and accelerated notably in the second half as business confidence improved. During the fourth quarter, fixed investment growth reached 12.1 percent year-on-year (up from a revised 8.1 percent in the third quarter). While 2006 investment approvals were plummeting amid a "wait and see" investor attitude, the most recent data from the Investment Coordination Board (BKMP) show actual investment up 103 percent year-on-year, to US$10.2 billion, through the middle of December 2007. Most of the growth in investment is attributable to the transportation, warehouse, and telecommunication sectors, which experienced sizable foreign-direct-investment inflows. Incidentally, the transportation and communication sector and the utilities sector led growth in the fourth quarter, with advances of 17.4 percent and 11.8 percent, respectively.

Indonesia's GDP grew by 6.25 percent in the fourth quarter of 2007, with 6.30 percent growth for the year as a whole. It is unlikely that the U.S. slowdown had any impact on Indonesia's fourth-quarter GDP performance. Trends witnessed during the earlier part of 2007 appear to have intensified in the last quarter: domestic demand is accelerating, while net exports are easing slightly. Private consumption growth continued to grow, with a 5.6 percent year-on-year increase in the fourth quarter, up from a revised 4.8 percent in the third quarter and the highest rates since the beginning of 2004. Stabilization on the inflation front, further interest-rate cuts, and the lack of political or notable social disruptions during 2007 have all contributed to a general improvement in consumer sentiment that resulted in more spending on durable goods. Sales of high-ticket items, including cars and motorcycles, boomed last year, with industry sources reporting a 40 percent jump in vehicle sales as of late 2007.

Consumer Demand

Consumer demand accelerated in 2003–04 due to easy credit, strong economic growth, and general stability, although private consumption growth eased sharply in late 2005 following a 125 percent fuel-price hike. Household budgets were subsequently squeezed by double-digit inflation, and consumer durables witnessed large declines. The environment looks set to improve, with high-frequency indicators showing a broad solid recovery.

Consumer spending accelerated further in 2008, after the consumer confidence index published by Danareksa Research Institute reached a one-year high in December 2007 before easing slightly in January 2008. Growth in real private consumption is forecast to accelerate from 4.9 percent in 2007 to 5.3 percent in 2008. Lower inflation should improve consumers' purchasing power, which should translate directly into stronger demand for high-ticket items that felt the brunt of the spending slowdown in 2006. Vehicle sales, in particular, are expected to once again post solid gains, and are estimated to reach 500,000 units in 2008.

Capital Investment

Having averaged a meager 1.25 percent annual growth during the first nine months of 2006, fixed investment spending accelerated notably during the final three months of that year and maintained good momentum throughout 2007. Thanks to 12.1 percent growth in the fourth quarter, the sector recorded a 9.2 percent gain for the year as a whole. Investment spending should remain strong in 2008 as confidence among domestic and foreign investors improves further. Data from the Investment Coordination Board show that foreign-direct-investment approvals were up 177 percent from a year earlier during January–October 2007, while domestic investment approvals were up 22 percent year-on-year. Given these favorable numbers, there seems to be enough momentum in the pipeline to boost real investment growth to above eight percent in 2008.

Labor Markets

Unemployment has been on a rising trend in recent years, even though economic growth has been restored following the Asia crisis. Indeed, the headline unemployment rate inched up steadily from 6.10 percent in 2000 to 10.30 percent in 2006. Underemployment (persons working less than 35 hours per week) is similarly prevalent, at some 30 percent of the labor force in August 2006.

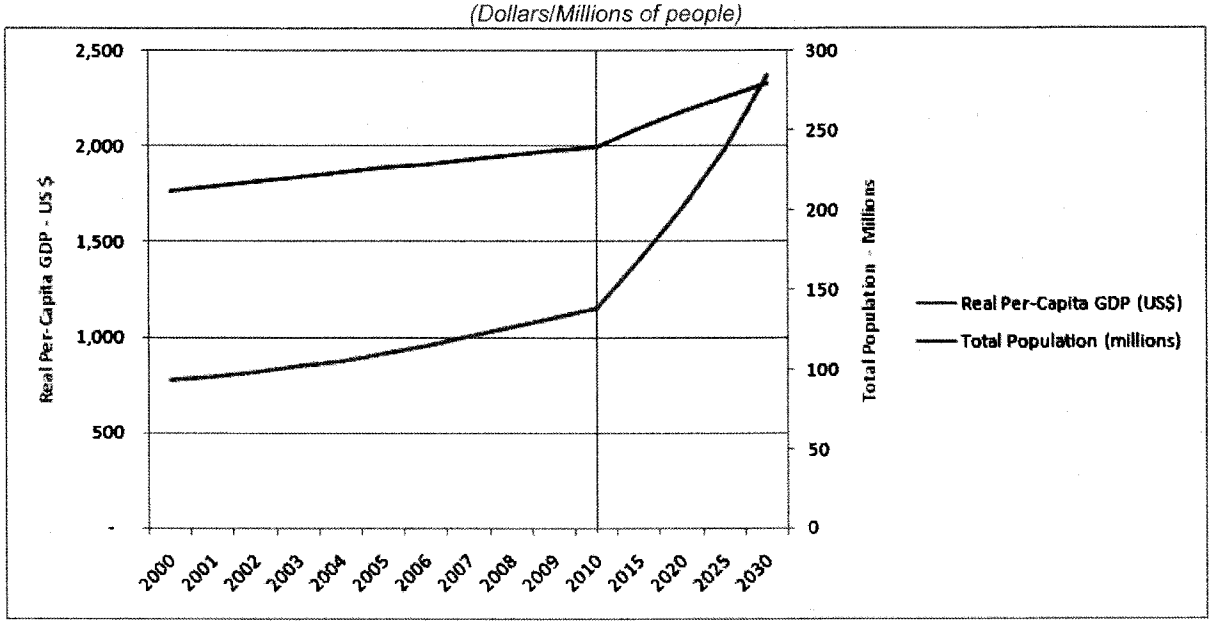
High domestic unemployment will likely remain one of Indonesia's most significant economic and political problems in years to come. Although population and labor-force growth per se are not particularly rapid compared to other countries in the region (such as India, for instance), job creation will be similarly weak—reflecting moderate economic growth and less flexible labor laws. Indeed, many foreign and domestic investors have pointed out that increasing protectionism and labor-market regulations such as generous termination packages, have significantly raised labor costs over the past several years and have stymied new hiring. Given the growing political influence of organized labor (there are some 180 unions and five national labor confederations); this trend would be difficult to change going forward. In addition, with the rise of Vietnam as a new regional manufacturing center, Indonesia will likely experience continued loss of manufacturing jobs in coming years. One offsetting trend would be a corresponding increase in expatriate Indonesian workers that would take on lower-skilled jobs elsewhere in the region.

Much of the increase in unemployment can be attributed to stricter, less flexible labor laws implemented over the past several years. A recent World Bank study, for instance, showed Indonesia to be very poorly placed in relation to other Asian countries in terms of labor competitiveness. According to the report, Indonesia's cost of laying off workers is higher than that of China and about twice that of India, being equivalent to some 108 weeks of pay. Indeed, there is abundant anecdotal information suggesting that small businesses often choose to close down rather than lay off workers and bear the associated severance costs. In addition, local governments have the ability to set minimum wage rates and populist tendencies mean that the mandated increases are often times quite large. As an example, the minimum monthly wage in the city of Batam increased to 860,000 rupiah for 2007 (about US$95), up from just 635,000 rupiah in 2005. Such increases make it extremely difficult for employers to estimate and control long-term labor costs. Foreign investors have also been deterred by the labor regulations, and Vietnam is often cited as the preferred alternative, especially for labor-intensive industries such as textiles and footwear.

The gradual increase in Indonesia's population will be accompanied by a much faster increase in real per-capita GDP, as indicated on chart 2.3 below. Real per-capita GDP is forecast to reach US$2,371 by 2030, an increase of 125 percent from 2008.

Chart 2.3 Comparison of Indonesian Population and GDP

(Dollars/Millions of people)



Source: Global Insight

Inflation

Despite a recent uptick in headline CPI inflation, the outlook remains favorable. Average annual inflation is forecast to reach 6.5 percent in 2008 (following 6.4 percent 2007) and fall below 6.0 percent by 2009. The 5.8 percent annual inflation rate recorded in June 2007 most likely marked the bottoming out of inflation during the current economic cycle. Nevertheless, although annual averages continue to point to favorable moderation in prices, the last couple of months have brought evidence that inflationary pressures are intensifying again, in line with regional trends.

Another notable risk to this outlook comes from the possibility of additional fuel-price hikes, since an inflationary wave ensued the last time the Indonesian government raised administrative fuel prices by 150 percent in October 2005, due to pressure from foreign investors worried about the fiscal implications of costly fuel subsidies. The effect on headline inflation was swift and substantial, with CPI inflation surging to a 17.9 percent year-on-year that very same month. Transportation costs rose by 29.0 percent month-on-month, and food prices also rose by 7.2 percent month-on-month. With inflation at a six-year high and far above the regional average, the public's inflationary expectations began to change, making the government's projections of a quick pullback in inflation impossible to achieve. Indeed, the inflation rate inched even higher in November and was still as high as 17.9 percent in February 2006. As domestic demand began to weaken and monetary tightening took hold, inflation stabilized in the 14–15 percent year-on-year range for most of summer 2006. Favorable base effects then allowed for a major downshift in inflation, with headline CPI rates falling to about 6.0 percent year-on-year since late 2006 for an annual average of 13.1 percent.

2.5.3 KEY ECONOMIC/BUSINESS RISKS

Risks

Indonesia's recovery from the Asian financial crisis has been painfully slow, and its progress still lags compared to most other crisis-affected countries. Nevertheless, macroeconomic stability

has returned and growth has accelerated in recent years, driven by a renewed wave of investor interest. Significant challenges remain, however, highlighting the need for more decisive reform of the legal and regulatory environment, as well as corruption eradication. Indeed, while there are no major near-term economic risks, ongoing structural rigidities have the ability to exacerbate the negative effect of unexpected shocks such as a possible major terrorist attack, a natural disaster, a sudden drop in investor confidence and a run on the currency, or a political crisis. As such, the most salient risk facing the Indonesian economy is not a sudden collapse into crisis, but too slow progress with structural reforms that would result in a steady but critical decline in competitiveness and subsequent loss of the economy's capacity to sustain domestically generated growth. Indeed, despite recent improvements, growth remains below levels needed for sustained unemployment and poverty reduction, and performance remains critically tied to the outlook for export industries. Exposure to volatile global energy and other primary commodities' prices is therefore a significant risk factor going forward.

Business Risk Developments

- Substantial volatility in global financial markets has put downward pressure on the rupiah, which continues to be seen as one of the riskier currencies in Asia. Given that concerted efforts by central bankers in developed economies to ease credit conditions have so far had limited results, the near-term outlook for global financial markets remains quite uncertain. Trading in the rupiah is limited, and the currency tends to experience notable turbulence and powerful depreciation pressures during such periods.

- The subprime mortgage crisis in the U.S. and the resulting shift towards a more accommodating monetary policy in the U.S. and other developed economies has had the secondary effect of stoking inflationary fears and pushing oil prices to new record highs. Although growing recession risks have somewhat tempered the ascent of oil prices, the risks of further energy price increases—especially to subsidized domestic fuel prices—have risen compared with the previous quarter.

2.5.4 Exports and Imports

Natural Resources

Indonesia is well-endowed with natural resources, of which natural gas and petroleum are the most important. The country is OPEC's only Asian member, producing about 1.0 million barrels per day of crude oil, but proven reserves have declined sharply over the past two decades. In addition, a series of facility maintenance closures turned Indonesia into a net oil importer in 2005. The country's main strength, however, lies in natural gas exports, which are directed mainly to regional powerhouses like Japan and Singapore. It also exports small amounts of tin, nickel, timber, bauxite, and copper, as well as precious metals like gold and silver. Despite abundant mineral resources, however, the mining and oil industries have languished in recent years. New investments have been delayed by opaque and contradictory legislation and the regulatory body.

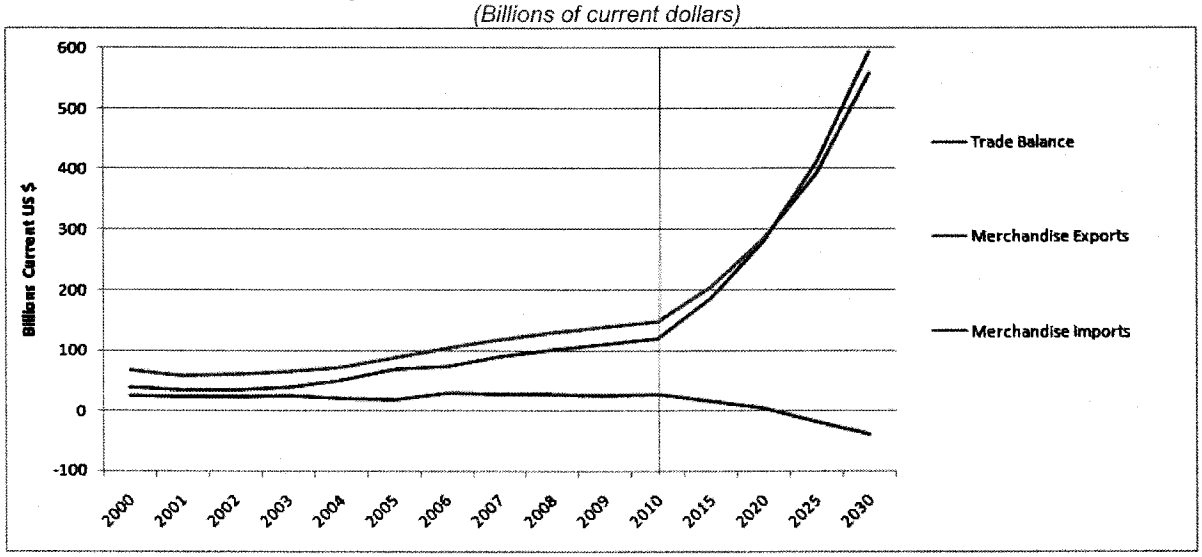
External Sector

Export-oriented policies and bountiful natural resources have allowed Indonesia to maintain healthy trade surpluses (of about 4–5 percent of GDP) for most of the past 20 years. Historically, import growth lagged behind export growth, so the trade surplus widened from US$10 billion in 1997 to US$25 billion in 2000—equivalent to 19 percent of GDP. Net exports are forecast to shrink slightly in coming quarters due to weaker external demand, although Indonesia's external position will remains favorable. The trade balance will record sizable surpluses of 4–6 percent of GDP through the rest of the decade, before settling into the 2–4

percent range over the longer term. Similarly, the 2007 current-account surplus is estimated at US$12.7 billion in 2007, or 2.9 percent of GDP, with sizable surpluses expected for a few years thereafter. Longer term, the current account should revert to deficits, but these should be relatively small and comfortably financed. The improvement in the overall balance-of-payments position allowed for a significant lowering of the foreign debt stock from a peak of 160 percent of GDP in 1998 to 35 percent of GDP as of end-2006. Chart 2.4 compares Indonesia's merchandise exports and imports.

Chart 2.4 Comparison of Indonesian Merchandise Exports and Imports

(Billions of current dollars)



Source: Global Insight

Trade Profile

Indonesia enjoys a fairly open trade regime and few barriers to trade, being a member of both the World Trade Organization (WTO) and the Association of Southeast Asian Nations (ASEAN). About one-fifth of Indonesia's roughly US$50-billion annual merchandise export earnings come from petroleum and natural gas. Manufactured goods make up the bulk of exports, however, led by textiles, electronics, and machinery and equipment. Indonesia also exports significant quantities of timber (volumes have declined in recent years because of environmental concerns), cocoa, and coffee, as well as tin, copper, and nickel. Service exports, mostly tourism, bring in about US$5 billion per year. Japan remains, by far, Indonesia's largest market, accounting for around a fifth of its exports, yet its share has almost halved since the early 1990s. The U.S. is another major export market, while China has gained prominence in recent years as a destination for raw materials. Indonesia's main export destinations also tend to be its largest sources of imports. Table 2.2 below details Indonesia's main trade partners.

Table 2.2 Ranking of Indonesia's Major Trade Partners in 2005

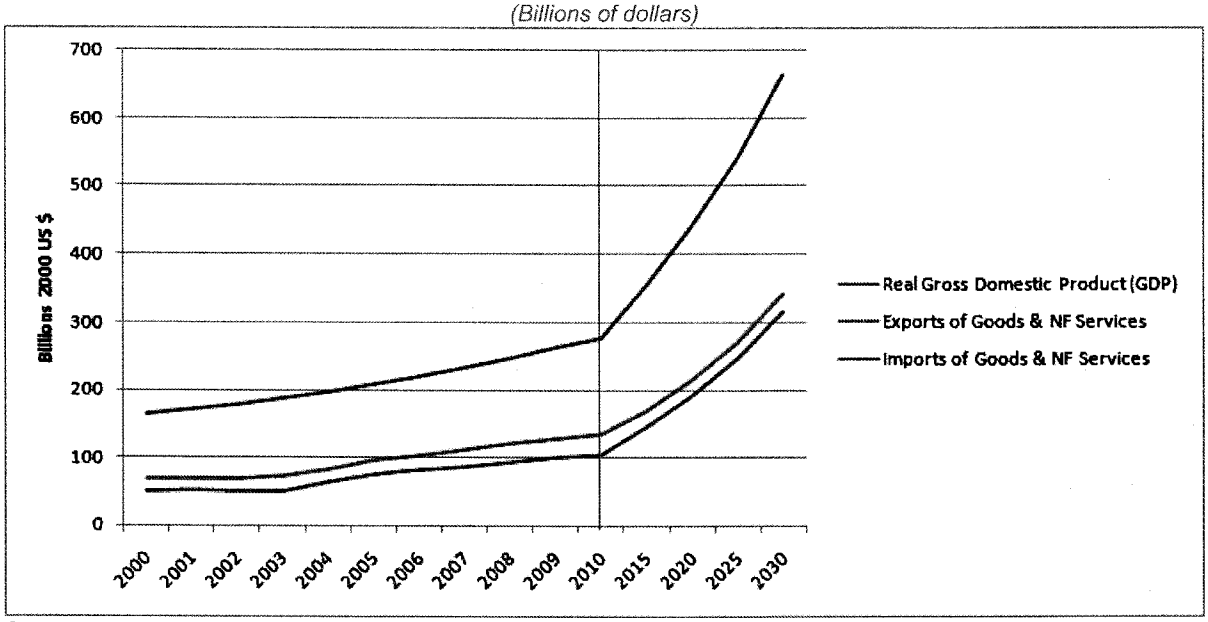
EXPORTS			IMPORTS		
Category	**Billions US$**	**% Share**	**Category**	**Billions US$**	**% Share**
Japan	18.0	21.1	Singapore	9.5	16.4
United States	9.9	11.6	Japan	6.9	12.0
Singapore	7.8	9.2	China	5.8	10.1
South Korea	7.1	8.3	United States	3.9	6.7
China	6.7	7.8	Thailand	3.4	6.0
Malaysia	3.4	4.0	South Korea	2.9	5.0
India	2.9	3.4	Saudi Arabia	2.7	4.7
Thailand	2.2	2.6	Australia	2.6	4.5
Australia	2.2	2.6	Malaysia	2.1	3.7
Netherlands	2.2	2.6	Germany	1.8	3.1

Source: Global Insight, from data supplied by IMF, Direction of Trade Statistics

Both Indonesia's exports and imports of goods and services are forecast to continue to increase in line with real GDP, as shown in chart 2.5. By 2030, exports are of goods and NF services are forecast to reach US$340 billion, with imports of US$315 billion.

Chart 2.5 Comparison of Indonesia's Real GDP and Imports/Exports

(Billions of dollars)



Source: Global Insight

2.5.5 Infrastructure

Infrastructure Overview

Indonesia's infrastructure requires considerable investment. The World Bank country director warned in December 2003 that the poor state of the country's infrastructure posed a greater risk than terrorism to Indonesia's long-term growth. In particular, vast discrepancies exist between the island of Java, the country's political and economic hub, and the outlying islands, where the infrastructure can be very rudimentary. What is more, the percentage of spending on infrastructure dropped during the nineties. Figures released in 2005 suggested that spending fell from approximately 5.3 percent of GDP in 1993/94 to just 2.3 percent in 2002.

Identifying infrastructure investment as one of the core policy objectives of his presidency, Susilo Bambang Yudhoyono hosted an international investors' conference in January 2005, where 91 projects with a total value of US$22.5 billion, including power generation and water schemes, were unveiled. Following up on pledges made at the conference, the government announced in February 2006 that it is seeking investors for 25 major infrastructure projects. The projects, worth US$7 billion, include 12 toll roads on Java and Sumatra, seven power generation plants, three gas pipelines and four water projects. The move comes as an attempt to restore confidence in the institutions of the country's government and business environment, with poor infrastructure being one of the biggest obstacles to foreign and domestic investment.

Road

Indonesia has approximately 35,000 km of roads, including 650 km of high-capacity toll roads. The volume of land traffic in urban areas has increased rapidly, due to growth in industrial parks and residential areas, and this is especially a problem in Java, where the majority of the population lives. As a result, chronic road congestion is a problem in most Indonesian cities, with the capital Jakarta having one of the world's highest rates of particle air pollution; respiratory problems are common, among short-term visitors and residents alike.

With the road sector carrying the bulk of domestic freight, as well as passenger traffic, the government has come to the conclusion that infrastructural development is required to ensure continued economic development. It has responded by constructing toll roads, especially in the heavily populated Java province. These roadways are expected to cost around US$580 million, and should be complete by 2008. The government has also adopted other key development initiatives, addressing the need for better roads in Java and Sumatra under the Indonesia Strategic Roads Infrastructure Project, which will expand 400 km of strategic national roads and bridges with generous loans from the World Bank. These roadworks are scheduled to start in June 2007, and will be fully implemented over a five-year period. The government is also embarking on a number of ambitious toll-road construction projects in partnership with the private sector, the total value of which is estimated at US$2.8 billion.

The land transport infrastructure outside the capital area is generally in need of expansion, although the standard of roads on the main islands has improved, and is generally good on Java. Most cities in Java, Sumatra, Sulawesi and Bali are connected by highways or secondary roads, and 90 percent of passenger transport and 50 percent of cargo is transported using the road network.

Rail

Only Java can claim to have something resembling a rail network, although the system is largely single-track and trains can only operate safely at fairly low speeds. Scheduled inter-city trains often lack air-conditioned first class (Eksekutif) cars, although Bisnis class (business class) is

good value for money. The development of a mass transit system has been inhibited by high construction and maintenance costs, although the government is now working with the private sector to develop subway and light rail projects in Jakarta. An overground train system is also being devised in the capital, to reduce commuter volume on roads, and a rail link to the city's international airport is underway. Meanwhile, Borneo's first railway is set to be constructed following a billion-dollar agreement between Indonesian state firm PT Kereta Api Indonesia and two South Korean companies, with the enactment of a new transport law having paved the way for the private sector to play a greater role in the development of much-needed rail infrastructure in the country.

Maritime

Indonesia has 349 ports for ocean-going and inter-island shipping. Of this number, 127 of these are open to ocean-going ships. The largest port is Tanjung Priok, serving the Jakarta area, which is currently undergoing expansion in response to increased demand. The two other major containerized seaports are Tanjung Perak in Surabaya and Belawan in Medan. There are also ports at Cilacap, Cirebon, Kupang, Palembang, Semarang and Ujungpandang.

Seaports are crowded, and shipping delays are common. Water depths are insufficient to handle the fourth-generation line-haul ships in use across the Pacific adding pressure on the government to upgrade existing facilities, as well as construct new ones. There is a ferry service for people and vehicles linking the major islands and many of the smaller islands. Being a nation of islands, Indonesia has long depended upon water transportation for moving virtually all its commodities and people. However, seasonal weather patterns can make transport to the remote islands unreliable.

The International Maritime Bureau (IMB) reports that Indonesian waters are consistently the most high-risk areas in the world for marine piracy, although increased regional co-operation has improved the situation somewhat. Around one-quarter of all reported actual and attempted attacks on ships take place within the Indonesian archipelago, where organized crime, rogue navy elements and Islamic terrorists have established themselves. Moreover, low-level corruption facilitates the criminal action of armed gangs, who have historically attacked vessels of all sizes, ranging from individuals' yachts to container ships and petrochemical tankers.

Waterways

Given the size and topography of the country, waterways have proven to be a good means by which to transport goods. Indonesia has more than 20,000 km of waterways, and these have gained an increasing amount of attention for two very distinct reasons: waterways have been identified as a possible security risk, used by drug-smugglers and other criminal elements, while environmental concerns are increasingly been raised regarding the health of the country's waterways, many of which have become heavily polluted and consequently degraded.

Utilities

Indonesia lags behind its ASEAN neighbors in terms of infrastructure provision, but this is particularly evident in the area of electricity. An estimated 45 percent of households do not have any connection to the electricity grid, underlining the poor health of the power sector, which has suffered years of underinvestment. As a result, power plants run at below full capacity, and much of the country, including Java and Bali, suffer from sporadic electricity supply problems. There is little provision for fluctuations in demand, and the network is already under considerable strain, pointing to further problems in the future. Similarly, access to potable water is also limited, with the authorities pursuing a program of both upgrading and extending the network of drinking water and sewerage pipes.

2.5.6 TRADE AGREEMENTS

ASEAN

Indonesia is a key player in the ASEAN Free Trade Area (AFTA), which—through the Common Effective Preferential Tariff (CEPT) scheme—seeks to increase ASEAN's competitiveness as a global production base, through the elimination of tariff and non-tariff barriers within ASEAN, and through attracting more foreign direct investment (FDI) to the region. Indonesia signed the Singapore Declaration in 1992, and AFTA became fully operational on 1 January 2003. A number of "AFTA Plus" activities have been initiated, including efforts to promote the elimination of non-tariff barriers and quantitative restrictions, the harmonization of customs, valuation and procedures, and the development of common product certification standards. Comprising 10 integrated markets with a population exceeding half a billion people, ASEAN is attractive to large-scale direct investment, which is integral to fuelling Indonesian economic growth.

China

China was Indonesia's fifth-largest export market and third-largest source of imports in 2005. The ASEAN China Free Trade Agreement (ACFTA), signed in 2002, points towards the fact that China will remain an important trading partner for Indonesia. Tariffs are being reduced between January 2004 and December 2006, with full trade liberalization between China and Indonesia, as well as five other ASEAN countries, scheduled to take place by 2010. The plans for the FTA envisage a zero-tariff market of 1.8 billion people, which will make it the third-largest global trading area behind the European Union (EU) and the North American Free Trade Zone. It has been estimated that trade between China and ASEAN will reach US$200 billion by 2010.

Japan

Japan was Indonesia's main export market in 2005 and Indonesia's second-largest source of imports. Under the Suharto regime, the relationship was characterized by the Indonesian government's extraction of loans from the Japanese government, in return for a carte blanche on the exploitation of resources and economic contracts. However, this situation has come to an end, as evidenced by discussions on a Japanese-Indonesian FTA, and the announcement that such a deal is expected to be in place before the end of 2006. It is based on concern in Jakarta that other ASEAN countries such as Singapore, the Philippines, Thailand and Malaysia have all moved faster than Indonesia to pursue FTAs with Japan. Indonesia remains an important energy supplier to Japan, despite having become a net importer of oil. Competition for Indonesia's remaining gas reserves (especially Natuna in the South China Sea and the Bird's Head area of Papua) is acute among international clients, leaving the Indonesian government with an important trump card in its relationship with the energy-hungry Japan. Indonesia has also sought an expansion of Japanese investment, while Japan has sought improved market access, through the elimination of excessively high tariffs on industrial goods. Reciprocally, Indonesia has sought improved access for its exports to Japan, including a number of products deemed "historically sensitive" in the form of footwear and leather products, plastic goods and organic chemicals.

United States

The U.S. was Indonesia's second-largest export market in 2005, with exports consisting primarily of such products as clothing, natural rubber, machinery and footwear. Meanwhile, the U.S. was Indonesia's fourth-largest source of imports mostly taking the form of construction equipment, machinery, aviation parts, chemicals and agricultural products. The U.S. accounts of much of Indonesia's FDI, which is mainly concentrated in the mining and energy sectors. With bilateral relations having improved immensely since the U.S.-Indonesian relationship was put on ice, following the crisis in East Timor, trade talks between the two countries have

accelerated, under the auspices of the U.S.-Indonesia Trade and Investment Framework Agreement (TIFA). This is part of a U.S. commitment to the goals set forth in the 2002 Enterprise for ASEAN Initiative (EAI), under which it is seeking to strengthen its trade and investment ties with the 10 ASEAN countries. The warming political relationship between the two countries can also be seen in recent U.S. overtures to Indonesia; the Washington government increasingly sees Indonesia as a key ally, due to its status as the world's most populous Muslim nation, its dedication to democratic and moderate policies, and its position as a crucial regional counterweight to China. These factors have led observers to predict that a free trade agreement may be impending, following unprecedented U.S.-Indonesian talks on illegal logging in 2006.

2.5.7 NATURAL HAZARD RISKS

The Indonesian archipelago's close proximity to the intersection of three continental plates, which jostle under immense pressure, makes it particularly vulnerable to earthquakes and volcanic eruptions although none have in recent decades affected major business centers.

A massive 9.3 magnitude earthquake on 26 December 2004 triggered the Indian Ocean tsunami wave that killed more than 220,000 people. Since the 26 December 2004 earthquake off the Acehnese coast, parts of the Indonesian archipelago have been subject to a continuous series of terrifying after-shocks, with the largest, in March 2005, causing a further 1,000 deaths. The close proximity between the epicenters of the two quakes has led some scientists to believe that the events were linked. Given that the northern part of Sumatra had not been subject to any large earthquakes in around 100 years, it is certainly worrying that it experienced two major seismic events in the space of three months. A second quake from the same fault line, registering 8.7 on the Richter scale, killed around 1,000 people in late March 2005, while a major quake at Yogyakarta killed more than 5,000 people in May 2006.

Indonesia is as such an integral part of the Pacific "Ring of Fire"—a band of intense seismic activity spanning from Japan, through South-East Asia and across the Pacific Ocean having more than 130 active volcanoes. Some experts suggest that the country's run of tremors between late 2004 and early 2005, combined with its precarious position along a seismic fault line, have raised the prospect of a "super-volcano" eruption. The world's biggest super-volcano, Lake Toba, is located on the Indonesian island of Sumatra, directly above the fault line. Some experts believe that the recent tremors may have generated seismic stresses that could expedite a quake that triggers a volcanic eruption. Lake Toba's last eruption 73,000 years ago is believed to have released 1,000 cubic km of ash and rock into the atmosphere, blocking solar radiation and starting an ice age.

Seasonal flooding can pose problems in most parts of the archipelago but particularly so in Sumatra and Kalimantan. The annual monsoon patterns have a measurable impact on sea transport to the outlying islands.

2.6 THAILAND

2.6.1 ECONOMIC INDICATORS

Outlook

Thailand's ongoing political troubles undermined both investment and consumption, and economic growth fell to 4.8 percent in 2007. Global Insight believes this to be the bottom in the current growth cycle, and the economy should regain footing in 2008 as elections are now out of

the way. An expansionary fiscal stance should boost domestic demand while net exports are expected to remain moderately strong, even if not quite as buoyant as in 2007 when the trade surplus reached levels not seen in a decade. Since the new government will likely adopt economic policies perceived to be more investor friendly compared with those of the interim administration, investment spending is expected to resume in 2008 and beyond.

Although growth in several key export markets, such as the U.S., has slowed, momentum in export demand has so far remained strong. Although external demand will lose buoyancy because of the sub-prime mortgage crisis in the U.S., this sector should remain a notable contributor to growth over the medium term. Risks of political violence should also subside in 2008, which in turn should benefit the tourism sector.

Responding to weak domestic demand and subdued inflation, the central bank aggressively cut interest rates during 2007, but the current easing cycle is in its last stages. The policy rate could fall another 25 basis points from the current 3.25 percent rate—especially in light of ongoing monetary easing in the United States—but given that headline inflation has moved up sharply in recent months, the central bank will have less leeway in cutting rates in 2008.

Table 2.3 below details the compound annual growth rates for a number of key indicators. The forecasts project that Thailand will experience a decrease in annual GDP and population growth rates, with population growth rates between 2020 and 2030 forecast to be one third of current levels.

Table 2.3 Comparison of Thailand's Key Economic Indicators

(Percent Change)

Key Compound Annual Growth Rates	2000-08	2010-20	2020-30
Gross Domestic Product (GDP)	5.0%	4.4%	4.2%
Exports of Goods & NF Services	5.9%	4.9%	4.8%
Imports of Goods & NF Services	6.0%	5.6%	4.2%
Total Population	0.7%	0.4%	0.2%
Real Per-Capita GDP	4.3%	4.0%	4.0%

Source: Global Insight

Domestic Assumptions

- Tightening credit conditions worldwide and increased risk aversion among investors will have a modest detrimental impact on export demand.
- The political scene stabilizes in 2008 and the coalition government adopts macroeconomic policies that are perceived to be more investor friendly compared with those of the interim administration.
- Southern unrest may continue to hurt domestic sentiment; however, prolonged unrest is not expected to spread widely.
- Monetary easing has run full circle and higher inflationary pressures will preclude further rate cuts.

2.6.2 ECONOMIC GROWTH OUTLOOK

Short-term Outlook

Export growth remained very strong throughout 2007, but momentum is expected to weaken throughout 2008. Growth in the U.S. is slowing amid a stronger-than-expected correction in house prices. Rapid appreciation in the Thai baht exchange rate will undermine the competitiveness of exports. Indeed, the baht has gained some 17 percent against the U.S. dollar over the past two years, partly as a result of a surge in portfolio capital inflows following the 2006 military coup. Following unsuccessful interventions aimed at curbing the currency's appreciation, the Bank of Thailand has resorted to administrative measures including allowing exporters to hold foreign currency for longer periods. Yet, these measures have had little influence, and given the strength of external balances, Global Insight expects further appreciation of the baht.

Consumer and investor sentiment hit multi-year lows in 2007, but the outlook for 2008 is more encouraging, if for no other reason than favorable base comparisons. But apart from pure technical reasons, there have been encouraging signs of recovery in both private consumption and investment spending during the third quarter, and Global Insight expect these trends to continue.

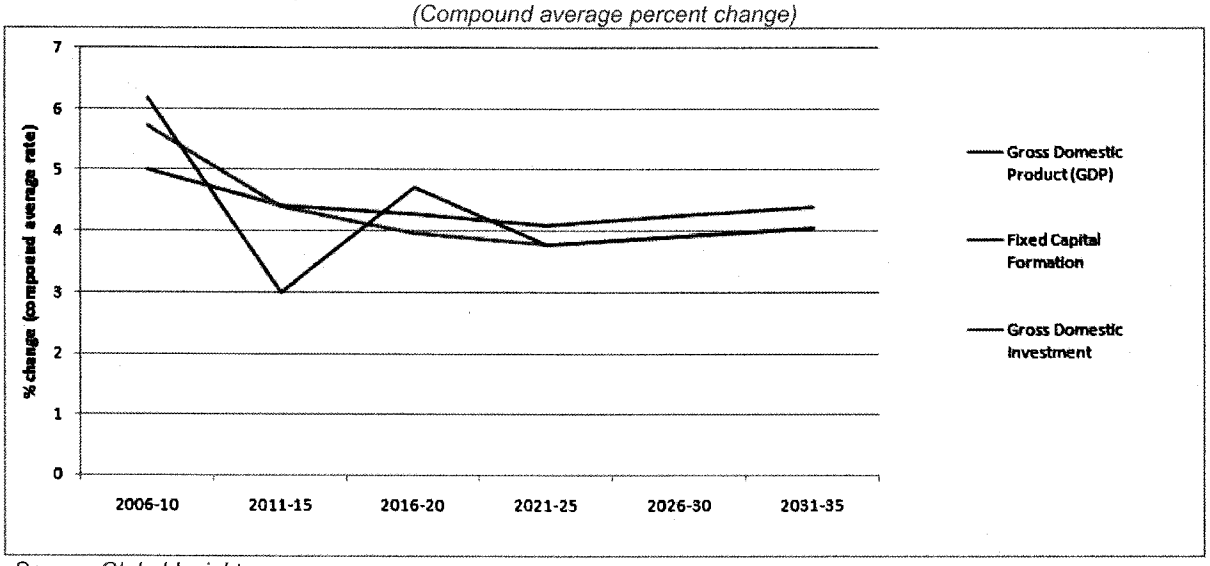
Medium- and Long-Term Outlook

In light of growing competition from China and other emerging manufacturing centers such as Vietnam, moving up the value-added chain is the Thai economy's challenge. Although this need is apparently recognized by policy makers, they have yet to engage in open debates or a concerted planning effort to develop Thailand's position as a more advanced producer. Currently, the country is uncomfortably stuck somewhere between a major agricultural and successful light industry producer, which has nonetheless failed to build up higher-value industries such as high-tech or bio-tech. Rather than strengthening the environment for foreign investment, the administration has so far chosen to focus on developing local small and medium-sized enterprise (SME) to strengthen domestic activity and counterbalance any future drop in exports. The policy has been illustrated by the funneling of credit to SMEs through state financial institutions. The focus of policy also remains somewhat protectionist rather than centered on further liberalization, and heavy state rather than private-sector investment. A more sustainable strategy would be to step up deregulation of markets and reduce still-high levels of state interventions in large corporations compounded with improvement of the micro-foundations of the economy to improve the investment climate. A well-functioning financial sector, good regulatory and legal frameworks, and, above all, an improvement in educational standards are the preconditions for any aspiration to move beyond the current labor-intensive and capital-poor production structures.

The following chart (2.6) compares the compound average percent change over five year increments for GDP, fixed capital formation, and gross domestic investment. All three growth rates are forecast to decrease in the near-term, with the rate of increase of gross domestic investment falling by half. Global Insight expects that the rates should increase in the long-term, leveling out at about a four percent increase per year.

Chart 2.6 Comparison of Change between GDP, Fixed Capital Formation and Gross Domestic Investment in Thailand

(Compound average percent change)

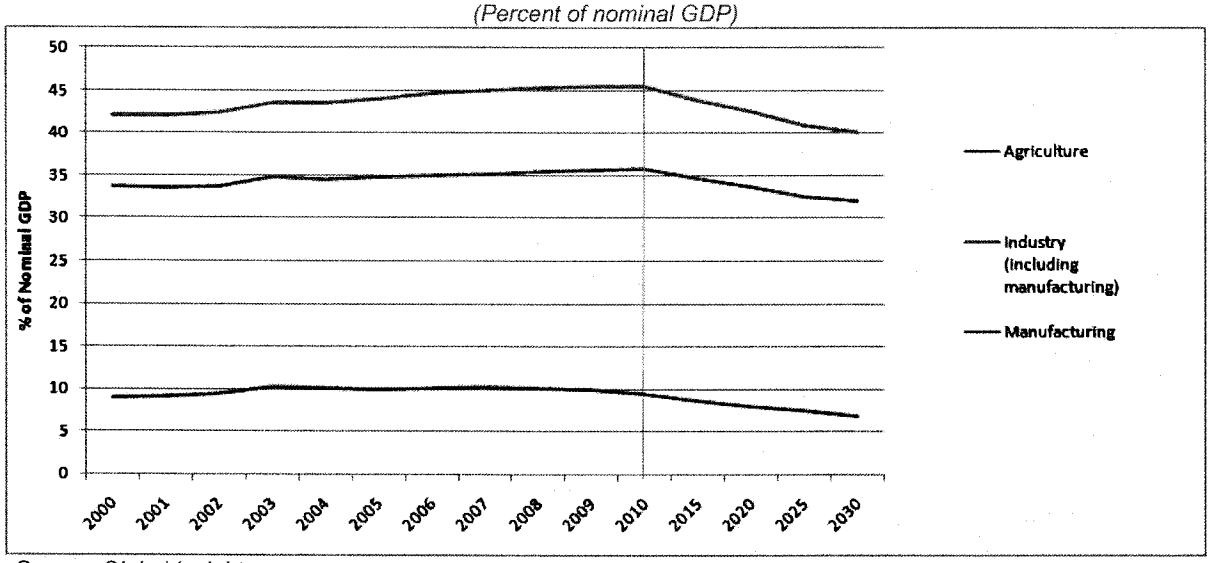


Source: Global Insight

Chart 2.7 below compares the percentage share of nominal GDP that is attributable to the agriculture, industry, and manufacturing sectors. Note that the manufacturing sector is a subset of the industry sector, in which it accounts for about three-quarters of the total. All three sectors are forecast to decrease slightly from current shares by 2030.

Chart 2.7 Thailand's Sector Share in GDP Factor Cost

(Percent of nominal GDP)



Source: Global Insight

Current Economic Conditions

The Thai economy accelerated to its fastest growth rate in seven quarters in the final quarter of 2007. Data released by the National Economic and Social Development Board (NESDB) show that GDP expanded by 5.8 percent on the year in real terms in the fourth quarter. The rate was

up from the 4.8 percent gain recorded in the previous quarter and marked the fastest rate of growth since the first quarter of 2006. In 2007, GDP expanded by 4.8 percent year-on-year.

Momentum continued to be generated by buoyant exports, which have been boosted by surging global prices for key agricultural commodities, including rice and rubber. Rice prices, for example, are currently rising at a rate of around 25.0 percent in annual terms. Concurrently, steady regional demand for general merchandise goods has offset slowing U.S. demand on the overall trade balance. In the three months through December 2007, exports grew by 7.6 percent, gaining traction from the 4.1 percent growth rate recorded in the September quarter. Tourism has also continued to rebound from the devastating effects of the December 2004 tsunami and recent political turmoil, with receipts rising by 13.1 percent during the fourth quarter, up from a meager 0.3 percent gain in the three months through September. Meanwhile, import growth remained muted, registering a 3.5 percent rise compared with 1.8 percent in the third quarter. The trade balance subsequently accrued a 152-billion-baht (US$4.90 billion) surplus during the quarter. In 2007 as a whole, imports expanded by 1.5 percent, as exports rose by 7.2 percent in annual terms.

Domestic demand has been weighed by the protracted political turmoil that preceded the ousting of former Prime Minister Thaksin Shinawatra in a coup in September 2006, and persisted throughout the 15-month period of military rule. Uncertainty is persisting in the political outlook after the general election in late December 2007 returned the Thaksin loyalist People Power Party (PPP) to government in a six-party coalition. The CPI accelerated to an 18-month high in February, rising by 5.4 percent on the year on the back of higher food and fuel costs. Subsequently, household consumption rose by 1.6 percent on the year, slowing from the 1.8 percent annual gain recorded in the third quarter. In particular, spending on durables recorded significant declines, while the take-up of credit also slowed. However, sentiment surveys are pointing to a gradual improvement in consumer confidence, although the outlook still remains negative. The consumer confidence index compiled by the Thai Chamber of Commerce rose to a reading of 72.6 points in February—an 11-month high. Respondents took heart from the peaceful completion of December's election and growing signs of economic stabilization. During 2007, private consumer spending rose by just 1.4 percent on the year, slowing from the 3.2 percent gain recorded in 2006.

Investment showed stronger traction in the fourth quarter. Total gross capital formation (GCF) rose by 4.0 percent on the year, accelerating from the 2.6 percent annual gain recorded in the third quarter. Private capital expenditure expanded by 3.9 percent on the year in the three months through December, and while spending on construction decreased by 8.5 percent in annual terms, equipment investment expanded by 7.4 percent, with the cost of imports dampened by the continuing strength of the Thai baht. Public construction spending surged by 23.6 percent year-on-year with the onset of several huge infrastructure projects, including construction of the Mass Rapid Transit route. However, again reflecting the impact of prolonged political turmoil on domestic demand, total GCF rose by just 1.4 percent, with private investment rising by a meager 0.5 percent.

Consumer Demand

Private consumption growth has decelerated steadily since mid-2003, with annual growth rates moderating from 6.5 percent that year to 4.5 percent in 2005 and 3.2 percent in 2006. Worse still, private consumption rose by just 1.4 percent in 2007, undermined by political uncertainly, weak overall growth, and further declines in consumer confidence. Private consumption growth hit a new low in 2007, undermined by political uncertainty and weak economic growth overall.

Consumer spending on durable goods is forecast to accelerate notably in the second half of 2008.

Capital Investment

As in all other affected countries, investment spending took a major dive in the aftermath of the Asia crisis. Indeed, in real terms, capital investment has yet to return to the levels reached in the mid-1990s. As of 2005, investment levels were still about 31 percent below the 1996 peak. Nevertheless, significant progress has been made in recent years. Stronger external demand coupled with an increase in public investment has resulted in an average annual growth of 12.1 percent during 2002-05.

Following three years of double-digit growth, investment activity has steadily moderated since 2006 amid growing political instability and changes to the legal environment. Fixed investment growth turned negative in early 2007—for the first time since 2001—but appears to have bottomed out during the summer months.

Despite lower interest rates following a shift to monetary easing by the central bank, investment spending growth reached a multi-year low in 2007 as both domestic and foreign companies adopted a "wait-and-see" attitude amid politically ignited revisions to some of the most important laws and regulations governing businesses in Thailand. Nevertheless, there is significant upside potential for 2008 depending primarily on the country's ability to restore and maintain political stability following the recent elections and the potential for more business-friendly policies.

Labor Markets

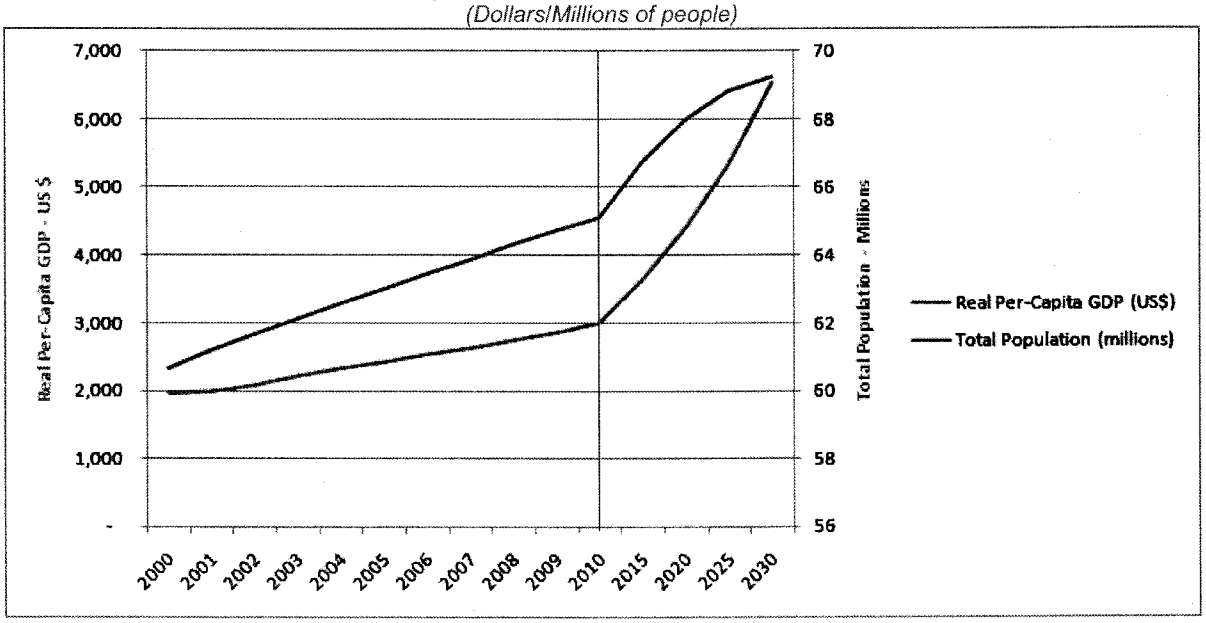
Thailand has historically enjoyed extremely low unemployment rates, averaging less than 2.0 percent over the last 15 years. Even in the immediate aftermath of the Asian Crisis, unemployment did not surpass 4.0 percent—an enviable level in most other developing economies. Although rapid economic growth has certainly contributed to the country's low levels of unemployment, the main factor relates to pure demographics. Thailand's population growth has historically been quite low, just 1.1 percent per year between 1991 and 2006, so its labor-force growth has been very restricted. In addition, participation rates have also declined from about 87 percent throughout most of the 1980s to just about 80 percent in the late 1990s. This ratio appears to have stabilized now at around 80 percent of the population aged 15-64.

Given severe constraints to indigenous labor-force growth, the forecast is for low unemployment to remain a feature of the Thai economy in the future. Global Insight expects the unemployment rate to remain in the 1.7–2.2 percent range for the next decade or so, before increasing slightly later on due to weaker economic growth and productivity gains.

The increase in Thailand's population will be accompanied by a similarly paced increase in real per-capita GDP, as indicated on chart 2.8 below. Real per-capita GDP is forecast to reach US$6,529 by 2030, an increase of 139 percent from 2008.

Chart 2.8 Comparison of Thailand's Population and GDP

(Dollars/Millions of people)



Source: Global Insight

Inflation

CPI exhibited high volatility in 2004-05. By September 2004, CPI inflation stood at a 36-month high. After a brief hiatus, prices started moving higher once again in 2005, mostly in response to the elimination of diesel subsidies. In addition, surging food costs caused by prolonged drought early in the year also brought about strong upward pressure on prices. All in all, annual inflation hit 4.5 percent in 2005, the highest since 1999. High oil prices, which pushed up energy and transportation costs, remained the main impetus behind high inflation into the first half of 2006. Inflation peaked at 6.2 percent year-on-year, and then steadily declined through December, for an annual average of 4.6 percent. Favorable base effects and a mellow economy have resulted in lower inflation rates in 2007, at just 2.2 percent.

As in many Asian countries, inflation appears to have bottomed last summer, and headline inflation rates have jumped sharply (up to 5.7 percent year-on-year in February) in recent months, mostly in response to high energy and food prices.

2.6.3 KEY ECONOMIC/BUSINESS RISKS

Risks

Having started in the 1960s as a primarily agricultural economy, Thailand entered a phase of accelerated economic development in the early 1980s thanks to an intensive program of export-led industrialization. This helped Thailand to establish itself as one of the region's "Tiger" economies until growth succumbed during the 1997-98 Asian financial crises. Following a major economic downturn in 1998, however, macroeconomic fundamentals have since improved greatly (at least up to the 2006 military coup). The turnaround in the external payments position has been profound, with the reversal from deficit into surplus allowing a reduction in debt stocks, while the fiscal position has improved. However, further structural reforms are needed. More aggressive market liberalization, lowering the degree of state economic interventionism, and higher investment in education are required as Thailand faces growing competition from other emerging markets such as China and Vietnam. In addition, as

events over the past year have shown, the political scene remains rather tumultuous and macroeconomic policy can be unpredictable at times. Advancing the cause of multi-party democracy and addressing new challenges such as Islamic militancy are also crucial for sustained future development.

Business Risk Developments

- The Thai cabinet has approved an increase in the minimum wage according to the cost of living in different regions. The increases will vary between 1.6 percent and 3.8 percent, and will apply to 54 of the country's 76 provinces. In the capital, Bangkok, and five other provinces, the minimum wage will rise by 1.6 percent or three baht to 194 baht (US$5.74) per day, but in the poorest regions of the northeast the increase will be just one baht to 140 baht per day. Higher labor costs and expected increases in energy costs in 2008 will put some pressure on business profitability.
- All of Thailand's political parties have paid lip service to Thaksin's populist economic policies, which have put emphasis on privatization, rural development and infrastructure projects, particularly after the military-led government's poor management of the economy. Recent reversals in rules affecting capital movements, which have caused consternation among foreign investors when first announced, suggest that the new government will pursue more investor-friendly policies.

2.6.4 EXPORTS AND IMPORTS

Natural Resources

Thailand is one of the world's largest producers of tin, which it has capitalized on with the construction of a smelter for domestic processing. Other important mineral resources include coal (lignite), zinc, gypsum, fluorite, limestone, marble, and tungsten. Thailand is also one of the world's largest exporters of precious gems, especially sapphires and rubies (mined on the east coast). Agricultural resources include rice, of which Thailand is one of the world's top exporters, fisheries, and extensive forestry reserves.

External Sector

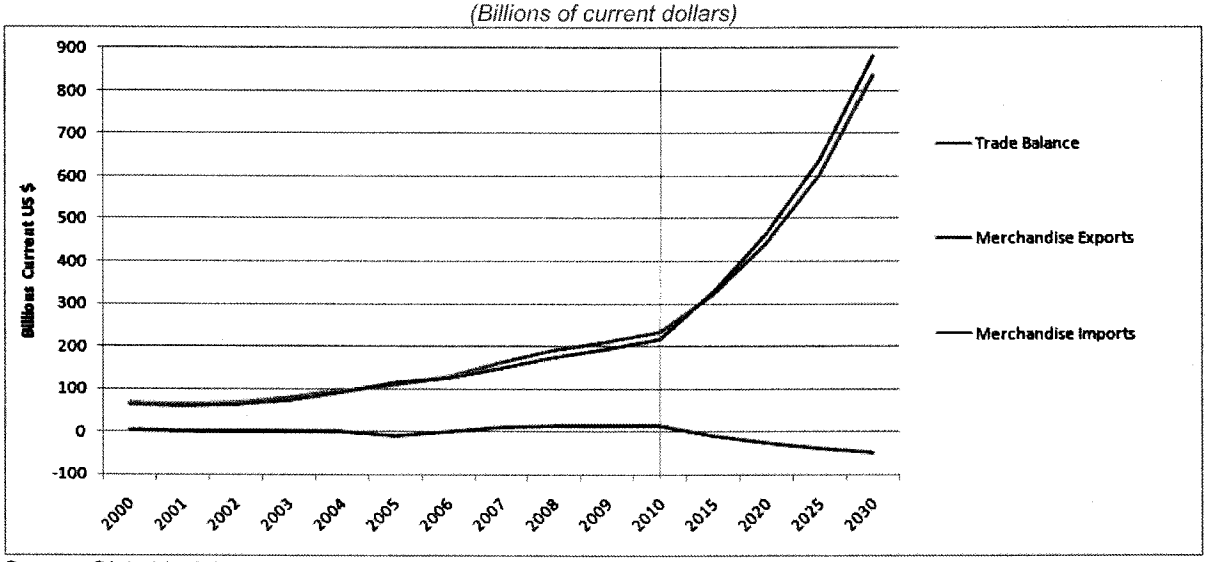
Strong demand for electronic goods and autos boosted Thailand's exports in 2006 while import growth slowed because of decreasing fuel costs and lessening domestic demand. Monthly exports were about 17.5 percent higher in 2006 than in 2005, with growth rates accelerating further in the second half of the year. Subsequently, the trade balance recorded a surplus of US$0.9 billion, marking a sharp improvement from the US$8.5-billion deficit recorded in 2005. Similarly, the current account reached a surplus of US$2.1 billion.

The magnitude of the improvement in Thailand's trade and current-account balances during 2007 has been quite impressive. Fueled by robust demand overseas, monthly exports have grown by an average of 26.6 percent year-on-year, while tepid domestic demand resulted in import growth of only 17.6 percent year-on-year. The result has been a nearly US$13-billion trade surplus and a current-account surplus of nearly US$15 billion for 2007 as a whole.

Global Insight expects Thailand's current account to record substantial surpluses over the next several years, in the area of 4-5 percent of GDP. Export demand is expected to remain fairly buoyant—despite short-lived dips as the one expected in 2008—while a peaceful resolution to the current political impasse should support the valuable tourism industry. In the longer term, the current account should nearly balance and then revert to small deficits of about two percent of GDP later in the forecast period. Chart 2.9 compares Thailand's merchandise exports and imports.

Chart 2.9 Comparison of Thailand's Merchandise Exports and Imports

(Billions of current dollars)



Source: Global Insight

Trade Profile

The United States and Japan have traditionally been Thailand's main export markets, and their share in overall exports has actually increased over the past 15 years. As of 2004, China was the third-largest export market, and other regional economies have climbed up the ladder. Indeed, six of the top-seven and seven of the top-ten export markets in 2004 have been Asian countries. Most major export destinations are also main import sources, although Japan has a commanding lead. Hydrocarbons propel the United Arab Emirates and Saudi Arabia to rank among the top-ten import sources. Table 2.4 below details Thailand's main trade partners.

Table 2.4 Ranking of Thailand's Major Trade Partners in 2005

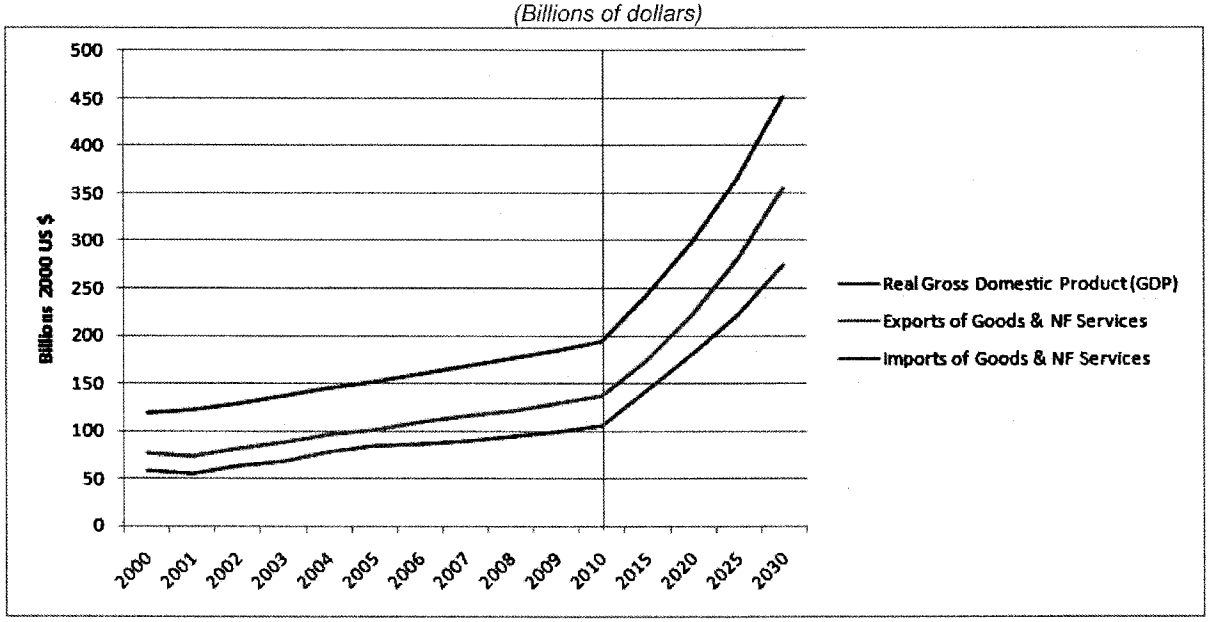
EXPORTS			IMPORTS		
Category	**Billions US$**	**% Share**	**Category**	**Billions US$**	**% Share**
United States	17.0	15.4	Japan	26.0	22.0
Japan	15.0	13.6	China	11.2	9.4
China	9.1	8.3	United States	8.7	7.4
Singapore	7.6	6.9	Malaysia	8.1	6.9
Hong Kong	6.1	5.6	United Arab Emirates	5.7	4.8
Malaysia	5.8	5.3	Singapore	5.4	4.6
Indonesia	4.0	3.6	Saudi Arabia	4.0	3.4
Australia	3.2	2.9	South Korea	3.9	3.3
Netherlands	2.8	2.5	Australia	3.3	2.8
United Kingdom	2.8	2.5	Indonesia	3.1	2.7

Source: Global Insight, from data supplied by IMF, Direction of Trade Statistics

Both Thailand's exports and imports of goods and services are forecast to continue to increase in line with real GDP, as shown in chart 2.10. By 2030, exports are of goods and NF services are forecast to reach US$354 billion, with imports of US$275 billion.

Chart 2.10 Comparison of Thailand's Real GDP and Imports/Exports

(Billions of dollars)



Source: Global Insight

2.6.5 INFRASTRUCTURE

Infrastructure Overview

Thaksin promised to fund infrastructure projects worth 100 billion baht in his second term. He followed through on this in February 2005, promising that whereas his first four years in office had been a time to "repair" the country following the Asian financial crisis, his second term would see him "build" the country. To this end, he announced that 1.5 trillion baht would be spent on a number of key infrastructure projects, including the expansion of the mass transit system. However, doubts were raised over the logic of the policy, with economists calling for a strong evaluation of whether these projects would drain the economy or produce longer-term gains—no indication was given on how they would be funded. Political unrest helped to stymie the program during 2006 and it was subsequently reviewed by the interim administration. Some aspects are now being implemented—notably the transport plans for Bangkok—while others have been shelved. Thaksin's policies have placed an emphasis on rural development, massive infrastructure projects and privatization in order to revive domestic demand and offset an expected slowdown in exports caused by a braking U.S. economy. In February 2008 Prime Minister Samak Sundaravej unveiled a spending package which included a number of major infrastructure projects, including nine new rail lines for Bangkok's mass transit system; upgrades to the national rail system, sea ports and airports; irrigation projects; and modernization of the national logistics system. He also pledged investment in a number of rural development projects, including loan schemes for villages, debt assistance to farmers, guaranteed commodity prices, and protection against natural disasters.

Road

Road transportation is considered to be Thailand's key mode of transportation for goods and passengers, and the system compares favorably with that of other developing countries in the region. Rural roads are being improved, and such moves generally receive support because many MPs are from the provinces. By way of contrast, the Bangkok metropolitan area is legendary for its traffic congestion. Steps have been taken to address this - most notably with the introduction of the Skytrain rapid transit system and a subway network - but it remains a significant problem.

In March 2005, authorities in Bangkok released detailed plans regarding the Bus Rapid Transit (BRT) system. After some delay, it fell to the interim administration to approve the proposals in January 2007. It is now envisaged that the new routes will be operational in 2008. The latest proposals are for five pilot projects constructed over three years at a cost of 12.89 billion baht. The first route will run for 16.5km from Suravong to Chong Nonsee and will be able to accommodate up to 50,000 passengers a day, using more than 3,540 buses.

A wider program of highway construction was halted following the 1997-98 Asian financial crises, leaving the country with hundreds of half-finished road projects. The authorities have subsequently altered their policy, focusing on the need to build an inter-city motorway system with greater private-sector involvement.

Rail

The State Railway of Thailand (SRT) operates four main routes: north from Bangkok to Chiang Mai, north-east from Bangkok to Nongkhai and Ubon Rajathani, east from Bangkok to Prachinburi, and south from Bangkok to the Thai-Malaysian border. The authorities are well aware that further rail development is needed, and have conducted a study into the privatization of the sector. This identified that the system needs structural reorganization, and would benefit from private sector involvement, but the rail authority is keen to delay privatization until at least 2010. As noted above, the new spending package included funding for nine new rail lines for Bangkok's mass transit system, as well as upgrades to the national rail system. In January 2007, the authorities pressed the SRT to focus more on logistics to try to improve its financial performance. The SRT runs at a loss and has been described as the country's worst-performing state enterprise. The Bangkok Post reported that the company was planning two new rail transport routes for goods during 2006, in an attempt to reduce national logistics costs. The routes would run from Nakhon Sawan to the port of Laem Chabang, and from Khon Kaen to the same port. The same month, it was also announced that the authorities were contemplating allowing private companies to enter the rail freight business using SRT track. This would counter the current problem where the amount of expansion SRT can afford in this area is constrained by its debt problems.

The Bangkok Transit System (BTS) or Skytrain came into operation in 1999. This has cut journey times in the congested capital dramatically, and it is estimated that the network serves around 200,000 passengers a day; this number is expected to increase as the line is extended into the city's suburbs. The city's much-heralded underground railway system came into operation in August 2004, slightly later than planned. However, its early months were dogged by safety problems; the most serious of these saw the network closed for a week in January 2005, following a crash in which more than 200 people were injured. The authorities have estimated that another 200,000 people will use the subway system daily once the line is extended.

In September 2004, the authorities unveiled a US$12.1 billion plan to expand the public transport infrastructure in Bangkok, with the aim of servicing the capital with a fully integrated transport system by 2010, helping to reduce congestion levels. This project has subsequently come under review, but it appears that it will at least in part still continue, extending both the Skytrain and subway.

Maritime
Thailand has 40 operational seaports, including eight deep-sea international ports, of which the largest is Klong Toey, with deep-sea facilities at Laem Chabang. These ports have low-priced handling and inexpensive storage costs. The Port Authority of Thailand (PAT) has responsibility for Bangkok Port and Laem Chabang. Discussions regarding privatization have been under way for several years, with PAT originally scheduled to be sold in 1999. Union opposition has delayed the sale indefinitely, but once it goes through, a port holding company is expected to be created that will oversee the management of the main ports. In November 2006, it emerged that the post-coup administration had decided to allow private firms to run Laem Chabang, in an attempt to improve the port's efficiency. Moves are also under way to provide the port with better links to the rail infrastructure. Currently, Laem Chabang is expected to experience overcapacity once its four terminals come into operation later this year. Poor rail links to the port are deterring users, despite the fact that the port has deep-water facilities. The authorities are looking to address this and in May 2007 approved plans to construct a rail link from the eastern province of Chachoengsao to Laem Chabang, a project that is expected to be completed in 2010.

Beyond this the other concern is bringing port security up to that required by the U.S. global port security container initiative.

Waterways
Historically, waterways have been an important means of transportation. Approximately 4,000 km of inland waterways formed the heart of the system, although its usage fell away during the Twentieth Century, with companies favoring road and rail. However, some traffic continues to use the system, and the government has approved the construction of a canal from the Indian Ocean to the Gulf of Thailand. The 120km canal would be carved through the Kra peninsula, linking the Indian Ocean and the Pacific. This is an idea with historical roots, and the region's countries are looking for alternatives to the Malacca Straits, which are heavily used and pose the risk of piracy or a terrorist attack. The canal could cut the cost of transporting goods in the region considerably.

Utilities
Energy provision is adequate and reliable, with the government moving effectively to ensure that longer-term demand will be met. Ensuring effective water supplies and sanitation is more problematic, particularly in Bangkok. As a result of the city's expansion, the demand for piped water exceeds supply, while waste treatment facilities similarly struggle to cope. The government has attempted to address these problems, but continued migration into the city means that a significant improvement in the situation is not expected.

2.6.6 TRADE AGREEMENTS

ASEAN
The 10-member ASEAN is at the heart of Thailand's foreign policy, bringing together the country's officials with their regional counterparts in more than 300 meetings every year. Thailand was one of the five co-founders of the group, along with Indonesia, Malaysia, the Philippines and Singapore. ASEAN was formed in 1967 to promote regional peace and stability

through respect for judicial norms and adherence to the principles articulated in the UN Charter. Widening co-operation in economic, social, cultural and technical fields facilitated eventually heightened engagement, and the group has grown to include other countries, including Brunei, Vietnam, Laos, Myanmar and, most recently, Cambodia. Thaksin sought—largely unsuccessfully— capitalize on the departure of ASEAN's figurehead, Malaysia's former Prime Minister Mahathir Mohamad, attempting to push himself forward as his natural successor. This was not well received, and domestic problems also foiled Thaksin's ambition. Furthermore, Thaksin's move prompted dissatisfaction from a number of other states, who saw this as another example of Thailand exerting its regional dominance.

Japan
In November 2007, a free trade agreement came into effect between Japan and Thailand, paving the way for the elimination of tariffs on more than 90 percent of bilateral trade in terms of value over the next decade. The FTA was agreed in April after five years of negotiations. It will apply to a variety of products, ranging from Thai exports such as shrimps and mangoes to Thailand gradually lowering import tariffs on Japanese cars. Japan has traditionally been one of Thailand's main export markets, and the FTA allows for closer trading ties.

EU
Relations with the EU focus on trading, with the bloc consistently accounting for around 15 percent of Thailand's total trade. In terms of investment, the EU is the third-most important source of FDI after Japan and Asia's newly industrializing economies (NIEs). The framework for co-operation with Thailand is the EC-ASEAN Agreement of 1980, although there are no preferential trade agreements between the two. Instead, the EC's General System of Preferences governs bilateral trading relations.

WTO
Thailand joined the WTO in 1995, although former Trade Minister Supachai Panitchpakdi went on record as arguing that the WTO is a Western-dominated body that fails to consider issues that concern the majority of the world's population. Recent moves have suggested that Thailand is more intent on furthering bilateral trading ties; in 2003, it abandoned its earlier allegiance to the G-22 group of developing nations during ministerial talks in Cancun (Mexico), instead setting its sights on trading agreements with the United States, with which it has subsequently pursued FTA negotiations.

2.6.7 NATURAL HAZARD RISKS

Flooding is common throughout the country during the rainy season, and while disruptions to transport links occur occasionally, they are rarely more than a nuisance.

2.7 SINGAPORE

2.7.1 ECONOMIC INDICATORS

Outlook
Economic growth in Singapore will slow in 2008 and will ease toward its trend growth rate in the medium term. The economic slowdown will be fairly moderate and cyclical in nature, and the risk for a hard landing still remains fairly low. The outlook for the near term is predicated upon the exports environment, and less volatile domestic demand could soften the slowdown in economic activity. Continued diversification into new industries, such as biomedical sciences, and enhancement of established industries, such as banking and tourism, also reduce the vulnerability of the country's exports to cyclical downturns in demand for electronics and

pharmaceuticals and open up new channels for export growth. Meanwhile, the current-account balance will remain in robust surplus for the entire forecast period. Although the massive current-account surplus will narrow slightly in the medium term, it is unlikely to fall sharply. Households will likely maintain their current high levels of savings given the substantial aging of the population. The government will continue to invest a large portion of its substantial public savings abroad, and outward investment by the private sector will continue.

Robust public finances and long-standing fiscal surpluses provide significant policy flexibility. Bountiful assets provide the government with ample resources to pursue counter-cyclical fiscal policy. Overall, however, the government has been reluctant to use fiscal means to support the economy during hard times and rarely resorts to pump-priming measures. Although a cyclical downturn is under way, Global Insight expects the government to continue its prudent course of conservatism and flexibility. On the monetary side, the central bank is likely to maintain its tight monetary bias at least through mid-2008, given that price pressures are expected to persist in the near term. In response, the Singapore dollar will remain strong, and will likely continue to appreciate against the U.S. dollar in the near term; macroeconomic fundamentals lend indefinite support to a stronger Singapore dollar.

Singapore is renowned for its strong economic fundamentals and prudent macroeconomic policies. The city-state is the quintessential open market when it comes to free trade, with low, if not zero, import tariffs. A small country with four million people and no natural resources, Singapore has made free-trade agreements a cornerstone of its economic policy, realizing that they are the best means of protecting its position as the region's trade and investment hub. The country has recently inked bilateral trade deals with the U.S., Australia, Japan, New Zealand, and India, among others. The economy has exhibited remarkable dynamism in its response to low-wage regional competitors over the last decade by moving toward higher-quality production and into new sectors. This move up the value chain has prevented Singapore from being driven out of many of its manufacturing markets. Meanwhile, the ongoing liberalization of the financial sector will make Singapore even more attractive to foreign investors, thereby ensuring a steady inflow of foreign funds. Singapore's prudent economic policies, stable political system, highly skilled labor force, and well-established infrastructure all point to the continuation of strong and steady growth.

Table 2.5 below details the compound annual growth rates for a number of key indicators. The forecasts project that Singapore will experience a decrease in annual GDP and population growth rates, with population growth rates between 2020 and 2030 forecast to be almost one-third of current levels.

Table 2.5 Comparison of Singapore's Key Economic Indicators

(Percent Change)

Key Compound Annual Growth Rates	2000-08	2010-20	2020-30
Gross Domestic Product (GDP)	5.0%	4.2%	3.5%
Exports of Goods & NF Services	8.7%	5.6%	4.8%
Imports of Goods & NF Services	7.9%	6.2%	5.0%
Total Population	1.4%	0.8%	0.5%
Real Per-Capita GDP	3.6%	3.4%	3.0%

Source: Global Insight

Domestic Assumptions

- Singapore's government continues to pursue extremely stable macroeconomic policies. Additionally, there will be no change in Singapore's political leadership in the near and medium terms, allowing for stable policymaking.
- International demand for electronic components will weaken in 2008 and pick up slightly in 2009.
- No significant terrorist attack disrupts the economic activity in the city state.
- SARS (severe acute respiratory syndrome) will not recur, and the avian influenza (flu) outbreak will be contained.
- No hard landing in the Chinese economy. China's central bank will keep the renminbi exchange rate to the U.S. dollar stable, allowing modest appreciation in the seven percent range for the next two years.

2.7.2 ECONOMIC GROWTH OUTLOOK

Short-term Outlook

Although Singapore's growth momentum is likely to subside in 2008 from the robust 7.9 percent GDP growth achieved in 2007, the trade-dependent city-state will likely sustain strong manufacturing output. Global Insight expects the economy to register growth of 5.2 percent in 2008 and 5.1 percent in 2009. Much slower global growth and a stronger domestic exchange rate will constrain Singapore's trade-dependent economy in 2008. Robust domestic demand will provide support and will help offset weaker exports. Although Singapore has diversified away from dependence on the U.S. over the past five years, the major risk is still that U.S. growth will be far slower than expected in the wake of the U.S. sub-prime loan crisis. Meanwhile, strong growth in Singapore's services sector and continued growth in electronics manufacturing will continue the economy's positive momentum.

The cyclical peak of Singapore's growth has now clearly passed. Singapore's primary short-term economic risk at present is the possibility that the imminent phase of the cyclical slowdown could be sharper and less benign than expected. Although the baseline forecast suggests that this scenario will most likely not occur, there is a small possibility of a bumpy financial landing. Global Insight's current growth forecast implies that Singapore's economy will decelerate moderately in 2008 and 2009, following the rapid growth in recent years.

Global demand for Singapore's key exports—computer components and technology goods—will fall slightly as the U.S., the largest consumer of these goods, moves into the downward phase of its investment cycle. Demand from China will also cool as the Chinese authorities attempt to control their buoyant economy. The current global electronics cycle, coupled with a weakening U.S. economy, will dampen growth in the export-driven city-state, since electronics account for a major share of its exports. The output of the electronics sector, which contributed 66 percent of total non-oil domestic exports and about half of Singapore's manufacturing output in recent years, will continue to post relatively solid growth in the medium term.

Financial services will continue to boost service-sector growth in 2008 and 2009. As Asia continues to grow in prominence in the world economy, Singapore's role as a regional hub for finance and commerce will intensify. Fund management, stock brokering, foreign-exchange management, and offshore finance are all expanding in the city-state. The banking sector, always sound, will continue to attract foreign capital.

Medium- and Long-Term Outlook

The government's solid macroeconomic policy record will ensure the stability of the country in the medium and long terms. The domestic savings rate will average more than 42 percent, slightly lower than the past five years' stellar 49 percent average, as Singaporeans increase their rates of consumption. Investment will also recover, although at a slower rate than private consumption, averaging five percent annual increases over the next five years. Despite the recent improvements in growth, however, Global Insight does not expect employment to return to its pre-recession levels. In particular, structural unemployment remains high; Singapore is attempting to diversify away from low-base manufacturing to high-tech industries. This transition could cause increased unemployment.

The government has not shied away from pursuing painful, unpopular economic policies when deemed necessary, however, and the country is guided by policymakers with long-term vision. Well-organized governance has given rise to some of the world's finest infrastructure, including sophisticated telecommunications networks, extensive public transportation, well-managed healthcare and education, and ultra-modern air and seaport facilities. Economic growth will slow over the medium and long terms, as per-capita income converges with those of advanced economies, and competition from low-cost producers such as China and India intensifies. The government has demonstrated its commitment to enhancing economic competitiveness and maintaining solid macroeconomic policies to foster greater entrepreneurialism and innovation.

The longer-term outlook remains generally robust. The moves toward expanding its financial-services industry, deregulating the banking industry, and enhancing the biotechnology sector have improved the country's long-term prospects. Again, however, Singapore's longer-term growth prospects are complicated by the increasingly stiffer competition from lower-cost competitors such as China and India, as they rapidly close the gap that currently exists in terms of quality of infrastructure and manpower. In response to this, the Singaporean government wants to push for a more creative and innovation-driven economy, where the focus is no longer just on value addition, but idea creation, enabling the private sector to play a much larger role in guiding the economy's development. The government has demonstrated its commitment to enhancing economic competitiveness and maintaining solid macroeconomic policies to foster greater entrepreneurialism and innovation within the corporate sector.

The financial system is exceptionally robust, benefiting from an efficient legal system and good accounting standards. The ongoing liberalization of the financial sector will make Singapore even more attractive to foreign investors in the medium term, thereby ensuring a steady inflow of foreign funds. Financial services will continue to boost service-sector growth for years to come. As Asia continues to grow in prominence in the world economy, Singapore's role as a regional hub for finance and commerce will greaten. Fund management, stock brokering, foreign-exchange management, and offshore finance are all expanding in the city-state. The banking sector, which is always sound in Singapore, will continue to attract foreign capital.

An important challenge of Singapore's aging population in the forecast horizon is ensuring that the retired are adequately treated. Thus, recent measures to refocus the Central Provident Fund (CPF) as a core retirement scheme are promising. Another possible obstacle to long-term growth, however, could be the outflow of skilled labor. The government is attempting to reverse this trend by loosening regulations and encouraging innovation.

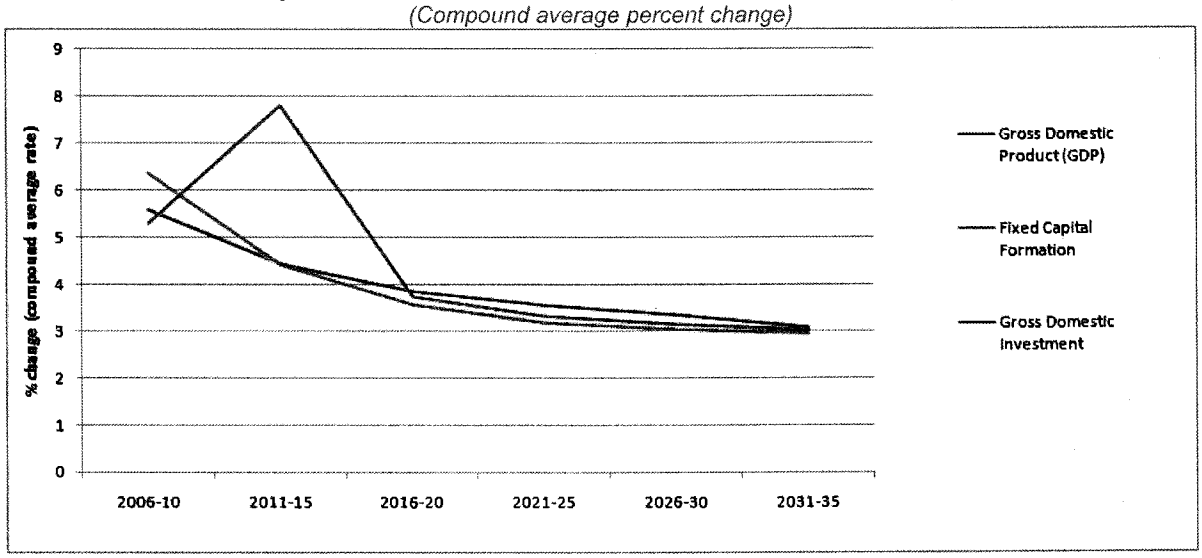
The government has made significant progress in increasing labor market and wage flexibility and reducing business taxes and costs. Also encouraging are the quality upgrading and diversification in the manufacturing sector, and the continued domination of Singapore as a hub

for regional asset management, health, and education services. The government continuously fosters research and development and investment in human capital. While a faster pace of divestment of the ubiquitous government-linked companies that are not of strategic importance to the country could further promote entrepreneurship and the growth of the private sector, the authorities' current careful approach has also proven successful.

The following chart (2.11) compares the compound average percent change over five year increments for GDP, fixed capital formation, and gross domestic investment. While the annual change in gross domestic investment is forecast to increase sharply in the near term, all three growth rates are forecast to decrease to about three percent growth per year in the long term.

Chart 2.11 Comparison of Change between GDP, Fixed Capital Formation and Gross Domestic Investment in Singapore

(Compound average percent change)

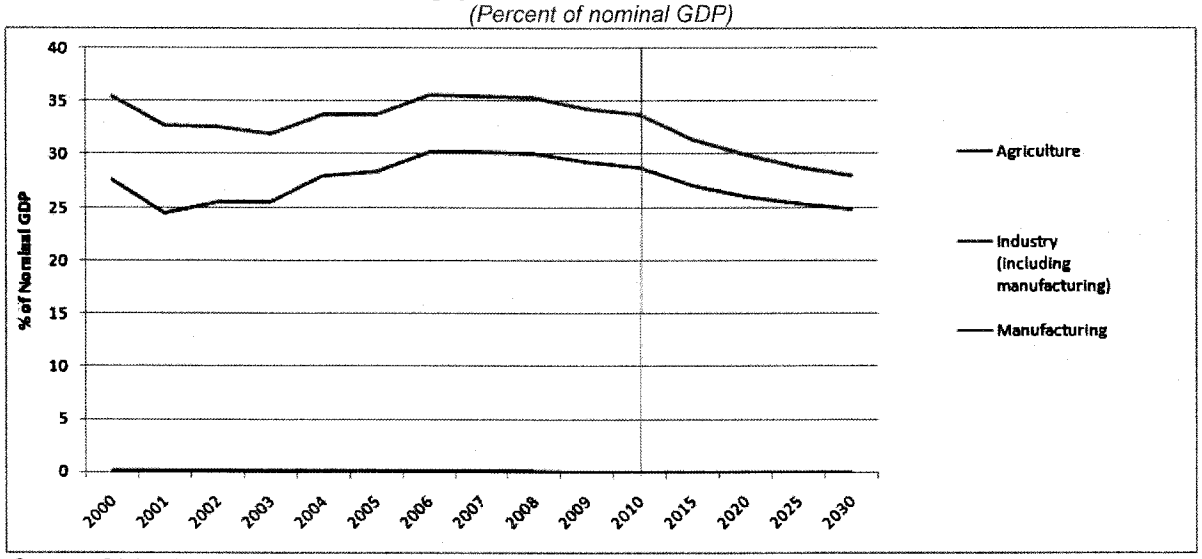


Source: Global Insight

Chart 2.12 below compares the percentage share of nominal GDP that is attributable to the agriculture, industry, and manufacturing sectors. Note that the manufacturing sector is a subset of the industry sector, in which it accounts for about 90 percent of the total. The industry and manufacturing sectors are forecast to decrease slightly from current shares by 2030.

Chart 2.12 Singapore's Sector Share in GDP Factor Cost

(Percent of nominal GDP)



Source: Global Insight

Current Economic Conditions

Economic growth has remained buoyant in recent quarters. Real GDP expanded by 5.4 percent year-on-year in the fourth quarter of 2007, according to the Ministry of Trade and Industry, as moderating growth in the services sector and a weakening in electronics manufacturing weakened the positive momentum from the third quarter. The advance is lower than the 9.3 percent rise in the third quarter and lower than the government's preliminary estimates of 6.0 percent growth. In the fourth quarter, manufacturing expanded by 5.8 percent year-on-year, and services grew by 8.1 percent year-on-year. Meanwhile, seasonally adjusted GDP shrank by 4.8 percent (annualized rate) in the quarter. In light of the weak data, the government downgraded its growth forecast for 2008, from 4.5-6.5 percent to 4.0-6.0 percent. The 2007 data also indicate that Singapore is making headway in efforts to wean its economy from dependence on electronics and to diversify into new areas. U.S. growth is likely to slow significantly in 2008, but Singapore may be cushioned somewhat by continued demand from neighboring Asian economies, which are increasingly important trading partners. Meanwhile, for the whole of 2006, real GDP expanded 7.9 percent, following the 6.6 percent growth registered in 2005. Strong growth in the services sector and a recovery in electronics manufacturing have continued to propel the economy forward.

Significantly, it has now been four years since the country emerged from its worst recession since 1964. After three years (2001-03) of uninterrupted contraction in domestic demand and rising unemployment, the domestic economy has been expanding and unemployment falling steadily since 2004. In recent years, Singapore's economy was hard hit by a series of external shocks. These shocks—the Asian crisis of 1997-98, the bursting of the technology bubble, and the SARS (severe acute respiratory syndrome) outbreak in 2003—disrupted an economic expansion that had been largely uninterrupted since the 1970s. The shocks occurred when Singapore was also facing increasing competition from regional low-cost economies. To facilitate an orderly adjustment to these changes, the government undertook a wide range of structural reforms. Assisted by supportive macroeconomic policies and improved external conditions, the economy recovered rapidly.

Singapore has promoted its pharmaceuticals and biotechnology industries, revitalized its tourism sector, and developed its wealth-management business. That action, combined with the strong performance of its oil-rig builders, has helped the economy overcome high oil prices and periodic global slowdowns and fare better than regional rivals such as South Korea and Taiwan, whose fortunes are more closely tied to global electronics demand. The city-state's recent economic performance also indicates that it is making headway in efforts to wean its economy from dependence on electronics and to diversify into new areas.

Concerns that China and other low-wage competitors would pose a significant threat to Singapore's manufacturing exports have proven to be overblown. The Singaporean economy has exhibited remarkable dynamism in its response to these competitors over the last decade by moving towards higher-quality production and into new sectors. This move up the value chain has prevented Singapore from being driven out of many of its manufacturing markets. In addition, the city-state is shifting away from those industries where it cannot compete and into new ones, such as biomedical sciences (plus into others where it has a comparative advantage, such as banking and tourism). Diversification also reduces the vulnerability of the country's exports to cyclical downturns in demand for electronics and pharmaceuticals, as well as opens up new channels for export growth. That this diversification is the result not only of government intervention, but also of strong foreign direct investment into an economy supportive of free-market enterprise, allows for even greater optimism.

Consumer Demand

Following many years of languishing domestic demand, at least compared with the vibrancy of the external sector, generally robust domestic demand is finally becoming the norm. The retail sales index increased by 7.8 percent year-on-year in January 2008, up 3.1 percent from its December levels. The year-on-year increase is attributable to an overall rise in spending due to recent economic and business-condition-propelled spending in all sectors. Excluding car sales, retail sales rose by 15.1 percent year-on-year in December; car sales declined by 5.3 percent during the month.

The nascent recovery in domestic demand first seen in 2003 became much stronger, broader, and more consistent throughout 2004–07. The cyclical recovery in the economy in recent years has helped bolster consumption. Private consumption remained healthy in 2007, as consumer confidence generally held strong. Improved labor-market conditions also helped boost consumption expenditures. Domestic demand has significantly picked up in the last three years, following a prolonged period of low economic growth (2001-03) in which consumer confidence plunged and consumers tightened their purse strings.

Consumption in Singapore has historically lagged both investment and the dazzling export sector. The central provident fund (CPF) was initially established as a national savings pool focusing in particular on providing basic pensions, mortgages, and healthcare. The CPF, however, has become a financial behemoth reinforcing Singapore's high savings rate (the highest in the world) to the detriment of consumption and investment, while stringent contribution rules have stifled entrepreneurship.

The recent burst of domestic economic recovery will help to unleash stifled demand, with retail figures showing consumers splurging on expensive goods. Recovering property markets, as well as robust automobile sales, have also helped domestic demand. As the economy slows moderately in 2007 and 2008, however, the current consumer exuberance will retreat marginally. Conversely, consumer confidence will increase with a recovery in the housing market and positive labor-market trends in the near term. Retail sales will retain traction,

increasing 5.9 percent in 2008 and 5.4 percent in 2009. Private consumption will remain healthy, and is forecasted to rise 3.5 percent in 2008 and 2009, underpinned by a general improvement in consumer sentiment. In the medium term, however, Singapore's domestic demand will remain structurally less buoyant, as a result of government economic policy that emphasizes high savings and an overwhelming external orientation, at the expense of the domestic economy. Domestic savings will average slightly more than 45 percent, lower than the past five years' 49 percent average, as Singaporeans slowly increase their rates of consumption.

Capital Investment

The country's stellar infrastructure facilitates the most productive uses of investment, both domestic and foreign. Well-organized governance has given rise to some of the world's finest infrastructure, including sophisticated telecommunications networks, extensive public transportation, well-managed healthcare and education, and ultra-modern air and seaport facilities.

Investment growth has strengthened over the last two years, but remains highly cyclical. After all, external or foreign demand, not domestic demand, has historically driven Singapore's stellar growth. Fixed investment increased 20.2 percent in 2007, following 11.5 percent growth in 2006 and anemic 0.1 percent growth in 2005. In terms of the most recent quarterly data, in the fourth quarter of 2007, gross fixed investment rose 16.1 percent year-on-year, on the back of stronger construction and works, which grew 14.3 percent year-on-year. Meanwhile, machinery and equipment capital expenditures, riding on still-respectable exports growth, rose by 14.0 percent year-on-year. On the inventory front, there was less de-stocking compared with the same period a year earlier. Other sectors with positive investment trends have included transport engineering and biomedical production, indicating that broadly, the government's diversification strategy has been working well.

Although dependence on foreign demand will likely remain high, Global Insight expects domestic demand, especially fixed investment, to also play a meaningful role in supporting overall growth near the five percent range. The government's plans to diversify the economy in the services sector, such as tourism and wealth management, have led to several construction projects in the pipeline. These include the integrated resorts (S$10.3 billion), projects to revamp existing tourism sites (S$2.0 billion), and the Business and Financial Centre (S$2.1 billion). These major projects represent about seven percent of GDP and should lend some support to domestic demand. As domestic demand strengthens, stronger investment confidence and housing starts are likely to become supportive of growth in coming quarters. Fixed-capital investment is forecasted to rise 6.3 percent in 2008 and 6.1 percent in 2009, underpinned by a generally healthy consumer sentiment.

Business confidence continues to remain moderately strong, but has dipped recently. The forward-looking purchasing managers' index (PMI) stood at 50.5 points in January 2008, compared with 51.0 points a month earlier, and was supported by growth in new orders and output, according to the Singapore Institute of Purchasing and Materials Management. With December's figure, the index remained in positive territory and stands above the psychologically important mark of 50—in April 2007, the PMI had fallen below 50. Meanwhile, the electronics sub-index stood at 50.8 in January.

Labor Markets

Riding on the strong growth momentum of the last three years, the unemployment rate has since been broadly stable. The seasonally adjusted unemployment rate stood at 1.6 percent year-on-year in the fourth quarter of 2007, marginally lower than the 1.7 percent registered in the third quarter and lower to the 2.6 percent year-earlier figure, according to the Manpower Ministry. Total employment in Singapore rose by 64,200 in the three months through December 2007, a marked acceleration from the previous quarter. Meanwhile, for the whole of 2007, the number of new positions created in the economy stood at 234,900, surpassing the total of 176,000 recorded for the whole of 2006. Significantly, after three years (2001–03) of uninterrupted contraction in domestic demand and rising unemployment, the domestic economy expanded strongly in 2004–07, and unemployment fell to nine-year lows. The unemployment rate has declined in recent years as job creation surged, particularly in the services sector, but unemployment remains high among low-skilled workers.

Following the 1997-98 Asian Financial Crisis, Singapore's economy has been undergoing substantial restructuring. Reflecting this restructuring, the economy strongly rebounded, and unemployment steadily declined. Nevertheless, the increase in the overall average unemployment rate since 1998 compared with extremely low pre-crisis levels was unprecedented in the country's history. Although the ongoing economic expansion since the Asian crisis generated significant job gains, the country's unemployment rate has remained significantly above its long-run historical trend. The average unemployment rate rose to over three percent in the post-crisis period compared with the lower-than-2 percent rate recorded in the pre-crisis period.

The increase in unemployment levels following the 1997-98 Asian Financial Crisis is associated with structural changes in the labor market. The increase in structural unemployment is largely attributable to the economic restructuring that has occurred in response to increased competition from low-wage regional economies such as China. Industries in Singapore have moved up the value-added chain, and companies have shifted their low-end operations to the low-wage Asian economies. As a result, labor demand shifted toward high-skilled workers. Although these changes allowed the Singapore's firms to retain their competitiveness, they also fostered unemployment among low-skilled workers.

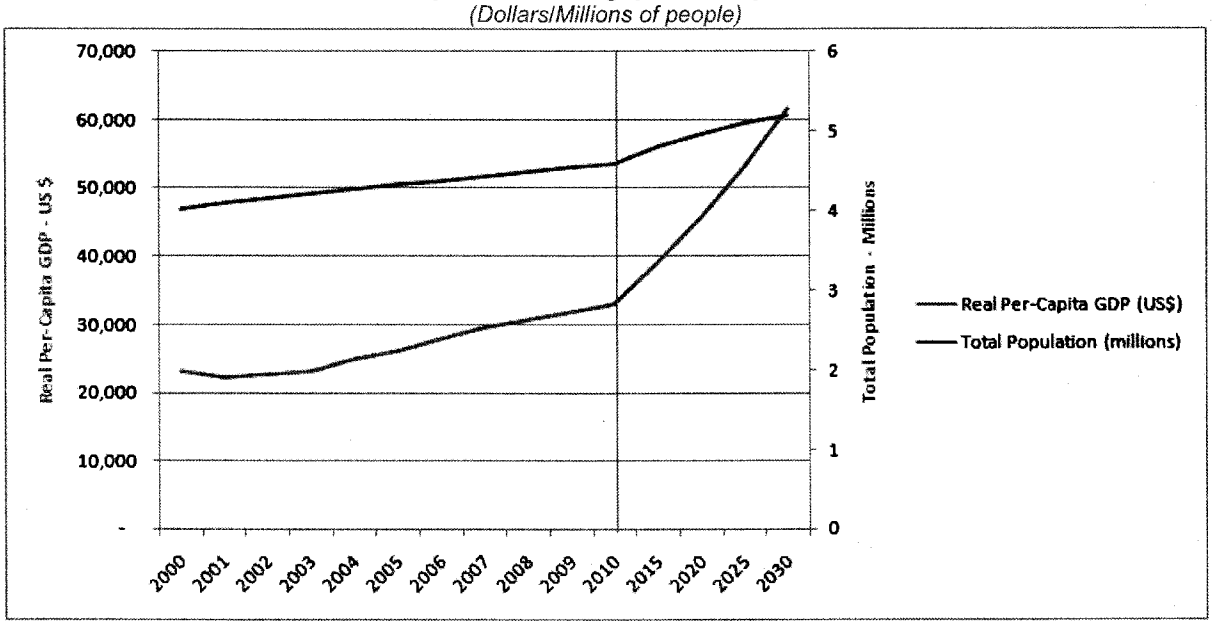
Overall, the outlook for jobs for 2008 and 2009 remains bright, given the buoyant domestic economy. Nevertheless, despite the improvement in overall economic conditions from 2004 onwards, Global Insight does not expect employment to return to its extremely low pre-Asian-crisis levels. Unemployment will remain in the 2-3 percent range in the near-to-medium term. In particular, structural unemployment will remain relatively high; Singapore is attempting to diversify away from low-base manufacturing to high-tech industries, a transition that could cause increased unemployment. Consequently, lower-skilled workers face the prospect of longer-term unemployment. The government has not shied away from pursuing painful, unpopular economic policies when deemed necessary, however, and the country is guided by policymakers with long-term vision.

An important challenge posed by Singapore's aging population in the forecast horizon is ensuring that the retired are adequately provided for. Thus, recent measures to refocus the CPF as a core retirement scheme are promising. Another possible obstacle to long-term growth, however, could be the outflow of skilled labor. The government is attempting to reverse this trend by loosening regulations and encouraging innovation.

The gradual increase in Singapore's population will be accompanied by a much faster increase in real per-capita GDP, as indicated on Chart 2.13 below. Real per-capita GDP is forecast to reach US$61,579 by 2030, an increase of 101 percent from 2008.

Chart 2.13 Comparison of Singapore's Population and GDP

(Dollars/Millions of people)



Source: Global Insight

Inflation

Inflation has crept up significantly and steadily, and inflationary sources are both global and domestic. Global factors include stratospheric oil and food prices, while domestic causes include property-price and wage inflation. The current-account surplus has narrowed slightly, reflecting higher imports as investment picks up. Inflationary pressures have increased in the economy following a strengthening of domestic demand. Robust rates of investment have supported strong employment growth, boosting household consumption as employment and income security improves. In line with the persistent inflationary pressures, the Monetary Authority of Singapore has maintained its modest and gradual tightening of its monetary stance over the last two years.

Recent months' data still paint a positive picture for inflation, despite the recent uptick. The CPI increased by 6.6 percent year-on-year in January compared with December's 4.4 percent increase, according to the Singapore Department of Statistics. Housing costs increased by 11.1 percent year-on-year, and transportation and communications prices rose by 6.9 percent year-on-year; together, these figures represent 40 percent of the index. Meanwhile, average consumer prices rose 2.1 percent in 2006, on the back of high oil prices, following increases averaging 0.9 percent in 2003–06. The still-benign CPI figures generally reflect the economy's macroeconomic stability even in the face of robust growth recovery in exports, retail sales, and jobs. Meanwhile, wholesale prices weakened in 2006 to 5.0 percent, down from 9.6 percent in 2005. Deflation last resurfaced in 2003, and the current, entrenched trend of slightly higher inflation represents a welcome boost to consumer spending and retail sales.

Strong inflationary pressures will continue to be felt in forthcoming months, as global oil prices remain elevated. Global Insight expects consumer price inflation to increase to 2.9 percent in 2008 and 2.1 percent in 2009; as a result of robust economic growth, headline CPI inflation will tick upwards in the near term. On the flip side, any adverse shock like a steep fallout from the U.S. subprime loan crisis or any unexpected re-emergence of SARS or a severe outbreak of the avian influenza could quickly reintroduce deflationary pressures in future months. Wholesale price inflation remains considerably higher than CPI inflation and is expected to equal 5.9 percent in 2008 and 5.3 percent in 2009. Meanwhile, higher productivity will put upward pressure on wages, which will begin to push up wholesale prices later in 2007.

Inflation spiked in 2007 as food prices continued to rise; prices will remain relatively elevated through 2008. Global Insight forecasts that consumer price inflation will remain relatively benign in 2008 at 2.9 percent, despite strong growth and high global oil prices. The tight monetary stance maintained by the ever-vigilant Monetary Authority of Singapore (MAS) will help constrain inflation.

The easing of government restrictions on property finances and foreign home ownership that occurred in 2005 and 2006 will continue to support Singapore's real estate prices in 2008 and beyond, and still-high oil prices will boost pump prices. The central bank will likely maintain its tight monetary policy through at least mid-2007, given that supply-side price pressures are expected to rise through the year. The tightening bias also reflects official expectations of the continued health of the economy. As the economic recovery firmly took hold, it appears that Singapore's protracted bout with deflation is finally over.

In the medium term, the strength of fundamentals and the positive balances in the external accounts mean that the Singapore dollar is likely to return to a stronger level relative to other Asian currencies. This translates into a reduction in external inflationary pressures that will help preserve the nation's low-inflation profile. Given the importance the monetary authorities associate with a stable currency, only sharply higher world commodity prices (for instance, from an oil shock), higher than already steep levels, could conceivably push inflation up in the medium term.

2.7.3 KEY ECONOMIC/BUSINESS RISKS

Risks

Singapore's overall short-term risks have ticked upwards in recent months, albeit from extremely low levels. Due to its stable government, political risks remain virtually non-existent. The only political change is Prime Minister Lee Hsien Loong's appointment of a new finance minister, current Treasury deputy Tharman Shanmugaratnam. Shanmugaratnam, a former central banker, will maintain his position as minister of education concurrently until the government's budget debate, which is set for early 2008. Meanwhile, most business and financial risks center on the performance of the global economy, which will be the key determinant of Singapore's trade-dependent growth in the near term. Given Singapore's extreme dependence on trade, it is especially vulnerable to global financial crises, or a hard landing in China or Asia. The global electronics cycle has peaked; as electronics demand retreats in the global economy over the near term, export growth will decline perceptibly. The pace of GDP growth will likely slow in the near term to a still-strong but more sustainable rate. But risks to this relatively benign outlook would be undercut by a harder-than-expected landing in the U.S. and by a sharp inventory adjustment in global electronics.

Singapore has been steadily moving up the manufacturing value-added chain into selected knowledge-intensive activities, such as pharmaceuticals and biotechnology, in an effort to remain competitive. Domestic risks to watch for include skilled labor shortages, which could retard the momentum of business development. Nevertheless, given the strong external and fiscal positions, prudent policies, and gradual diversification of growth sources, the economy is well placed to face such risks.

Business Risk Developments

- The economy continued to maintain significant momentum in the third quarter of 2007, with real GDP expanding by 8.9 percent year-on-year. However, in upcoming quarters, the slowdown in U.S. demand associated with the ongoing subprime crisis and the correction in domestic housing markets will serve to dent external demand. Soft external demand notwithstanding, Singapore's economy has also been riding on the back of the extended global liquidity cycle, which has helped to support the financial services industry. A potential turnaround in global credit conditions could threaten domestic demand. Economic restructuring efforts, meanwhile, have also led to the development of other segments such as biomedical, pharmaceuticals, and marine and offshore services, which have helped to counter the softness in other economic areas. Global Insight continues to expect a moderation in economic activity in Singapore throughout 2008.
- The Singaporean government increased its land-development tax in a bid to contain a surge in redevelopment activity in the city-state. The land redevelopment charge rate was raised to 70 percent, from the previous level of 50 percent. Developers are subject to the charge when land increases in value as a result of government re-zoning of the land. Redevelopment activity has surged in recent quarters, sending residential house prices soaring to their highest level in over a decade. Redevelopment has been spurred by the saturation of privately owned developments in Singapore, mostly constructed in the last property boom in the 1990s. The increase in the land-development tax should serve to cool the market by decreasing the financial gains for developers acquiring residential estates.

2.7.4 EXPORTS AND IMPORTS

Natural Resources

Singapore, a small country with four million people, has no natural resources except for fish and deepwater ports. Its strategic location on major sea lanes, coupled with strong government policy have helped offset some of these disadvantages. Upon independence in 1965, Singapore was faced with a lack of physical resources and a small domestic market. In response, the government adopted a pro-business, pro-foreign investment, export-oriented economic policy framework, combined with state-directed investments in strategic government-owned corporations. The manufacturing sector is a mainstay of Singapore's economic growth despite the absence of natural resources or an agricultural base. In the absence of natural resources, the city-state depends heavily on foreign trade and has aggressively sought free-trade pacts with other nations.

External Sector

Export growth has remained relatively healthy in recent months. Non-oil domestic exports increased by 7.3 percent year-on-year in February 2008, compared with a 2.8 percent contraction in January. Exports of chemicals and pharmaceuticals grew moderately, but crucial electronic exports—which account for 60 percent of total non-oil trade and 50 percent of manufacturing output—declined by 1.3 percent year-on-year in February, with contractions in exports of semiconductors and disk drives. Meanwhile, exports to the European Union (EU) increased by five percent, and showed gains in other major markets, particularly in the U.S. (six

percent) and China (four percent). Total exports increased by 28.5 percent year-on-year and imports rose by 30.6 percent year-on-year in February. Meanwhile, for the whole of 2007, Singapore's exports accelerated by 10.1 percent year-on-year, to S$300 billion, bolstered by external demand, which sustained strength in crucial exports—semiconductors, chemicals, and pharmaceuticals.

Despite periodic economic downturns in Asia and, at times, lackluster exports, Singapore's current-account position has remained extremely healthy. The country has been enjoying increasing current-account surpluses through most of the 1990s and onward, mostly because of strong surpluses in both the goods and the services balance. Official reserves increased modestly in 2006, by US$20.9 billion, to total US$136.7 billion, equivalent to import cover of about five and one-half months. The years of current-account surpluses, which have exceeded capital and financial accounts outflows, have helped build up the country's sizable foreign reserves. The current-account balance reached a surplus of US$36.3 billion during 2006, representing 27 percent of GDP. The trade balance has also maintained a steady surplus in the last three years. In 2007, the trade surplus rose to US$38.0 billion, representing 25 percent of GDP. Buoyed by the robust rise in goods exports in recent years, attributable to favorable external demand conditions, the export-dependent Singaporean economy remains in fairly robust health

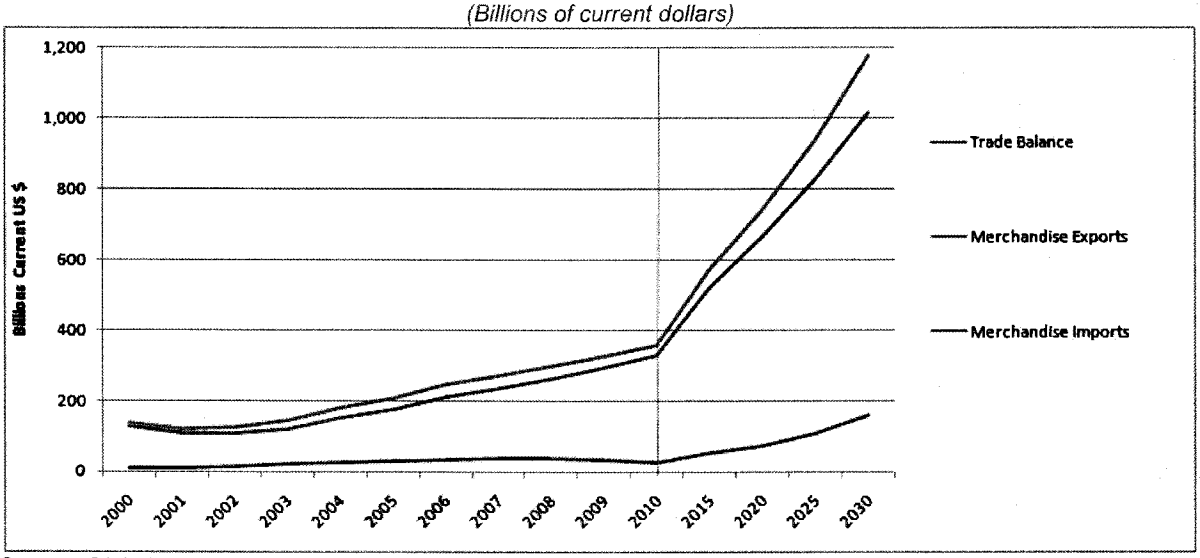
Exports are forecast to rise moderately in 2008 and 2009, above nine percent annually, as global demand for electronic components remains relatively firm in the near term. The PMI has steadily registered accelerating expansion in the manufacturing sector. Strength in manufacturing will likely be sustained, as firms, reflecting their confidence in the economy, increase their intake of capital and of intermediate goods imports. Global electronics downturns hit the export-driven city-state hard because electronics account for a major share of its exports. Local electronic manufacturers can be expected to benefit strongly from recovering U.S. technology spending. Free-trade agreements will continue to be a cornerstone of Singapore's economic policy. Any significant global fallout from the U.S. subprime loan crisis could dent Singapore's exports, however.

Meanwhile, the current-account balance will remain in robust surplus for many years, for the entire forecast period. The massive current-account surplus (27 percent of GDP in 2006) will narrow slightly in the near term, reflecting strong import demand amid rising wages and lower unemployment in the domestic economy. Furthermore, the size of the current-account surplus, while remaining buoyant, should decline slightly in the medium term. The city-state is the quintessential open market when it comes to free trade, with low, if not zero, import tariffs.

The current-account surplus will narrow marginally in the longer term, as consumption rises with the decline in unemployment, and investment increases with the further strengthening of domestic economic conditions, the continued health of global technology demand, and a firming up of the domestic property market. Nevertheless, the current-account surplus is unlikely to fall sharply in the forecast period. Households will likely maintain their current high levels of savings given the substantial aging of the population. The government will continue to invest a large portion of its substantial public savings abroad. Outward investments by the private sector, as well as the government will likely to remain strong as both continue to diversify their investments abroad. In addition, the move toward expanding and deregulating the financial-services industry has improved the country's long-term growth prospects, which will most likely increase the service balance in the medium term. Chart 2.14 compares Singapore's merchandise exports and imports.

Chart 2.14 Comparison of Singapore's Merchandise Exports and Imports

(Billions of current dollars)



Source: Global Insight

Trade Profile

Free-trade agreements are a cornerstone of Singapore's economic policy. The city-state depends heavily on foreign trade, and has aggressively sought trade pacts with other nations. Since 2000, the country has inked bilateral trade deals with the U.S., Japan, Australia, New Zealand, South Korea, India, and Jordan. Meanwhile, the ASEAN Free Trade Area (AFTA) was initiated in 1992. Singapore exports a broad range of manufactured goods, and foreign-exchange earnings are well diversified. Important exports include electronics and high-tech goods, machinery and consumer goods, mineral fuels, and chemicals. The government is also successfully diversifying the economy into other emerging sectors, such as pharmaceuticals and biomedical goods, so that it will be less vulnerable to external business cycles and low-cost producers in the regions. Table 2.6 below details Singapore's main trade partners.

Table 2.6 Ranking of Singapore's Major Trade Partners in 2005

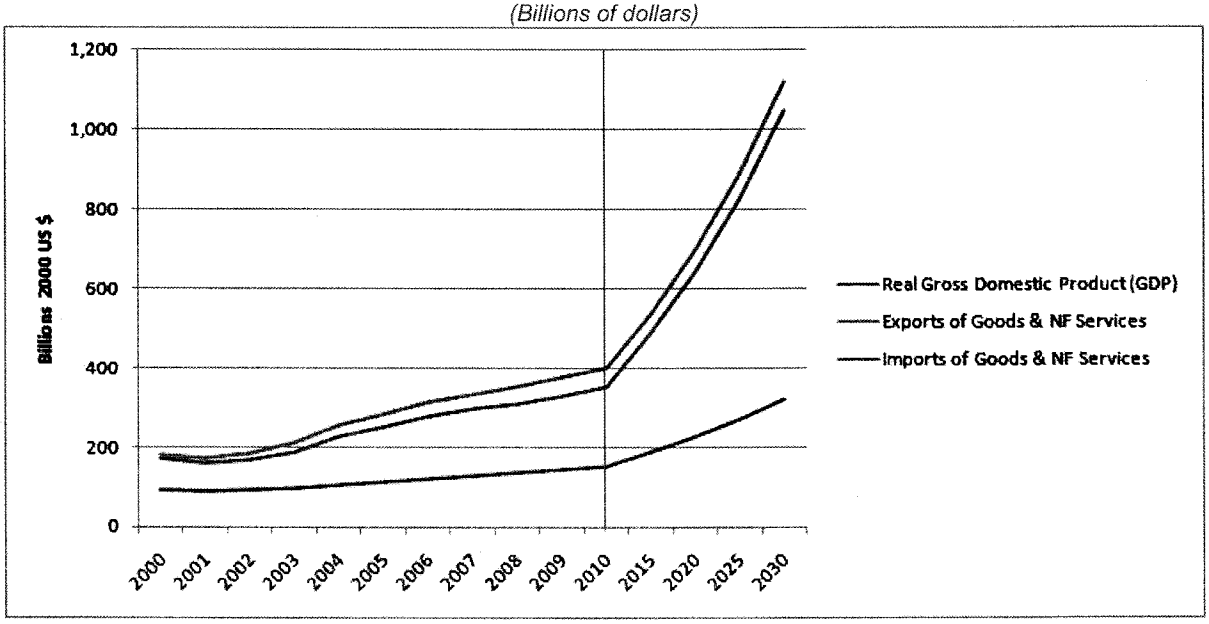
EXPORTS			IMPORTS		
Category	**Billions US$**	**% Share**	**Category**	**Billions US$**	**% Share**
Malaysia	30.4	14.7	Malaysia	27.3	14.4
United States	23.9	11.5	United States	23.5	12.4
Indonesia	22.1	10.7	China	20.5	10.8
Hong Kong	21.6	10.4	Japan	19.2	10.1
China	19.8	9.5	Indonesia	10.5	5.5
Japan	12.5	6.1	Saudi Arabia	9.0	4.7
Thailand	9.4	4.6	South Korea	8.6	4.5
Australia	8.4	4.1	Thailand	7.5	4.0
South Korea	8.1	3.9	Germany	6.0	3.1
Germany	6.3	3.0	Philippines	4.7	2.5

Source: Global Insight, from data supplied by IMF, Direction of Trade Statistics

Both Singapore's exports and imports of goods and services are forecast to continue to increase at a faster rate than GDP, as shown in Chart 2.15. By 2030, exports are of goods and NF services are forecast to reach US$1.12 trillion, with imports of US$1.05 trillion.

Chart 2.15 Comparison of Singapore's Real GDP and Imports/Exports

(Billions of dollars)



Source: Global Insight

2.7.5 INFRASTRUCTURE

Infrastructure Overview

The Singaporean government in January 2008 announced that it will spend S$28 billion (US$20 billion) on the expansion of the country's rail and motorway systems. This plan represents a bid to boost the construction industry and bring up property prices in outlying areas in the northern and western parts of the city-state, The construction projects are set to be completed by 2020 and constitute one of the largest-ever infrastructure plans to be announced for the city-state, with government infrastructure spending having declined since 1999. The expansion of key transport links will also address concerns that the transport system will be unable to accommodate the needs of a population that is projected to grow from 4.5 million to six million over the next two decades.

Road

Singapore's small size and level of wealth has led the government to ensure that the cost of private car ownership is high. To own a car, one must first purchase a Certificate of Entitlement (COE). These are auctioned twice monthly, and last for 10 years. Prices vary, but a certificate for a medium-sized car costs around S$25,000.

Other costs of running a car include:

- S$1,000 registration fee (S$5,000 for companies);
- an additional registration fee of 150 percent of the open market value of the car; and
- annual road tax (based on engine capacity).

There is also a road tax surcharge on vehicles older than 10 years.

The island is crisscrossed by roads and eight expressways, which have a total length of 150 km and the government's 2008 infrastructure package has allocated S$8 billion to construct a new motorway system. There are no unpaved roads, and the city-state's paved roads total upwards of 3,000 km. Prohibitions have been imposed on driving in the Central Business District (CBD), and an Area Licensing Scheme (ALS) is in operation on weekdays and Saturday mornings; vehicles must display a special license that can be purchased on a daily or monthly basis. Special licenses must also be displayed on the East Coast Highway, and parking spaces in the CBD are restricted. Such deterrents to private vehicle ownership are supported by a comprehensive public transport system. The bus service is considered to be inexpensive and efficient, while taxis are both numerous and well-regulated.

Rail

Run by the Land Transport Authority (LTA) and the Ministry of Transport (MoT), public transport is based on the mass rapid transport (MRT) subway system, which provides a safe, frequent and reliable service, and a network of bus and taxi services. This has been supplemented by the Light Rapid Transit (LRT) rail system, as part of efforts to make public transport account for 75 percent of all journeys. There are rail links from Singapore to West Malaysia and Thailand. The 2008 infrastructure bill unveiled by the government allocated some S$20 billion for further expanding the light rail system. This is set to grow to twice its current size with the addition to two new lines to the two already in existence, adding 100 extra rail stations to the existing network. The objective is to encourage the population to increasingly rely on public transport to boost Singapore's green image, after road congestion has been found to have increased by 25 percent since 1999 despite high taxes levied on car.

Maritime

The port of Singapore is world-class, and earned the title of the world's busiest port in 2005, based the amount of shipping tonnage handled and containerized traffic, which totaled 22.3 million TEUs. It has links to over 600 other ports in 123 countries, and serves 200 shipping lines. The port offers sophisticated storage, warehousing and distribution facilities, while a massive upgrade program will add 15 new berths added to Pasir Pajang Terminal over the next 5-7 years. However, many shipping companies have complained about price inflexibility on the part of the Port Authority of Singapore (PAS), which has led the port's top two clients, Denmark's Maersk Sealand and Taiwan's Evergreen Marine, to leave for nearby Malaysian facilities at Tanjung Pelepas, where costs are around 40 percent lower. Costs in Singapore are likely to fall in the long run as competition intensifies, with anticipated cuts in port fees of between 20 -50 percent. Singapore's advantage rests primarily on its better facilities and faster turnaround times, achievements reflected in the fact that the PSA Corporation is a four-time winner of the Lloyd's List Maritime Asia Award for "Best Container Terminal".

In June 2002, Singapore became the first Asian port to introduce new security measures demanded by the U.S. in the wake of the September 11, 2001 terrorist attacks, and by February 2004, its ports were among the first in the world to comply with International Ship and Port Facility Code (ISPS) regulations. The ISPS regulations were adopted in late-2002 as a result of fears that international terrorist organizations such as al-Qaida and the Jemaah Islamiyah (JI) network could be planning to use container and petro-/chemical tankers as weapons of mass destruction (WMD) in suicide attacks. Singapore's speedy efforts to adopt security measures are illustrative of both the country's perceived vulnerability to such attacks, as well as its close co-operation with the U.S. in the war against fundamentalist terrorism.

Waterways
Singapore is an island, and while its economy is therefore highly dependent on marine access, it does not have any significant internal waterways.

Utilities
The Public Utilities Board (PUB) is responsible for the provision of water, as well as the distribution of electricity and piped gas to Singapore's households and businesses. Water standards are in line with quality guidelines set by the World Health Organization (WHO), and it is considered safe to drink from the tap. The PUB also processes all new applications for utilities, billing, and payment collection.
Singapore currently depends on water supplies from neighboring Malaysia for around half of its daily needs, a source of friction between the two nations, which has sometimes led to fears that the supply might be turned off. However, Singapore is reducing its reliance on Malaysian sources through initiatives such as the seawater purification plant constructed by local water-treatment firm Hyflux, which started functioning in 2005. It is the largest such facility in Asia, and will meet 10 percent of Singapore's daily water requirements of 1.1 billion liters (300 million gallons); demand is expected to rise by one-third over the next decade. The Hyflux initiative marks the first time that Singapore will tap the large supply of seawater surrounding the island for use in residential and industrial areas. Pressure to increase self-sufficiency has grown as a result of ongoing difficulties in negotiating import terms with Malaysia; one bilateral accord is due to expire in 2011, and another in 2061.

2.7.6 TRADE AGREEMENTS

Given its export-dependent economy, Singapore has been among the world's most active trading states, and has taken a leadership role in promoting regional trade agreements as a precursor to wider multilateral initiatives. Given its relatively small size, it has been much more effective in this role within ASEAN than in the WTO framework. Targeting its major strategic trade partners, Singapore has concluded a string of free-trade agreements (FTAs) with important partners such as New Zealand, Japan, the U.S., Australia, and the European Free Trade Association (EFTA—comprising Switzerland, Iceland, Liechtenstein, and Norway).

2.7.7 NATURAL HAZARD RISKS

Despite international attention and local efforts through bodies such as ASEAN, the summer months from July onwards still see forest fires begin to rage through Indonesia and parts of Malaysia. The fires are frequently started deliberately and cause substantial tension in the region, as the noxious haze crosses international borders, bringing an acrid and unpleasant smell. Singapore can be affected, although—unless the fires have been especially fierce—there is unlikely to be any adverse impact on health if the air is inhaled. However, asthmatics may wish to be cautious.

2.8 MALAYSIA

2.8.1 ECONOMIC INDICATORS

Outlook
Malaysia's near and medium-term outlooks are fairly positive, even though the effects of the sub-prime mortgage crisis in the U.S. are certain to cause an impact throughout the world. As U.S. demand for Asian exports cools and credit conditions tighten, Global Insight expects to see a drop-off in net exports as a share of GDP. However, this would only be a relative retreat and

Malaysia will continue to record massive external surpluses. In addition, domestic demand will remain strong as well, even though private consumption will (and should) moderate from current red-hot growth rates.

Malaysia has traditionally been a low inflation country. More favorable base comparisons have allowed inflationary pressures to retreat during the summer of 2007, but headline CPI rates have moved back above 2.0 percent since. Given strong upward pressures on food prices, as well as rapid income growth and booming consumer demand, average inflation is forecast to accelerate to about 2.5 percent before easing slightly over the medium term.

The longer-term outlook could deteriorate as investment attractiveness is eroded. Although Malaysia continues to be one of the more stable countries in the region and is far from being in a crisis situation, its inability to break out of the 5-6 percent growth range in a sustainable manner does highlight growing challenges. The country is gradually losing its appeal to foreign investors, in part due to the emergence of new, lower cost manufacturing centers such as China and Vietnam. Although inward FDI levels jumped 50 percent in 2006, the trend for the prior few years has been that of a steady decline, and the outlook is not particularly encouraging. Fixed investment growth averaged a meager 3.0 percent (which marks an upward revision following rebasing of national accounts) during 2001-06—one of the lowest rates in Asia. For an economy as trade dependent as Malaysia's (where foreign trade turnover is equivalent to more than 200 percent of GDP), this is a particular cause for concern. Although its position as a higher value added, high-tech manufacturing base has previously appeared shielded from increased competition from China's lower-end manufacturing focus, it is clear that this is no longer the case. One interesting trend to note is the rising levels of outward FDI from Malaysia, which suggest that rather than competing against lower cost manufacturing bases elsewhere, Malaysian companies may look to take advantage of them by expanding production bases beyond national borders.

Table 2.7 below details the compound annual growth rates for a number of key indicators. The forecasts project that Malaysia will experience a decrease in annual GDP and population growth rates, with population growth rates between 2020 and 2030 forecast to be almost half of current levels.

Table 2.7 Comparison of Malaysia's Key Economic Indicators
(Percent Change)

Key Compound Annual Growth Rates	2000-08	2010-20	2020-30
Gross Domestic Product (GDP)	5.1%	4.6%	3.8%
Exports of Goods & NF Services	4.0%	1.6%	4.8%
Imports of Goods & NF Services	4.5%	0.1%	5.1%
Total Population	1.9%	1.4%	1.0%
Real Per-Capita GDP	3.2%	3.2%	2.8%

Source: Global Insight

Domestic Assumptions

- Tightening credit conditions worldwide combined with the U.S. recession will affect the economy by lowering export demand. The impact on the exchange rate will be slight.

- The central bank will engage marginal monetary easing in 2008, a move facilitated by subdued inflation and similar rate cuts by major central banks around the world.
- The government will continue to liberalize the investment environment and will encourage managed capital outflows over the next couple of years with the goal of easing upward pressures on the currency.
- Investment activity will pick up slightly over the medium term, but growing competition from China and Vietnam will preclude a full recovery.
- Social tensions will increase over the medium term as a result of the growing influence of Islamist militancy and deterioration in inter-ethnic relations. Although an outbreak of violence is likely to be avoided, increased polarization of the three main ethnic groups is a strong possibility, and this will lead to modest capital flight.

2.8.2 ECONOMIC GROWTH OUTLOOK

Short-term Outlook

Following a strong performance in 2007, Malaysia's economic growth is expected to ease in 2008 as red-hot private consumption returns to more sustainable levels and exports ease in line with weaker U.S. and global demand. Unless the U.S. recession turns out to be far deeper and more prolonged than currently expected, the impact on Malaysia's GDP growth should be well contained. Global Insight currently forecasts 5.6 percent real GDP growth in 2008. Nevertheless, the prolonged weakness of investment growth reflects more deep-seated structural challenges in the economy, which need to be redressed if competitiveness is to be maintained over the long term. The 8-9 percent growth rates which were typical until the mid-1990s are unlikely to be matched over the medium term unless the government engages in a new round of macroeconomic reforms. Structural problems such as labor shortages and ongoing budgetary support for inefficient domestic industries must be addressed if Malaysia is to return to consistent six percent-plus growth rates.

Medium- and Long-Term Outlook

Since Malaysia is highly dependent on exports, anything that affects world demand—particularly for electronic products—risks undermining its economic growth. The economy does not suffer from any serious imbalances, although the exchange-rate regime remains excessively rigid. Nevertheless, there is the risk of complacency and the related loss of competitiveness as new, rapidly reforming economies (such as China and, more recently, Vietnam) attract increasing FDI inflows. Indeed, Malaysia must continue to reinvent and position itself more aggressively as a higher-end production platform, at the cutting edge of technological progress to prevent FDI outflows. This has not occurred swiftly enough to date, and Global Insight is skeptical about Malaysia's ability to return to growth rates in excess of seven percent in coming years.

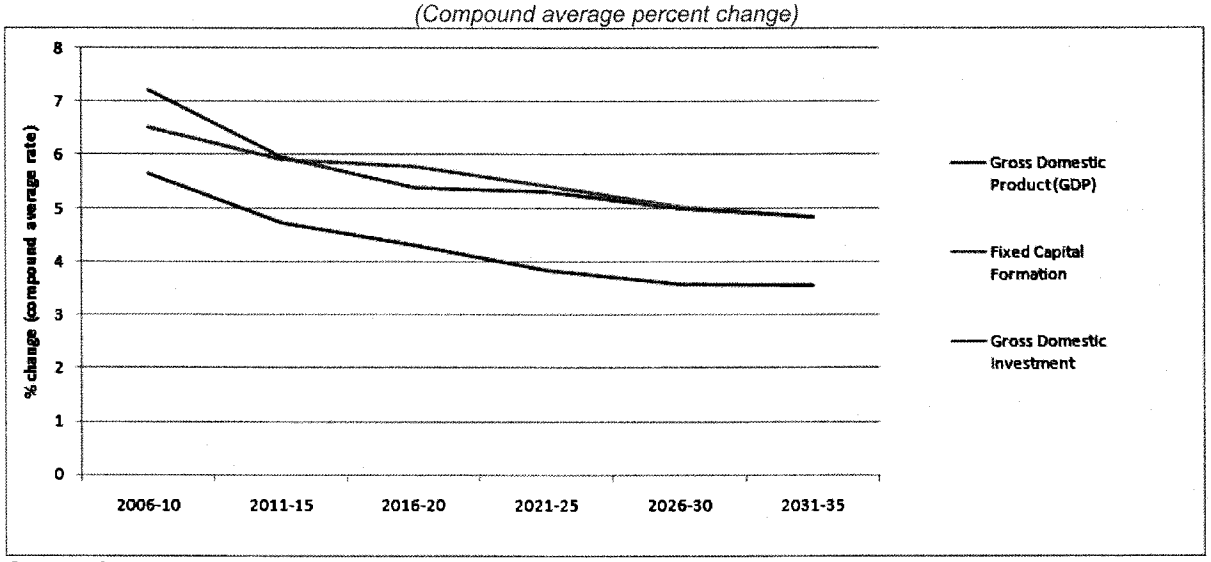
Political risk has been low for the past 20 years, with former Prime Minister Mahathir a strong and steady influence on the country's development. The new administration has overcome the burden of its predecessor's legacy and has shown that it can establish its own strong leadership. A new focus on addressing social inequalities should improve social cohesion over the medium term, minimizing the risks of political instability. Nevertheless, a significant problem with Malaysia's investment environment and one that poses risks to its long-term economic performance relates to the sensitivity of ethnic relations. Malaysia has adopted an affirmative action policy in favor of the Malay majority. In practice, this policy has given rise to vested interests and has obscured the commercial rationale behind key economic transactions. The neglect of commercial considerations in favor of the political ideas of ethnic-Malay empowerment in business has reduced the overall efficiency of the Malaysian economy. The highly centralized government system has fostered unhealthily close relations between political

and corporate circles, with charges of corruption, cronyism, and opacity commonly leveled at the operational environment. The Foreign Investment Committee, which approves investments and corporate transactions, has required that Malay Malaysians hold at least a 30 percent stake in any company acquired. Its decisions have often been tilted towards political considerations.

The following chart (2.16) compares the compound average percent change over five year increments for GDP, fixed capital formation, and gross domestic investment. All three growth rates are forecast to decrease in the near-and far-term.

Chart 2.16 Comparison of Change between GDP, Fixed Capital Formation and Gross Domestic Investment in Malaysia

(Compound average percent change)

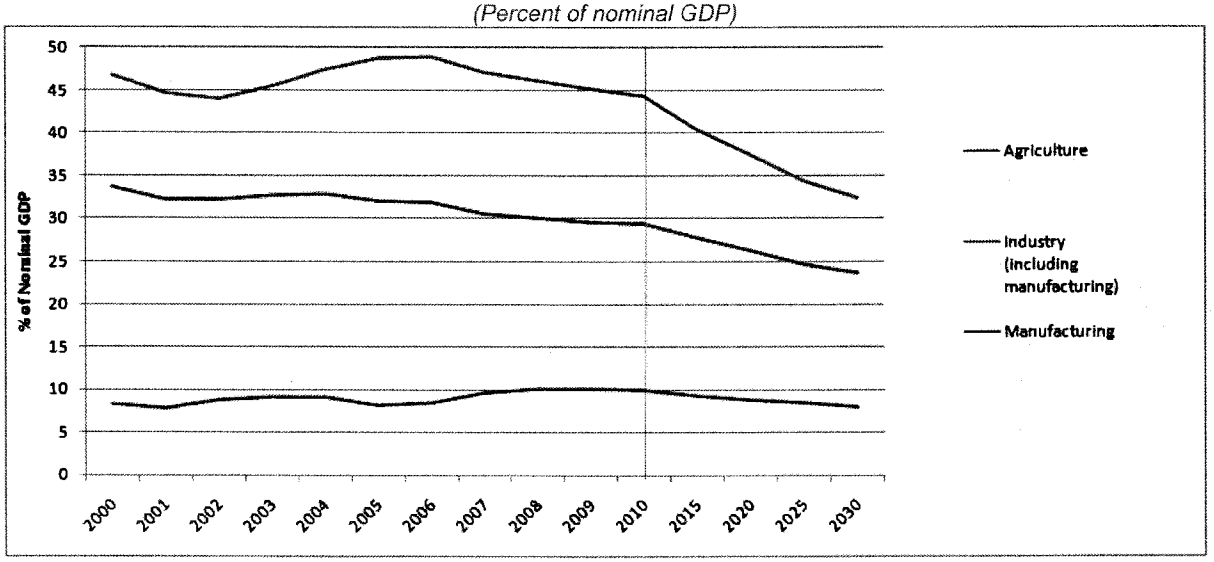


Source: Global Insight

Chart 2.17 below compares the percentage share of nominal GDP that is attributable to the agriculture, industry, and manufacturing sectors. Note that the manufacturing sector is a subset of the industry sector, in which it accounts for about two-thirds of the total. All three sectors are forecast to decrease from current shares by 2030, although the decrease in the sector share contributed by industry will be the most significant at approximately one-third of current levels. By 2030, manufacturing will account for almost three-quarters of the total industry sector share.

Chart 2.17 Malaysia's Sector Share in GDP Factor Cost

(Percent of nominal GDP)



Source: Global Insight

Current Economic Conditions

Malaysia's economy experienced an upswing in the fourth quarter of the 2007, pushing growth to a three-year high. GDP in real terms expanded by 7.3 percent on the year in the three months through December, marking the fastest annual growth for a quarter since the second quarter of 2004. Momentum in the fourth quarter was generated by the confluence of surging domestic demand growth and accelerating exports. Real private consumption in particular sustained traction, rising by 11.1 percent on the year in the December quarter after a 14.0 percent gain in the three months through September. Growth in the third quarter stood as the fastest gain since 2000. Household spending has been supported by rising employment and associated income growth. Increases in civil-service wages have also fuelled spending, while appreciation in the ringgit exchange rate has boosted purchasing power. In 2007, private consumption spending rose by 11.7 percent in annual terms. Government consumption growth slowed in the three months through December compared with the previous quarter, rising by 4.4 percent on the year following a 5.3 percent gain in the September quarter.

Investment spending also sustained momentum following a rebound in the third quarter. Weak investment spending had been Global Insight's main concern regarding the Malaysian economy for most of this decade. Real fixed investment growth had averaged a mere 2.0 percent annually during 2001-05—far lower than in most other Asian economies, and a far cry from the double-digit growth rates witnessed during the late 1990s. However, investment activity began accelerating in 2006 as the hi-tech industry started coming out of its post-bubble lethargy. Fixed investment rose by 7.9 percent in 2006, and accelerated to 13.5 percent in the September quarter of 2007 after averaging growth of 8.2 percent in the first half. Spending on machinery and equipment underpinned fourth-quarter growth of 11.0 percent in annual terms, indicating that the recovery is being sustained. For 2007 as a whole, gross fixed capital formation (GFCF) rose at a record high rate of 10.2 percent in annual terms.

Also of note was the unexpected strength of export growth during the fourth quarter. Exports accelerated sharply, rising by 7.5 percent year-on-year in the three months through December following a meager 2.5 percent gain in the September quarter. Exports have been buoyed by robust global demand for crude oil and liquefied natural gas (LNG), as well as agricultural

commodities such as rubber. Robust regional demand has also offset moderating growth in the U.S. as the sub-prime loan crisis encroaches on consumption. However, import growth also gained traction, inflated by the high cost of refined fuel products and equipment as investment accelerated. For 2007 as a whole, exports expanded at a rather lackluster rate of 3.7 percent in year-on-year terms, in large part reflecting the still-sluggish state of the global electronics market that has failed to stage a definitive recovery. Imports are also dominated by parts and components for the manufacturing processing industry.

Following torrid growth of 9.8 percent in 2004, real private consumption eased to a still-high 8.7 percent in 2005 and softened to 7.1 percent in 2006. Performance in 2007 has exceeded expectations, with private consumption growth reaching 11.7 percent. The medium-term outlook is one of continued strong gains in private consumption spending supported by strong growth, low inflation, and an appreciating currency.

Consumer Demand

Having steadily decelerated over the past couple of years, real private consumption growth surged to 14 percent year-on-year during the third-quarter 2007. The acceleration was somewhat surprising, although lower inflation may have boosted consumers' purchasing power while strong overall economic performance has been a boon to consumer confidence.

The latest industry estimates put Malaysia's retail market at around US$13 billion annually. Although not a large country compared with some of its neighbors, Malaysia's higher per capita income makes it an attractive target among its peers. Indeed, its per capita income is four times higher than that of Indonesia, and about twice as high as that of Thailand.

Capital Investment

Malaysia's export-oriented growth model required substantial investments to build and then expand the country's manufacturing base, with much of it centered on the high-tech industry. Fixed investment growth averaged a massive 19.3 percent during 1988-95, before easing to the high single digits in 1996-97. Such rapid expansion of the capital base was made possible by large inflows of FDI, as well as state-backed infrastructure projects, and translated into rapid export and economic growth and established Malaysia as one of the most successful "tiger" economies. Investment spending hit a wall with the onset of the Asia Crisis in 1997, and has yet to fully recover to pre-crisis levels. Fixed investment collapsed in 1998, when spending fell by a staggering 40 percent, and even strong performance in 2000 amid the high-tech boom did not help to make up the lost ground. With the bursting of the high-tech bubble and the sudden surplus of production capacity worldwide, investment activity retreated once again. Fixed investment growth averaged a meager 1.6 percent per year between 2001 and 2005—a complete turnaround from a decade earlier. As a result, real investment spending as of 2005 was still only about 73 percent of the pre-crisis levels. Given growing headwinds facing the Malaysian economy, Global Insight does not expect a full catch-up until the end of this decade.

Following a slight acceleration in 2006 to 7.9 percent, fixed investment growth accelerated to 10.2 percent in 2007 but is expected to slow to about 7.2 percent this year (downside risks exist, however, in light of the U.S. recession) and to the 4.5-5.0 percent range over the medium term. Gross investment growth will fare slightly better, thanks to a moderate build-up in stocks. In the near term, a pullback in external demand will limit the impetus for additional capacity building, while the medium-term outlook is clouded by a growing shift in FDI flows away from Malaysia and into lower-cost manufacturing centers in Vietnam and China (among others). At some 4-6 percent annually, fixed investment growth will be at the lower end of the regional range, although better than in the first half of the decade. One factor which could boost Global

Insight's longer-term forecast would be a change in government policy towards a more aggressive pursuit of establishing higher value-added industries such as biotech and a renewed commitment to further improving the business and investment environment.

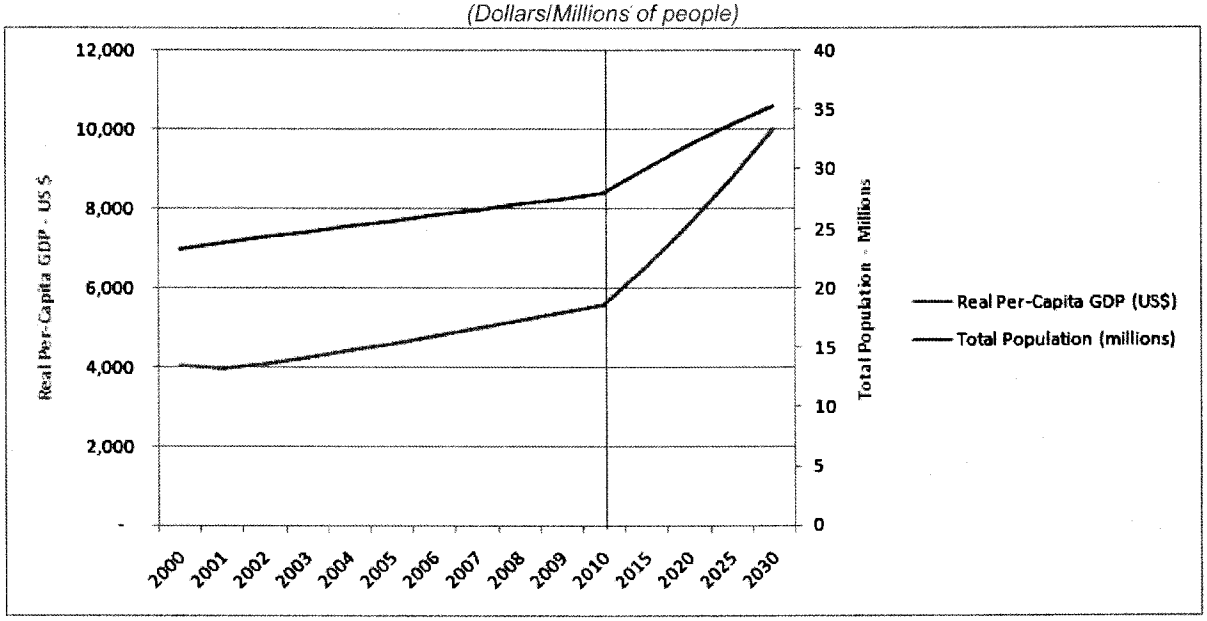
Labor Markets

Although economic growth is not expected to accelerate notably over the forecast period, Malaysia's fairly small labor force means that conditions in the labor market will remain tight in the future. Indeed, Global Insight does not expect the unemployment rate to surpass 4.0 percent over the forecast horizon, and this projection incorporates growing imports of labor from neighboring countries.

Malaysia's population and real per-capita GDP are both forecast to continue to increase in the future, as indicated on Chart 2.18 below. Real per-capita GDP is forecast to reach US$10,006 by 2030, an increase of 93 percent from 2008.

Chart 2.18 Comparison of Malaysia's Population and GDP

(Dollars/Millions of people)



Source: Global Insight

The quality of available labor is generally high, relative to the current manufacturing base, centered on labor-intensive light manufacturing. However, Malaysia's labor costs have risen relatively sharply, undermining cost competitiveness in labor-intensive industries in relation to major emerging markets, notably China. The market remains relatively rigid, bound by a significant level of regulation supporting positive discrimination towards bumiputras and high welfare commitments. Malaysia's relatively small workforce (about 10.5 million workers) is evenly distributed across sectors, with 37 percent engaged in manufacturing and construction, 28 percent in local trade and tourism, 16 percent in agriculture, 10 percent in services, and the remainder in government. However, Malaysia suffers from a relatively serious shortage of domestic labor in various sectors, including electronics, but also agriculture, which has been exacerbated by official campaigns to rid the country of thousands of illegal foreign workers. The government has thus sought to address the problem through a variety of policies in the education sector, as well as diversifying the workforce by relying on some sources of foreign

labor. As a result of fairly tight labor-market conditions, unemployment rates have historically been very low, and have been almost unchanged at 3.5 percent for the past several years.

Literacy and basic education rates are in the mid-90 percent range, and there are 17 public and 20 private universities and colleges—as well as various polytechnic/industrial training institutes—offering courses towards certificates, diplomas and degree qualifications. More than half of the enrolment in public institutions of higher learning is in the sciences and technical disciplines. If the economy is to move up the value-added chain, however, improvement in skills and education levels is required. Currently, secondary school enrollment rates run at around 70 percent, while university enrolment rates stand at around 30 percent. In a bid to remedy the problem, the government made education a top priority in the new five-year Malaysia Plan that it introduced in March 2006, allocating one-fifth of its 200-billion-ringgit budget to the sector. As part of long-awaited reforms in the sector, racial quotas are to be virtually abandoned, while the government is also promoting the use of English as the teaching language in Malaysia's primary schools. Seeking to put a halt to the continuing "brain drain" that has resulted from the quota system spurring many university students to study overseas, Malaysians will now be allowed to study domestically at international schools. Based on reforms in the education sector, enrolment into tertiary level education is projected to increase from 25 percent in 2000 to 40 percent by 2010. This is expected to be accompanied by an 80 percent increase in the number of professional and technical workers, from about one million in 2000 to 1.8 million by 2010.

Inflation

Malaysia has a long tradition of price stability. It has historically enjoyed a benign inflation environment, thanks in part to its stable exchange-rate regime and good macroeconomic policies. Indeed, inflation rates have historically been more typical of a developed economy than of a developing one, having averaged just 2.6 percent during 1985-2004. Over the span of these two decades, inflation surpassed 5.0 percent only once—in 1998—following the substantial depreciation of the ringgit. Between 2000 and 2004, annual inflation rates moderated to a tight range of 1.1-1.8 percent, reflecting falling commodity prices (through 2003) and slower domestic demand.

Prices have eased sharply in 2007 following a cyclical peak in 2006. Strong inflationary pressures had been building in intermediate prices since 2003, reflecting a sharp pickup in global commodity prices, especially oil. Indeed, producer price inflation reached 8.9 percent in 2004 and 6.9 percent in 2005. Producer price inflation had intensified at a time when strong domestic demand provided an environment for passing some of these increases onto the consumer. While the pass-through process was rather slow initially, it started gathering speed during 2005 to peak in spring 2006. Annual CPI inflation rates shot up to 4.8 percent and 4.6 percent year-on-year in March and April 2006 respectively (reflecting a 23.0 percent fuel-price increase), marking the highest levels since 1998.

Having reached a decade-high of 3.6 percent in 2006, average annual inflation fell to 2.0 percent in 2007. However, base effects have turned less favorable in recent months and will contribute to a moderate acceleration in headline inflation over the course of 2008. High food and energy prices, coupled with fairly rapid income growth, are all contributing to heightened inflationary pressures. Relatively speaking however, Malaysia's inflation (forecast at 2.5 percent in 2008) remains among the lowest in Asia.

2.8.3 KEY ECONOMIC/BUSINESS RISKS

Risks

Thanks to a well-targeted export-oriented development policy, Malaysia has managed to transform itself from a primary commodity producer to a newly industrialized country (NIC) within two decades. Robust growth was interrupted by the 1997-98 Asian financial crisis, although its effects were contained by the imposition of capital controls and highly expansionary fiscal policies. Ongoing restructuring has since greatly strengthened the financial sector; the investment environment has been gradually liberalized, the fixed exchange rate abandoned, and most capital controls eliminated. Nevertheless, long-term challenges have become apparent in recent years as growth has moderated from the torrid rates experienced in the early 1990s. Investment flows have slowed notably as more and more investors are looking into establishing a presence in lower-cost countries. Indeed, the economy needs to move up the value-added chain to preserve its competitiveness against fast-growing markets such as China, India, and, more recently, Vietnam. The next development goal is to reach development nation status by 2020. However, deeper deregulation and increased openness of the labor market are required to strengthen the investment climate, promote innovation, and foster entrepreneurship for long-lasting growth. Signs of growing religious activism do raise a long-term concern over the country's ability to maintain social and ethnic harmony, which is crucially important for continued economic growth.

Business Risk Developments

- Corruption remains a significant problem, despite much-publicized government efforts to combat corruption, improve transparency, and lower red tape. In November, the prime minister responded to growing criticism by establishing a Royal Commission to probe a video clip revealing high-level judicial corruption. The World Bank has been quite critical of Malaysia's business environment, stating in a report that potential investors were faced with the arduous task of following 25 different procedures taking up to 281 days before being able to set up a factory. In addition, Malaysia only improved its ranking in Transparency International's 2007 Corruption Perceptions Index to 43rd, from 44th in 2006. It still ranks worse than in 2005, when it was placed 39th.

- Malaysia and Pakistan have inked a trade pact paving the way for substantial tariff cuts for industrial and agricultural products, according to Malaysia's Ministry of International Trade and Industry (MITI). The Malaysia-Pakistan Closer Economic Partnership (MPCEPA), which was signed in November, encompasses trade liberalization in a number of sectors including goods and services, investment, construction, tourism, intellectual property protection, healthcare, and telecommunications. Under the agreement, Malaysia will fully eliminate import duty by 2012 on some 74.5 percent of current tariff lines, while also reducing various import tariffs on 18 percent of tariff lines over the next five-to-seven years. Pakistan will in turn root out duties on 43.2 percent of tariff lines applicable to industrial and agricultural imports from Malaysia by 2012. Malaysia's major exports to Pakistan are palm oil, chemical, electrical and electronic products, machinery, and textiles. Pakistan's main exports to Malaysia are seafood, textiles and clothing, cereals, electrical, and electronic products, and chemicals. Malaysia's total trade with Pakistan last year reached 3.3 billion ringgit (US$991 million), with exports accounting for 3.1 billion and imports 217 million. The trade pact is set to take effect in January 2008.

2.8.4 EXPORTS AND IMPORTS

Natural Resources

Malaysia is fairly rich in natural resources, with much of its initial development built on commodity exports. Timber, palm oil, and rubber are abundant, and the country is one of the largest palm oil producers in the world. Thanks to a good-sized maritime coast, fisheries are also an important resource. Mineral resources include petroleum and natural gas (the country is a small net oil exporter) but reserves are fairly small. Among metallurgical deposits tin, copper, iron ore, and bauxite are the most significant.

External Sector

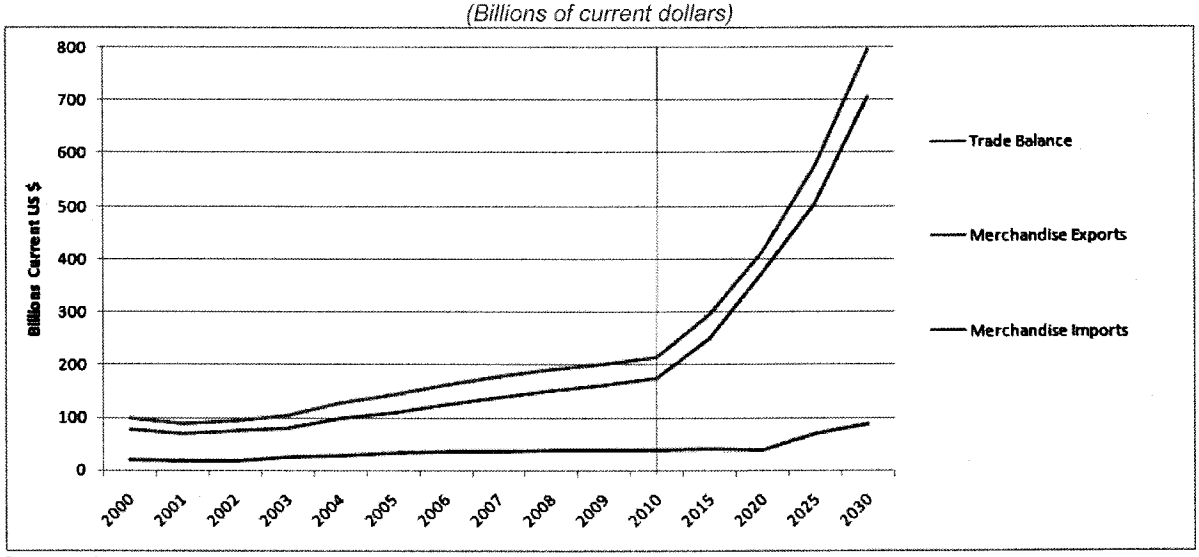
Combined, exports and imports account for 220 percent of GDP, which represents both a great advantage for the country and also a vulnerability. On the positive side, this openness has encouraged substantial investment in technology, allowing it to move up the value-added production chain, and forced the government to create a business-friendly environment, with fairly strong institutions and good commercial laws. On the other hand, it has directly exposed the country to the cycles of global demand, particularly to volatility in high-tech demand. Despite temporary setbacks, such as the 7.4 percent contraction in 1998 and the meager 0.3 percent growth in 2001, the Malaysian economy has generally been able to rebound quickly from these episodes. Export growth has been very strong over the last few years, averaging 15.3 percent a year in 2004-06.

The current account was in deficit throughout the 1990s but the currency devaluation that occurred during the Asian crisis inhibited domestic demand while boosting exports, so the current account switched into large surpluses almost instantly. Since then, an export-oriented growth paradigm and a slightly undervalued exchange rate have helped maintain large surpluses. In recent years, the surpluses surged to average 12.9 percent of GDP in 2003-05 and 16.3 percent of GDP in 2006.

Strong export growth kept the 2007 trade and current-account surpluses at near-record highs. Global Insight estimates a current-account surplus of about 12.8 percent of GDP in 2007, and about 9.4 percent in 2008. With trade and current-account surpluses expected to remain close to 16 percent and 10 percent of GDP respectively over the next several years, Malaysia enjoys one of the strongest external balances in the world. Chart 2.19 compares Malaysia's merchandise exports and imports.

Chart 2.19 Comparison of Malaysia's Merchandise Exports and Imports

(Billions of current dollars)



Source: Global Insight

Trade Profile

Malaysia's economy is one of the most trade-dependent in the world- the result of two decades of export-led growth. The U.S. is the largest export market, accounting for about a fifth of merchandise exports—a reflection of Malaysia's successful electronics industry. Otherwise, trade is highly concentrated within Asia: Singapore, Japan, and China are among the top trading partners by volume, and there are strong exchanges with Taiwan and Thailand as well. Electronics dominate both exports and imports, given Malaysia's strong focus on electronics and semiconductors industry, as well as large imports of intermediate goods that are re-exported following additional processing. Crude oil and natural gas exports are similarly matched by imports of refined petroleum products. Other major exports include various commodities such as wood and wood products, palm oil, and rubber. Table 2.8 below details Malaysia's main trade partners.

Table 2.8 Ranking of Malaysia's Major Trade Partners in 2005

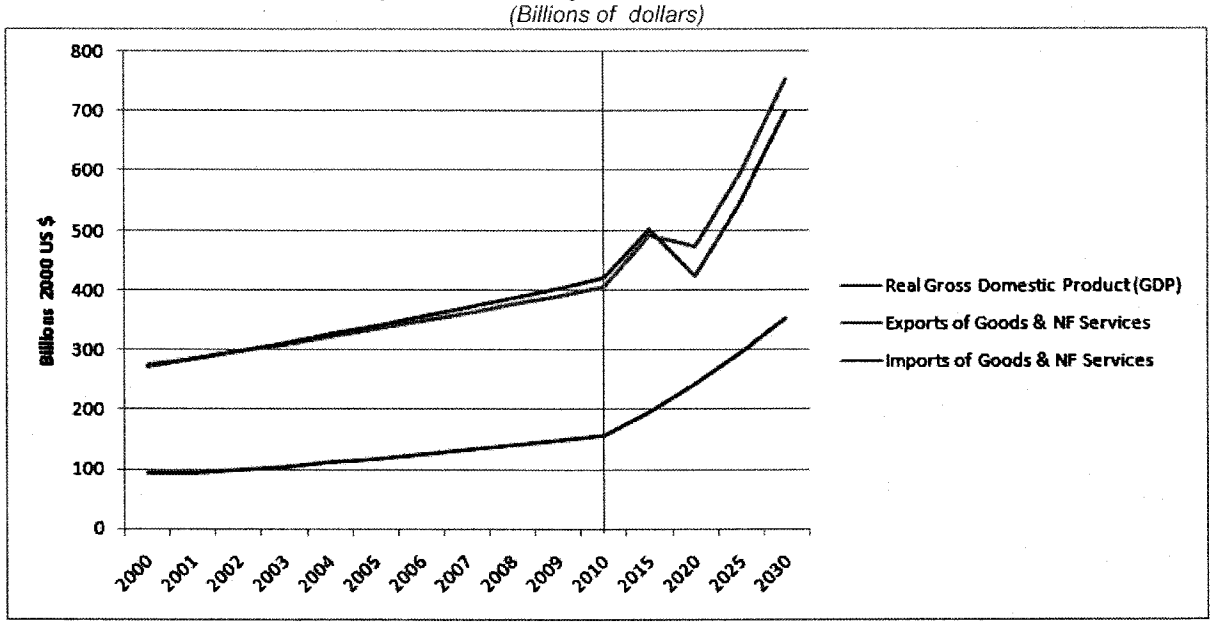
EXPORTS			IMPORTS		
Category	**Billions US$**	**% Share**	**Category**	**Billions US$**	**% Share**
United States	27.8	19.7	Japan	16.6	14.6
Singapore	22.0	15.6	United States	14.8	13.0
Japan	13.2	9.4	Singapore	13.4	11.8
China	9.3	6.6	China	13.2	11.6
Hong Kong	8.2	5.9	Thailand	6.0	5.3
Thailand	7.6	5.4	South Korea	5.7	5.0
South Korea	4.7	3.4	Germany	5.1	4.5
Australia	4.8	3.4	Indonesia	4.4	3.9
Netherlands	4.6	3.3	Philippines	3.2	2.8
India	4.0	2.8	Hong Kong	2.9	2.5

Source: Global Insight, from data supplied by IMF, Direction of Trade Statistics

Both Malaysia's exports and imports of goods and services are forecast to increase at a faster rate than real GDP in the long-term, although a pull-back is anticipated in the short-term, as shown in Chart 2.20. By 2030, exports are of goods and NF services are forecast to reach US$754 billion, with imports of US$697 billion.

Chart 2.20 Comparison of Malaysia's Real GDP and Imports/Exports

(Billions of dollars)



Source: Global Insight

2.8.5 INFRASTRUCTURE

Infrastructure Overview
The World Bank has graded Malaysia's infrastructure system as Category A, which is equivalent to the situation in industrialized Western European countries. The government has worked towards its further improvement. In mid-2006, Prime Minister Abdullah Ahmad Badawi unveiled a string of infrastructure projects to be carried out under the Ninth Malaysian Plan (9MP) 2006-10 worth a cumulative 15 billion ringgit (US$4.07 billion). The 880 projects include the construction of 450 new schools, inter-state and regional road building and other major infrastructure activities. As such, they mark a break from the "mega-projects" pursued under the government of Mahathir Mohammad, with expenditure being now focused on basic infrastructure and welfare initiatives.

Road
The country's road network is comprehensive and serves all parts of the peninsular, while road upgrading continues in Sabah and Sarawak. Highways afford safe and fast travel. Kuala Lumpur has increasingly suffered from congestion, but the opening of a light-railway system across the city has significantly alleviated the problem. Buses serve all of the country's significant towns.

Rail
The railway system relies on two key lines and their branch lines. The network is due for an upgrade, but rail travel is reliable, although somewhat slower than using roads. The capital Kuala Lumpur and its surrounding suburbs are served by an electrified commuter train service, the KTM Komuter. A containerized rail service known as the ASEAN Rail Express connects Kuala Lumpur with Bangkok (Thailand), and plans are underway to expand this into a Trans-Asia Rail Link that will one day include Singapore, Vietnam, Laos and Myanmar, before reaching a terminus in Kunming (China).

Maritime
As one of the littoral states along the vital Malacca Straits waterway, seaborne trade is Malaysia's economic lifeblood, and seven international ports serve as the arteries through which 95 percent of the country's international trade passes:

- Penang Port
- Port Klang
- Johor Port
- Port of Tanjung Pelepas (PTP)
- Kuantan Port
- Kemaman Port
- Bintulu Port

The Hong Kong-based publication Cargonews Asia ranked Port Klang and the Port of Tanjung Pelepas (PTP) among the region's top 10 seaports and top 10 container terminals. Port Klang's central location, and the government's determination to make it a national and regional hub, have led to steadily rising cargo volumes; the completion of the Westport will give it sufficient capacity to handle the projected cargo throughput of 130.5 million tons by 2010. Kuantan Port is currently undergoing a 30-year expansion project, to meet rising throughput from a large-scale petrochemical facility along the Kertih-Gebeng corridor.

Waterways
Malaysia has 7,200km of waterways, with a network of ferries ensuring their general accessibility. However, business travelers should be advised of the risk of maritime piracy and

other seaborne crime, especially along the Indonesian coast in the Malacca Straits, where piracy is a serious problem, the recent introduction of regionally integrated patrols.

Utilities
The Tenaga Nasional Bhd (TNB) is the state electricity utility company, and holds a monopoly on power generation, transmission and distribution across the Malaysian peninsula. In the island provinces of Sabah and Sarawak, responsibility for these functions falls respectively to the Sabah Electricity Board and Sarawak Electricity Supply Corporation. TNB currently services approximately four million industrial, commercial, mining and domestic customers.

The central government's Federal Public Works Department oversees general operations, but responsibility for the management and supervision of water utilities lies with individual state water authorities, such as State Public Works Departments, State Water Supply Departments and State Water Boards. These organizations are tasked with regulating water supply and the maintenance of waterways, water flows, pipelines and drainage. Overall, Malaysia's water supply consists of 97 percent surface water and three percent groundwater.

2.8.6 TRADE AGREEMENTS

ASEAN
The 10-member ASEAN is at the heart of Malaysia's regional foreign policy, bringing officials together with their regional counterparts in more than 300 meetings every year. Malaysia was one of the five co-founders of the group, along with Indonesia, Singapore, Thailand and the Philippines, when it was formed in 1967 to promote regional peace and stability through respect for judicial norms and adherence to the principles articulated in the UN Charter. Widening co-operation in economic, social, cultural and technical fields eventually facilitated heightened engagement, and the group has grown to include Brunei Darussalam, Vietnam, Laos, Myanmar and—most recently—Cambodia. The ongoing bilateral tensions between Malaysia and Indonesia have been dampened to some extent by ASEAN, which has provided a useful forum for not only conflict mitigation, but also mutually beneficial co-operation that renders military conflict far less likely.

Australia
An April 2005 summit meeting in Canberra between PM Anwar and his Australian counterpart John Howard marked the first such visit by a Malaysian leader in more than 20 years. While the trip resulted in renewed momentum towards a bilateral free-trade agreement (FTA), it did not achieve much by way of deepening the political relationship between the two countries, despite the apparent improvement. With bilateral trade in excess of US$10 million, moves towards an FTA with Malaysia would signal a strengthening of Australia's regional relations, and would underline the country's growing economic involvement with its neighbors.

Singapore
Positive momentum in Malaysia-Singapore relations has been particularly evident on the economic front, with Malaysia scrapping restrictions on Singaporean investment in some state-owned enterprises (SOEs), and planning to institute joint stock exchanges. The city-state's Temasek investment arm, along with GIC Group, poured almost US$1 billion into Malaysian investments during 2004; key deals included Temasek's acquisition of a five percent stake in Telekom Malaysia and GIC Real Estate's US$123-million purchase of a 70 percent stake in Johor Bahru City Square. Another bilateral deal, signed in July 2004, established a US$2.6 million working fund to help companies in both countries carry out feasibility studies and pursue joint missions, under the auspices of a Malaysia-Singapore Business Council. Singaporean

trade minister George Yeo told conference delegates, "Malaysian and Singapore businesses should actively combine their strengths to become more competitive globally."

United States
Trade and investment links have been particularly strong, and the U.S. is Malaysia's leading trading partner and largest source of FDI. While there has been steady growth in fields such as high technology, industrial automation, education/distance learning and medical products and services, the protection of Malaysia's service sector—particularly in financial services and the car industry—remains somewhat problematic. Trade relations were expected to improve further after the two countries started negotiations on a free trade agreement in early 2006; it is hoped that such a move will spur Malaysia's efforts to become a regional trade hub.

2.8.7 MARITIME PIRACY RISKS

The strategic significance of the Malacca Straits amplifies the risk factors at play in the waterway. No less than one-third of the world's trade passes through the channel along with the majority of the oil and natural gas that fuels north-east Asia's economies. Experts estimate that by 2020, the economies of the Asia-Pacific region will require up to 38 million barrels per day, most of which will be shipped in from the Persian Gulf. Japan already imports 80 percent of its crude oil from the Middle East, and ships carrying this economic lifeblood to Japan must first pass through the Malacca Straits. In a global economy, interlinked by overlapping networks of human, goods, capital and information flows, a disruption to "normal business" in one part of the network can spread rapidly to foment instability throughout the entire global economic system. Although plans to construct a US$7-billion oil pipeline cutting through northern Malaysia with the capacity of delivering 80 percent of the oil going through the channel via an alternative route have gotten under way in 2007, this project may not be workable in the near future and further faces high costs and operational problems.

July 2004 witnessed the start of a new regime of coordinated joint naval patrols between Singapore, Indonesia and Malaysia–the three countries bordering the Malacca Straits. An overall contingent of 17 warships set sail, marking the start of the "Malsindo" year-round patrol operation. The launching ceremony was presided over by each country's military chief, along with their naval commander. The next year, in 2005, Thailand joined the grouping, which decided to add aerial reconnaissance and air patrols as part of its maritime security remit. In response to concerns about sovereignty issues, it was agreed that each of the 5-7 ships from each country participating in the patrol would serve under its own nation's command, and be linked by a hotline enabling rapid communication in the event of a "hot pursuit" situation, from one country's territorial waters into another's. Under the agreement reached by the three governments, hot pursuit will be permitted, provided the request is first communicated to the host country. The creation of the Malaysian Maritime Enforcement Agency (MMEA) in late-2005 points towards further progress in regional co-operation, which has somewhat improved the precarious security situation in the Straits. The number of attacks thus fell to 12 during 2005, from 38 the previous year. However, while the launch of joint patrols represents a major step forward in the battle against seaborne crime in one of the world's most critical waterways, observers are concerned that senior military officials are not necessarily seeing eye-to-eye in terms of appreciating the nature of the threat they face.

2.9 VIETNAM

2.9.1 ECONOMIC INDICATORS

Outlook

Having reached a decade-high of 8.5 percent in 2007, the outlook for economic growth remains very favorable going into 2008, during which it should remain above 8.0 percent. Industrial production has been booming in recent years, thanks to large investments which have greatly expanded capacity. Demand for infrastructure expansion and the need to meet the ever-growing energy demands of the country have also contributed to rapid growth in the secondary sector. Domestically, consumer spending is being propelled by higher wages, large remittance inflows, and improved credit availability. The near and medium-term outlooks for private consumption are quite favorable. Fiscal policy will continue to support growth. While funding inflows (donor financing and worker remittances) provide ample financing sources, the speed at which trade deficits have widened in recent years is somewhat worrisome. On the upside, international donors strongly support Vietnam's poverty eradication efforts, so funding for growth-inducing infrastructure spending will continue to flow in. As a result, public spending will continue to support the economy, and budget deficits of around 4–5 percent of GDP are likely to continue over the next few years.

Investment activity continues to accelerate, fueled by booming foreign investor interest in the country. Indeed, FDI approvals have exceeded US$10.0 billion in 2006 and are estimated at around US$14 billion in 2007. Although actual FDI inflows remain significantly below approval levels, it is an undeniable fact that the greater presence of foreign investors benefits Vietnam's growth prospects, through qualitative improvements to the product line and higher export competitiveness. Indeed, the foreign-invested sector now accounts for some 15 percent of GDP and about half of merchandise exports.

Having subsided slightly in the early part of 2007, inflationary pressures have intensified again since late summer, sparking a number of administrative measures to control rising prices. Nevertheless, despite these moves inflation reached 8.3 percent in 2007, up from 7.7 percent the year before. Although much of the increase was related to higher food prices in response to supply constraints, other areas, including housing and construction materials have also experienced strong inflationary pressures. Global Insight expects inflation to reach double digits in 2008, before easing back into the 6-8 percent range in subsequent years.

Table 2.9 below details the compound annual growth rates for a number of key indicators. The forecasts project that Indonesia will experience a slight decrease a in annual GDP and population growth rates, with population growth rates between 2020 and 2030 forecast to decrease by almost one-third of current levels.

Table 2.9 Comparison of Vietnam's Key Economic Indicators
(Percent Change)

Key Compound Annual Growth Rates	2000-08	2010-20	2020-30
Gross Domestic Product (GDP)	7.8%	6.9%	6.1%
Exports of Goods & NF Services	14.5%	7.9%	7.8%
Imports of Goods & NF Services	19.0%	6.8%	6.6%
Total Population	1.4%	1.1%	0.8%
Real Per-Capita GDP	6.3%	5.7%	5.2%

Source: Global Insight

Domestic Assumptions

- Tighter credit conditions worldwide have a marginal negative impact on Vietnam's economic performance in 2008.
- Monetary tightening by the central bank does not preclude further increases in inflation.
- Macroeconomic reforms continue and the investment climate improves, as Vietnam moves to become an alternative investment destination to China.
- Exchange-rate controls are slowly relaxed over the medium term, but the currency is not allowed to float freely.
- Substantial FDI and foreign aid inflows allow trade deficits to be maintained into the future.
- WTO membership and the associated decline in import tariffs will lead to a widening of trade deficits over the medium term.

2.9.2 ECONOMIC GROWTH OUTLOOK

Short-term Outlook

Global Insight forecasts that the economy's momentum will remain very strong in 2008. Recent data on FDI inflows are a harbinger of the galvanizing effect of WTO membership, as they revealed a massive surge in foreign investment commitments immediately after the accession was formalized. Concurrently, fiscal policy will continue to support growth, as funding inflows from foreign donors make budget deficits easier to finance. As capacity is boosted by high levels of investment spending, Global Insight expects real GDP to expand by 8.3 percent in 2008 and by 8.0-8.3 percent for several years thereafter.

Medium- and Long-Term Outlook

Significant structural reforms have resulted in impressive economic growth in the past decade, as well as a notable increase in living standards. Exports rose more than twentyfold between 1991 and 2007, and per-capita income increased eight-fold, leading the United Nations Development Program to name Vietnam "the most successful transition economy of the past decade". With economic reforms likely not only to continue, but also to accelerate, the medium-term outlook appears very positive for this "new tiger" among Asian economies. As part of its reform efforts, Vietnam has been nurturing closer trade relations with its neighbors in the ASEAN, as well as Europe and the United States. Negotiations to join the WTO were successfully completed in November 2006. This will help improve the regulatory environment, and further galvanize investment inflows.

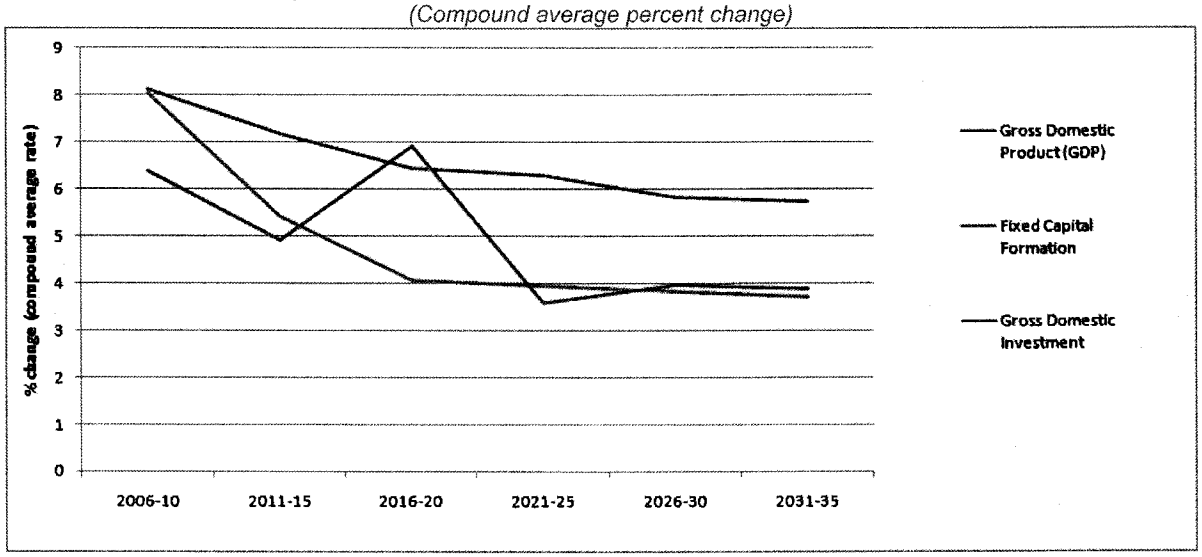
Over the longer term, political stability and effective reform implementation are critical to Vietnam's growth profile. Temporary stumbles and slowdown of the reform momentum may occur, but the evident benefits of economic opening suggest that the political will to continue the process will be found. Global Insight is therefore confident about Vietnam's long-term economic performance, and expect real GDP growth to average 7.5 percent annually through to 2015. Natural resources, such as oil and gas, fisheries, phosphates, significant agricultural and hydroelectric potential, and the country's large and well-educated labor force are bound to attract significant investor interest in the future. Furthermore, China's experience with macroeconomic reform provides a real-life case study of transition from a controlled economy to a market-based economy, which might help avoid costly policy mistakes.

Risks remain. Still, the sheer complexity of the reform process poses significant risks. The state still retains a major economic presence (accounting for some 40 percent of GDP) and its dominance in the financial sector is effectively undermining the quality of bank lending, crowding out private investment, and posing long-term challenges to banking-sector sustainability. In addition, reform of state-owned enterprises remains inhibited by concerns over associated socioeconomic dislocations and their impact on the legitimacy of the Communist Party. Growing regional economic disparities are another source of potential discontent. Increased trade openness, especially in the aftermath of the WTO accession, will expose efficiency shortfalls in state enterprises, causing corporate bankruptcies and mounting layoffs, which could trigger a popular backlash against reforms. Both fiscal and monetary-policy environments are expected to encounter difficulties in the future. Indeed, current high levels of inflation pose a risk to macroeconomic stability. Budgetary pressures will similarly increase in line with the escalating social costs of reform, and will do as a result of larger fund injections to recapitalize the state banks. The adoption of new prudential regulations will expose banking-sector vulnerabilities and inevitably lead to consolidation as a means of improving balance-sheet positions. The eventual relaxation of foreign exchange and capital controls would increase exchange-rate volatility.

The following chart (2-2.21) compares the compound average percent change over five year increments for GDP, fixed capital formation, and gross domestic investment. The percent change in gross domestic investment is forecast to fluctuate rapidly over the next 20 years, ranging from a low of 3.6 percent to a high of 6.9 percent. Both GDP and fixed capital formation are forecast to decrease from a compound average rate of 8.0 percent in the short-term to 5.7 percent and 3.9 percent respectively by the 2021-35 period.

Chart 2.21 Comparison of Change between GDP, Fixed Capital Formation and Gross Domestic Investment in Vietnam

(Compound average percent change)

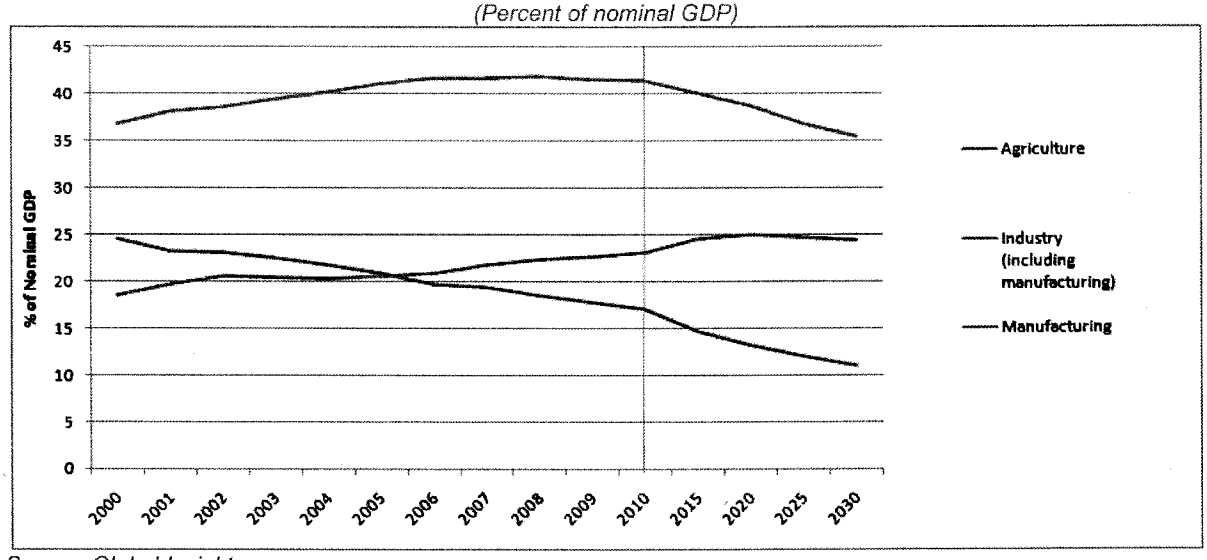


Source: Global Insight

Chart 2-2.22 below compares the percentage share of nominal GDP that is attributable to the agriculture, industry, and manufacturing sectors. Note that the manufacturing sector is a subset of the industry sector, in which it accounts for slightly under a half of the total. The sector share of agriculture is forecast to continue decreasing, from 18.6 percent in 2008 to 11.1 percent by 2030. While the total share contributed by industry will drop in the long term, the proportion of this that is made up by manufacturing will continue to increase, accounting for over two-thirds by 2030.

Chart 2.22 Vietnam's Sector Share in GDP Factor Cost

(Percent of nominal GDP)



Source: Global Insight

Current Economic Conditions

Vietnam's economic growth has been steadily improving from the low point reached in 1999. Growth has picked up in recent years, despite temporary shocks, such as the SARS epidemic, as economic diversification has increased resilience to unfavorable demand shocks. Ongoing efforts to open up the economy and the expansion of the private sector have fostered economic activity. Rising levels of foreign investment have facilitated technology transfer and improved the overall quality of goods being produced in the country. A bilateral trade treaty with the United States has further boosted industrial output and exports. The United States has now replaced Japan as the most important Vietnamese export destination, usurping a decades-old hierarchy. Economic growth has surpassed 7.0 percent annually since 2002, placing Vietnam among the fastest-growing countries in the world. With increased private and foreign investment activity, the manufacturing sector has made great progress; construction and mining activities have also expanded at a rapid rate, becoming the major sources of growth.

Thanks to rapid growth in the industry and construction sectors, the Vietnamese economy grew by 8.4 percent in 2005, 8.2 percent in 2006, and 8.5 percent in 2007. Momentum accelerated thanks to strong growth in the industry and construction sectors, reflecting robust domestic and foreign investment. Rising income levels, which are due to the economy's rapid development, are boosting private consumption. Retail sales—a proxy for household spending—have been surging for several years now, with annual growth rates of 15-20 percent. Emerging middle-income groups in urban areas are spearheading the development of private consumption, with further grist provided by robust remittance inflows.

Consumer Demand

Consumer spending has been on a strong upward trend in recent years, propelled by higher wages, large remittance inflows, and improved credit availability. As a result, the growth in retail sales has accelerated every year since 2000, and has surpassed 20 percent a year since 2005. The latest estimates indicate a 23.3 percent gain for 2007. Rapid liquidity growth has also helped fueled a surge in consumer durable sales: for instance, passenger-car sales were up 145 percent year-on-year during the first nine months of 2007.

The near and medium-term outlooks for private consumption remain very favorable, thanks mainly to rapid wage increases, both in the public as well as the private sectors. Some staffing agencies estimate wage increases of about 12 percent in 2007, partly due to growing skilled-labor shortages in the country. In addition, higher mandatory minimum wages, part of the government's resolve to lift living standards, coupled with expansion of financial services and improved credit availability bode well for consumer spending over the medium term. The net result will be a consumer spending boom over the medium term, with retail sales projected to grow by double digits over the next several years. Vietnam will increasingly become an attractive destination as a market in itself, rather than the traditional role of a manufacturing platform which it has performed for the last decade.

Capital Investment

Investment spending has been a major contributor to growth in recent years, and its prominence has increased recently thanks to large inflows of FDI. FDI approvals surged by nearly 50 percent in 2005, topping US$5.5 billion (higher than the full-year target of US$4.5 billion). They are estimated to have exceeded US$10 billion in 2006 and US$14 billion in 2007. While actual FDI inflows remain significantly below approval levels, it is an undeniable fact that the greater presence of foreign investors benefits Vietnam's growth prospects, through qualitative improvements to the product line and higher export competitiveness. Indeed, the foreign-

invested sector now accounts for over 15 percent of GDP and about half of merchandise exports. The granting of permanent normal trade relations status by the United States in December 2006 has also bolstered FDI inflows from that country, building on the United States' already heavy commercial involvement in Vietnam. As an illustration of these links, in 2006 U.S. computer-chip giant Intel Corp. announced plans to invest US$1 billion in a Ho Chi Minh City plant, while Lockheed Martin Corp. was tasked with overseeing the construction and launch of Vietnam's first satellite.

WTO membership will ensure a greater degree of predictability in the investment climate, reinforcing the reform agenda. FDI is subsequently pouring into export sectors to capitalize on the country's low operating costs—a model which is set to keep growth in the 8.0 percent range over the medium term.

Labor Markets

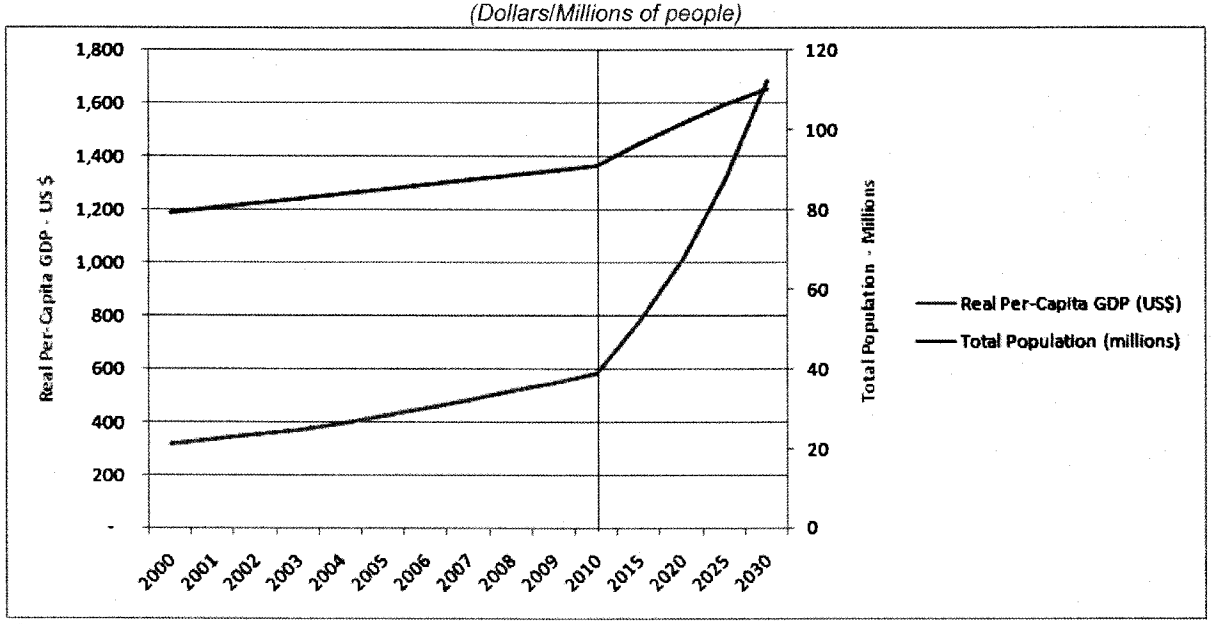
Vietnam has a large pool of comparatively well-educated labor at its disposal, although a shortage of skilled workers—particularly in the south—is a problem. The literacy rate is comparatively high for a country of low income (93 percent of adults above the age of 15)—a positive legacy of the Communist era. This, combined with a cultural inclination toward valuing education, bodes well for the future. A positive work ethic is also likely to benefit the country's economic development. It is currently estimated that by 2010, given the influx of young workers into the workforce, 64.4 percent of the population will be working, compared with the current rate of 53.4 percent. Furthermore, the authorities announced in February 2006 that they intend to create eight million new jobs by 2010. Concerted efforts are being made to address educational and training shortfalls, with the aid of the international community and foreign investors. The World Bank announced in October 2005 that it would provide the government with a grant of US$50 million, with the aim of improving areas in which schools fall below minimum standards.

Vietnamese authorities announced a massive increase in the minimum wage for the private sector in January 2006, which was to take effect on the first of February. They argued that the move was necessary to reflect changing economic conditions, including growth, the consumer price index, and labor supply and demand. However, most observers agreed that the decision to increase wages probably resulted from a series of large-scale strikes in the south of the country, which were described as the worst in 30 years. Workers in the region had taken particular exception to the pay and conditions offered in Asian joint-venture partnerships. Neighboring Asian countries such as Hong Kong, Singapore, and Taiwan have been attracted to Vietnam because of its competitive costs. Unfortunately for the authorities, strikes continued, despite the wage increase. Furthermore, the wage increase reportedly angered investors because it was authorized without negotiation.

The gradual increase in Vietnam's population will be accompanied by a much faster increase in real per-capita GDP, as indicated on Chart 2.23 below. Real per-capita GDP is forecast to reach US$1,685 by 2030, an increase of 228 percent from 2008.

Chart 2.23 Comparison of Vietnam's Population and GDP

(Dollars/Millions of people)



Source: Global Insight

Inflation

Following a deflationary episode in 2000-01, prices have undergone notable increases in recent years. The avian flu outbreak, high global oil prices, and rising domestic wages have pushed consumer prices sharply higher. Vietnam's CPI basket is heavily skewed toward food items (even though their share was reduced to 40.0 percent to minimize the bias), which makes it very sensitive to swings in rice prices. Due to this sensitivity, the CPI also tends to be quite volatile. For most other countries, a five-percentage-point swing in the annual inflation rate within the span of six months would be viewed as a "crisis" situation. However, in Vietnam, this has happened several times since the mid-1990s, without any major economic effect. Due to the factors mentioned above, inflation accelerated from 3.1 percent in 2003, to 7.8 percent in 2004, and to 8.3 percent in 2005.

Inflationary pressures intensify. Having subsided slightly in the early part of the year, inflationary pressures have intensified again over the summer, mostly in response to a surge in food and housing costs. As of December 2007 the headline CPI inflation rate rose to 12.6 percent—the highest in a decade. The stubborn increase in inflation has sparked a number of administrative measures aimed at controlling rising prices. For instance, the government slashed import tariffs on several types of goods, including completely built cars, which saw tariffs fall from 90 percent to 60 percent. Nevertheless, despite these moves inflation averaged 8.3 percent in 2007.

Due to very strong upward pressures on food prices, headline inflation will likely reach double digits in 2008, despite repeated government efforts to control prices and recent monetary tightening by the central bank. Until food supplies improve globally—especially for commodities such as pork and rice—which account for a large share of Vietnam's CPI basket, it is unlikely that any administrative moves by the government will be successful in precluding further increases in inflation. In addition, rapid wage growth and a growing trade deficit are signs which

point to a potential overheating problem in Vietnam's economy, which would further exacerbate inflationary pressures in the near term.

2.9.3 KEY ECONOMIC/BUSINESS RISKS

Risks

Since the start of the doi moi (or "renovation") reform program initiated in the early 1980s, Vietnam has made great progress toward a market-oriented economy. Dogged by political interference in the mid-1990s, restructuring has regained impetus following leadership changes in April 2001. A major milestone has been the normalization of trade relations with the United States in 2001, while entry into the WTO was achieved in 2007. An emphasis on export-oriented growth led to a fivefold increase in exports over the past decade. Social indicators have improved markedly, leading the World Bank to declare Vietnam as the most successful transition economy of the past decade. Nevertheless, significant obstacles remain. The state still retains a major economic presence (accounting for some 40 percent of GDP) and its dominance in the financial sector is effectively undermining the quality of bank lending, crowding out private investment, and posing long-term challenges to banking sector sustainability. Infrastructure development has not kept up with economic growth, leading to costly bottlenecks and pushing operating costs higher than in other countries in Asia. The education system is in dire need of business-oriented reforms to address skilled labour shortages that are increasingly becoming a top investor concern. In addition, reform of state-owned enterprises (SOEs) remains inhibited by concerns over associated socio-economic dislocations and their impact on the legitimacy of the Communist Party. Growing regional economic disparities are another source of potential discontent. Despite these constraints and possible stumbles along the way, advances on the path of further reforms are assured.

Business Risk Developments

- Privatization will accelerate in 2008-09. The State Bank of Vietnam has set new regulations for non-listed commercial banks to sell banking shares to foreign investors, according to a report by local newspaper, Vietnam News. These regulations follow the government's decision in April to raise the cap for shares held by foreign investors in local joint stock banks from 10 percent to 15 percent. The total foreign ownership ceiling was re-established at 30 percent, while the maximum stake that a non-strategic foreign investor can hold was set at five percent for an individual and 10 percent for a bank. They also come ahead of the initial public offering of the state-owned Bank of Foreign Trade of Vietnam (Vietcombank) on 26 December, becoming the first state-owned bank in Vietnam to do so. This is expected to spark a wave of large-scale privatizations in the Communist-ruled country. Reform of the state-dominated financial sector along more commercial lines remains critical to support long-term growth. Inefficient allocation of capital continues to undermine growth in the productive private sector while fueling financial imbalances from non-performing loans generated in the state sector.
- International donors pledged US$5.4 billion in official development assistance (ODA) to Vietnam for 2008, an increase of 20 percent over the previous year, at the 2007 Consultative Group Meeting for Vietnam in Hanoi. More than half the funds will go to infrastructure. Officials noted that the pace of implementation would be accelerated following less than US$2 billion being dispersed in 2007 due to bureaucratic delays. In return, donor countries have demanded that Vietnam abide by its commitments as a member of the World Trade Organization, which it joined in 2007, and ensure that political reforms keep pace with economic reforms, notably on the issues of human rights, corruption, and protecting the environment.

2.9.4 EXPORTS AND IMPORTS

Natural Resources

Natural resources have been a major contributor to growth. Mineral deposits are Vietnam's most important natural resources. These include extensive coal reserves, as well as deposits of iron ore, tin, copper, lead, zinc, nickel, graphite, silica sand, and limestone, along with many others. Thanks to these endowments, the mining sector has developed into one of the country's main industries. In addition to coal and other minerals, Vietnam is also endowed with sizable crude oil reserves. The country is the third-largest crude oil producer in South East Asia after Indonesia and Malaysia; it exports all of its production, as it lacks any refineries. In the early 1980s, Vietnam began exploring an offshore oil reserve near the Mekong River delta; to date, more than 600 million barrels of crude oil have been recovered. Most of this oil is being exported primarily to Japan and other Asian countries. This may change soon, however, since Vietnam is aggressively moving to establish a domestic refining industry. Fish is another important resource and a main export commodity.

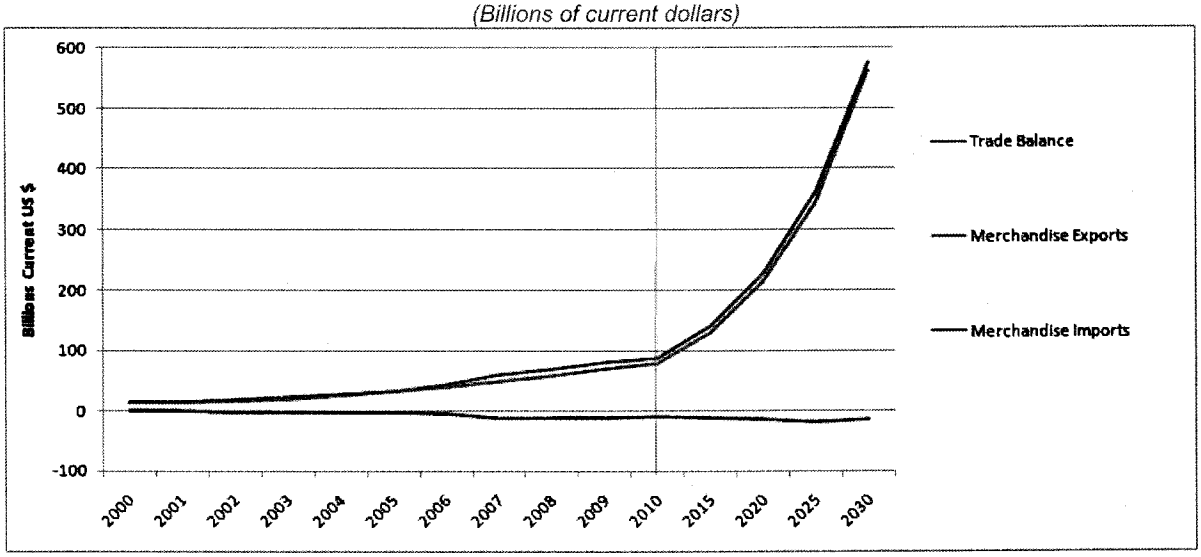
External Sector

Massive worker remittances have helped tilt the current account into surplus. Revised data on Vietnam's current-account position show a trend of smaller deficits than were previously estimated. Indeed, compared with deficits of several billion dollars, the latest figures show a shortfall of less than US$1 billion in 2004—about 2.1 percent of GDP. In 2005, even though the trade balance remained in deficit, the current-account balance moved into surplus (for the first time since 2001) in response to a surge of worker remittances and private transfer inflows from abroad, estimated at about US$4 billion. Given the growing number of Vietnamese working abroad and the large size of the expatriate Vietnamese community, these inflows are likely to accelerate further in coming years. The trade balance itself, however, has been experiencing widening deficits in the last few years, fueled by surging intermediate goods imports. For 2007, for instance, the shortfall is estimated to have more than doubled to US$12.6 billion, due to a 35 percent increase in imports.

The trade and current-account deficits will persist, but Vietnam will avoid financing difficulties. Following Vietnam's recent accession to the WTO and the required easing of import restrictions associated with its membership, Global Insight expects imports to accelerate in coming years. This would result in persistent trade and current-account deficits over the medium term. However, given that a fair share of these imports represent capital goods, and in light of the country's substantial FDI inflows, Global Insight believes these deficits are unlikely to pose sustainability problems as long as the government remains committed to economic reforms, and thus, investor sentiment remains positive. Chart 2.24 compares Vietnam's merchandise exports and imports.

Chart 2.24 Comparison of Vietnam's Merchandise Exports and Imports

(Billions of current dollars)



Source: Global Insight

Trade Profile

Trade becomes increasingly important as Vietnam integrates in the world economy. With the gradual opening of its economy, Vietnam's external trade surged in the late 1990s. Exports increased five-fold over the past decade, being estimated at roughly $40 billion in 2006. Trade with the United States has soared following a bilateral trade agreement in 2001, and the United States is now Vietnam's main export market, overtaking Japan. With Vietnam's recent accession to the WTO and the granting of permanent normal trade relations with the United States, external trade is set to expand at a rapid rate in coming years.

Raw materials and low-tech manufacturing goods top exports. Rice, Vietnam's primary agricultural product, is also one of its main exports. Other export commodities include crude oil, marine products, coffee, rubber, tea, garments, and shoes. Japan, China, Germany, Australia, the United States, France, Singapore, and the United Kingdom are all major export partners, with Japan being the single-largest importer of Vietnamese oil. Equipment and machinery are among the most important imports, together with petroleum products, fertilizer, steel products, raw cotton, grain, cement, and motorcycles. Primary import partners include Japan, Singapore, South Korea, Taiwan, China, and Thailand. Trade with the United States is expected to take off significantly over the next several years, following the normalization of trade relations between these former enemies. Table 2.10 below details Vietnam's main trade partners.

Table 2.10 Ranking of Vietnam's Major Trade Partners in 2005

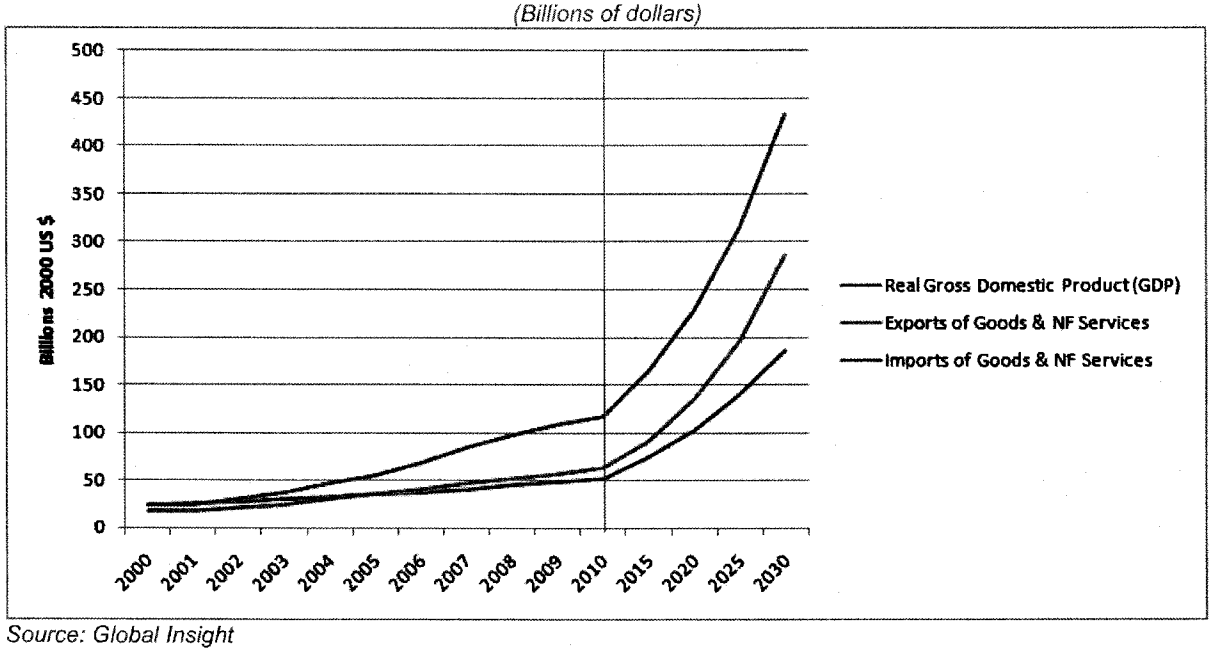
EXPORTS			IMPORTS		
Category	**Billions US$**	**% Share**	**Category**	**Billions US$**	**% Share**
United States	5,930.6	18.3	China	5,778.9	15.6
Japan	4,411.2	13.6	Singapore	4,597.6	12.4
China	2,916.0	9.0	Japan	4,093.0	11.1
Australia	2,570.2	7.9	South Korea	3,600.5	9.7
Singapore	1,808.5	5.6	Thailand	2,393.2	6.5
Germany	1,086.7	3.4	Malaysia	1,258.6	3.4
United Kingdom	1,015.8	3.1	Hong Kong	1,235.8	3.3
Malaysia	949.3	2.9	Switzerland	893.4	2.4
Philippines	829.0	2.6	United States	864.4	2.3
Thailand	779.7	2.4	Russia	768.0	2.1

Source: Global Insight, from data supplied by IMF, Direction of Trade Statistics

Both Vietnam's exports and imports of goods and services are forecast to increase at a faster rate than GDP, with imports in particular expected to increase rapidly, as shown in Chart 2.25. By 2030, exports are of goods and NF services are forecast to reach US$286 billion, with imports of US$434 billion.

Chart 2.25 Comparison of Vietnam's Real GDP and Imports/Exports

(Billions of dollars)



Source: Global Insight

2.9.5 INFRASTRUCTURE

Infrastructure Overview

Vietnam's infrastructure has yet to recover from the ravages of war three decades ago, and a subsequent lack of investment under the communist command economy. The government is aware that the state of the country's infrastructure is an impediment to foreign investment, and resources are being targeted towards numerous projects. Underlining the problem, the authorities downgraded their FDI projections in January 2006 because of infrastructure problems and legislative changes.

A request made by Hanoi's People's Committee to both the planning and investment ministry and the finance ministry provides an indication of the scale and diversity of these projects. In August 2005, the committee called for funding to conduct several projects in and around the capital, including the clearance of sites for a third ring road to be constructed around the city, the construction of an elevated rail network, work on a number of bridges, and the construction of a new drainage system. Underlining the scale of this work, it was reported during the same month that the government disbursed US$2.3 billion for infrastructure investment in the first eight months of the year. However, the whole sector struggled with increasing oil prices during 2005, which have resulted in losses for all transport providers.

More broadly, the authorities unveiled a 15-year infrastructure plan in December 2004, in which it was decided that: five percent of urban land will be used for public services; 25-35 percent of land in cities will be assigned for transport use; public transport will be expected to meet 50 percent of all traffic demands; 80 percent of the population will have access to safe water supplies, rising to 90-100 percent by 2020; and all areas will have a functioning, standardized drainage and water treatment system, also by 2020. Nationwide, the aim is for per capita housing acreage to be 10-12 square meters (sq.m.) by 2010, rising to 18-20 sq.m. over the following decade. No details were released regarding the costs involved.

This sort of large-scale upgrade of infrastructure is characteristic of both policy and need. Project details are being released almost continuously alongside projections of future costs and program timescales. An example of this came in July 2006, when the authorities announced that US$28 billion was to be targeted on the Mekong Delta up to 2011 to improve infrastructure to attract investment.

Road

There is a dense road network in Vietnam, but a combination of the war and years of neglect mean that the road infrastructure is very poor. Secondary roads become virtually impassable in the rainy season and many rivers can only be crossed by ferry. Although 40 percent of freight traffic travels by road, this tends to be for short journeys only. Work is also being undertaken to enhance the network. An improvement of the main highway between Ho Chi Minh City and Hanoi, which is currently hopelessly overburdened, could provide relief, but increasing traffic volumes could negate any increase in road capacity.

The long country's lack of decent north-south road links particularly hinders economic growth. However, the Vietnamese government has made infrastructure development a priority area and, with the help of international assistance, progress is being made. The construction of bridges in the Mekong Delta, the upgrade of roads towards the Cambodian border, and, most importantly, the enhancement of Highway 1—the main north-south road—will lead to improvements in the longer term. Providing examples of the type of project with which the international community becomes involved, there are currently a couple of large-scale projects under way. One such

project involves the upgrade of more than 1,500 km of roads in northern areas, while the second scheme, funded by the World Bank, is designed to improve the quality of the nationwide road network.

Rail

The railway system, although 2,600 kilometers in length, is more suited for leisurely exploration than efficient transport. Trains are old and very slow, plying six main routes: Hanoi-Ho Chi Minh City, Hanoi-Haiphong, Hanoi-Muc Quan, Hanoi-Thanh Hoa, Hanoi-Lao Cai and Dong Anh-Thai Nguyen. The Hanoi-Ho Chi Minh journey takes a minimum of 40 hours. However, in 2002, Vietnam Railways submitted a plan for the development of the country's rail system. The proposals are in two phases: the upgrade of existing line, followed by the creation of an urban rail network in the major cities, alongside an express service nationwide. This would include the construction of a high-speed railway between Hanoi and Ho Chi Minh City. In August 2005 it was reported that a consortium of three Japanese rail service companies had been named as consultant for a project aimed at upgrading the rail network between the two cities. In a further development, it was announced in February 2007 that the state-owned Vietnam Railways would be responsible for the project, but with considerable external funding, particularly from Japan and donors like the Asian Development Bank. The cost was given as approximately US$33 billion, with a completion date of 2013. Connections between Hanoi, Dong Dang and Hai Phong, Ho Chi Minh City and Vung Tau as well as Can Tho are also penciled in for major developments, to be partly financed through state bonds and development assistance. However, given the ambitious nature and the costs of these plans, it will be years before those proposals come to fruition. The plan envisages the government investing US$11bn by 2020.

The government approved plans in September 2001 to build an underground metro rail system in Ho Chi Minh City. The plan resurfaced again in October 2004, with the government announcing that it was pursuing a feasibility study for the construction of two subway lines, each expected to be 21km long. This would provide the basis for a broader system, ultimately envisaged to have six lines. The project's cost is an issue, with initial estimates reaching US$800m, 70 percent of which the government would be seeking in the form of donor aid. Another project that is also in the planning stage is a new tram system for Hanoi. The city was served by a tram network until the late-1980s, when the system was scrapped by authorities. In an inexplicable policy reversal, the same authorities are now seeking to have a new system in place by 2007, which most observers agree is optimistic, and will be using a loan and construction aid from France worth US$200m. Rail infrastructure spending in Hanoi is growing. In February 2006 it was revealed that the Vietnam Railway Corporation (VCR) had budgeted almost US$40 million worth of investment for 2006 alone, up 35 percent on the previous year. In addition to all this, information has been released during 2006 regarding rail routes in Hanoi itself. In June it was announced that six new rail routes would be built in an attempt to counter traffic problems and pollution, while in August it was announced that a part-elevated route would be built, costing US$54.3 million. April 2007 saw the authorities approve the construction of an urban rail line in Ho Chi Minh City, with an estimated cost of more than US$1 billion. The 19.7km line will link the central Ben Thanh market with Di An district (Binh Duong province), with part of the line routed underground. The Japan Bank for International Co-operation is expected to fund more than 80 percent of the work.

Meanwhile, projects are materializing countrywide. A new rail link from Ho Chi Minh City to My Tho is expected at a cost of US$444 million, aimed at linking the southern hub with the Mekong, with 2015 given as the completion date. A north-south express rail route, costing more than US$30 billion, is expected to be constructed by 2016. This would cut the journey time between the capital and Ho Chi Minh City down to 10 hours from 30. In addition to the new rail lines, the

authorities are looking to construct a number of high-speed routes. Between 2010 and 2015 it is envisaged that four such routes will be constructed: between Hanoi and Hai Phong, Hanoi and Vinh, Ho Chi Minh City and Vung Tau, and Ho Chi Minh City and Nha Trang.

In an attempt to fuel rail-transport usage, the authorities in March 2006 lowered rail transit fees by 40 percent for cargo. Current plans envisage the rail sector meeting 25-30 percent of cargo transport and 20-25 percent of passenger transport by 2020. In 2005, the sector transported more than 8.7 million tons of cargo and more than 12 million passengers.

Maritime

Vietnam has seven international seaports. The main ones are Haiphong (in the north), Ho Chi Minh City and Da Nang. There are also five special ports for the shipment of oil and coal only. Port expansion has not kept up with increases in trade volume, and the ports are characterized by antiquated equipment and limited storage space. However, some improvements have been made, making the whole system more competitive.

In January 2006, the authorities announced their decision to construct a military port at Haiphong. Work on the US$500 million development will begin in 2007, and the facility will ultimately provide the navy with a second deep-water port (the other being in Cam Ranh). The port will also handle commercial traffic. The move comes against a backdrop of efforts to increase investment in the shipping sector; legislation is in place to encourage this sort of investment, but most domestic companies lack the finances to pursue the opportunity. As a result, joint-venture partnerships are necessary, and the industry is therefore keen to offer a number of incentives in its attempts to capture greater levels of foreign investment. Alongside this, the government is also under pressure to invest more substantially in the attendant infrastructure, providing the associated road networks and utilities that a port requires. In other developments, it was announced in July 2006 that the authorities had given permission to develop a general port along the Thi Vai River in the southern province of Ba Ria-Vung Tau, with work expected to begin in 2006, at a cost of US$191.7 million. This is one of a number of port projects along the river, some of which are already partly constructed. The province is expected to become the Southern Focal Economic Zone's gateway to international shipping lanes. It is envisaged that ports in this region will have the capacity to handle around 14.5 million tons of cargo by 2010 and 41 million tons just 10 years later. Separately, a deepwater container port is under construction in the central province of Quang Ngai, as is the US$230-million Saigon Premier Container Terminal. The latter is a joint venture between P&O and a state-owned company. The terminal, which will have a capacity of 1.5 million TEUs annually, is expected to come online in 2008.

Waterways

The country has over 17,000 km of waterways, more than 5,000 km of which are navigable at all times. Waterways have traditionally played an important role in the transportation of people and goods, and their usage is again increasing, although poor maintenance has had a negative impact on their operation.

Utilities

Electricity output is rising, but the authorities continue to struggle to match demand, not least because much of the country's energy supply is exported. As a result, power cuts are frequent, and large parts of the country remain beyond the reach of the national grid. A scheme is currently under way to link rural communities to the grid by 2010. Parliament passed draft legislation in late-2004 calling for the market to be opened to competition and providing incentives for the development of renewable energy resources. However, these moves will take

years to come to fruition. In the interim, the authorities will continue to upgrade existing infrastructure and bring new hydropower plants on line. The authorities brought a second north-south power transmission line into operation in October 2005, in an attempt to counter power shortages in 15 northern provinces. It was announced in December 2005 that work had started on the construction of the country's largest-ever hydro-electric project. The 2,400MW complex is being built in the northern Son La province, and is expected to begin generating electricity in 2012.

There are water supply problems across the country. One scheme found that just 129 of more than 400 urban centers were served by piped water, and much of this was of poor quality. It therefore comes as little surprise that waterborne diseases are a significant health problem, accounting for 20-30 percent of child mortalities.

2.9.6 TRADE AGREEMENTS

ASEAN

Membership of ASEAN forms one of the keystones of Vietnam's diplomacy, ironic given that the organisation was formed in 1967 to contain Communist expansionism. On joining ASEAN in 1995, the regime established an international platform unencumbered with Western reservations over human rights. ASEAN provides a vital vehicle for integration with the Asian region and base for the development of inter-regional economic relations. ASEAN has provided Vietnam with enhanced bargaining power, even though it seems unlikely to provide a counterweight if conflict with China erupted.

WTO

Vietnam won acceptance into the WTO in November 2006, with its final accession secured before the year's end. Negotiations began in 1995, but have been hampered by myriad problems. Vietnam's external sector is broadly competitive, but inefficiencies persist in the domestic economy, reflecting the dominant role of the state. Reforms are needed to change the role of the state and release resources to the vastly more productive private sector to help the economy fulfill its long-term potential.

2.9.7 NATURAL HAZARD RISKS

Flooding is common in many areas of Vietnam. However, central Vietnam is particularly badly affected by seasonal floods, which often occur in late October/November, and transport links are disrupted more or less regularly at these times. Severe flooding leads to seasonal disruption of major highway links in Central Vietnam. The Mekong delta and its infrastructure are also frequently affected by flooding.

2.10 INDIA

2.10.1 ECONOMIC INDICATORS

Outlook

Exceptionally strong growth will continue to characterize the Indian economy despite a slight moderation in fiscal 2008, and Global Insight expects continued robustness in the near and medium terms. The country's recent economic performance has been stellar, with GDP growth averaging 7.4 percent since 2001; GDP is expected to register growth of 8.5 percent in the current fiscal 2007 (ending in March 2008) and 8.0 percent in fiscal 2008. The development of India's world-class information technology (IT) industry has coincided with the start of a new

wave of economic reform and India's increasing integration into the global economy. Growth in the services sector will continue outpacing the rest of the economy. Although India's manufacturing sector has reignited in recent years, thanks in part to the emergence of its export-oriented sub-sector, services will continue to be India's leading growth sector. In any case, India's growth fundamentals are now on a relatively solid footing and can support strong sustainable expansion for the foreseeable future. Medium-term prospects also appear highly favorable, and Global Insight expects the economy to expand upwards of eight percent, and maintain growth averaging six percent through the long term.

The Reserve Bank of India (RBI) has succeeded in keeping the exchange rate relatively competitive, building reserves, and, most importantly, containing inflationary pressures. Although inflation has accelerated over the last two years because of supply-related factors, its pace remains relatively mild by historical standards. The decline in inflation in recent years has been achieved through supply-side liberalization, including deregulation and reduction of tariffs and subsidies. CPI inflation is expected to average 5.4 percent in 2008 and 5.5 percent in 2009, remarkably low given relatively high oil prices and the current stage of the domestic growth cycle. Any interest-rate reductions are extremely unlikely in the near and medium terms, and substantial easing, in any case, is unlikely in the current fiscal environment.
External accounts remain fairly healthy despite the fact that the current account has returned to deficits in recent years. IT and related services are expanding rapidly, transforming parts of the country into an export platform, as well as generating employment and boosting consumer demand. While software exports constitute only two percent of GDP, the IT and related services not only include software exports, but also business-process outsourcing (BPO) activities such as accounting, procurement, insurance management, legal services, human resources, and other internal corporate control functions. This industry's rapid growth is likely to be sustained, thanks to a continuing shift of business process outsourcing work to India, which, together with high overseas workers' remittances, combine to contain any significant pressure on the current account. The trade deficits, in turn, are exacerbated by high oil prices, a growing demand for capital and consumer goods, and falling terms of trade. Bolstered by service exports and remittances, the current account will continue to incur only mild deficits, at less than 1.5 percent of GDP, in the medium term. The positive structural changes in the external sector have resulted in the ongoing accumulation of foreign-exchange reserves.

Table 2.11 below details the compound annual growth rates for a number of key indicators. The forecasts project that Indonesia will experience a decrease in annual GDP and population growth rates, with population growth rates between 2020 and 2030 forecast to be almost half of current levels.

Table 2.11 Comparison of India's Key Economic Indicators
(Percent Change)

Key Compound Annual Growth Rates	2000-08	2010-20	2020-30
Gross Domestic Product (GDP)	7.6%	7.1%	5.5%
Exports of Goods & NF Services	15.4%	7.9%	7.3%
Imports of Goods & NF Services	17.6%	9.2%	7.9%
Total Population	1.6%	1.2%	0.9%
Real Per-Capita GDP	5.9%	5.8%	4.6%

Source: Global Insight

Domestic Assumptions

- The Congress-led coalition will continue to be a part of a stable government in India and will likely remain in power at least until end-2008 (more than four years since it came to power). General elections are due by May 2009 at the latest.
- Neutral monetary policy will continue in the near term, but the likelihood of one more rate hike before the end of fiscal 2007 (March 2008) has fallen slightly. Meanwhile, monsoon rains are expected to be normal in 2008 as well, which will help the agricultural sector maintain strength.
- FDI will continue to increase steadily in the near and medium terms.
- No significant backtracking on India's reform initiatives. However, the current selective approach to liberalization will continue, drawing on distinctions between priority and non-priority sectors.
- No immediate capital-account convertibility of the Indian rupee, although the government will increasingly move toward full capital-account convertibility in the medium term.

2.10.2 Economic Growth Outlook

Short-term Outlook

India's economic prospects will remain buoyant in the near term despite the mild global-induced slowdown expected in fiscal 2008. Extremely strong economic growth will continue in fiscal 2007 (ending in March 2008) and even in fiscal 2008, despite the expected recession in the U.S. economy and slowdown in global demand. India's fast-growing service sector, which accounts for more than half of the Indian economy, will remain a key driver in upcoming quarters, along with the crucial industrial sector. Low interest rates have continued to support domestic demand. India will likely see a full-blown recovery in private investment that will help drive industrial growth higher. Robust recent economic expansion will keep India on track to register one of the highest growth rates in the world again in the current year, despite spiraling oil prices and modest delays in anticipated reforms. Finance minister Chidambaram indicated that the Indian government was planning to speed up market overhauls, construction, and infrastructure improvements to keep up the current economic pace. Following growth of 9.4 percent in fiscal 2006, Global Insight expects GDP to register growth of 8.5 percent in fiscal 2007 and 8.0 percent in fiscal 2008.

The robust domestic economic environment and higher spending on infrastructure also are promising indicators. The crucial manufacturing and service sectors have continued to show strength. High-profile construction projects will support industry. Services are booming as Indian firms establish themselves by doing the back-office work for large swathes of the industrialized world. Export growth has accelerated steadily since 2002, industrial production has remained strong, and domestic demand is recovering. Consumer demand remains robust; double-digit growth in car sales, meanwhile, points to continued strength in domestic demand.
In the medium term, favorable export growth, continued economic reforms, and greater contributions from the service and construction sectors are expected to keep the economy advancing at rates well above 7.0 percent. The large-scale structural reforms the government embarked on in 1991 have yielded significant, if not spectacular, results. Despite initial political resistance to the process of liberalization and privatization, the mandate for free-market reform has now been cemented, and all the leading political parties now favor reform. Increasing financial deregulation and minimizing the crowding-out of the private sector by the government would go a long way toward reinforcing this trend.

Medium- and Long-Term Outlook

India's medium- and long-term growth prospects are highly favorable, as ongoing reforms confer significant gains in supply-side efficiency. Indeed, India's relatively high economic growth over the 1990s was made possible mainly by significant efficiency gains with little increase in investment rates. Improved economic efficiency was a critical factor in bringing the economic growth rate to over six percent in the 1990s and into the current period, substantially higher than the earlier average of about three percent a year in the 1970s and early 1980s. Furthermore, the reforms are attracting new foreign investment and stimulating new industries based on information and communications technology. Trend GDP growth rates are expected to be upwards of 6.0 percent.

Structural reforms in the private sector have outpaced those in the public sector, boosting trend GDP growth in recent years and slowly reducing poverty levels. Improvements in economic indicators reflect important structural enhancement in recent years. Development is increasingly generated by the private sector, which is both saving and investing a larger share of GDP. The number of industries barred from the private sector has been gradually reduced from 27 to a mere handful. Most consumer goods are now produced in highly competitive markets. Industrial liberalization, along with a moderate cut in external trade barriers, has created more competitive Indian firms, especially in sectors such as pharmaceuticals, software, and other services. The greatest success has been in information technology. The industry has grown about 50 percent annually, and exports neared US$10 billion this year. Software exports comprise 62 percent of India's total exports and account for two percent of the country's GDP. India's transformation from a largely autarkic state towards a progressively greater outward orientation will raise the contribution to GDP from net exports, although the pace of change will be gradual.

India's underutilization of resources, implying that the economy is not fully utilizing its growth potential, translates into economic advantage in the long term. Plentiful, undeveloped natural resources offer untapped potential. The highly skilled, educated labor force boosts prospects for both the private and public sectors. The dynamic, successful overseas Indian community also sparks domestic entrepreneurial activity, both directly and indirectly. Rapid urbanization rates will also act as an important force of change in the long term.

India's democratic political system is more stable and institutionalized than other developing countries'. Domestic factors, not external creditors (as in many other countries), drive reform in India. With more linguistic and religious diversity than other nations, the compulsions of governance force major parties to act pragmatically and to avoid sharp changes in policy. This ensures policy continuity and institutional stability even as governments change. In recent years, India's political system has successfully accommodated greater federalism and social mobility while pursuing economic liberalization under a series of coalition governments. India's evolution over the last 50 years into a stable, mature democracy with strong institutions will undoubtedly bolster long-term growth initiatives.

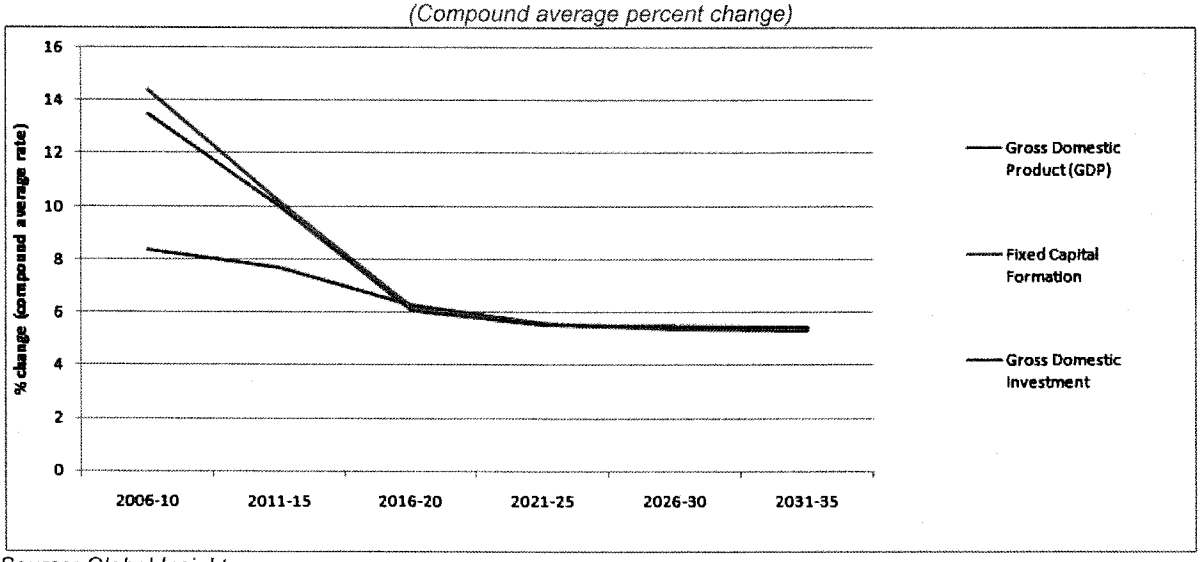
The government's optimistic economic growth target of upwards of 10 percent a year, however, is somewhat unrealistic. Such rapid growth would require a substantial increase in public and private investment from the current 26 percent of GDP. The household saving rate, which stands at around 25 percent of GDP, is already fairly high, compared with other developing economies at similar income levels. Thus, the government needs to make India a favored destination for foreign investment, although it is not possible to fill the resource gap from external resources alone. To boost domestic savings, the government needs to make a greater effort to mobilize public savings, while exploring the scope for expenditure control at all levels.

Prospects will depend critically on efforts made by the government to deregulate a broad swath of the economy and rid it of burdensome regulations stemming from the "license raj." The ability to control the country's nettlesome fiscal deficit will be key in reducing the high cost of capital for the country's private sector. Politically difficult decisions might be required to reduce expenditure, including serious downsizing of bureaucracies and cuts in subsidies. Privatization needs to stand atop the government's reform agenda, while more efficient revenue collection is essential.

The following chart (2.26) compares the compound average percent change over five year increments for GDP, fixed capital formation, and gross domestic investment. All three growth rates are forecast to decrease sharply in the near-term before leveling out at a 5.5 percent increase per year from 2021 to 2035.

Chart 2.26 Comparison of Change between GDP, Fixed Capital Formation and Gross Domestic Investment in India

(Compound average percent change)

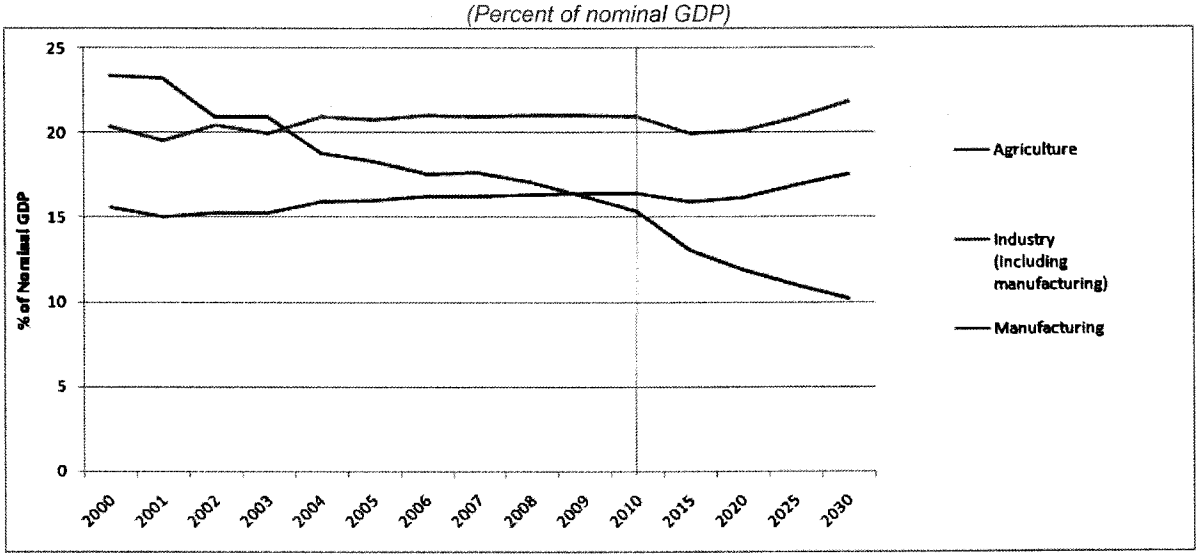


Source: Global Insight

Chart 2.27 below compares the percentage share of nominal GDP that is attributable to the agriculture, industry, and manufacturing sectors. Note that the manufacturing sector is a subset of the industry sector, in which it accounts for about three-quarters of the total. The sector share of agriculture is forecast to continue decreasing, from 17.1 percent in 2008 to 10.2 percent by 2030. The total share contributed by industry is forecast to increase slightly in the long-term, with the proportion that is made up by manufacturing remaining approximately level.

Chart 2.27 India's Sector Share in GDP Factor Cost

(Percent of nominal GDP)



Source: Global Insight

Current Economic Conditions

By the end of 2006, India featured a rapidly expanding US$900-billion economy—the third largest in Asia, after Japan and China. Annual economic growth averaged 7.4 percent in 2002-06—a full two percentage points higher than the rate for the preceding five years. Nevertheless, per capita GDP at market exchange rates remains fairly low in comparative terms at US$813—less than half of China's and among the lowest in the region. The low overall income per capita masks considerable pockets of wealth that exist in India, often alongside the vast masses of the poor. The low income level also masks a relatively rich natural resource endowment, in terms of under-utilized water, mineral, and energy reserves, along with a huge population, which if employed more productively could put the country's economic growth on a higher path.

India's crucial manufacturing and service sectors have continued to show strength of late, despite sharp gains in the last few years and a global slowdown. A broader rebound in domestic spending and an upturn in external demand also continue to fuel the growth momentum. High-profile construction projects support industry. Services are booming as Indian firms establish themselves doing the back-office work for large swathes of the industrialized world.

The economy has been booming in recent quarters, with real GDP expanding by 8.4 percent year-on-year in the third quarter (October-December) of fiscal 2007, according to the Central Statistical Organization. Growth in the second quarter declined slightly from 10.2 percent a year earlier and 8.9 percent registered in the July-September quarter. Manufacturing output rose by 9.3 percent on the year in the quarter, rising modestly from the 8.6 percent rate recorded in the previous three-month period. Manufacturing output has been buoyed by rising export levels, and domestic demand remains robust. Services expanded by 11.2 percent in annual terms during the third quarter. Nevertheless, agriculture—on which two-thirds of India's households still depend for income—continued to record sluggish growth, expanding by only 3.2 percent year-on-year. Growing disparities between rural and urban areas have fueled the increasingly politicized debate over the structure and equity of growth, which the government has sought to douse with fiscal packages aimed at alleviating rural poverty.

Meanwhile, growth for the whole of fiscal 2006 (April 2006-March 2007) stood at 9.6 percent—the strongest growth rate in two decades. Economic growth in fiscal 2006 was powered by the manufacturing and service sectors, and by strong consumer spending; farm production, however, lagged. Data showed manufacturing output rose by 12.3 percent year-on-year, up slightly from 9.1 percent during the previous year. Overall services expanded robustly across all sub-sectors during the year. Within the service sector, trade, hotels, and transport grew by 13.0 percent; construction increased by 10.7 percent; and finance and property expanded by 10.6 percent. Meanwhile, the agricultural sector posted only 2.7 percent year-on-year growth. Meanwhile, full-year growth for the previous year, fiscal 2005, stood at 9.0 percent. The robust annual figures helped India register one of the highest growth rates in the world again, despite stratospheric oil prices and delays in anticipated reforms. Finance Minister Chidambaram indicated that the Indian government was planning to speed up market overhauls and the construction of infrastructure to keep up the current economic pace. The overall growth pace is likely to be maintained throughout the next two years, with only marginal slowing.

Agriculture accounts for more than one-quarter of India's economy, and fully three-quarters of the country depends on farming for its livelihood, so the periodic mild droughts impact the overall economy somewhat. Nevertheless, the importance of the once-crucial sector has declined considerably, and there has been little recent indication of any significant agricultural slowdown affecting either industry or services, the other two key sectors of the Indian economy. Overall, data from the manufacturing and service sectors underscore the continuing diversification of the economy's base, as export-oriented sectors develop, and the declining exposure of growth to agricultural cycles.

India's trend growth from 1960 to roughly 1980 remained at around 3.5 percent annually, but since the mid-1980s growth accelerated initially to 4.0-4.5 percent and reached 5.5 percent in the late 1980s. Since the balance-of-payments crisis in 1991, two key trends have characterized the growth pattern of the Indian economy: firstly, the trend growth rate has increased further to around 6.0 percent; and secondly, the volatility of growth has decreased, reflecting the gradually declining importance of the agricultural sector in India's GDP. India has gradually become a high mean-moderate variance economy.

Consumer Demand

Overall private consumption increased by 7.2 percent year-on-year in the third quarter (October-December) of fiscal 2007. Meanwhile, car sales stood at 94,756 units in February 2008, up 2.3 percent from a year earlier, according to the Society of Indian Automobile Manufacturers (SIAM). Commercial vehicle sales in February were mixed: medium and heavy commercial vehicles declined by 1.5 percent year-on-year, to 26,299 units, while light commercial vehicles increased by 2.0 percent year-on-year, to 18,760 units. Meanwhile, the accelerated growth rate of car sales of 20 percent recorded for the whole of 2007 is a result of increased competition in the market, the easy availability of credit, the launch of new models, and higher disposable incomes among the country's expanding middle class. India's largest carmakers by market share are Maruti Suzuki, Tata Motors, and Hyundai. Overall, the Indian passenger car market continues to be in good health in 2008 and 2009 as new model launches, incentive programs, and the country's strong economy continued to provide the conditions for further growth.

Domestic credit has been surging across the country, and credit-card issuance stands at record highs. Credit-card spending has skyrocketed, increasing by more than 70 percent annually in the last two years. Credit growth in recent years has also been less affected by the periodic erratic monsoons, new emissions standards, and the value-added tax (VAT) systems. The farm

sector, which also accounts for more than a fifth of India's economy, also remains a crucial demand driver.

India had the fastest rate of credit growth in Asia in 2006, during which bank credit grew by over 30 percent, the ratio of private-sector credit to GDP increased to around 40 percent, and the aggregate credit-to-deposit ratio exceeded 60 percent. Credit remains low compared with GDP (around 40 percent), reflecting a low level of financial intermediation compared with other countries. Rising incomes and consumption amid falling borrowing costs have fueled credit demand. The overall non-performing asset ratio is low, and stress tests have shown that the banking system is resilient to the deterioration in credit quality that typically accompanies periods of rapid credit growth.

Robust growth in upcoming years should greatly boost private consumption, and according to a recent government the number of middle- and high-income households is growing extremely fast, while that of poorer families is shrinking. Much of India's consumption is driven by its middle class of around 300 million citizens, who are concentrated in urban areas that have grown rapidly during 15 years of liberalization. Thriving activity in the services sector has spawned myriad job opportunities in the cities. Illustrating the robust trend, vehicle sales are expected to remain strong in 2008 and 2009, bolstered by continued strength in the agricultural and manufacturing sectors.

In terms of the contribution to growth of different components of aggregate demand, private consumption growth is expected to rise steadily, and has the largest estimated share of 60 percent during fiscal 2007, followed by 31 percent for investment. Nevertheless, over 80 percent of the change in consumption demand is itself endogenously derived from income growth. Imports are estimated to have risen by 26 percent, and from a larger base, reflecting the revival of economic activity and the larger domestic absorption of certain consumer durables and non-durables.

Capital Investment

Fixed capital formation remained strong and grew at a rate of 15.1 percent in fiscal 2006. The strong figures, coupled with a 15.6 percent year-on-year expansion in the third quarter of fiscal 2007 (October-December 2007), reflect increasing investor confidence the face of strongly entrenched demand growth and the expansion in credit and companies' initial public offerings. The rate of fixed capital formation in GDP has increased to 29 percent, and that of gross domestic capital formation to 32 percent.

The government has embarked on an ambitious plan for developing special economic zones (SEZs), given both limited progress in attracting private infrastructure investment, as well as the improvements in governance and bureaucratic processes. The government approved the long-awaited SEZ bill in 2005, and it came into force in 2006. SEZs bypass many of the problems traditionally associated with operating in India by concentrating operations in one area, and therefore reducing the amount of infrastructure spending needed. The government has approved private investments of a trillion rupees in SEZs over the next three years, which it estimates would boost employment opportunities significantly. SEZs provide areas in which the bureaucratic processes associated with setting up and operating a business are drastically cut, not only simplifying procedures, but also providing a single method of clearance for regulatory matters. Of the plans for 117 SEZs, 51 have already received formal approval, while the remaining 66 are awaiting consideration. The SEZs will range in size from 10 hectares to 1,000 hectares, and are expected to attract sectors such as automotive, chemicals, biotechnology, IT, pharmaceuticals, and textiles.

India's investment environment continues to improve, thus lowering the cost of doing business. Fixed investment will remain robust, even though the current, slightly higher interest-rate environment will have some marginal negative effects on investment. Global Insight expects fixed investment to expand by 13.7 percent in fiscal 2008 and 14.5 percent in fiscal 2009. Reinforcing the positive trend, business surveys in early 2007 have indicated that firms are fairly upbeat about capacity utilization and demand conditions despite the impending mild slowdown. The efficiency of investment in the economy will continue to grow steadily, as private investors have been allowed to invest in more sectors of the economy, and public investment projects have become more selective and better managed. Even lifting the rate of investment growth to this level, and thus maintaining the upward trend in the overall GDP growth rate, will require carefully managed policy reforms and public spending budgeting, as the economy faces two main interrelated challenges in the next few years. Gross fixed capital formation must increase beyond an already relatively healthy 29 percent of GDP, and improvements in physical infrastructure will be crucial. In addition to increased capital, a structural transformation of the economy, together with a less distorted investment environment, is essential to stimulate productivity increases by shifting resources from the less to the more efficient sectors. Sustaining high industrial growth rates will require more and better infrastructure and continued high levels of investment.

Labor Markets

With the world's second-largest population of 1.08 billion, India already has tremendous potential in terms of labor resources. In recent years, India's total population has been growing at approximately 1.5 percent per year, and growth is expected to moderate only slightly, to 1.2 percent by 2025. About 33 percent of its population is currently below the age of 15 and only five percent over the retirement age of 65. This trend implies that over the next 10 to 20 years, the already large portion of the population within the working-age cohort (62 percent in 2005), will continue to expand further, implying a significant increase in the supply of labor. India will likely add close to 250 million workers to the labor pool between 2005 and 2025. This trend stands in sharp contrast with the working-age populations of the rest of Asia, especially China, where the number of workers in this cohort is expected to peak and start dropping already by 2010. Furthermore, India's advantage with plentiful working-age labor is likely to persist for a long period since the dependency ratio (proportion of non-working population to working population) will decline steadily in the coming years and is expected to drop sharply from 59 percent in 2005 to 47 percent in 2020 to 44 percent in 2025.

India has a significant advantage among emerging markets because it has a vast pool of highly skilled English-speaking workers. Moreover, the weaknesses of its public education system are partially offset by a fast-growing technical education capacity in the private sector, along with "on-the-job learning" offered to employees by the large domestic private companies and foreign multinationals. India has the world's third largest pool of scientific and technical personnel with wages a fraction of counterparts in advanced economies. However, more than two thirds of the workforce remains engaged in primary agriculture, with services and manufacturing accounting for around 17 percent and 16 percent of employment, respectively.

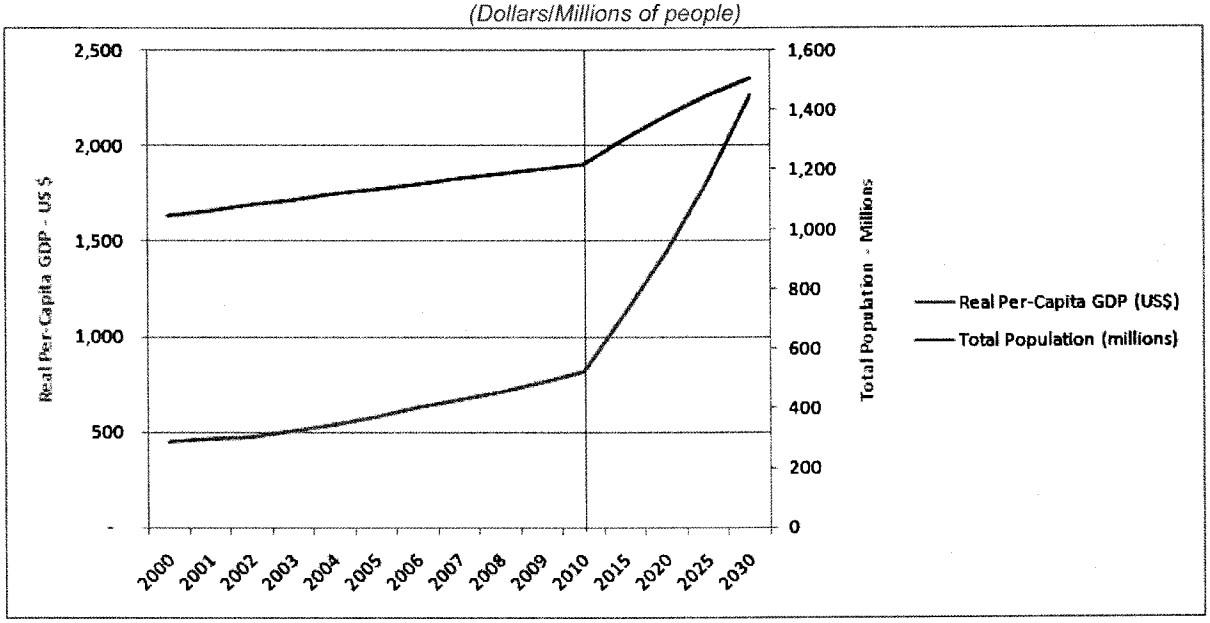
India has one of the most regulated labor markets in the world, and employment regulations are regarded as being one of the greatest obstacles to an improvement in productivity. The market is heavily regulated, a legacy of government intervention to protect employees and direct wage outcomes. Although some work has been carried out on the labor laws, more is needed, not least because over-regulation and problems such as industrial action deter potential investors and place obstacles in the path of those already involved in the Indian market. As with previous administrations, Prime Minister Manmohan Singh has committed the United Progressive

Alliance (UPA) to addressing the labor reform issue, but no specific policy prescriptions have been proposed. The political environment clouds prospects for wholesale labor reform, especially for the UPA government, given the influence of leftist parties in its coalition. The state is both a dominant employer and enforcer of protective labor legislation, a situation incompatible with the needs of an open market economy. The pro-labor legislation has given undue influence to the fragmented trade union movement.

The increase in India's population will be accompanied by a much faster increase in real per-capita GDP, as indicated on Chart 2.28 below. Real per-capita GDP is forecast to reach US$2,263 by 2030, an increase of 216 percent from 2008.

Chart 2.28 Comparison of India's Population and GDP

(Dollars/Millions of people)



Source: Global Insight

Inflation

In the past, with its large fiscal deficits, India has experienced periods of relatively high inflation. Inflation has been relatively benign in India in recent years, however, and has remained far below the historical long-run trend level. CPI averaged 9.4 percent in 1980-99.

Although consumer price inflation has accelerated somewhat in recent years because of supply-related factors, its pace remains relatively mild by historical standards—averaging only 4.0 percent in 2000-06, compared with 9.1 percent in the preceding six years. The decline in inflation in recent years has been achieved through supply-side liberalization, including deregulation and reduction of tariffs and subsidies. CPI inflation fell from 5.6 percent year-on-year in December 2007 to 5.5 percent year-on-year in January 2008, reflecting slightly lower prices for energy and agricultural goods. Inflationary pressures have generally accelerated during the last two years as a result of supply-related factors and strong domestic demand; however, annual CPI growth has been mild in recent years. The central bank's monetary policy thus far has also been underpinned by falling inflation.

The wholesale price index (WPI) had risen steadily in early 2007 on the back of higher oil prices, but now seems to be on a sharp declining trend, rising by only 4.9 percent year-on-year

during the week of 16 February 2008. Price pressures have increased following deterioration in food supplies and spikes in global fuel prices, despite the aggressive monetary tightening cycle pursued by the central bank earlier. In general, slightly lower trends in inflation are expected in upcoming months. A revamped WPI was introduced recently, with a larger representation of manufactured and energy goods. The WPI is widely used to track inflation in India because it includes a larger basket of commodities than the CPI.

The overall trends in the inflation picture are expected to persist in the longer term. The central bank's tighter monetary policy thus far has also kept inflation in check despite skyrocketing oil prices. CPI inflation is expected to average 5.4 percent in 2008 and 5.5 percent in 2009, still remarkably low given still-high oil prices and the current stage of the domestic growth cycle. The RBI has maintained price stability in recent months by falling in line with global interest rates and ensuring that it would not have to resort to disruptive rate hikes in the future. With global interest rates continuing to rise since early 2006, the RBI has had little choice but to continue to tighten monetary policy, especially given the strength in domestic demand. Any interest-rate reductions are extremely unlikely in the near and medium terms, and substantial easing, in any case, is unlikely in the current fiscal environment. In the medium term, repeated fiscal disappointments, coupled with rapid economic growth, are expected to generate CPI inflation averaging 5.0 percent.

The inflationary picture will likely improve marginally on the supply side of the economy as well in the near and medium terms, despite energy prices and stronger domestic economic activity. Average wholesale price inflation is expected to equal 4.4 percent in 2008 and 4.6 percent in 2009.

2.10.3 KEY ECONOMIC/BUSINESS RISKS

Risks

India represents one of the world's most promising emerging markets, with an economy that has tremendous potential coupled with soaring business and investor interest. The country's recent economic performance has been stellar. The development of a world-class IT industry has coincided with the start of a second wave of economic reform. India's economic development has been fairly unusual for a rapidly developing emerging market, with growth in the services sector outpacing that of the rest of the economy. As a result, the GDP share of manufacturing—which is responsible for generating mass employment in most rapidly developing economies—has remained largely static.

Although India's manufacturing sector has reignited in recent years, thanks in part to the emergence of its export-oriented sub-sector, services will continue to be India's leading growth sector. In any case, India's growth fundamentals are now on a relatively solid footing and can support strong sustainable expansion for the foreseeable future. Nevertheless, inflows of FDI, crucial to spurring the development of manufacturing, remain low, especially in relation to neighboring powerhouse China. Investment has been stifled by intrusive market regulation, poor infrastructure, inflexible labor-market practices, and recurring fiscal deficits, which have crowded out private investment. Therefore, reform remains essential to unlocking the economy's full potential and propagating growth across the whole country, which forms the central platform of the current Singh administration. Although constraints and risks to growth certainly exist, they are likely to be gradually mitigated as policy reforms continue in response to the needs of expanding domestic employment and creating a globally competitive economy.

Business Risk Developments

- The Indian economy is likely to maintain momentum despite the current weak global economic environment and the continuing fallout from the U.S. subprime credit crisis. India's economy is among the least vulnerable to any global economic slowdown. India's exposure to global trade is one of the lowest in Asia, and hence the influence of slower foreign trade is likely to rank among the least consequential in the region. The economy has been booming in recent quarters, despite an increasingly mixed global economic environment. If the global credit crunch is prolonged, and with expectations of slower global and U.S. growth over the next year, India's growth could also be impaired. Certainly, a key risk to India's outlook is any significant further turbulence in the U.S. financial markets spilling over into Indian financial markets. Global Insight expects any financial-market-induced economic deceleration in India to be relatively mild as external risks are counterbalanced by the dynamism of the domestic economy.

- The Indian government pledged to increase investment in infrastructure to retain high growth levels. The cabinet recently approved a draft five-year plan that forecasts GDP growth rates of 9–10 percent and an increase in infrastructure investment from five percent of GDP to nine percent during 2007–12. This increase implies that US$500 billion would be required for infrastructure investment over the five years, US$350 billion of which would be funded by the government for use on standard projects, with the rest sourced from other areas, including global financial markets. The authorities have said there would be no problem in sourcing such a large chunk of funding. This problem is regarded as a key impediment to GDP growth over the longer term, but investment in infrastructure is increasing through a number of methods ranging from special economic zones (SEZs) to the raising of ceilings in individual sectors.

- The lagged effect of aggressive monetary policy tightening over the past two years has kept inflation in check of late. The wholesale price index (WPI) had risen steadily in early 2007 on the back of higher oil prices, but now seems to be on a sharp declining trend, rising by only 3.0 percent in October 2007. Price pressures have receded following improvements in food supplies, declines in global fuel prices, and the aggressive monetary tightening cycle. Many of the inevitable supply bottlenecks and shortages created by India's rapid economic growth are improving rapidly.

2.10.4 EXPORTS AND IMPORTS

Natural Resources

India's mineral resources include high-grade iron ore, ferroalloys including chromite and manganese, and titanium, copper, bauxite, zinc, lead, gold, and silver. Nonmetallic minerals include limestone, dolomite, rock phosphate, mica, gypsum, fluorspar, graphite, magnesite, and diamonds. The peninsula is also endowed with fossil fuel resources, including abundant coal reserves—fourth-largest in the world—centered in the Chota Nagpur Plateau and some petroleum and natural gas reserves that are insufficient to meet the economy's demands. Principal oil fields are located offshore in the Arabian Sea and onshore in eastern Assam and Gujarat states. India has a competitive advantage in agriculture, with plenty of arable land, sun, and water.

External Sector

External accounts remain fairly healthy despite the fact that the current account has returned to deficits over the last three years. The two key new positive trends in the current account have been the growth and diversification in services export earnings, as well as the massive increase

in overseas workers' remittances. The positive structural changes in the external sector have resulted in the ongoing accumulation of foreign-exchange reserves. IT and related services are expanding rapidly, transforming parts of the country into an export platform, as well as generating employment and boosting consumer demand. Meanwhile, exports of goods and services are playing an increasingly important role in fueling economic growth, with their share of GDP doubling to 23 percent in the past decade of reform. This trend will continue as international companies take advantage of India's low-cost base by outsourcing some of their operations.

Merchandise exports increased by 20.5 percent year-on-year in January 2008, to US$13.1 billion; imports rose by 63.6 percent year-on-year, to US$22.5 billion, while non-oil imports increased by 64.9 percent, to US$14.7 billion. Meanwhile, the trade deficit stood at US$9.3 billion during January. Despite the current global economic slowdown, India's recent robust export figures, together with a pick-up in non-oil imports, are confirming a relatively strong industrial performance in fiscal 2008 (ending in March 2009) as well.

Meanwhile, for the whole of fiscal 2006 (April 2006–March 2007), merchandise exports grew by 21 percent, total imports were up 22 percent, and non-oil imports increased by 25 percent. The trade deficit stood at US$56.7 billion during fiscal 2006. India's software industry continues to grow at a breakneck pace, despite periodic global technology slowdowns and cutbacks by businesses. The current-account deficit totaled US$9.6 billion in fiscal 2006 compared with US$10.1 billion in fiscal 2005. The signs of relative weakness are continuing: the trade deficit widened to lifetime highs of US$56.7 billion in fiscal 2006.

Indian software and services exports rose by 33 percent year-on-year, to US$31.4 billion, in fiscal 2006, according to the country's leading software industry body, the National Association of Software and Service Companies (NASSCOM). The financial, banking, and telecommunications sectors were high-growth areas for Indian software companies. IT service exports have expanded steadily since 2000: software exports stood at US$5.6 billion in fiscal 2000, US$7.7 billion in fiscal 2001, US$9.6 billion in fiscal 2002, US$12.5 billion in fiscal 2003, US$16.6 billion in fiscal 2004, and US$23.6 billion in fiscal 2005, according to NASSCOM. More than 60 percent of India's software exports are destined for the United States. Software exports make up 62 percent of India's total exports and account for around two percent of the country's GDP.

The strong foreign-exchange liquidity cushion provides precautionary lines of defense against unanticipated external balance-of-payments shocks. The sharp increase in foreign-exchange reserve accumulation in recent years has more than doubled import cover from five months in 2000 to over 11 months in February 2008. More than US$100 billion was added to reserves in the 12 months prior to February; total reserves now exceed US$300 billion. This build-up of reserves represents an external-accounts improvement that is unprecedented in India's history. The healthy liquidity position also confers a degree of domestic financial stability.

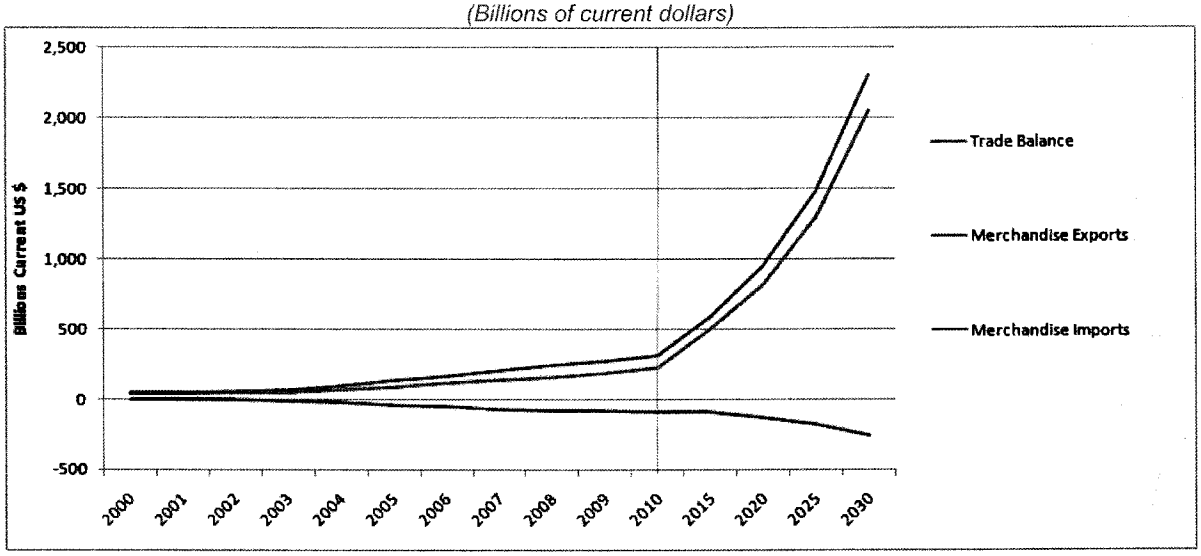
India's external accounts continue to look extremely healthy, and booming IT exports have helped strengthen India's balance of payments. The external sector is expected to remain healthy; growth of merchandise exports is forecasted to stand at upwards of 16 percent annually in 2008 and 2009. The projected robust growth of merchandise exports is largely due to high growth in world trade and India's increasing exposure to the global economy. India's exports are also well diversified, comprising textiles and garments, automobile parts, and chemicals and pharmaceuticals.

Pressure on the current account will continue to increase in the near term as industrial momentum persists and oil prices remain elevated. The current account will continue to post a deficit fiscal 2008, although at less than 1.0 percent in both years, the deficit will remain relatively small. The country will continue to record mild deficits from now on.
Still, India's balance-of-payments position is modest in comparison with those of other countries. Recent current-account deficits have been modest, notwithstanding an inflated oil-import bill. Exports weakened in 2001 in response to the slowing global environment, but since then have remained extremely robust in 2002-06, and Global Insight expects this trend to continue. The trade deficit should worsen moderately in the next two years because of a greater intake of imports and an inflated oil import bill. Despite a fast-accelerating import bill, exports of IT services and remittances will keep the current account in modest deficit again this year, and the country will continue to record mild deficits in the medium term.

Meanwhile, the IT and related services industry is expected to maintain robust growth. The National Association of Software and Service Companies expects software services exports to grow 16 percent in fiscal 2007 and in fiscal 2008, and expects revenue from call centers and other information-technology-enabled services to increase 50 percent annually in the near term. While software exports constitute only two percent of GDP, the IT and related services not only include software exports, but also BPO activities such as accounting, procurement, insurance management, legal services, human resources, and other internal corporate control functions. This industry's rapid growth is likely to be sustained, thanks to a continuing shift of business process outsourcing work to India, which, together with high overseas workers' remittances, combine to contain any significant pressure on the current account. The trade deficits, in turn, are exacerbated by high oil prices, a growing demand for capital and consumer goods, and falling terms of trade. Bolstered by service exports and remittances, the current account will continue to incur only mild deficits, at less than 1.5 percent of GDP, in the medium term. The positive structural changes in the external sector will continue to bolster the ongoing accumulation of foreign-exchange reserves. Chart 2.29 compares India's merchandise exports and imports.

Chart 2.29 Comparison of India's Merchandise Exports and Imports

(Billions of current dollars)



Source: Global Insight

Trade Profile

India is a member of the South Asian Association for Regional Cooperation (SAARC), and a regional trade block among these members was formed when SAARC Preferential Trading Arrangement (SAPTA) was signed in 1943 for giving preferential market access to the exports of the member countries in a limited way. The Agreement on South Asia Free Trade Area (SAFTA), which provides free trade in goods among SAARC member countries, was implemented in 2004.

India has been a member of the WTO since its inception in 1995. Since international trade has become more important for the economy, India has been more aggressively pursuing bilateral agreements. It has established a comprehensive economic partnership with Singapore, and is currently exploring agreements with Japan, China, South Korea, Thailand, Malaysia, Chile, South Africa, and the Gulf Cooperation Council (GCC).

India has a well-diversified export profile. The leading export category is textiles and garments, complemented by gems and jewelry, and the export of machinery and chemicals. Even further diversification exists in India's total foreign-exchange earnings profile when service exports are included. India's dynamic service exports feature IT-and-related services, as well as financial, medical, and legal services. Table 2.12 below details India's main trade partners.

Table 2.12 Ranking of India's Major Trade Partners in 2005

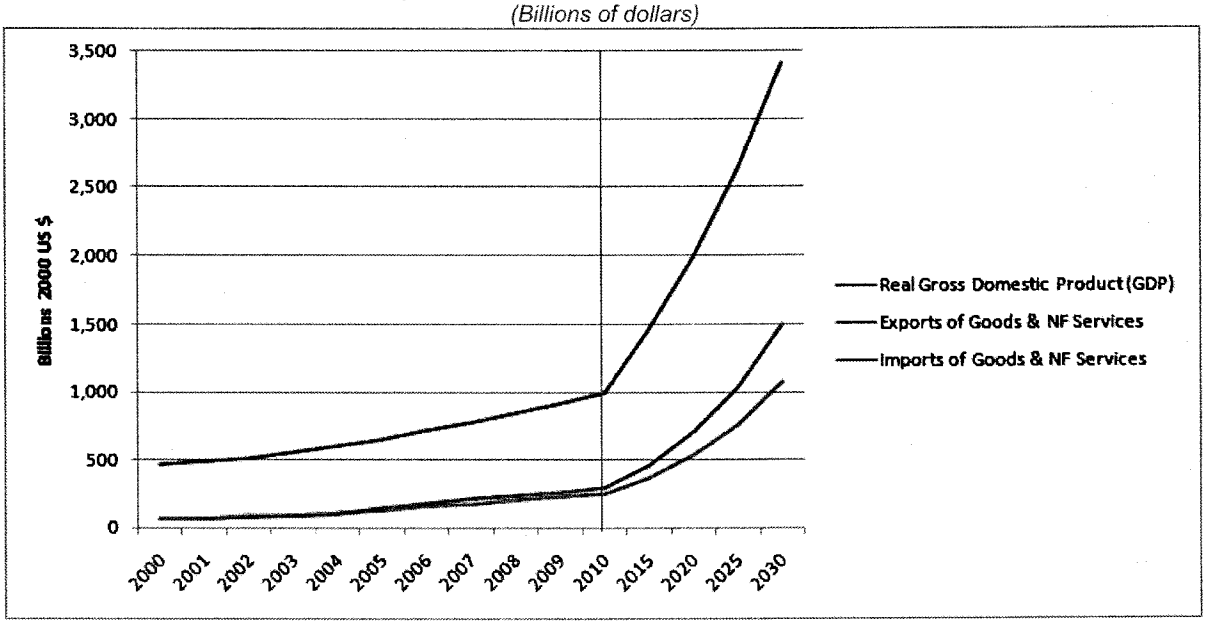
EXPORTS			IMPORTS		
Category	**Billions US$**	**% Share**	**Category**	**Billions US$**	**% Share**
United States	16.4	16.7	China	9.8	7.3
United Arab Emirates	8.3	8.5	United States	7.6	5.6
China	6.4	6.6	Switzerland	6.4	4.7
Singapore	5.2	5.3	Germany	5.4	4.0
United Kingdom	4.8	4.9	Belgium	4.7	3.5
Hong Kong	4.3	4.4	Australia	4.6	3.4
Germany	3.3	3.4	United Arab Emirates	4.4	3.3
Belgium	2.8	2.8	South Korea	4.1	3.1
Italy	2.4	2.5	United Kingdom	3.8	2.8
Japan	2.4	2.4	Japan	3.5	2.6

Source: Global Insight, from data supplied by IMF, Direction of Trade Statistics

Both India's exports and imports of goods and services are forecast to continue to increase at a slower pace than real GDP, as shown in Chart 2.30. By 2030, exports are of goods and NF services are forecast to reach US$1.07 trillion, with imports of US$1.50 trillion.

Chart 2.30 Comparison of India's Real GDP and Imports/Exports

(Billions of dollars)



Source: Global Insight

2.10.5 INFRASTRUCTURE

Infrastructure Overview

India's poor infrastructure has long been an issue, with successive governments addressing the problem in a number of mostly piecemeal ways. In October 2004, Prime Minister Manmohan Singh used his inaugural address to the ASEAN conference to unveil his plans for infrastructure development. The primary element of this was his government's aim to attract US$150 billion in foreign investment into infrastructure by 2014, divided down into US$25 billion for telecommunications, US$55 billion for air, road and rail infrastructure, and US$75 billion for the power sector. This estimate has continued to increase. In February 2008 India's Finance Ministry revealed that the country needs between US$500 billion and US$515 billion in infrastructure investment up to fiscal year 2011/12 to maintain growth rates close to nine percent. Of this, 30 percent is expected to come from private firms, 37.2 percent from the federal government and 32.8 percent from the states. Sporadically, the international community weighs in to provide assistance. In one such instance, the World Bank announced in August 2005 that it was lending the country US$9 billion over three years for infrastructure spending. In February 2007, the authorities launched a US$5 billion infrastructure financing initiative to help airports, ports, power supplies and roads. Under the plan, which sees the collaboration of a number of companies, US$2 billion will be provided in equity capital and US$3 billion in long-term debt financing, with maturities exceeding 10 years. The Infrastructure Development Finance Company Ltd (IDFC) is set to manage the equity financing and will invest in both brownfield and greenfield operating projects.

Road

India has a large road network comprising around 2.1 million km of highway. Almost 50 percent of all traffic uses the national highways, which were not designed for such numbers, causing problems with maintenance as well as safety. Expanding the road network is underway, most notably with the Golden Quadrilateral project. This was the brainchild of former prime minister Atal Behari Vajpayee and is designed to link Kolkata (formerly Calcutta), Delhi, Mumbai

(formerly Bombay) and Chennai (formerly Madras) with a four-lane expressway. It was originally scheduled for completion at the end of 2005, but problems including legal obstacles and delays mean that the work is still ongoing. In January 2008 it was announced that the project will now be expanded to cover 6,500km, some portions of which will be developed into eight lanes. A total of 2.2 trillion has been set aside for the expansion and maintenance of the national network. In January 2007, the Malaysian government announced that it would lead a number of companies in a scheme aimed at building a network of national expressways spanning 7,000 km. The project envisages the creation of two expressways, one linking Trivandrum with Chennai, Bangalore, Hyderabad and Pune, and with the other connecting Delhi and Kolkata. The project will be conducted on a build-operate-transfer basis.

Alongside the national level, the current administration is looking at improving the rural network. In May 2007, the authorities approved a 480-billion-rupee road-building scheme in the country. The funds will be focused on rural communities, aiming to improve their development prospects by improving access. The two-year plan is designed to provide road connectivity to 66,000 villages, reducing transportation costs and improving employment opportunities.

The authorities are looking into ways to hasten the process of approving road schemes. The finance ministry is relaxing the approval limits on projects, and those with a capital cost of up to five billion rupees will not require the approval of the inter-ministerial Public-Private Partnership Appraisal Committee (PPPAC). Alongside this, the issue of corruption within the construction sector—and the consequences this has for the quality of roads—has been raised. In May 2007, Prime Minister Manmohan Singh criticized the sector and argued that quality benchmarks were required to raise the standards in road construction.

In addition to this, a number of cities are considering new transport schemes. Some of these target the roads, but many are turning to alternative public transport such as metros and new overland train links. In an all-encompassing approach, moves are underway to improve Delhi's transport system ahead of the city hosting the 2010 Commonwealth Games. The metro system is being expanded, buses are being replaced with modern air-conditioned vehicles and there are moves to phase out rickshaws.

The country's congested and lawless roads account for nearly 60,000 fatalities a year (compared to just over 40,000 in the United States), giving the country the highest traffic accident casualty figures in the world. Those unfamiliar with the Indian road network should therefore not attempt to drive in India, at least until they have become accustomed to local traffic conditions. A better option is to use an experienced local chauffeur.

Rail

India has the world's second-most extensive rail network, covering 63,000 km. The rail system was planned during British rule, with the goal of connecting military cantonments, and was quickly expanded following independence. The importance of this form of travel is reflected in the fact that the Rail ministry is the only government department to present a separate budget for Parliament's approval. As with the road system, the sheer quantity of rail passengers and rail usage can result in some large-scale accidents. An estimated 18.5 million people use Indian railways daily. Moves are being made to improve the rail network, and in 2002 the government announced plans to introduce high speed trains (travelling at speeds up to 200 miles per hour). Furthermore, the authorities are looking at privatizing key rail services, including station maintenance and carriage cleaning. Under the UPA, the Ministry has the colorful character of Laloo Prasad Yadav in charge. Known more for his outspoken views and corrupt past, Laloo is both a blessing and a curse to the sector. He has and will continue to

keep the rail industry's needs in full public view, but his methods are doggedly populist, offering sops and vote-winning measures rather than tackling essential reforms.

Prime Minister Manmohan Singh has expressed concern regarding the situation and in October 2004 suggested to Laloo that he pursue a project similar to that witnessed regarding roads, and seek to put in place a high-speed freight network linking the country's four key cities, rather than looking at a great number of small-scale rail projects. As the February 2006, 2007 and 2008 rail budgets highlighted, steps are now being made in this direction, but there remains little progress on issues like cross-subsidy - where high freight prices offset low-cost passenger travel. Moving more freight to the rail service is regarded as a key reform if Indian Railways is to remain viable over the longer term. Nonetheless, Indian Railways, which was once on the verge of bankruptcy, recorded a surplus of 250 billion rupees (US$6.3 billion) in 2007. The "please-all" budget for the 2008 fiscal year (until March 2009) plans to spend 370 billion rupees, up 21 percent on the previous year, on boosting freight operations. This will be done by network expansion, cutting freight and passenger fares and by improving safety and services such as reservations and toilets. Under Yadav, Indian Railways has emerged as one of the public sector's best cash generators through an expansion in freight capacity, the construction of new lines, the leasing out of advertising space and the introduction of competitive bidding.

The Indian government is planning an US$800 million upgrade to the country's railway infrastructure. Under the Railway Sector Investment Program, which was developed by the Indian government and the Asian Development Bank (ADB), the Japan Special Fund will provide a grant of US$1 million, India will provide US$250,000 in logistical support and the ADB will provide up to US$500 million in loans. Under the program, rail track will be doubled along the country's busiest corridors through Maharashtra, Karnataka, Andhra Pradesh, Orissa and Chhattisgarh, while the lines passing through the states of Maharashtra, Karnataka, and Andhra Pradesh will be electrified. According to its "India: Country Operations Business Plan 2008-10", the ADB intends to provide India with loans of approximately US$9 billion over three years, of which one-third will be devoted to transportation projects and a quarter to energy projects.

Privatization was however, ruled out, which will disappoint the growing number of FIIs expressing an interest in the sector. Given the interest, it appears that the rail sector is the one to watch. India is about to embark on a US$40 billion freight corridor program which has generated significant interest, with FIIs looking for any opportunities, particularly if freight routes come up for privatization at some point. In January 2007, the state-operated Container Corporation lost its monopoly in the cargo sector when Indian Railways signed agreements with 14 companies. As part of the agreement, the companies will build inland container depots and buy containers from manufacturers.

In June 2007, the government approved a US$1.2 billion scheme to modernize Delhi's rail station. Every day, around 300,000 people use the building while 250 trains run to and from it. It is the country's largest station, but is in great need of an upgrade—something that the authorities are keenly aware of ahead of the city's hosting of the 2010 Commonwealth Games. As part of the refurbishment, air conditioning is expected to be installed and equipment upgraded.

Separately, a number of cities either have built or are building metro systems to counter traffic and congestion problems. Metro systems are operating in Delhi and Kolkata, with similar services being constructed in Bangalore, Mumbai and Kerala. Most are being developed on a Build Own Operate Transfer (BOOT) system.

India is also looking to link up its network with other nations to help facilitate trade. In March 2007, officials announced that they had launched an initiative aimed at constructing the 315 km of railway line that is "missing" to enable India to link up with Myanmar. Funds to construct the 100km required on its side of the border have been approved, while rail officials are in discussions with their counterparts from Myanmar about completing the rest of the line on the other side of the border. Rail links with Bangladesh are operational, facilitating cross-border freight traffic. In March 2007 it was announced that direct passenger rail services would be resumed with India and the service came into operation in July. The service was halted following the 1965 war between India and Pakistan, and although cargo services were restarted, there was no re-establishment of passenger train services. The train runs between Sealdah (near Kolkata) and Joydevpur (near the Bangladeshi capital, Dhaka). In March, it was also agreed that a train service agreement between the two countries would be extended until 2010. India also wants rail links with Myanmar, Bhutan and Nepal. A link with Myanmar would provide India with a transport link into the ASEAN region. The ADB and the Japan Special Fund are also attempting to enhance transport infrastructure in South Asia by investing in four member-states of the South Asia Sub-Regional Economic Cooperation (SASEC) group—Bangladesh, Bhutan, India and Nepal—under the SASEC Transport Logistics and Trade Facilitation Project. Alongside these moves, rail links aimed at linking the country with Russia, via Iran, are under way, and similarly, a rail link connecting India with China via Myanmar is being considered. It has also emerged that India will sign the Trans-Asia Railway Agreement by mid-year, formalizing its part in this major rail network plan.

Maritime

Shipping is of considerable importance to India and its international trade; the country's extensive natural coastline makes shipping ideal for transporting the bulk of its cargo. Reflecting this, India has the largest merchant shipping fleet of all developing nations. The government implemented a new policy regime towards the sector in 1990-91, alongside economic liberalization. This heralded a raft of measures, including incentives such as permitting foreign investment into the sector, as well as easing controls on the acquisition and sale of vessels. India has an extensive network of ports, which are listed under three categories based on volume: Large, Medium and Small. The large ones include Chennai (Tamil Nadu), Cochin (Kerala), Haldia (West Bengal), Kandla (Gujarat), Kolkata (West Bengal), Mormugoa (Goa), and Mumbai (Maharashtra).

An issue that has caused some controversy in recent times has been India's decision to dredge the sea lane above Sri Lanka's northern tip in the Palk Strait. The cabinet approved the scheme, known as the Sethusamudram canal project, in May 2005, which is designed to allow large ships to navigate around the southern tip of the country without the need for them to encircle Sri Lanka. It has been estimated that the project will cost US$564 million and take four years to complete. India has said that the federal government will stump up the majority of the funds, with port authorities and the Shipping Corporation of India also expected to contribute. However, Hindu groups in India, including the Bharatiya Janata Party (BJP), have voiced opposition to the project, claiming that the strait is the location of Adam's bridge or Ram Setu—an ancient bridge quoted in the Hindu text Ramayana.

It emerged in October 2005 that the authorities were considering amending shipping laws and opening up the sector to FDI, in order to promote tourism. A steering group, under the chairmanship of the shipping ministry and tourism minister, was reportedly considering a range of proposals, including: the liberalization of FDI regulations in the sector; the amendment of Section 21 of the Merchant Shipping Act, to simplify registration procedures for foreign cruise companies; and infrastructural development at seven ports, to allow cruise operators to use

their facilities. The ports in question are Cochin (Kerala), New Mangalore (Karnataka), Marmugao (Goa), Mumbai (formerly Bombay, Maharashtra), Kolkata (formerly Calcutta, West Bengal), Port Blair (Andaman and Nicobar islands) and Tuticorin (Tamil Nadu). In May 2006, it emerged that draft amendments to the Act were being finalized, but that private cruise operators had their reservations. The main problem is the fact that private operators would like to have some involvement in the development of port infrastructure, using a public-private partnership model.

In February 2007, Shipping Minister T.R. Baalu called for better connectivity between ports and hinterlands. He stressed the need for the creation of infrastructure facilities ahead of the expansion of the country's major ports. A major port expansion program is under way. As of 2007, the capacity of the country's ports was 600 million tons. This is expected to rise to 1,000 million tons by 2009, and 1,500 million tons at the end of the eleventh five-year plan (2012). Nonetheless, India's shipping potential remains under-utilized and the quality of the country's port infrastructure varies across states. For instance, the state of Gujarat accounts for 21 percent of India's exports, with its 41 ports handling 80 percent of national port traffic and 20 percent of cargo, according to official statistics.

Waterways

Official figures cite the network as totaling 14,500 km, but only around one-third of this is suitable for mechanized transport. One issue that is very pertinent to the region is the general lack of water. India is currently examining proposals that would see a number of major regional waterways redirected to help address water shortage problems in the country's large agricultural states. This has prompted an outcry from several other countries, most notably Bangladesh, which fears that such moves will adversely impact on its own water resources problems.

Utilities

India has serious problems with its electricity provision, with around 40 percent of households having no access to electricity. Many of the state electricity boards are virtually bankrupt and power theft is widespread. Although electricity to many sectors is subsidized, electricity infrastructure is - and has been for many years - largely ignored, given the poor finances of state providers. Beyond resolving these financing issues, greater private-sector involvement is necessary if regular power shortages are to be addressed in the longer term. The authorities have made some moves in this direction, with the previous government introducing an Electricity Bill in May 2003. This aims to address a number of problems, and has given state electricity boards greater powers to crack down on power theft as well as protecting their accounts from state interference. That said, with policy directed on a state-by-state basis, the pace of change will vary considerably, with some moving far quicker towards competitive wholesale or retail markets; a situation of which foreign businesses should be aware. Furthermore, although high costs are not a problem, India is becoming increasingly reliant on imported oil and coal supply chains. These are very unreliable, creating the potential for longer-term problems.

The water supply infrastructure is functional but experiences problems. In some areas, water supply is almost fully dependent on ground-water sources, and as such over-extraction and drought impact adversely on the situation. As part of the UPA government's commitment to tackling key issues, the prime minister created a national committee in October 2004 tasked with developing infrastructure in rural areas. Among the policies that the National Committee on Rural Infrastructure (NCRI) will consider are those related to improving water supply. Countrywide, water is not potable.

2.10.6 TRADE AGREEMENTS

SAARC

In 1991, SAARC set up the South Asian Preferential Trading Arrangement (SAPTA), the ultimate goal of which was to achieve a regional free trade area. SAPTA came into operation in 1995, after which negotiations were held in an unsuccessful attempt to reduce preferential tariffs. Fearing that a continuation of the policy would effectively make little difference to regional trading arrangements, the more radical option of a FTA was proposed, to be known as the South Asian Free Trade Agreement (SAFTA). The framework for this was agreed during the twelfth SAARC summit in January 2004, with implementation beginning in phases from 1 January 2006. It is envisaged that the free trade area will be operational by 2016, although progress remains a challenge, not least because of traditional tensions and fears regarding the different levels of development within the group. This has already resulted in the creation of a two-tier system, with the more and less developed nations reducing tariffs within five and eight years respectively.

WTO

The country's relations with the WTO have not been particularly harmonious. The country was one of the leading proponents of the attack on Western nations during September 2003's WTO ministerial conference in Cancun (Mexico), a move that prompted the failure of the talks. India has long opposed the subsidies that industrialized countries offer to their farmers, and there is a strong protectionist inclination among many small companies that fear foreign competition. Furthermore, such sentiments have resonance with significant segments of the country's business and political communities.

ASEAN

India is moving towards greater co-operation with ASEAN. It signed the Treaty of Amity and Cooperation with the group in September 2003, paving the way for stronger relations. The treaty includes broad provisions such as respect for sovereignty and territorial integrity, as well as pledges of non-interference in internal affairs. In essence, the treaty institutionalized India's growing interest in cultivating South-East Asian export markets and accelerating budding trade ties as part of its "Look East" policy. Politically, the move can be seen as a measure to tacitly challenge China's dominance of the region, by deepening ties with its traditional client states. Underlining its interest, December 2005 saw India attend the inaugural East Asia Summit—a grouping that is looking to create a regional trading bloc similar to the EU. For its part, ASEAN has become increasingly interested in India. Since agreeing in 2003 to implement a free trade agreement with the country, the bloc's member states have been actively pursuing local trading opportunities. Moves to try to implement the FTA have been frustrated. The key problem is India's refusal to cut tariffs on goods. Nonetheless, India has forged numerous bilateral free-trade agreements with East Asian economies, including a Comprehensive Economic Cooperation Agreement with Singapore and an Early Harvest Scheme with Thailand.

EU

India was one of the first countries to set up diplomatic relations with the then European Economic Community (EEC) in the 1960s, and the relationship with Europe has remained strong. Bilateral trade has an estimated annual worth of around 47 billion euro, as the EU has emerged as India's largest trade partner. The EU is also India's largest source of foreign direct investment, which amounted to almost US$11 billion from August 1991 to February 2007. Beyond trade and investment, the EU has provided India with considerable grants and aid to help fund development projects. The EU has reportedly allocated 470 million euro to promote economic development in India from 2007-2012. India's high tariff regime and its repeated use of anti-dumping measures remain contentious issues however, and will continue to prompt

criticism. In September 2005, India signed a Joint Action Plan and a Political Declaration with the EU, which served to formalize relations in the political, economic, trading and strategic spheres, placing relations on a far stronger footing. In October 2006, officials from India and the EU agreed to pursue a FTA. The deal has a number of purposes, including countering trade disagreements. The FTA will also concentrate on opening up various sectors. India is looking to have its garments, gems and leather goods gain a hold in the EU market. Negotiations are expected to be lengthy although both sides have set a target date of the end of 2008 to conclude an agreement. During the eighth EU-India Summit in December 2007 both sides also signed a memorandum of understanding on the "Country Strategy Paper for India for 2007-2010," which will support India's efforts to achieve the Millennium Development Goals and implement the India-EU Joint Action Plan. A "Delegation for Relations with India" has also been established in the European Parliament.

2.10.7 NATURAL HAZARD RISKS

Several major Indian cities, including the capital New Delhi, stand on or dangerously near fault lines, and with every tremor there are fears that a major urban centre may be hit by an earthquake. This came to pass in January 2001, when a massive earthquake struck the prosperous state of Gujarat, causing thousands of deaths and severe infrastructural damage. The October 2005 earthquake, which had its epicenter in northern Pakistan but also affected parts of Indian-administered Kashmir, was a reminder of the risk.

India suffers from numerous other natural hazards besides earthquakes. Drought and flooding are equally common, dependent on the monsoon rains. The latter can cause tremendous damage to infrastructure, though state food stocks have tended to reduce the sort of famines that accompanied such disasters in the past. Worst affected in recent years have been the states of Maharashtra, which experienced widespread flooding in July/August 2005, Orissa (cyclones, floods and droughts), Assam (floods) and Rajasthan (droughts), although changing weather patterns could lead to different circumstances in the future. A drought in 2002 was described as India's worst for 12 years, and afflicted Rajasthan, Uttar Pradesh, Madhya Pradesh, Rajasthan, Punjab, Haryana, Delhi, Karnataka, Kerala, Nagaland and Orissa. The cost of the disaster was estimated at over US$1 billion, although this was far higher in light of the negative impact it exerted on growth.

C-TRADE REVIEW

2.11 GLOBAL TRADE

2.11.1 OVERVIEW

The latest world economic forecast reveals that the world economy will grow at a slower pace than in 2007. The true depth and width of the U.S. Sub-prime mortgage crisis is now being revealed. As both borrowers and lenders continue to experience financial hardship, the risk that the U.S. economy is sinking further into a recession has increased. Global Insight has revised its forecast for 2008; U.S. real GDP growth is projected to decrease down to a mere 1.36 percent. Furthermore, U.S. import growth is projected to be negative for the first time since the 2001 recession. With the downturn of the U.S. economy and its negative impact on other countries, the new forecast also cuts the world real GDP growth by more than half a percentage point to 3.07 percent. World trade growth in real terms is projected to decrease by a full percentage point to below 6.5 percent in 2008. Global Insight remains cautious that the financial crisis created by the sub-prime mortgage crisis has yet to spread to more countries whose financial institutions had either directly or indirectly invested in the U.S. mortgage market. This crisis will negatively affect these countries' economies. Their economic growth could be even lower than what is currently forecasted, as a result, international trade could be depressed even further. Table 2.13 below provides information from the Global Insight forecasts for the economy and international trade of selected countries and country groups.

Table 2.13 Comparison of Economy and Merchandise Trade

(Annual Percent Change in Real Terms)

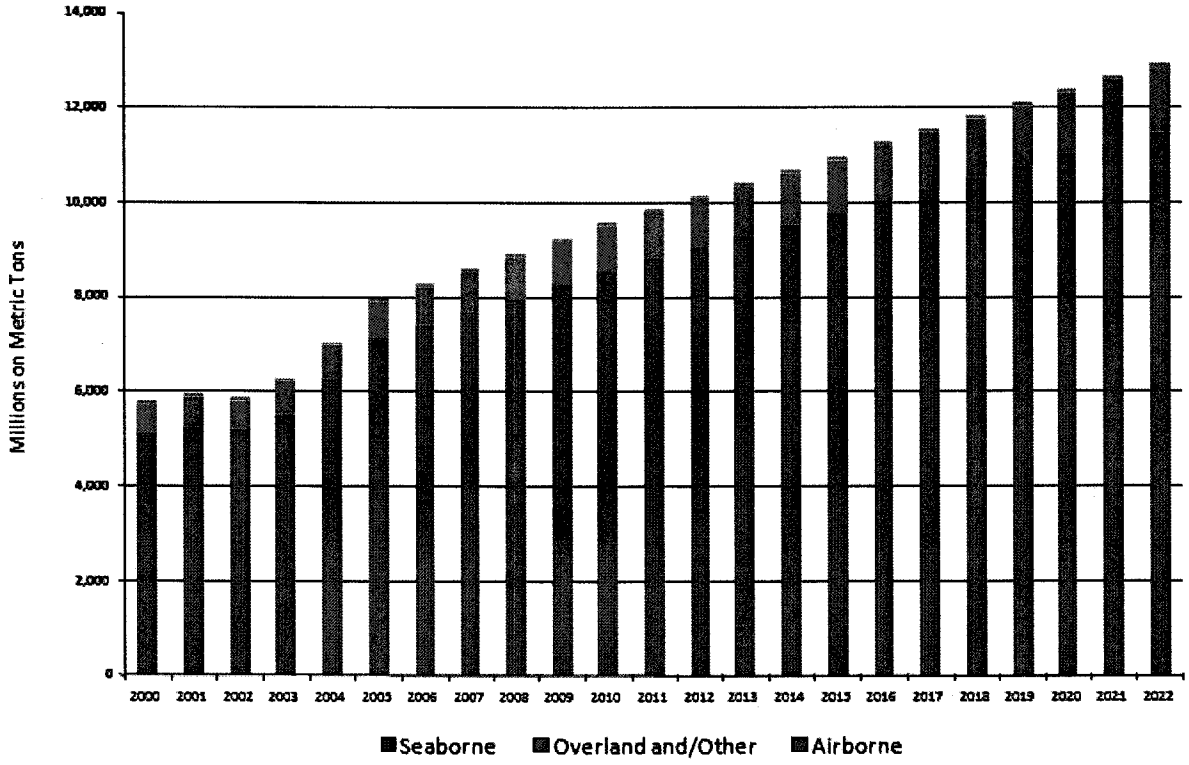
		2006	2007	2008	2009
World	Trade	9.63	7.57	6.46	7.48
	GDP	3.94	3.65	3.07	3.38
	Fixed Capital Formation	5.95	3.13	2.05	4.24
	Private Consumption	3.34	3.48	2.88	3.29
	Export Price	3.32	3.63	0.53	0.13
	Import Cost	2.28	-1.58	-5.81	-0.97
Asian Four	Export	10.52	11.10	8.87	10.52
	Import	11.48	9.86	6.84	9.21
	GDP	5.42	5.18	5.22	5.63
	Fixed Capital Formation	3.78	5.05	4.61	6.34
	Private Consumption	3.55	4.12	4.11	3.89
	Export Price	1.10	-2.19	-3.28	-1.08
	Import Cost to World	1.45	-4.83	-8.36	-2.53
	Import Cost to Self	3.32	1.31	-2.92	-1.65
South East Asia	Export	11.15	8.28	6.33	8.41
	Import	10.54	8.62	7.53	8.76
	GDP	5.98	5.99	5.59	5.46
	Fixed Capital Formation	5.57	5.61	6.10	6.78
	Private Consumption	3.76	5.34	5.08	4.59
	Export Price	3.78	0.77	-1.58	-0.95
	Import Cost to World	4.64	-1.42	-7.34	-2.37
	Import Cost to Self	-2.18	-3.78	-5.35	-2.95

Note: Asian Four refers to Korea, Taiwan, Singapore, and Hong Kong *Source: Global Insight*

Total world trade in 2008 is forecast to grow at a slower rate than in 2007; in 2008 total world trade is expected to grow at 3.8 percent down from 3.9 percent in 2007. Chart 2.31 depicts the annual growth rates of total world trade by mode through 2011. Seaborne trade is projected to grow at the same rate as it did in 2007; at 3.7 percent. Airborne trade is forecast to decrease in 2008, from 9.1 percent growth in 2007 down to 6.7 percent growth in 2008. Similarly, overland trade is projected to decrease slightly in 2008, from 5.1 percent in 2007 down to 4.8 percent in 2008. Both airborne and overland trade are more sensitive to high oil prices than seaborne trade, the slower growth in these two modes in 2008 is due in large part to high oil prices.

Chart 2.31 Forecast of Total World Trade by Mode

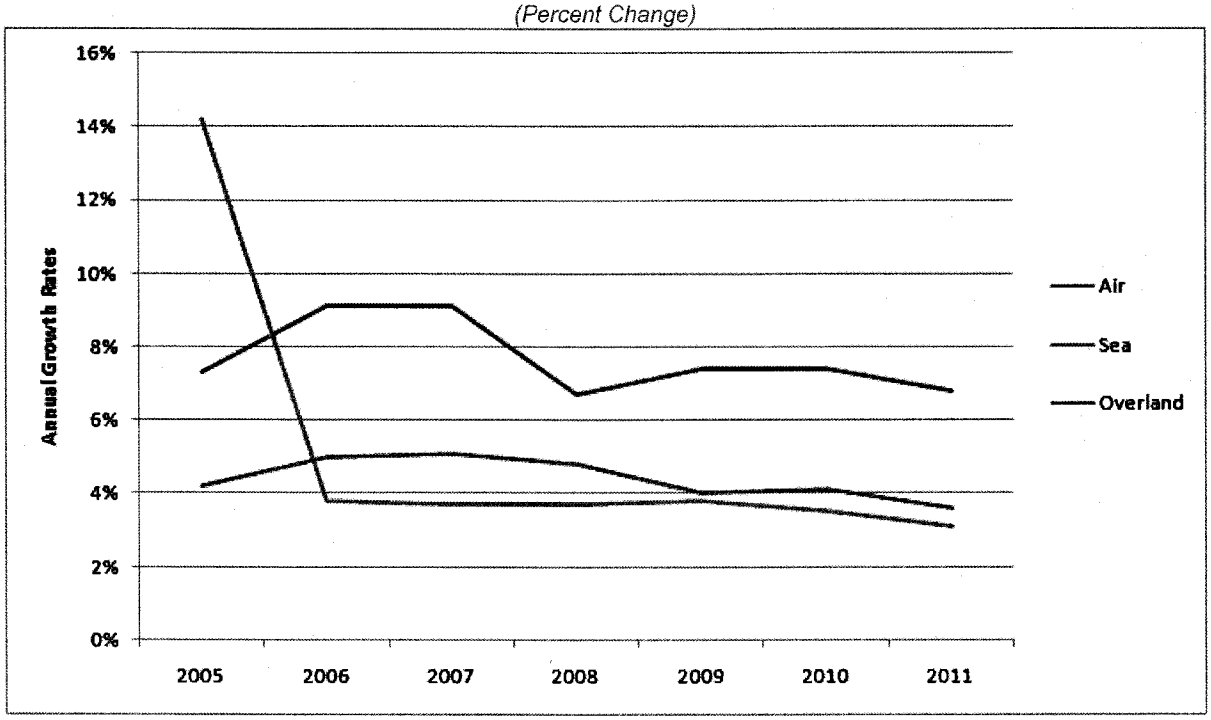
(Millions of Metric Tons)



Source: Global Insight

Chart 2.32 Annual Growth Rates of Global Trade Volumes by Mode

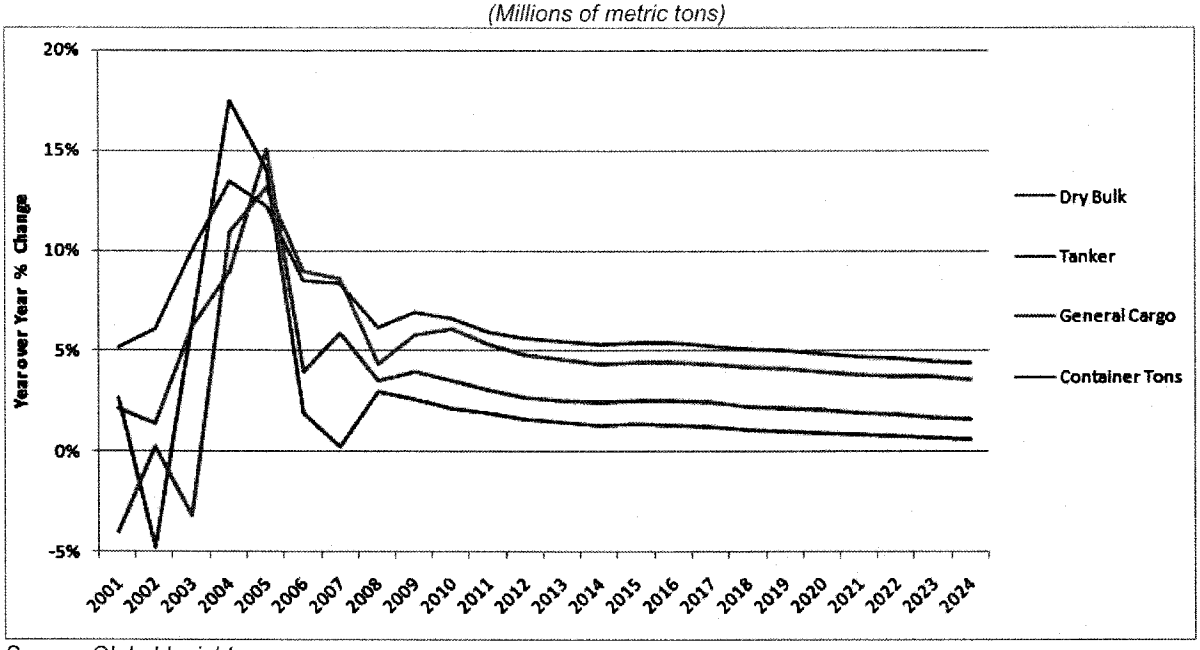
(Percent Change)



Source: Global Insight

Chart 2.33 Seaborne Trade by Service Type

(Millions of metric tons)



Source: Global Insight

2.11.3 IMPACT OF FALTERING U.S. ECONOMY

The continuing deterioration of the U.S. economy requires additional monitoring in order to examine its negative impact on the imports and exports of its trading partners. Global Insight forecasts that, in 2008, U.S. real investment is expected to drop by approximately 6.6 percent, and that private consumption will only inch up 0.83 percent, this is hardly in keeping with the population growth. The low levels of private consumption are likely to cause a marked decrease in the demand for imports; as a result U.S. real imports are expected to decrease by 1.79 percent in 2008. Table 2.14 below is a rough comparison of the current U.S. recession and the recession in 2001. An obvious difference is that, the 2001 recession was caused by a sudden burst of IT bubbles. Note that in 2000 the economy was still booming, and imports grew to a record high. In contrast, the current recession is a gradual emergence of financial crisis created by the inflated housing market and the sub-prime mortgage crisis. By 2007, U.S. economic growth had already begun to slow down, and import growth slid to its lowest growth rate since 2002. In 2008, the U.S. economy and imports will continue experience down-side pressure. They will gradually deteriorate in the first half of the year. This will allow households and firms to adjust their consumption, investment and production, and gives time to policy makers to take rescue measures. Therefore, it is likely that the current U.S. economic recession will not be as deep as the one in 2001, and the U.S. might not cut back on imports as much as it did in 2001.

Table 2.14 Comparison of the U.S. Economy and Trade in 2008 and 2001

(Annual percent change)

Year	2000	2001	2002	2007	2008	2009
Real GDP	3.66	0.75	1.60	2.19	1.36	2.17
Real Investment	6.06	-1.75	-3.52	-4.61	-6.60	2.22
Real Private Consumption	4.67	2.54	2.73	3.00	0.83	2.19
Real Trade	12.09	-3.27	5.33	1.31	-1.79	5.31
Nominal Trade	18.90	-6.24	2.06	5.18	-0.62	6.15

Source: Global Insight

Table 2.15 below is a comparison of select real U.S. imports in the current recession compared with the recession in 2001. In the current recession, imports of goods related to the housing market, such as furniture and construction materials, have declined more than they did in the 2001 recession. Imports of construction materials started to decline in 2007. Imports of IT machinery also started to decline in 2007, and they will continue to decline in 2008. However, the scale of their decline will be smaller than in 2001. In nominal terms, U.S. imports of food in the current recession are expected to grow higher than in the 2001 recession – from 8.02 percent in 2007 down to 3.56 percent in 2008, compared with 5.90 percent in 2000 and 2.97 percent in 2001. However, the dollar has been falling and food prices in the world market have been rising, in combination with the current recession this has caused U.S. imports of food to stagnate when measured in real terms. Countries whose exports rely more on the U.S. market will be affected even more by the U.S. recession.

Table 2.15 Comparison of the U.S. Selected Real Imports in 2008 and 2001

(Annual percent change)

Year	2000	2001	2002	2007	2008	2009
Food	3.45	4.11	7.97	-0.59	0.66	4.01
Apparel & Footwear	10.30	0.22	1.70	1.61	1.46	4.89
Furniture	15.07	-0.77	18.87	3.06	-2.99	7.25
Construction Material	4.36	-1.43	4.84	-4.83	-4.70	4.40
IT Machinery	23.59	-11.73	7.54	-6.84	-2.37	7.55
Non-IT Machinery	10.34	-5.18	-0.03	19.90	-4.69	5.00

Source: Global Insight

The falling U.S. dollar has helped U.S. export growth in recent years. However, the current U.S. recession is likely to have a negative impact on countries whose exports rely on the U.S. market. As the financial crisis spreads beyond U.S. borders to other developed countries the effects of the recession is likely to become more pronounced. In 2008, world investment growth is projected to decrease by one percentage point to two percent, and the growth of private consumption is likely to decrease by more than a half percentage point to below three percent. The majority of U.S. exports are capital goods and agricultural commodities. The weak U.S. dollar has made U.S. goods even cheaper than before, and the demand for U.S. agricultural commodities is especially strong due to bad harvests in other part of the world and the emerging demand for converting hydrocarbon to bio fuel. However, the demand for U.S. capital goods will be constrained worldwide as countries face tight budget for capital spending. Therefore, in 2008, U.S. export growth in real terms could drop to below five percent, and, in nominal terms, it could drop to below eight percent.

Fortunately, there are some countries whose financial institutions did not much invest (directly or indirectly) in the U.S. sub-prime mortgage market. These country's economies have remained healthy and their demand for import is still strong. This is different from the 2001 recession when too many countries were hurt by IT bubbles. The 2001 recession was a global economic recession. In the 2001 recession real GDP growth for the world economy dropped to only 1.5 percent, investment declined, and so did world trade. In comparison, the current recession is so far only a U.S. economic recession, not a global economic recession. It has only dragged the world economy and world trade growth to be moderately below their long-term trend. Table 2.16 below is a comparison of the world economy and trade in the current U.S. recession compared with the 2001 global recession.

Table 2.16 Comparison of the World Economy and Trade in 2008 and 2001

(Annual percent change)

Year	2000	2001	2002	2007	2008	2009
Real GDP	4.14	1.52	1.87	3.65	3.07	3.38
Real Investment	5.23	-0.38	-1.13	3.13	2.05	4.24
Real Private Consumption	4.08	2.47	2.20	3.48	2.88	3.29
Real Trade	8.42	0.67	4.68	7.57	6.46	7.48
Nominal Trade	12.53	-2.33	3.07	11.47	7.03	7.62

Source: Global Insight

Table 2.17 below is a comparison of the world trade by large commodity groups in 2008 and 2001. In 2001, trade of IT machinery declined the most; this is because the recession was primarily caused by the bursting of IT bubbles around the world. In comparison, in 2008, IT machinery continues to be in high demand in many countries. In 2001, though in recession, the volume of trade of energy products was unusually large, because that year the price of crude oil

dropped dramatically. In comparison, in 2008, the trade of energy products will be more sluggish, because of tightening supply and record high crude oil prices. The increased energy consumption by large and fast growing emerging countries such as China and India, will require further exploration of new oil supply and processing facilities as well as increased research in alternative energy sources. The increased demand for metal products that are used to build such facilities should more than offset the decreasing demand for metal products used in residential construction in the U.S. Therefore, international trade of metal and products will remain strong in 2008.

Table 2.17 Comparison of the World Trade by Commodity in 2008 and 2001

(Annual percent change, in real terms)

Year	2000	2001	2002	2007	2008	2009
Agriculture and Forestry	8.25	3.23	3.08	3.47	2.81	3.37
Non-energy Mineral	-7.56	6.93	0.64	3.68	1.69	2.63
Energy Mineral and Product	-0.34	4.32	2.26	1.40	1.49	2.15
Chemical	4.76	9.43	10.31	7.19	6.16	6.56
Non-metal and Products	5.60	-0.99	7.23	6.77	5.66	6.19
Metal and Products	6.30	-0.93	6.35	4.99	4.34	5.23
Non-IT Machinery	9.86	-1.62	1.36	13.98	6.00	7.32
IT Machinery	25.89	-3.97	6.47	8.35	10.03	12.18
Transportation	1.03	2.48	4.19	6.58	5.04	5.43
Food and Beverage	0.36	4.53	1.27	3.47	3.87	3.18
Textile, Apparel, and Footwear	6.74	0.90	3.67	5.88	6.03	5.66
Furniture, Toy, Sport, and Travel Goods	8.00	1.62	6.25	9.05	6.61	7.26

Source: Global Insight

Many economists believe that the U.S. economy will recover by the end of 2008, and that economic growth will inch up towards its long-term trend by 2009. The U.S. government has instituted various rescue measures that may stop the financial crisis and stimulate economic growth towards the end of 2009. However, it is unlikely that U.S. private consumption growth will be able to return to the high levels observed in the past one and a half decades. The robust private consumption observed in the late 1990s was boosted by IT-bubble related income; in the last seven or eight years, it was supported by the inflated home equity credit. U.S. imports of consumer goods in those periods were even higher because of cheap goods from China. High energy price are eroding disposable income, and the prices of imports are on the rise. Therefore, Global Insight does not expect that, in the near future, U.S. imports of consumer goods will return to the high growth rates observed in the past one and a half decades. For the world as a whole, the picture is brighter. Since this time it is only a U.S. economic recession, not a global economic recession, when the U.S. economy is back above water, the world economy and trade growth is projected to move up to the long-term trend in 2009.

2.11.4 MARITIME TRADE

Dry Bulk trade is projected to grow at a slower pace in 2008 than in 2007. In 2007, Dry Bulk trade grew by six percent this is projected to decrease to four percent in 2008. The slower Dry Bulk trade is due in part to slow growth rates in the trade of coal and grain. General Cargo trade growth is projected to decrease markedly from nine percent in 2007 to four percent in 2008.

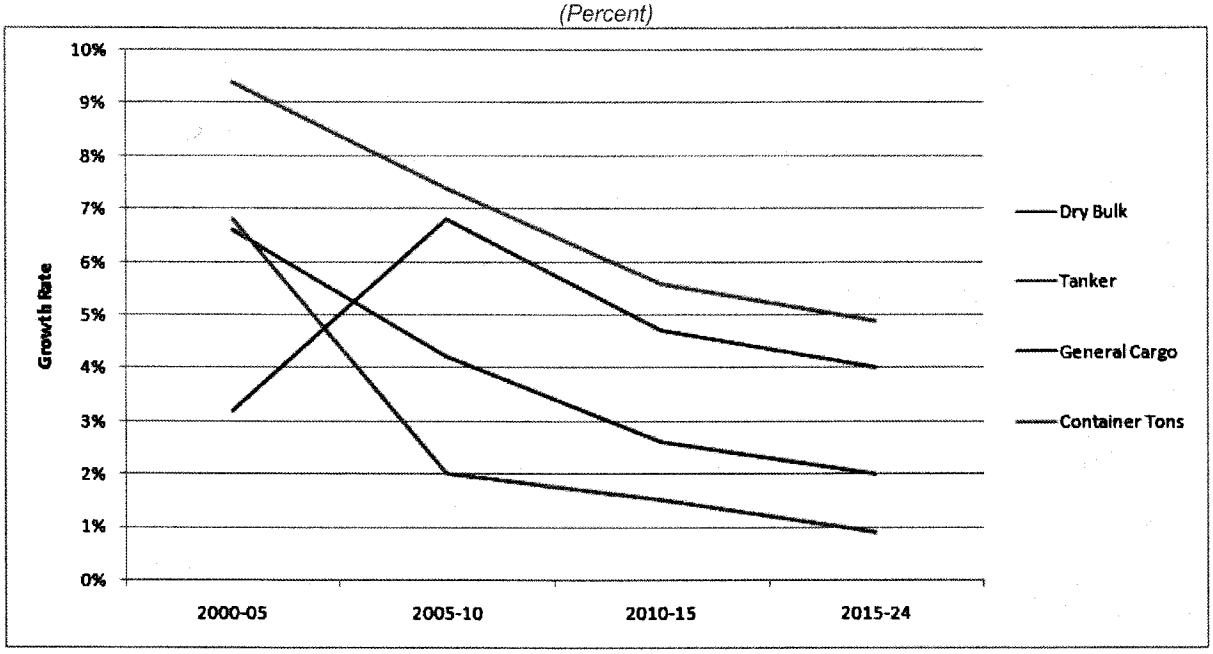
Container trade is projected to grow at a slightly slower pace in 2008 than it did in 2007. In 2007, containerized trade grew at an impressive eight percent however; it is projected to decrease down to six percent in 2008. In 2007 this growth was explained by the stronger than expected global economic growth in the first half of the year followed by more subdued growth in the second half of the year. While in 2008 the first half of the year is projected to have weak global economic growth and with the beginnings of a rebound in the second half of the year, resulting in the growth rates depicted in the graph above.

Liquid bulk trade is forecast to grow at a higher rate in 2008 than in 2007. Liquid bulk trade did not grow in 2007; however, it is projected to grow at three percent in 2008 as oil prices are expected to decline in the second half of the year. Liquid bulk cargo shipments are expected to grow at the slowest rate compared with the other three service types, averaging 2.6 percent over the forecast period.

The shares of global sea trade by service type in tons are shown in the pie chart. The share of container trade increased slightly from 2006 to 2007; from 11 percent to 12 percent and will remain at the same level in 2008. The share of dry bulk and general cargo also remained fairly steady in 2006 to 2007 at 38 percent and five percent, respectively. The share of tanker trade decreased incrementally in 2007 compared with 2006 from 46 percent in 2006 down to 44 percent in 2007. All four service types are projected to maintain the same market share in 2008 as they did in 2007.

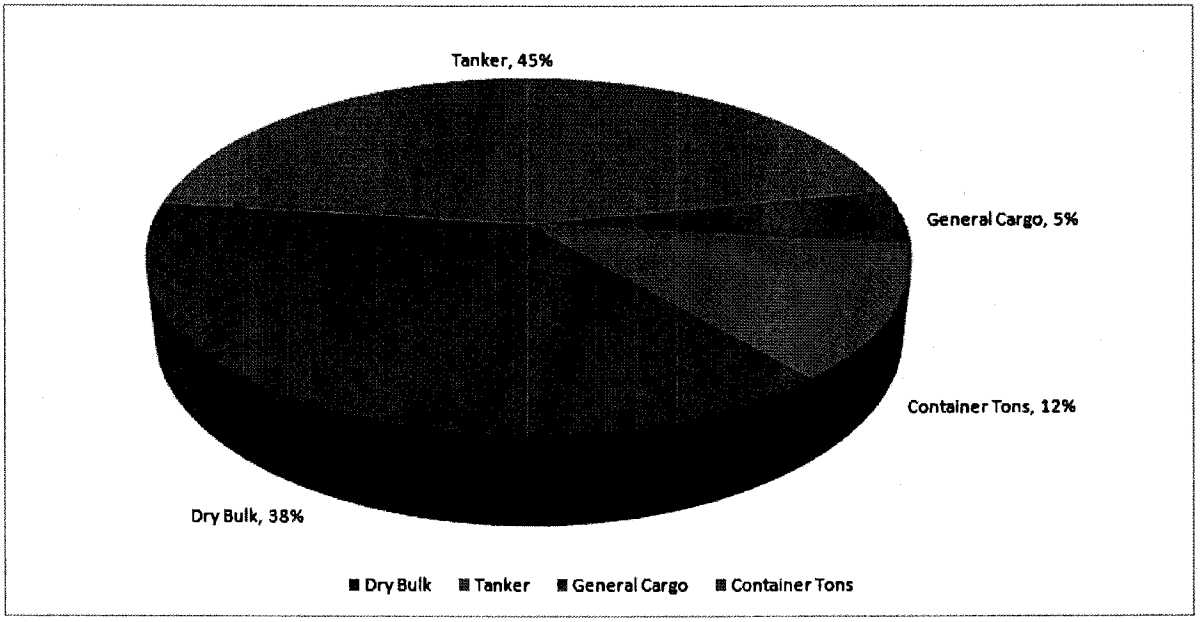
Chart 2.34 Growth Rates of Four Major Service Types—Ocean Freight

(Percent)



Source: Global Insight

Chart 2.35 Shares of Total Sea Trade in 2007



Source: Global Insight

Seaborne Trade by Region

The Middle East and Latin America are the first and second largest exporters of seaborne tons in the world. China and Northeast Asia is the third largest exporters of seaborne tons in the world. By 2024, Northeast Asia is projected to surpass the Middle East as the second largest exporter of seaborne tons

Northeast Asian seaborne exports are projected to grow at a slower rate in 2008 than in the previous year. Seaborne exports from this region are projected to grow at a rate of 5.1 percent in 2008 down from 7.5 percent in 2008. In contrast to this, Middle East seaborne exports are forecast to grow at a much higher rate in 2008 than they did in 2007; from 0.5 percent in 2007 up to 2.27 percent in 2008. The higher growth rate of Middle East seaborne exports is due in large part to OPEC increasing oil supplies and lower oil prices in the second half of this year. Similarly Latin America is forecast to see an increase in the growth of the region's seaborne exports from 1.2 percent in 2007 to 2.8 percent in 2008. High commodity prices will contribute significantly to increased seaborne exports from Latin America.

Northeast Asia's export growth will continue to be driven by China in 2008. Indeed, more than 62 percent of Northeast Asia's seaborne exports are from China. Chinese seaborne exports are projected to grow at 7.1 percent in 2008. However, this growth rate is contingent on the assumption that the U.S. recession will not become a worldwide recession.

Similarly, the Indian Subcontinent continues to boast the highest average growth rates of seaborne exports; this is primarily due to India's recent impressive economic growth. In 2008, Indian seaborne exports are forecast to grow at 8.0 percent. Some of the main factors that are contributing to India's remarkable trade growth include; the development of India's world-class information technology (IT) industry, the start of a new wave of economic reform, and India's increasing integration into the global economy. These factors have also lead to strong

economic growth in India, as a result despite the world economic downturn India's GDP in 2008 is expected to be stellar at 8.0 percent.

Table 2.18 Seaborne Long-Range Forecast — Exports
(Million metric tons)

Export Region/Year	2005	2007	2010	2015	2024	Avg. Annual Growth 2005-07	2007-10	2010-24
North America	563	682	784	874	1026	10.0%	4.7%	1.9%
North Europe	325	330	364	416	492	0.8%	3.3%	2.2%
NE Asia	658	781	931	1190	1725	8.9%	6.0%	4.5%
SE Asia	541	602	659	742	869	5.4%	3.1%	2.0%
Med	208	238	268	310	381	6.9%	4.0%	2.6%
Middle East	1361	1413	1504	1598	1722	1.9%	2.1%	1.0%
Indian Subcontinent	163	189	244	335	514	7.9%	8.8%	5.5%
ANZ	685	724	790	885	1049	2.8%	3.0%	2.0%
Latin America (Inc Mex/CRB)	1253	1272	1401	1593	1953	0.7%	3.3%	2.4%

Source: Global Insight

Global seaborne imports by region are outlined in Table 2.19 below. North America is the second largest importer in the world in seaborne ton terms. Due to a weak U.S. dollar and poor economic growth in the second half of the year, U.S. demand for seaborne imports decreased for the first time this decade in 2007 by -1.7 percent. The U.S. economy is expected to rebound slightly in the second half of 2008, as a result North American seaborne imports are projected to increase slightly by 1.9 percent in 2008.

Other than North America, the Indian Subcontinent is the only other region that is projected to see its seaborne import growth increase in 2008 over 2007 growth. Indian Subcontinent seaborne imports are forecast to grow by 8.1 percent in 2008 compared with 7.1 percent in 2007. This growth is driven primarily by India. In 2008, India's seaborne imports are expected to grow by 8.6 percent compared with 7.3 percent in 2007.

Northeast Asia continues to remain the world's largest importer in seaborne ton terms. Like exports, seaborne imports are driven by China. As China's economy continues to grow China requires increasingly more raw materials to feed production, this has lead to an increase in its imports. As a result, China's seaborne imports from the world are expected to grow at 7.1 percent in 2008.

Table 2.19 Seaborne Long-Range Forecast — Imports
(Million metric tons)

Export Region/Year	2005	2007	2010	2015	2024	Avg. Annual Growth 2005-07	2007-10	2010-24
North America	1,151	1,137	1,230	1,361	1,616	-0.6%	2.7%	2.0%
North Europe	761	784	831	907	1,085	1.5%	1.9%	1.9%
NE Asia	2,453	2,677	3,011	3,454	4,183	4.5%	4.0%	2.4%
SE Asia	425	471	519	589	694	5.3%	3.3%	2.1%
Med	580	640	689	754	872	5.1%	2.4%	1.7%
Middle East	179	204	237	289	407	6.9%	5.1%	3.9%
Indian Subcontinent	365	422	519	639	775	7.6%	7.1%	2.9%
ANZ	74	77	81	90	106	1.8%	1.7%	1.9%
Latin America (Inc Mex/CRB)	326	380	433	500	622	7.9%	4.4%	2.6%

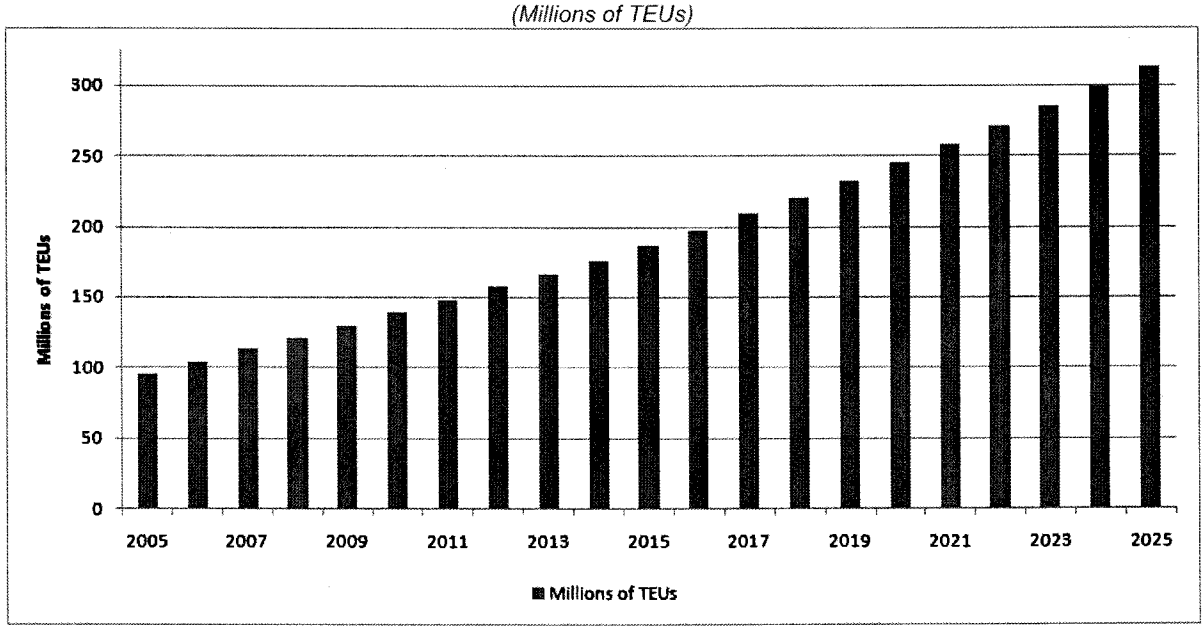
Source: Global Insight

Containerized Traffic

World container trade, measured in TEUs, is projected to grow at a much slower rate in 2008 than it did in previous years. 2007 marked the beginning of the deceleration in world container trade growth, with growth estimated at 8.8, down from 9.1 percent in 2006. Overall, world container trade is projected to grow by 6.5 percent in 2008, marking its trend towards a sustainable average container trade growth rate of 6.9 percent over the forecast period. Despite the deceleration in container cargo growth, it continues to grow faster than any segment of ocean cargo shipping.

Chart 2.36 Total Container Trade

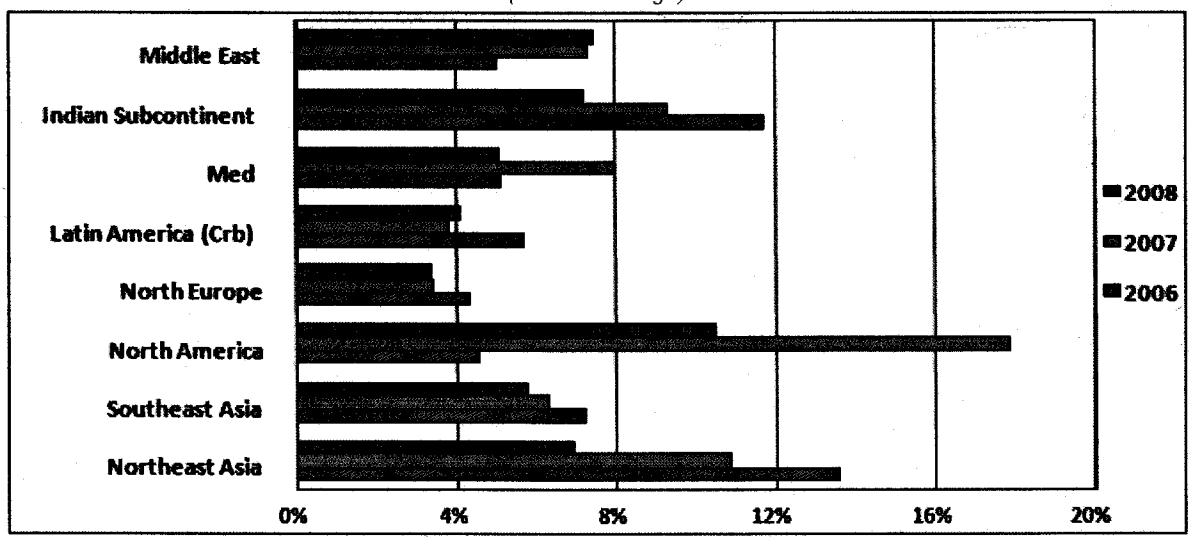
(Millions of TEUs)



Source: Global Insight

North America is projected to have the highest container export growth in 2008 of 10.5 percent. As the world economic outlook dampens no other region is forecast to post double digit container export growth in 2008. The Middle East and the Indian Subcontinent will post the second and third highest container export growth rates in 2008 of 7.4 percent and 7.2 percent respectively. As both the Euro and the Pound container to strengthen, North Europe is forecast to have the slowest export container growth in 2008. North Europe container exports are projected to grow at only 3.4 percent in 2008. Northeast Asia will also see a decrease in the region's container export growth in 2008, down to 6.9 percent from 10.5 percent in 2007.

Chart 2.37 Growth Rates of Containerized Exports by Region
(Percent change)

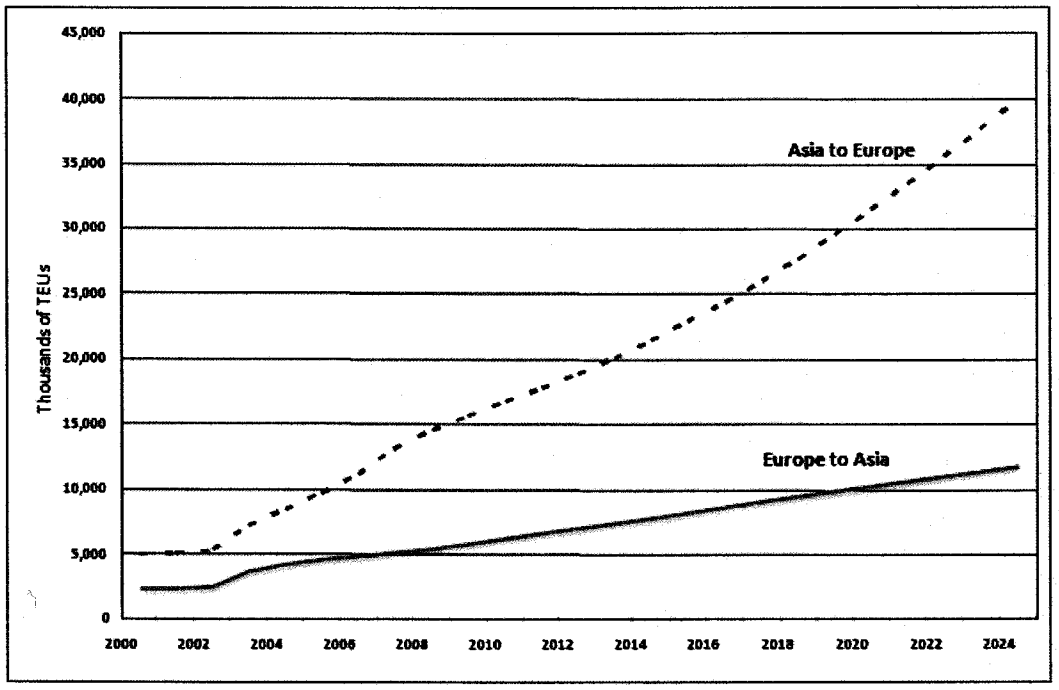


Source: Global Insight

2.12 FAR EAST-EUROPE TRADE

While in volume terms both Far East to Europe and Europe to Far East container trade is projected to increase, the growth rate of container trade for both routes will decrease in 2008. However, Far East to Europe container trade growth is forecast to decrease at a more marked pace than Europe to Far East container trade.

Chart 2.38 Europe Container Trade with Asia
(Thousands of TEUs)



Source: Global Insight

The difference in growth rates over the short- and long-term for eastbound and westbound trade are highlighted in the following two tables. Far East to Europe container trade grew at an impressive 8.4 percent in 2007; this is forecast to decrease noticeably to 12 percent in 2008. Europe to Far East container trade grew at a rate of 5.9 percent in 2007; this is forecast to decrease slightly to 5.3 percent in 2008. The ratio of westbound to eastbound TEU volumes continued to be about 2.7:1 in 2008. Furthermore, westbound trade will continue to grow at a higher rate than eastbound trade throughout the forecast period.

Table 2.20 Change in Asia-Europe Container Trade

Trade Direction	Annual Growth Rate					Average Annual Growth Rate		
	2006	2007	2008	2009	2010	2010-2015	2015-2020	2020-2025
Southeast Asia to Europe	7.4%	10.5%	8.4%	4.8%	4.0%	4.3%	5.0%	4.7%
Europe to Southeast Asia	5.7%	4.8%	4.9%	4.9%	5.4%	4.4%	2.9%	2.3%
Far East to Europe	16.3%	18.4%	12.0%	8.4%	7.9%	6.8%	6.6%	6.0%
Europe to Far East	5.3%	5.9%	5.3%	7.2%	7.1%	5.7%	4.6%	3.4%

Source: Global Insight

Table 2.21 Change in Asia-Europe Container Trade 2005-2025

Trade Direction	Average Annual Growth Rate
Southeast Asia to Europe	5.2%
Europe to Southeast Asia	3.7%
Far East to Europe	7.9%
Europe to Far East	4.9%
World Total	6.1%

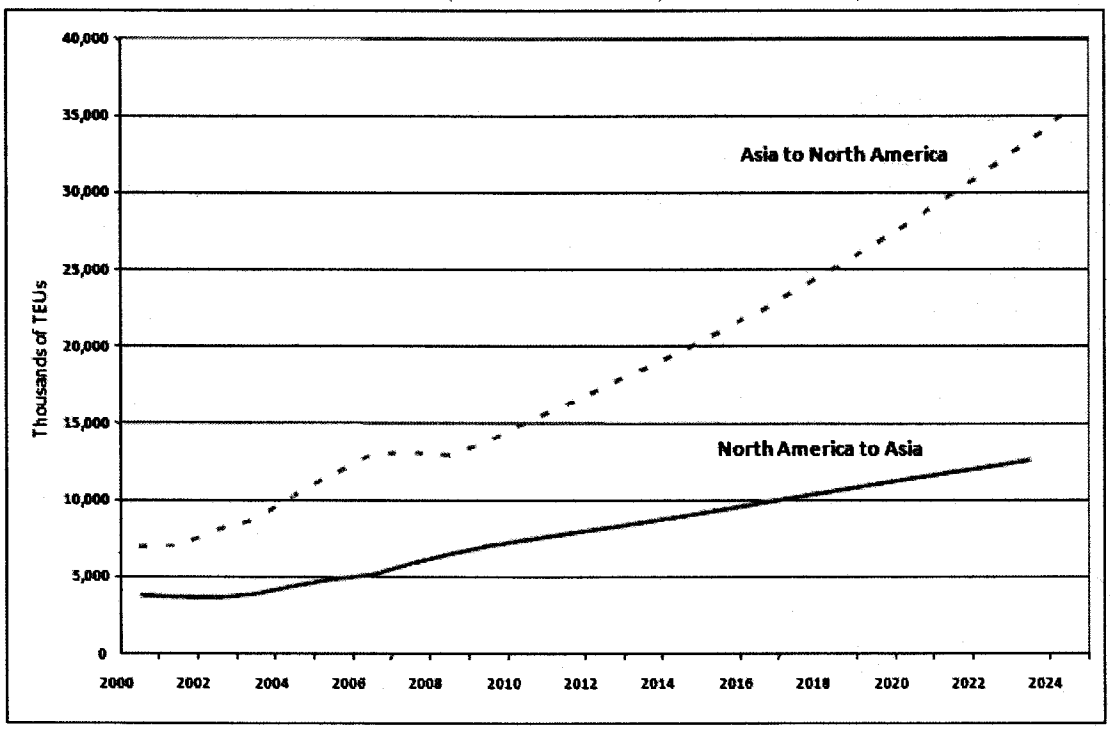
Source: Global Insight

2.13 Asia – North America Trade

As the U.S. economy slides into a recession, U.S. consumer demand for foreign goods is also projected to decrease significantly. As inflation continues to erode income gains, real consumer spending growth in the U.S. is expected to decrease from 2.9 percent in 2007 to 1.4 percent in 2008. This will have a significant effect on the volume of Far East to North America container trade, which is forecast to decrease for the first time in this decade from 13.1 million TEUs in 2007 to 12.8 million TEUs in 2008. This represents a decrease in Far East to North America container trade growth from 1.7 percent in 2008 to -1.3 percent in 2008. Conversely North America to Far East container trade growth is forecast to increase with container trade growth for this route remaining strong in 2008. North America to Far East container trade growth is forecast to decrease slightly from 14.4 percent in 2007 to 10.5 percent in 2008. The volume of North America to Far East container trade is also projected to increase from 5.8 million TEUs in 2007 to approximately 6.5 million TEUs in 2007. Despite the negative growth of Far East to North America container trade, the ratio of westbound to eastbound TEU volumes will continue to be about 2:1 in 2008.

Chart 2.39 North America Container Trade with Asia

(Thousands of TEUs)



Source: Global Insight

The difference in growth rates over the short- and long-term for eastbound and westbound trade are highlighted in the following two tables.

Table 2.22 Change in Asia- North America Container Trade

Trade Direction	Annual Growth Rate					Average Annual Growth Rate		
	2006	2007	2008	2009	2010	2010-2015	2015-2020	2020-2025
Southeast Asia to North America	2.7%	3.9%	2.9%	4.3%	6.7%	5.0%	5.1%	5.0%
North America to Southeast Asia	1.2%	28.1%	18.4%	6.5%	4.3%	3.9%	3.0%	2.8%
Far East to North America	11.3%	2.2%	-1.3%	7.1%	9.2%	7.0%	6.3%	5.9%
North America to Far East	5.4%	14.4%	10.5%	8.5%	5.6%	4.8%	4.1%	3.2%

Source: Global Insight

Table 2.23 Change in Asia-North America Container Trade 2005-2025

Trade Direction	Average Annual Growth Rate
Southeast Asia to North America	4.8%
North America to Southeast Asia	5.2%
Far East to North America	6.2%
North America to Far East	5.2%
World Total	6.1%

Source: Global Insight

D-CARRIERS AND SERVICE STRINGS

The dramatic growth of the world fleet is highlighted with the advent of the very large container ships over 8,000 TEU in the graphics and tables below. The Fully Cellular (FC) fleet for years 2007-2011 is expected to increase from the current 9.6 million TEU capacity by about 65 percent to 15.8 million TEUs, driven by the continued expansion of the demand side of the trade which is forecast to treble by 2015 when compared to 2001. Assessing the global and regional demand is challenging as there is no single source of data available that is particularly accurate regarding container traffic. All sources provide their individual estimates of volumes, some based on port statistics and others based on country to country trade calculated to containers (TEU). All have their drawbacks. This report has used the data from Global Insight's "World Trade Service". The numbers are consistent across the various trades.

The growth rates beyond 2010 for container vessels are dominated by Ultra Large Container Ships (ULCs) of over the 12,000 TEU, and it has to be assumed that for the most part the vessels over 8,000 TEU will be deployed on the Far East to Europe route, with some stretching to the U. S. East Coast.

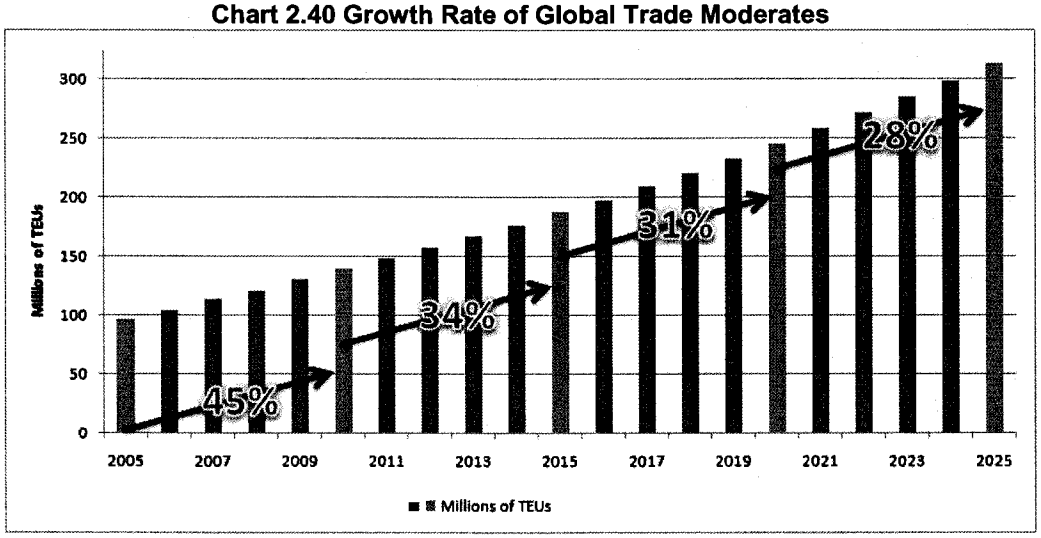
The liner industry has changed to meet the challenges of globalization and the near continuous growth in demand. This has resulted in a shift to larger vessels as companies seek reductions in slot costs as a means of dealing with increasing costs that are not readily recoverable. A second change has been the on-going consolidation of the industry through mergers and acquisitions.

A comparison of the growth rates between supply and demand highlights the industry's tendency to order new capacity with a time lag which so often in the past has caused temporary excess capacity and consequent drops in freight rates. Supply is expected to continue to outpace growth in demand through 2009 on a global basis before shifting in the other direction as in the past.

The trend has been, and will continue to be, for Carriers to work together in joint services and alliances that offer "strings" of services across a larger number of ports than they could service individually.[1] This will increase the use of hub ports as the ULCs must minimize the number of port calls if they are to stay efficient.

[1] Service strings referenced throughout this document vary based on time period, and with ongoing the recession strings are apt to change rapidly.

Chart 2.40 Growth Rate of Global Trade Moderates



Source: Global Insight

2.14 REVIEW OF TOP 20 GLOBAL CARRIERS

The Liner industry has become highly consolidated in terms of capacity market share. When the Top 20 carriers are analyzed, it can be seen that they have reached a market share penetration of 92 percent by the end of 2007. Further consolidation is expected within this group of companies, however the main impact will be felt at the Top 10 level, which is projected to increase from 65 percent of the total market to 70 percent.

What this means for the marketing initiative of any new port development is that the number of actual clients that can bring the substantial amounts of business required for success is limited. This has been the experience of Port Tanjung Pelepas, which for all intents and purposes only has two clients, Maersk Line and Evergreen. Nevertheless, these two customers provide enough throughput to have made the port highly successful.

Table 2.24 Carrier Concentration (based on current Orderbook)

	2000	2007	2011 (E)
Total Container Fleet Capacity (M TEU)	5.1	10.7	14.3
Top 20 Capacity Share (%)	75%	92%	90%
Top 10 Capacity Share (%)	49%	65%	70%
Top 5 Capacity Share (%)	27%	49%	49%

Source: HA Analysis

In terms of volumes carried, Table 4.2 below summarizes the liftings of the Top 20 container operators for 2005 through 2007. The estimated total liftings of these 20 operators account for nearly 80 percent of global container trade, which is very much in line with their capacity share.

Table 2.25 Top 20 Container Operators by Full Container Carryings

Main or parent company	*2007 TEU*	*Share 2007*	*2006 TEU*	*2005 TEU*
APL	4,714,000	3.8%	4,193,000	3,891,000
CSCL	6,630,000	5.4%	5,568,000	4,597,000
CMA CGM	7,240,000	5.9%	6,448,000	5,670,000
Coscon	5,800,000	4.7%	5,110,000	4,535,000
CSAV	2,400,000	1.9%	2,213,000	2,075,000
Evergreen	6,200,000	5.0%	5,700,000	5,000,000
Hanjin	4,300,000	3.5%	3,904,000	3,529,000
Hapag Lloyd	5,500,000	4.5%	5,004,000	4,876,000
Hyundai	2,415,000	2.0%	2,157,000	2,138,000
K Line	3,300,000	2.7%	2,938,000	2,650,000
Maersk Line	14,500,000	11.8%	13,320,000	13,096,000
MOL	3,200,000	2.6%	2,850,000	2,351,000
MSC	10,000,000	8.1%	8,250,000	6,500,000
NYK	3,800,000	3.1%	3,533,000	3,260,000
OOCL	4,602,000	3.7%	3,894,000	3,523,000
PIL	2,550,000	2.1%	2,300,000	2,100,000
RCL	2,700,000	2.2%	2,552,000	2,291,000
Wan Hai	2,750,000	2.2%	2,580,000	2,400,000
Yang Ming	3,050,000	2.5%	2,720,000	2,416,000
ZIM	2,400,000	1.9%	2,071,000	2,041,000
Total Top 20	***98,051,000***	***79.5%***	***87,305,000***	***78,939,000***
Estimated World Total	***123,400,000***	***100%***	***113,200,000***	***102,000,000***

Source: DynaLiners Trades Review 2008

Table 4.3 reports the liftings of the major carriers on the predominant Far East to Europe leg for 2006 (the latest year available). The carriers represent the core customer base for the Weh Island project. However, of the 12 companies identified below, only seven operate outside of a formal alliance and virtually all of the rest are in some form of vessel sharing/slot swap arrangement.

Table 2.26 Estimated Far East to Europe Liftings, 2006

	Million of TEUs
Maersk	3.4
MSC	1.6
CMA CGM	1.6
Evergreen	1.1
Hamjin	0.9
Hapag Lloyd	0.8
Coscon	0.8
CSCL	0.8
OOCL	0.7
APL	0.6
K Line	0.6
NYK	0.6
MOL	0.4

Source: Dynamar

2.14.1 CURRENT FLEET

The current fleet of the Top 20 Carriers is dominated by the top five companies as highlighted in Table 4.2 above. The table below splits the fleet of the top carriers by owned versus chartered. This highlights the industry strategy of operating with a significant capacity of non owned vessels. The primary reasons for this strategy are financial in nature, as it allows companies to buy the ships and then amortize them over 20 or 25 years, as well as the flexibility in being able to increase and decrease the fleets to better match the demand cycles in order to maintain as high a capacity utilization as possible which in turn should result in better freight rates.

Table 2.27 Top 20 Operated Fleets April 2008

		Total		Owned		Chartered		# of
Rank	Operator	TEU	Ships	TEU	Ships	TEU	Ships	services
1	APM-Maersk	1,996,863	550	1,062,462	195	934,401	355	162
2	Mediterranean Shipping Co.	1,255,242	386	712,015	214	543,227	172	101
3	CMA CGM Group	906,256	380	282,257	90	623,999	290	135
4	Evergreen Line	628,320	178	363,425	102	264,895	76	98
5	Hapag-Lloyd	500,799	140	256,581	61	244,218	79	92
6	COSCO Container L.	450,864	143	252,411	96	198,453	47	79
7	CSCL	425,509	137	251,192	87	174,317	50	64
8	APL	419,750	126	134,798	37	284,952	89	91
9	NYK	410,429	122	254,672	50	155,757	72	77
10	MOL	376,326	117	176,860	39	199,466	78	102
11	Hanjin / Senator	359,274	85	126,821	24	232,453	61	75
12	OOCL	352,351	83	204,149	36	148,202	47	69
13	K Line	307,278	94	169,306	34	137,972	60	79
14	Zim	284,674	112	136,009	42	148,665	70	82
15	Hamburg-Süd Group	282,174	117	116,209	38	165,965	79	52
16	Yang Ming Line	278,533	84	177,077	52	101,456	32	64
17	CSAV Group	275,303	92	21,208	4	254,095	88	40
18	Hyundai M.M.	236,079	52	87,273	16	148,806	36	56
19	PIL (Pacific Int. Line)	177,304	114	104,296	73	73,008	41	58
20	Wan Hai Lines	144,689	84	101,237	52	43,452	32	39

Source: Alphaliner 1999-2008

The current fleet in terms of numbers is dominated by the vessels below 5,000 TEU, but as one looks forward at the existing orderbook it becomes clear that the industry is rapidly moving towards larger vessels in their drive to bring down the average slot costs and thereby maintain better profitability.

Table 2.28 Cellular Fleet and Orderbook by Size Range

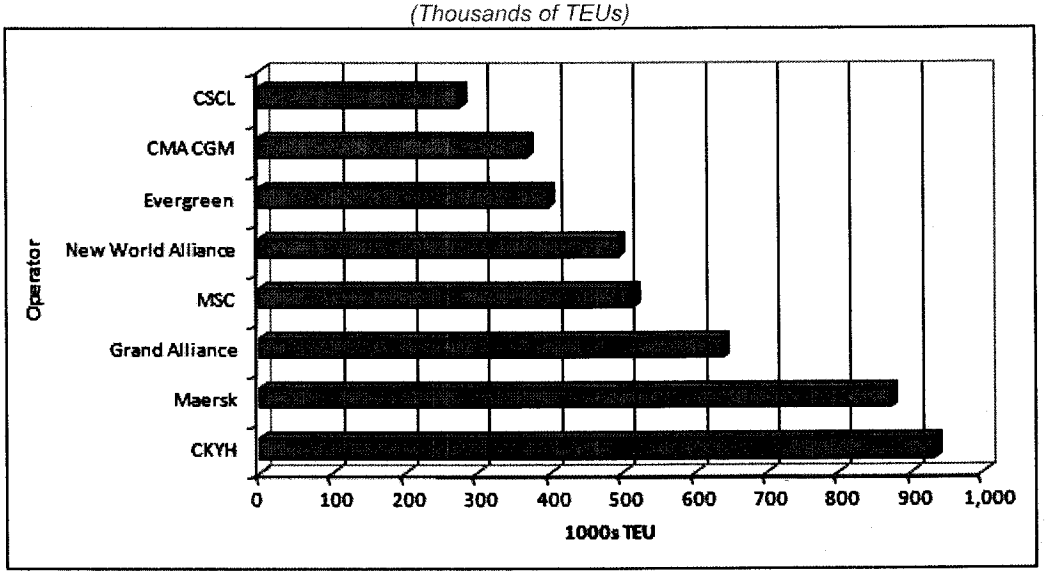
Size (TEU) Category	Operated Fleet			Orderbook			Orderbook Share
	Ships	TEU	Ø TEU	Ships	TEU	Ø TEU	
>7,500	190	1,671,000	8,800	330	3,530,000	10,700	211%
>5,000	413	2,415,000	5,800	177	1,084,000	6,100	45%
>4,000	401	1,780,000	4,400	256	1,121,000	4,400	63%
>3,000	315	1,072,000	3,400	72	248,000	3,400	23%
>2,000	693	1,749,000	2,500	155	401,000	2,600	23%
>1,000	1,190	1,674,000	1,400	305	439,000	1,400	26%
>100	1,150	696,000	600	144	119,000	800	17%
Total	**4,352**	**11,057,000**	**2,500**	**1,439**	**6,942,000**	**4,800**	**63%**

Source: Clarkson's Shipping Intelligence Network

The current state of the liner market, and as noted above, the future, is that carriers are increasingly operating in alliances and joint services in order to maximize their competitiveness and ability to service more ports, but with smaller numbers of large ships individually. The graphic below highlights the impact of alliances vis-a-vis individual operators. It is for this reason that we have recently seen the development of joint services between normally very independent minded lines. On the Transpacific trade Maersk Line, MSC, and CMA CGM have joined together to form a number of "strings" that jointly serve different parts of the trade from the Far East to the North American West Coast.

Chart 2.41 Alliances & Operators Current TEU

(Thousands of TEUs)

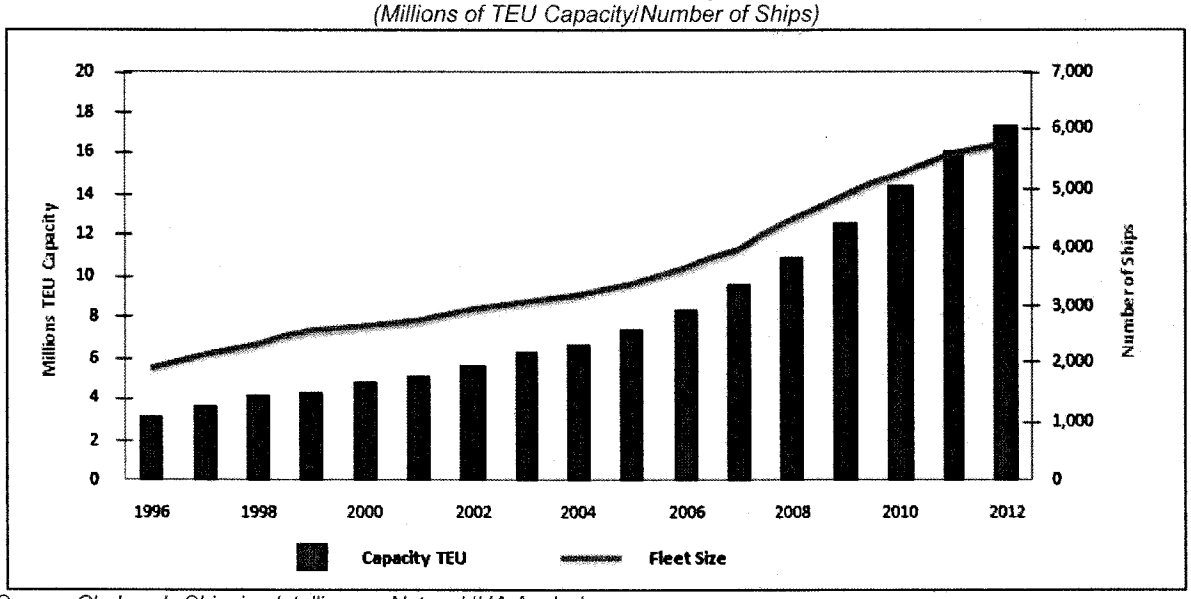


Source: HA Analysis

2.14.2 ORDERBOOK

The Orderbook currently stands around 1,350 ships totaling some 6.4 million TEU. This represents about 57 percent of the existing fleet. The development of the Orderbook over the last ten years and in the future of the current Orderbook is shown in Chart 2.41 below. The fleet size growth rate will slow but the capacity will grow faster due to the large number of ULCs on order.

Chart 2.42 Comparison of Capacity and Fleet Size
(Millions of TEU Capacity/Number of Ships)



Source: Clarkson's Shipping Intelligence Network/HA Analysis

The major carriers and alliances are continuing to grow with new capacity coming on stream over the next four years. Additionally, recent orders for ULCs are being placed from newcomers such as ZIM Line to the largest shipping lines. The three alliances plus the five independents below account for 91 percent of global capacity.

Table 2.29 Percent Share of Global Container Capacity

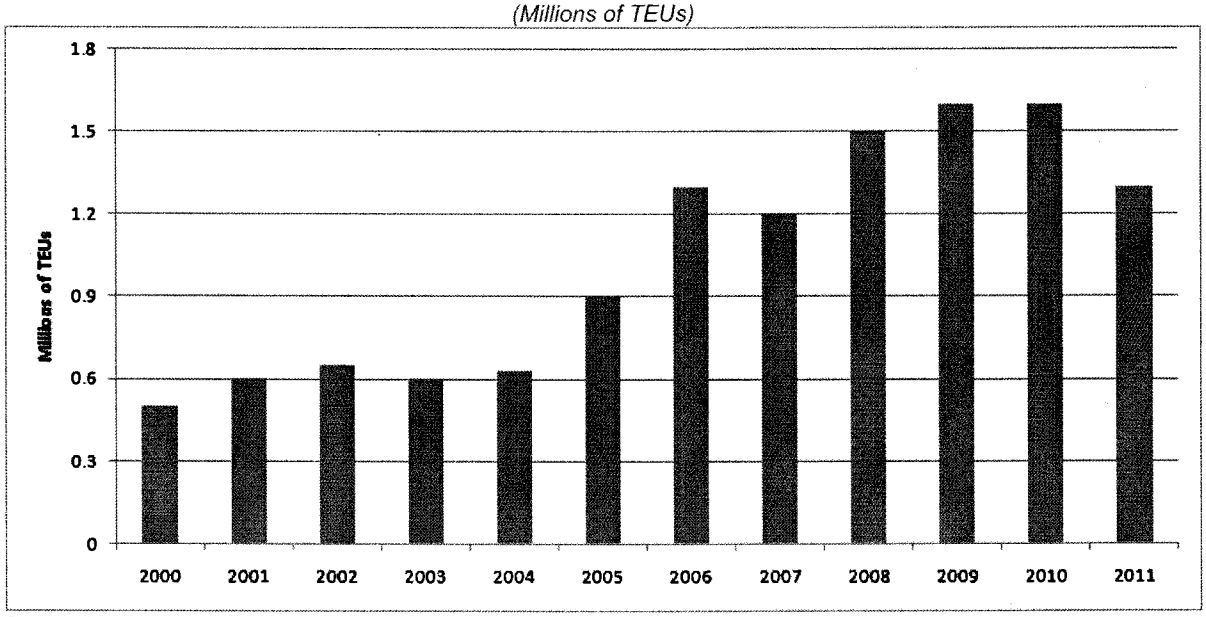
	2000	2003	2006	2007	Projected to 2012 with Orderbook
Alliances					
Grand Alliance	13.5%	14.0%	10.8%	11.8%	12.3%
CKYH	12.6%	12.4%	11.7%	11.9%	17.4%
New World	8.7%	7.8%	7.9%	7.5%	11.5%
Independents					
Maersk	12.0%	12.0%	18.2%	16.6%	16.5%
MSC	4.4%	8.1%	8.5%	9.8%	13.0%
CMA CGM	2.4%	4.8%	5.6%	6.5%	10.9%
Evergreen	6.2%	6.0%	5.2%	5.2%	5.2%
ZIM	2.8%	2.3%	2.2%	2.3%	4.1%

Source: AXS Liner April 2008

The volume of capacity entering the market is highlighted in the chart below by shipbroker Howe Robinson. Based on current trade forecasts and projections for ordering vessels, it is likely that the annual capacity increases beyond 2010 will remain in the 1.5 to 2.0 million TEU per annum range. Without this level of increase there will not be the tonnage available to carry the trade volumes. Not taken into account is the likely scrapping of the older (but smaller) vessels that will create further new orders, most likely of larger vessels.

Chart 2.43 Capacity Entering Service 2000-2010

(Millions of TEUs)



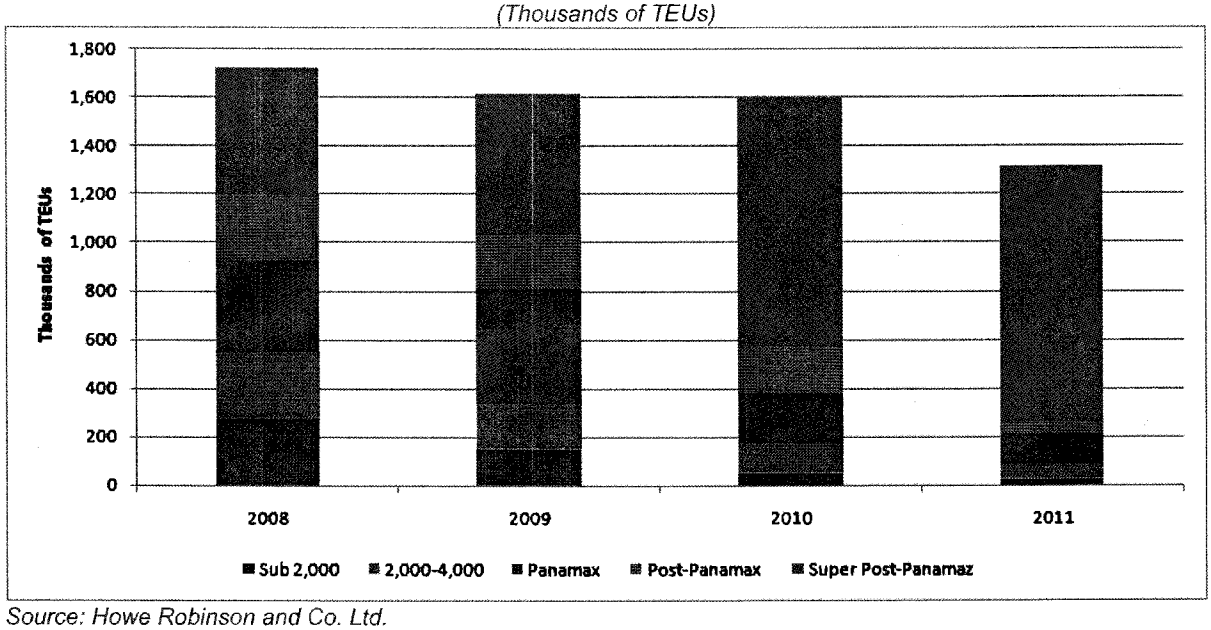
Source: Howe Robinson and Co. Ltd.

The size ranges of the Orderbook, as already discussed, tend towards the larger, super post-panamax vessels as can be seen in the Chart 2.43 below. Currently the following carriers have ULCs on order:

- APL
- CSCL
- Hanjin
- CMA CGM
- COSCON
- CSAV
- Hyundai
- Maersk
- MSC
- Zim

Chart 2.44 Orderbook 2008-2011

(Thousands of TEUs)



Source: Howe Robinson and Co. Ltd.

2.15 CURRENT SERVICES BY CARRIER, JOINT SERVICES AND ALLIANCES

The key trade routes to focus on are the Far East to Europe route, the Southeast Asia to the Bay of Bengal ports, Southeast Asia to the Arabian Gulf and Southeast Asia to the U.S. East Coast. Of these four, the first stands out by an extremely large margin as evidenced in the trade review discussed earlier in this task.

On the Far East to Europe route, the three large alliances account for 36 percent of the total capacity, which is similar to the Transpacific route. The three largest independents, however, provide 50 percent of the total services. The combination of these services is therefore 86 percent of the total capacity available on the route.

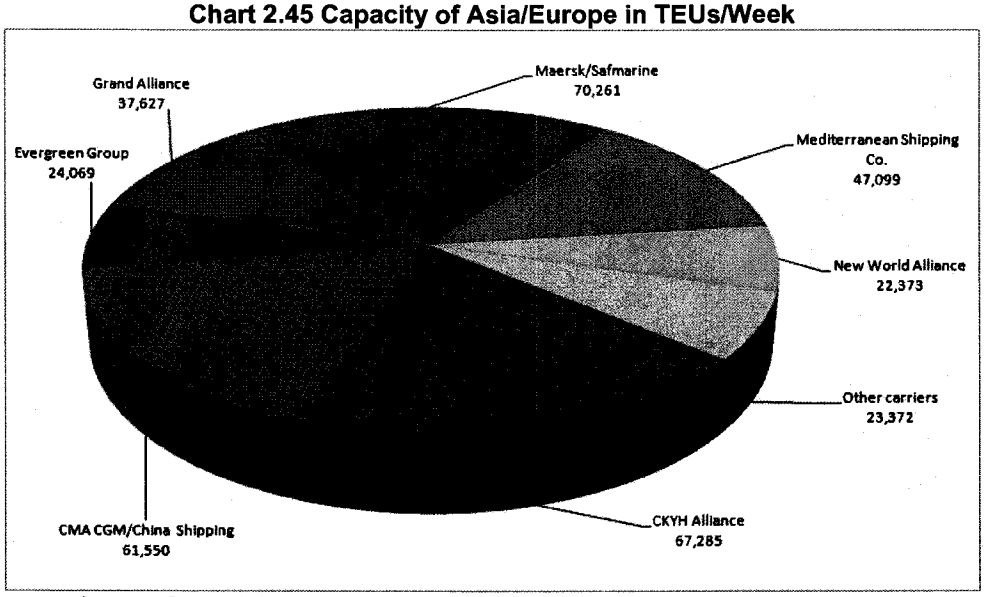
Table 2.30 Weekly Capacity and Service Strings: Far East - Europe

	Capacity/week (adjusted)	Share	Strings		
			North Europe	Med only	Total
CKYH Alliance	67,285	19%	9	7	16
Maersk/Safmarine	70,261	20%	6	4	10
Grand Alliance	37,627	11%	4	3	7
CMA CGM/China Shipping	61,550	17%	5	7	12
Mediterranean Shipping Co.	47,099	13%	3	4	7
Evergreen Group	24,069	7%	2	3	5
New World Alliance	22,373	6%	4	0	4
Other carriers	23,372	7%	4	4	8
Total	**353,636**	**100%**	**37**	**32**	**69**

Source: CompairData

This dominance by a small number of carriers and alliances is highlighted in Chart 4.6 below, with Maersk, New World Alliance and the Grand Alliance accounting for 50 percent of total capacity.

Chart 2.45 Capacity of Asia/Europe in TEUs/Week



Source: Compairdata

A similar pattern is evident on the Transpacific trade route where the three alliances play a dominant role with 55 percent of the capacity market share with a total of 41 strings. The top three carriers only muster 26 percent market share, but in combination this means that effectively six operating companies provide 81 percent of the total capacity.

There are today few carriers that use the Suez Canal route option to serve the U.S. East Coast, APL within New World Alliance being one of the exceptions (due in part to a lucrative U.S. Government contract to carry materials to Iraq on the return Eastbound journey). There are a number of other smaller services that cross Suez but currently no other major lines do so. While discussion persists that there will be more cross Suez services in the future, the volume of goods from Southeast Asia to the U.S. East Coast is not substantial enough. The Suez Canal Authority has in place discount schemes to attract services that currently use the Panama Canal.

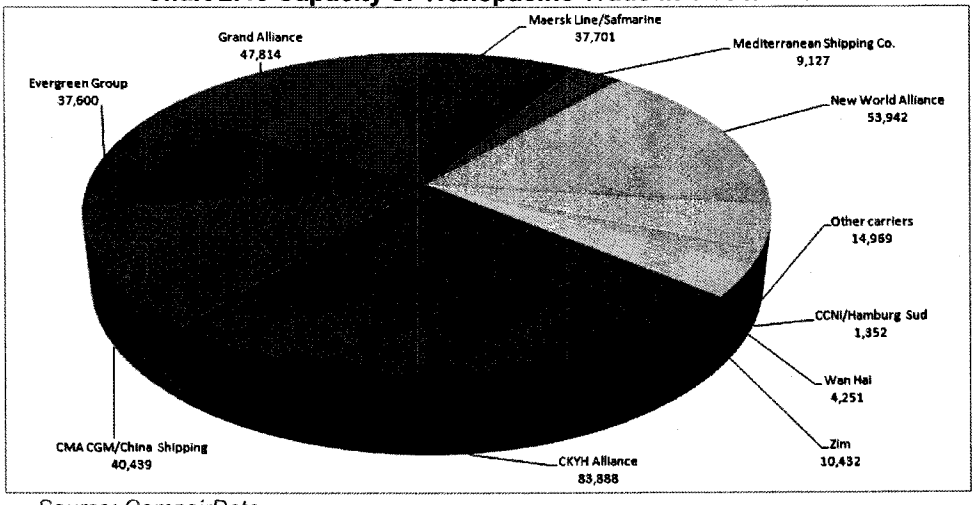
Table 2.31 Comparison of Major Carrier Groups in Asia/North America trade, as of January 2008

Carrier	Capacity/week (adjusted)	Share	Strings
CKYH Alliance	83,888	25%	19
New World Alliance	53,942	16%	12
Grand Alliance	47,814	14%	10
CMA CGM/China Shipping	40,439	12%	9
Maersk Line/Safmarine	37,701	11%	8
Evergreen Group	37,600	11%	9
Zim	10,432	3%	3
Mediterranean Shipping Co.	9,127	3%	3
Wan Hai	4,251	1%	1
CCNI/Hamburg Sud	1,352	0%	2
Other carriers	14,969	4%	11
Total Asia/North America trade	**341,515**	**100%**	**87**

Source: CompairData

The role of the three alliances and joint services is highlighted in the Chart 2.45 below, and together with Maersk Line/Safmarine they dominate the market.

Chart 2.46 Capacity of Transpacific Trade in TEUs/Week



Source: CompairData

2.16 FUTURE VESSEL SIZES AND POTENTIAL SERVICES

The trend in vessel sizes is for continued growth in the average TEU capacity. The table below provides a measure of the increasing size over the last ten years, with the top global carriers having doubled the average size of their fleet in this period. This is however somewhat distorted by the new carriers, such as China Shipping.

Table 2.32 Growth in Average Vessel Size

Parent/Main Company	Growth %	2008 Ø TEU	1999 Ø TEU
Maersk Line	71%	3,600	2,100
MSC	106%	3,300	1,600
CMA CGM	50%	2,400	1,600
Evergreen	67%	3,500	2,100
Hapag-Lloyd	38%	3,600	2,600
China Shipping	520%	3,100	500
Coscon	107%	3,100	1,500
APL	23%	3,200	2,600
NYK	57%	3,300	2,100
Hanjin	45%	4,200	2,900
MOL	63%	3,100	1,900
K" Line	57%	3,300	2,100
Zim	53%	2,600	1,700
Total	**100%**	**4,000**	**2,000**

Source: Dynaliners

Looking to the future, one can continue to project a further growth in the average size of the ships as highlighted in the table below. The current Maersk "E" class vessels remain the largest in service and they will remain so at least through 2011 based on the current Orderbook.

The new class of ships that have been ordered at Samsung by a number of carriers make up a distinct size range. They will be "Panamax" when the new Panama Canal locks are installed, as opposed to the Maersk Line ships which will still be too large for the newly expanded canal.

There continues to be speculation that the maximum theoretical size vessels will be the Malacca Max. This size range is based on the available fully laden draft available in the waters of the Malacca Straits. There are however major problems associated with this type of theoretical size range as most ports around the world will be unable to handle vessels of this size. One should therefore be cautious about planning for this size range.

Table 2.33 Changing Vessel Design Dimensions

	TEU	DWT	Draft	LOA	Beam
Malacca Max Theoretical	18,100	243,600	18.5	400	60
Samsung ULC Class	12,500	142,400	15.5	366	48.2
Maersk "E" Class	13,000	158,000	16	397	56.4

The potential services for future vessels in the larger size ranges is somewhat limited. The major critical factor will be dependent upon the total volumes available. Carriers attempt to run these vessels as efficiently as possible in order to gain the benefits of economies of scale that come with the slot cost savings due to size. This leaves two trade route options: the Transpacific and the Far East-Europe. The former is too short to expect the large vessels to

operate along whereas the latter is ideal with long voyage distance, large volumes, and a string of port calls necessary at both ends of the trade.

It should be expected however that the regional Intra Asia feeder and regular vessels will increase in capacity in the future, moving from the current average below 1,000 TEU to closer to 4,000 TEU on average. This is already becoming evident with some feeder vessels from China to Singapore.

Services from Southeast Asia to the Indian Sub-Continent and the Arabian Gulf will also see larger ships as there is "cascading" for the mainline routes of 3-5,000 TEU ships that are replaced by 10,000 to 13,000 TEU ships.

2.17 PORT CALL ASSESSMENT

The trend in the major trades that have long distances and large volumes of cargo is to increase the number of strings by forming joint services or vessel sharing agreements. This allows the carriers to increase the number of ports that they serve without having to have the full outlay in additional ships to service all the ports. The impact of this is that service strings actually have fewer ports of call than they historically did, as carriers work to keep the total number of ships required to a minimum.

The high cost of bunker fuel also works in favor of fewer port calls, as carriers have slowed their average vessel speeds by three to four knots, thereby saving around 25 percent in fuel costs. Slower speeds do however means less ability to call at additional ports.

The net result of the above two trends is to focus more attention on hub ports at both ends of the trade. What we already see is a focus by carriers on one or two ports in Southeast Asia and three to four ports in China (although China is blessed with large cargo volumes that create direct calls at their ports).

One of the main factors in choosing hub ports is the operations of the mainline vessels and the feeder vessels. On the one hand, the feeders cannot be seen as a hindrance to the mainline ships as they must maintain their schedule integrity. On the other hand, the terminal design has to be such that it is able to efficiently shift containers from the mainline services to the feeder ships.

E-ASIAN PORTS AND TRANSHIPMENT HUBS

2.18 REGIONAL TRADE

Prior to the rapid growth of South-East Asia's economies in the 1980s, many of the global shipping networks that served Asia focused on ports in Japan and on Singapore and Hong Kong. These ports began to serve as international hubs as other regional economies began to heat up, and as the export volumes of Taiwan and the Republic of Korea increased the ports of Kaohsiung and Busan began to serve as regional hubs. The network of feeder services became more developed during the 1980s, with the ports of Laem Chabang (Thailand) and Port Klang (Malaysia) developing into regional hubs. The rapid development of China's economy in the late 1990s led to a more intricate system of hubs and feeder service, including connections between the numerous ports located along the Pearl River delta and Hong Kong, and linkages between mainland China, Korea, and Japan. The continued growth in shipments from China coupled with congestion concerns at regional ports (including Hong Kong) and improved domestic handling facilities led to the adoption of direct service from China to Europe and North America. This trend was subsequently replicated by a number of other Asian ports.

Global Insight's World Trade Service forecast indicates that total world container traffic, excluding transshipment and Intra European traffic, in 2007 reached 114.0 million TEUs, a nine percent increase from 2006's 104.8 million TEU total. Much of this increase was due to strong growth at ports in the Far East and North Europe. The forecast shows continued growth in 2008, with a total of 121.4 million TEUs representing an increase of seven percent over 2007, reaching 187.0 million TEUs by 2015 for an annual average increase of 6.4 percent per year. In 2007, 52 percent of the global export volume of containers originated in the Far East, over half of which was accounted for by China (including Hong Kong).

United Nation estimates forecast that the number of full containers shipped internationally will increase from 113.6 million TEUs in 2005 to 235.7 million TEUs in 2015, a doubling in volume and an increase of over 7.5 percent per year.[2] The same study forecasts that the contribution to global export full container flows by North and East Asia will increase from 50 percent in 2005 to 62 percent in 2015, while import trade for the region will increase from 40 percent of the world total to 48 percent over the same period.

The trans-Pacific routes between Asia and North America accounted for 19 percent of global trade in 2005 with 21.7 million TEUs. The UN expects the volume of trade carried along the Asia-Europe routes to overtake that of the trans-Pacific routes by 2015, with volumes of 43.8 million TEUs and 43.4 million TEUs respectively. A report released by Drewry points out, however, that ports in Northern Europe may struggle to handle the level of growth seen in China's export market, with some ports already encountering congestion.[3] The report does note that it expects the vast majority of post-Panamex tonnage to provide service between Europe and Asia, which currently has no indication of overcapacity.

An article in *Maritime Policy &* Management estimated that 30.0 percent of global transshipment traffic in 2004 was handled by container ports located in Southeast Asia, and that this figure would increase to 32.5 percent by 2015.[4]

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[2] Regional Shipping and Port Development Container Traffic Forecast 2007 Update, UN ESCAP
[3] Container Shipper Insight 1Q 2008, Drewry Shipping Consultants
[4] Competition for Transshipment Containers by Major Ports in Southeast Asia: Slot Capacity Analysis (2008), Maritime Policy & Management, 35:1, 89 - 101

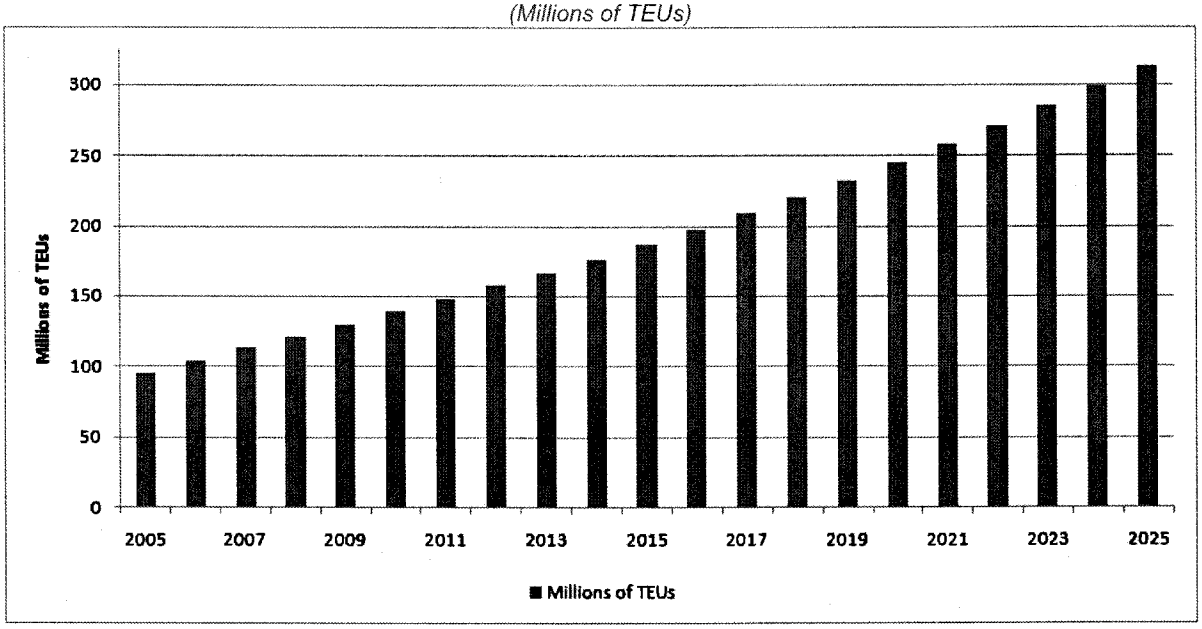
It is worth noting that transshipment traffic can shift locations more easily than shipments heading to and from inland destinations. This is evidenced in the struggle for customers by the Ports of Singapore and Tanjung Pelepas, which is also located on the Malaysian peninsula. Although Tanjung Pelepas was successful in acquiring Maersk Line and Evergreen Marine in 2000 and 2002 respectively, the Port of Singapore has met with success recently due its ability to secure long-term commitments by offering shipping lines joint ventures and dedicated berth space. The Port of Singapore also levies additional fees on those feeder services that also call at Tanjung Pelepas, limiting the latter's ability to develop its own feeder network.

The ports of Singapore, Port Klang, and Tanjung Pelepas are located along the Straits of Malacca where they are able to take advantage of European- and North American-bound transshipment opportunities. Together, the three ports handled 68.2 percent of the total container throughput in Southeast Asia in 2004, and handled almost all of the region's transshipment traffic.[5]

Global Insight's forecast for global deep sea container exports (excluding transshipments and intra-European movements) calls for an increase from 96.1 million TEUs in 2005 to 313.0 million TEUs in 2015, as seen in Chart 5.1 below. This represents a 6.1 percent annualized growth rate.

Chart 2.47 Global Deep Sea Container Exports (excluding transshipments & IntraEurope)

(Millions of TEUs)



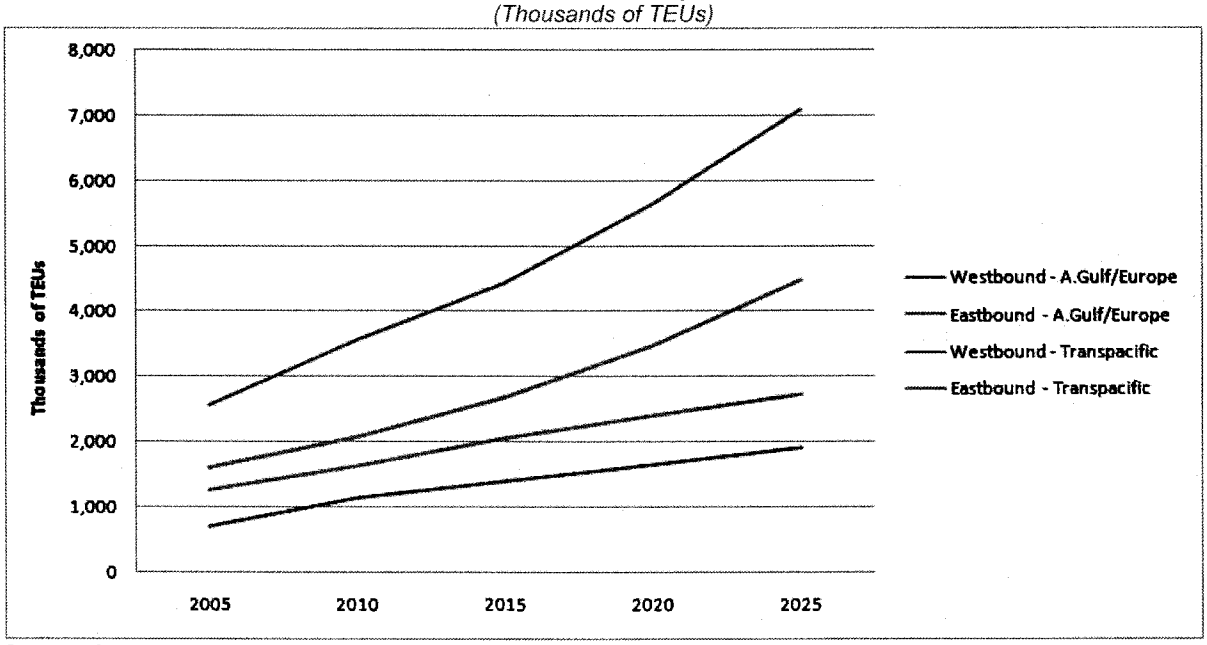
Source: Global Insight

Chart 2.47 below details the forecast for the volumes of goods imported and exported by Southeast Asia (Indonesia, Thailand, Singapore, Malaysia, and Vietnam) between 2000 and 2005 by route and direction. Transpacific trade in both directions and westbound trade to Europe and the Gulf is forecast to grow by an annual average of between 5.1 and 5.2 percent, while east bound trade to Southeast Asia from Europe and the Gulf is forecast to grow at just 3.9 percent per year. Overall, the total market potential is expected to grow from 6.2 million TEUs in 2005 to 16.2 million TEUs in 2025, an annual average of 5.0 percent.

[5] Ibid.

Chart 2.48 Comparison of Volumes Leaving and Entering Southeast Asia

(Thousands of TEUs)



Source: Global Insight

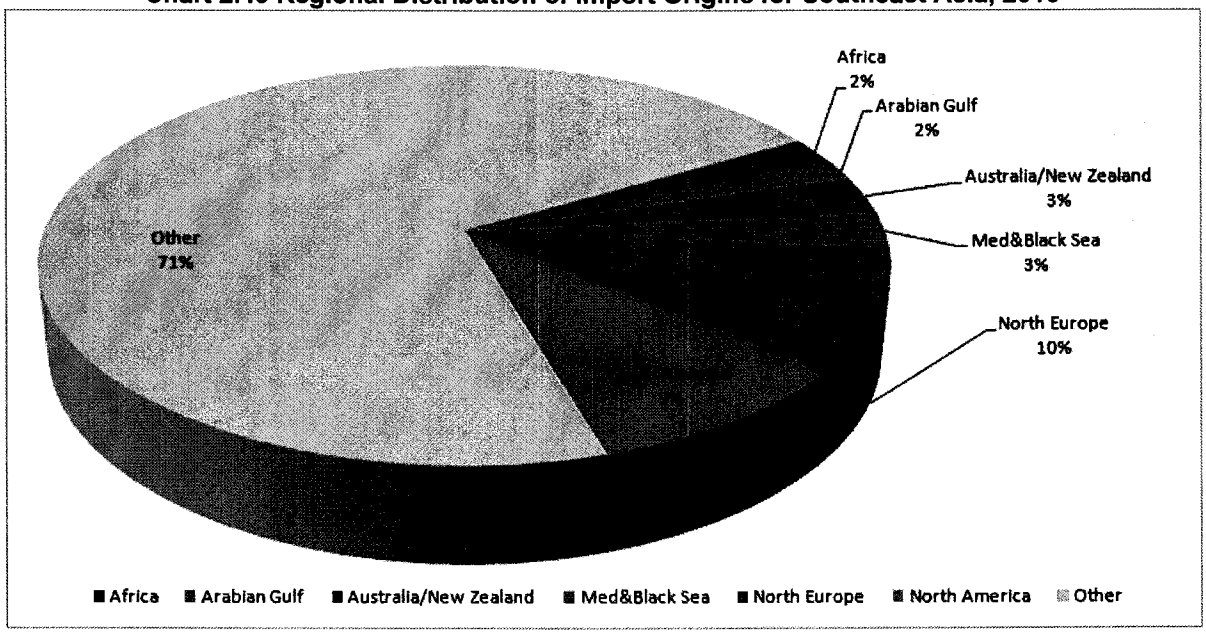
The following series of figures highlight two concepts:

- The 2015 forecast of regional distribution of import origins and export destinations for shipments headed to or from Southeast Asia (Thailand, Vietnam, Indonesia, Singapore, Malaysia, and the Philippines) and the Indian subcontinent.
- The forecast volumes of imports and exports by region shipped from or to Southeast Asia and the Indian subcontinent that are anticipated through 2025.

Much of the import and export trade is primarily intra-Asian, and has been classified as "other".

Chart 2.48 below depicts the projected regional distribution of goods imported into Southeast Asia in 2015. The bulk of the total 15.7 million TEUs imported into the region originate within Asia, with less than 20 percent (representing just under three million TEUs) originating in North Europe and North America.

Chart 2.49 Regional Distribution of Import Origins for Southeast Asia, 2015

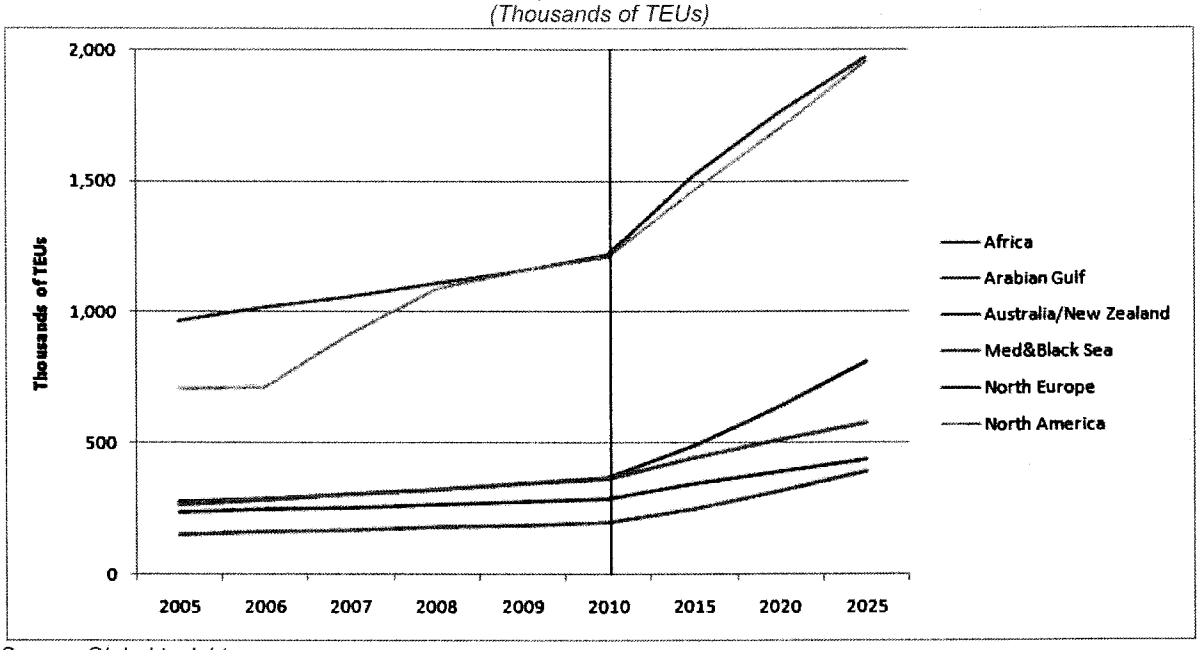


Source: Global Insight

The total volume of imports into Southeast Asia is forecast to grow from 8.1 million TEUs in 2005 to 24.4 million TEUs in 2025, an average annual growth rate of 5.7 percent. Chart 2.49 below depicts the growth rates of imports by region, excluding intra-Asia trade. Imports from North Europe and North America are forecast to each account for just under two million TEUs by 2025, with average annualized growth of 3.6 percent and 5.2 percent respectively.

Chart 2.50 Volume of Imports to Southeast Asia by Region

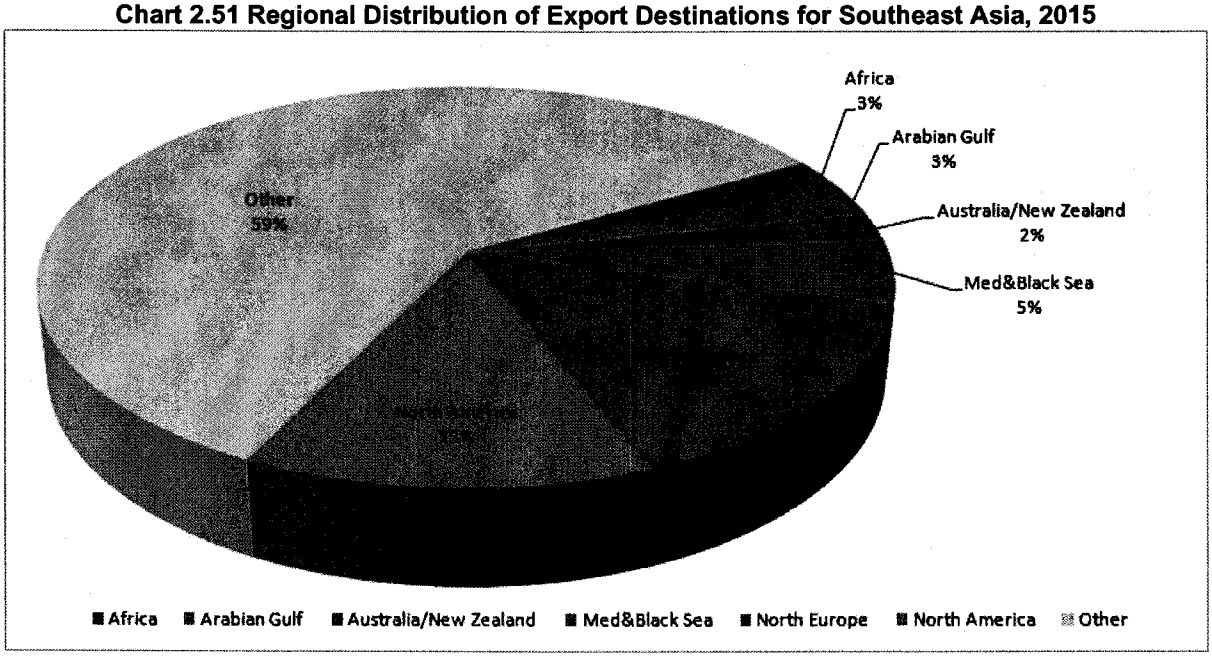
(Thousands of TEUs)



Source: Global Insight

Chart 2.42 below depicts the projected regional distribution of goods exported from Southeast Asia in 2015. As with imported goods, the bulk of the trade occurs within Asia. Of the total 19.9 million TEUs forecast to be exported from the region, less than one third (representing just under 5.6 million TEUs) is expected to be destined for North Europe and North America.

Chart 2.51 Regional Distribution of Export Destinations for Southeast Asia, 2015

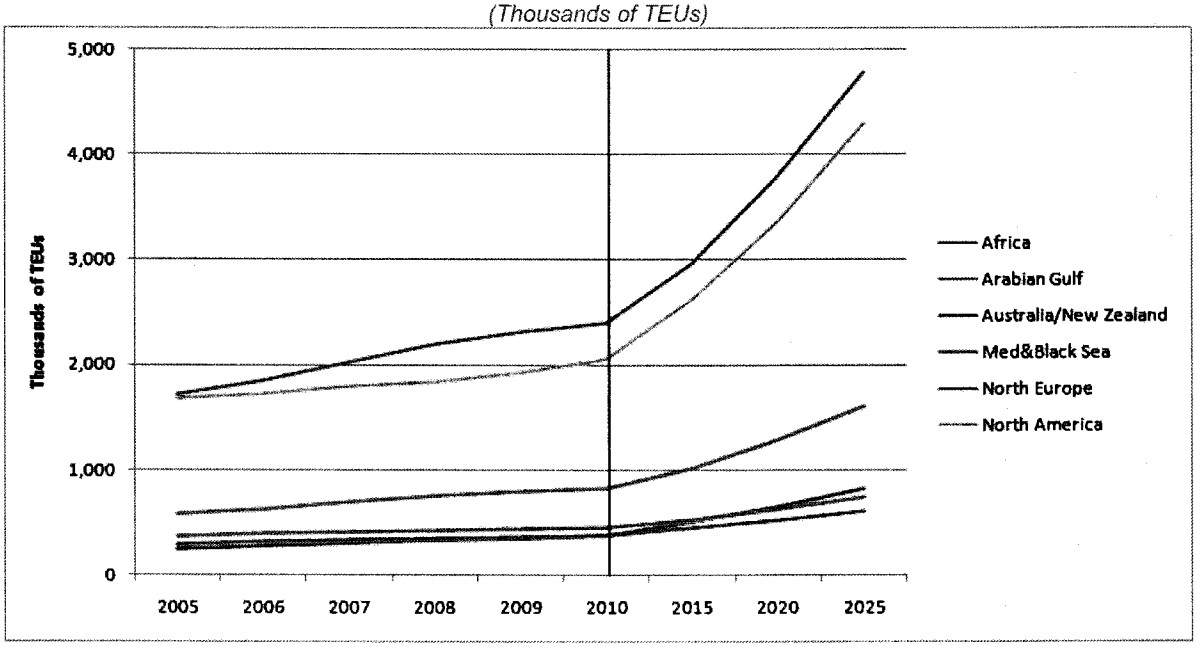


Source: Global Insight

The total volume of exports from Southeast Asia is forecast to grow from 11.7 million TEUs in 2005 to 31.2 million TEUs in 2025, an average annual growth rate of 5.0 percent. Chart 5.6 below depicts the growth rates of exports by region, excluding intra-Asia trade. Exports to North Europe and North America are forecast to each account for 9.1 million TEUs by 2025, with average annualized growth of 5.2 percent and 4.8 percent respectively. Exports to Africa are forecast to increase by an average 6.3 percent per year, reaching 0.8 million TEUs in 2025.

Chart 2.52 Volume of Exports from Southeast Asia by Region

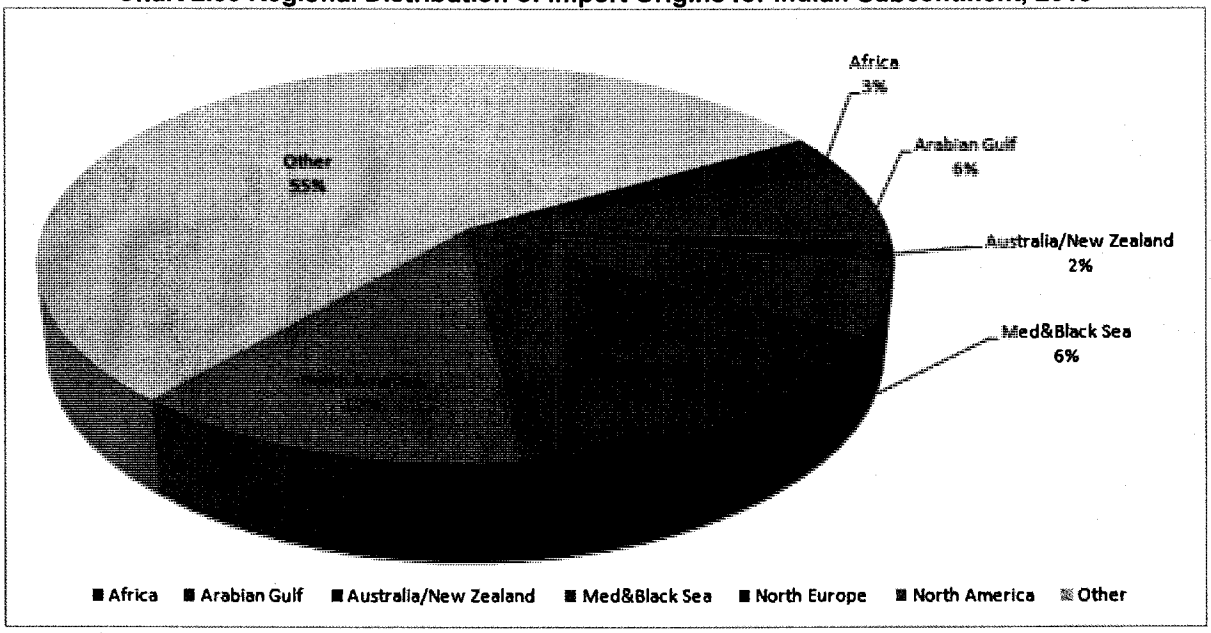
(Thousands of TEUs)



Source: Global Insight

Chart 5.7 below depicts the projected regional distribution of goods imported into the Indian Subcontinent in 2015. A little over half of the total 5.6 million TEUs imported into the region originate within Asia, while 28 percent (representing fewer than 1.5 million TEUs) originates in North Europe and North America.

Chart 2.53 Regional Distribution of Import Origins for Indian Subcontinent, 2015



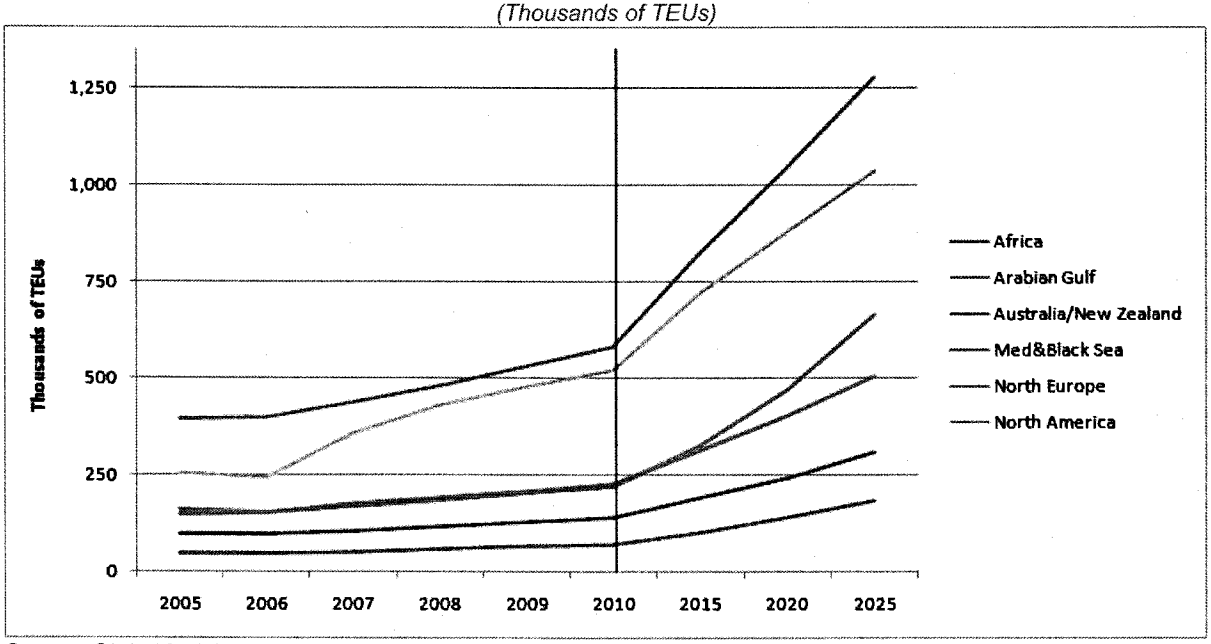
Source: Global Insight

The total volume of imports into the Indian Subcontinent is forecast to grow from 2.3 million TEUs in 2005 to 9.7 million TEUs in 2025, an average annual growth rate of 7.5 percent (which

is almost two percent per year more than the equivalent growth forecast for Southeast Asia). Chart 2.45 below depicts the growth rates of imports by region, excluding intra-Asia trade. Imports from North Europe and North America are forecast to account for a total of 2.3 million TEUs by 2025, with average annualized growth of 6.0 percent and 7.2 percent respectively.

Chart 2.54 Volume of Imports to Indian Subcontinent by Region

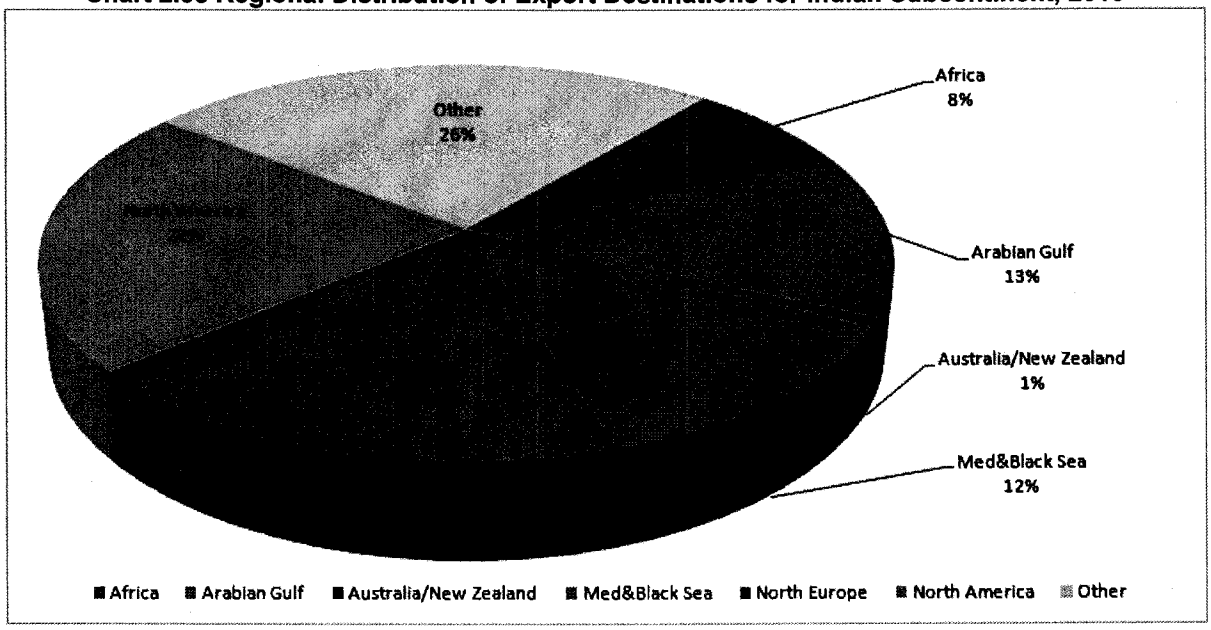
(Thousands of TEUs)



Source: Global Insight

Chart 2.46 below depicts the projected regional distribution of goods exported from the Indian Subcontinent in 2015. Unlike Southeast Asia, the trade is distributed more evenly amongst the various regions. Of the total 5.5 million TEUs forecast to be exported from the region, 1.0 million TEUs are destined for North Europe and 1.2 million TEUs for North America, together accounting for 40 percent of the total. The combined total of exports destined for Africa, the Mediterranean and Black Sea, and the Arabian Gulf (1.8 million TEUs) is expected to account for a full third of the world total.

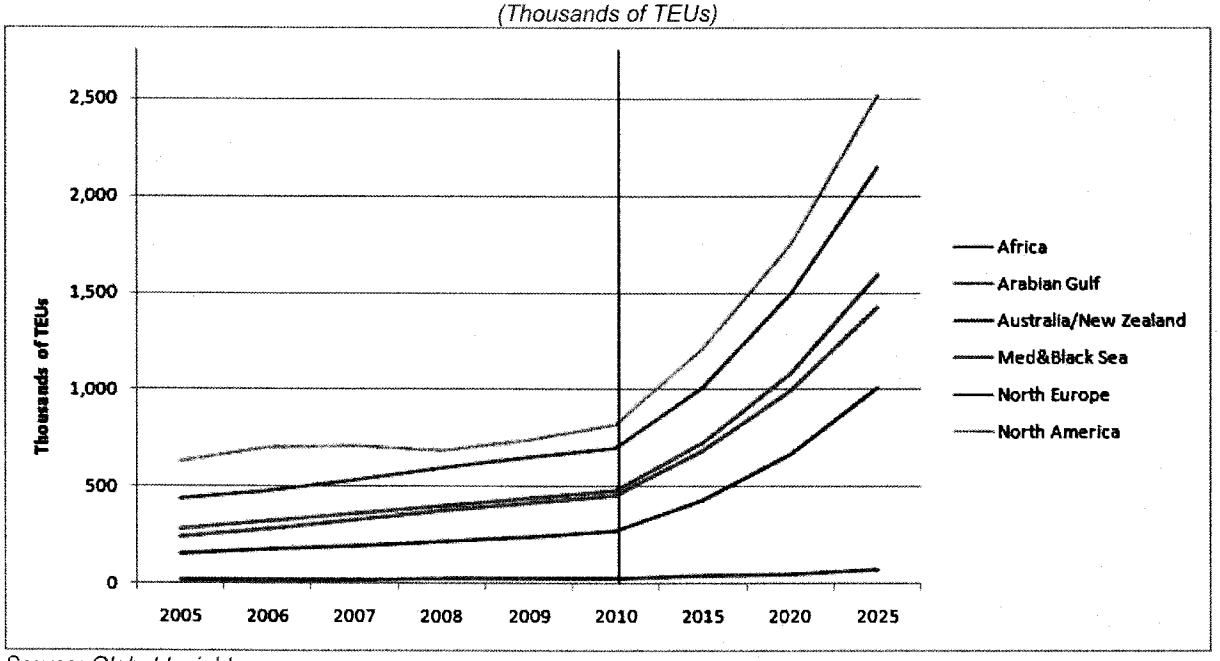
Chart 2.55 Regional Distribution of Export Destinations for Indian Subcontinent, 2015



Source: Global Insight

The total volume of exports from the Indian Subcontinent is forecast to grow from 2.3 million TEUs in 2005 to 11.6 million TEUs in 2025, an average annual growth rate of 8.3 percent, which is over three percent per year more than the growth forecast for Southeast Asia. Chart 2.47 below depicts the growth rates of exports by region, excluding intra-Asia trade. Exports to North Europe and North America are forecast to account for 2.2 and 2.5 million TEUs by 2025 respectively, with average annualized growth of 8.3 percent and 7.2 percent respectively. Exports to other regions are forecast to increase by even greater annual amounts: the Arabian Gulf by 9.0 percent (to 1.6 million TEUs), the Mediterranean and Black Sea by 9.3 percent (to 1.4 million TEUs), and Africa by 10.0 percent (to 1.0 million TEUs).

Chart 2.56 Volume of Exports from Indian Subcontinent by Region
(Thousands of TEUs)



Source: Global Insight

Table 2.32 below presents the average annual growth rate for imports and exports from both Southeast Asia and the Indian Subcontinent between 2005 and 2025, by region and for the world as a whole. It is clear from these numbers that the Indian Subcontinent is forecast to experience higher growth on both the import and export side. Exports to Africa, the Arabian Gulf, and the Mediterranean and Black Sea in particular are all forecast to increase by an average of at least nine percent per year, and by 2015 these destinations will account for one third of the Indian Subcontinent's export trade. Growth in the Indian Subcontinent's import trade is fairly evenly balanced amongst the trade partner regions, although growth is forecast to be brisk, averaging at 7.5 percent per year for the world total.

Although Southeast Asia's export growth is forecast to be slower, the world total is expected to average five percent per year. Exports to Africa in particular are expected to increase more rapidly than other regions, at a rate of 6.3 percent per year. Southeast Asia's import volume is anticipated to increase at a faster rate than its exports, with the world total forecast to increase by 5.7 percent per year.

Table 2.34 Average Annual Growth Rate for Imports and Exports from Southeast Asia and Indian Subcontinent between 2005 and 2025

Trade Partner Region	Southeast Asia		Indian Subcontinent	
	Import	Export	Import	Export
Africa	3.2%	6.3%	5.8%	10.0%
Arabian Gulf	4.9%	3.7%	7.3%	9.0%
Australia/New Zealand	5.5%	3.8%	6.8%	7.1%
Mediterranean and Black Sea	4.0%	5.3%	6.3%	9.3%
North Europe	3.6%	5.2%	6.0%	8.3%
North America	5.2%	4.8%	7.2%	7.2%
Other	6.2%	5.0%	8.3%	8.3%
World Total	**5.7%**	**5.0%**	**7.5%**	**8.3%**

Source: Global Insight

2.19 Existing Hubs and Port Volumes

The last two decades have seen remarkable growth from China's mainland ports, with the number of containers handled increasing from one million TEUs in 1983 to 43.6 million TEUs in 2005, which represents an 18.7 percent compound annual growth rate.

Preliminary 2007 numbers indicate that Singapore remained the busiest container port with 27.9 million TEUs. Shanghai's container volume increased by 20.4 percent to 26.2 million TEUs, and expects to hit 30 million in 2008. Hong Kong dropped to third place, with 23.9 million TEUs. Table 2.33 below ranks the ports by their 2006 activity. The port of Shanghai handled the largest volume of cargo for the third consecutive year, with its 2007 full-year cargo throughput reaching 560m tons, an increase of 4.2 percent over 2006.

Table 2.35 Ranking of Ports by 2007 Container Activity

			Millions of TEUs		
Ranking	**Port**	**Trade Region**	**2007**	**2003**	**Change 2003-07**
1	Singapore	Southeast Asia	27.9	18.4	52%
2	Shanghai	East Asia	26.2	11.3	132%
3	Hong Kong	East Asia	23.9	20.4	17%
4	Shenzhen	East Asia	21.1	10.6	98%
5	Busan	Northeast Asia	13.3	10.4	28%
6	Rotterdam	Northern Europe	10.8	7.1	51%
7	Dubai	Mid-East	10.7	5.2	107%
8	Kaohsiung	East Asia	10.3	8.8	16%
9	Hamburg	Northern Europe	9.9	6.1	61%
10	Qingdao	East Asia	9.5	4.2	123%
11	Ningbo	East Asia	9.3	2.8	237%
12	Guangzhou	East Asia	9.2	2.8	233%
13	Los Angeles	North America West Coast	8.4	7.2	16%
14	Antwerp	Northern Europe	8.2	5.4	50%
15	Long Beach	North America West Coast	7.3	4.7	57%
16	Port Klang	Southeast Asia	7.1	4.8	47%
17	Tianjin	East Asia	7.1	3.0	136%
18	Tanjung Pelepas	Southeast Asia	5.5	3.5	58%
19	New York/New Jersey	North America East Coast	5.4	4.1	33%
20	Bremen/Bremerhaven	Northern Europe	4.9	3.2	54%

Source: Port of Hamburg

At present, there are 57 services that connect the Far East with Europe including the Mediterranean, though some 85 operations deal with North America (including those transiting the Panama Canal). Table 2.34 below details the major Asian transshipment hubs, and details the percent share of the total TEUs handled that were transshipment in 2006.

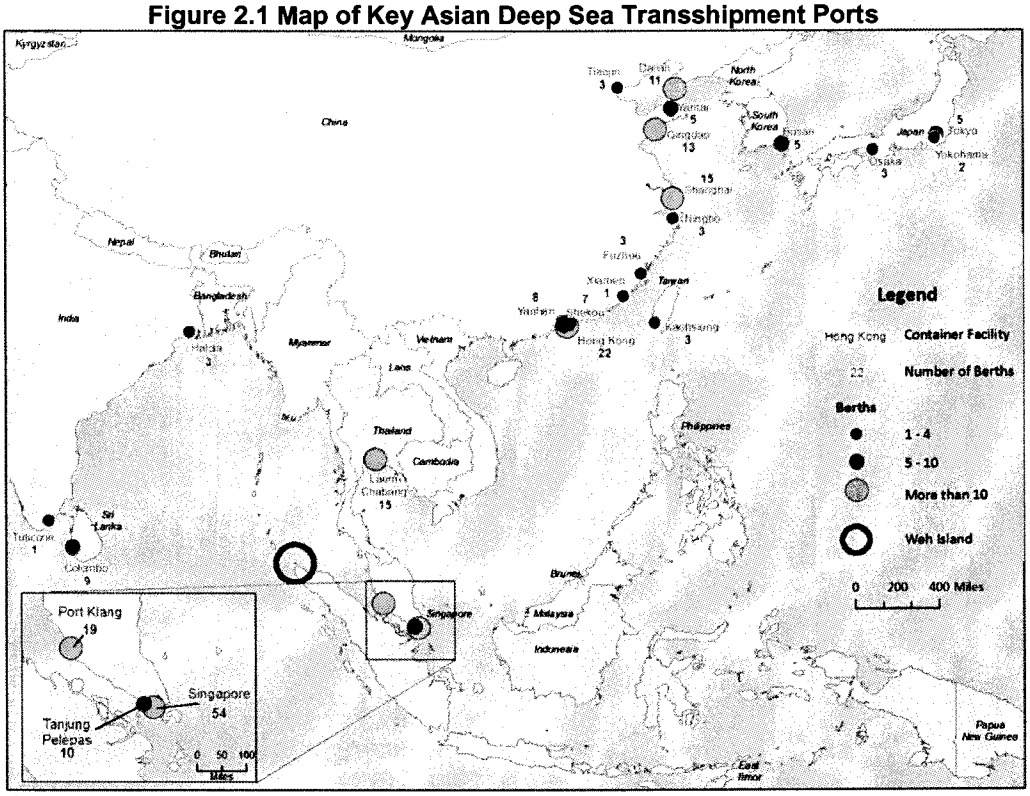
Table 2.36 Major Asian Transshipment Hubs Ranked by Percent Share

Port	Millions of TEUs 2006 Total	Transshipment	% Share
Singapore	24.8	21.1	85%
Hong Kong	23.5	9.6	41%
Shanghai	21.7	5.4	25%
Busan	12.0	5.2	43%
Kaohsiung	9.8	5.4	55%
Qingdao	7.7	2.0	26%
Port Kelang	6.3	3.3	52%
PT Pelepas	4.8	4.5	94%
Laem Chabang	4.1	1.1	27%
Colombo	3.1	2.4	77%
Kwangyang	1.8	0.4	25%

Source: Dynamar
Notes: Hong Kong values include mainland China-related transshipments, but not Pearl River Delta transshipments. Shanghai's transshipment volume is exclusively made up of domestic boxes, which may or may not include Yangtse River business.

Figure 2-2.1 below displays the locations of the key deep sea transshipment ports in Asia, and details the number of berths at each.

Figure 2.1 Map of Key Asian Deep Sea Transshipment Ports



Source: HA

Table 2.37 below provides additional details on the transshipment ports mapped in figure 2.1, including terminal names, quay length, and approach channel depths.

Table 2.37 Key Asian Deep Sea Transshipment Ports

Country	Port	Berths	Terminal	Length/m	Depth/m
China	Da Chan Bay	5	Da Chan Terminal 1	1,830	15.5
	Dalian	7	Dalian Container Terminal	1,856	14
		4	Dalian Container Terminal	1,380	13.5-16
	Fuzhou	3	Fuzhou International Container	983	14-16
	Ningbo	3	Ningbo Beilun International Container Terminals	900	13.5
	Qingdao	5	Qingdo Port Co Ltd	2,600	10.5-17.5
		8	Qingdo Qianwan Port Co Ltd	2,500	14.5-17.5
	Shanghai	6	Shanghai Port Container Co Ltd	1,635	13.2
		9	Yangshan Deepwater Port	3,000	16
	Shekou	1	Shekou Container Terminals	375	16-18
		2	Shekou Container Terminals	650	14
		2	Shekou Container Terminals	700	16
		2	Shekou Container Terminals	825	16
	Tianjin	3	Tianjin Port Container Terminal Co Ltd	825	15.2
	Xiamen	1	Xiaman International Container Terminals Ltd	1,083	13.3
	Yantai	2	DP World Yantai Co Ltd	573	14
		3	Yantai Port Container Terminal Co	580	14
	Yantian	5	Yantian International Container Terminal Ltd	2,350	15
		3	Yantian International Container Terminal Ltd	1,802	16
	Hong Kong	1	DP World	305	14
		2	Asia Container Terminals Ltd	740	15.5
		7	Kwai Chung Container Port Terminals	2,322	15.5
		12	Hong Kong international	3,992	12.5-15.5
India	Haldia	3	Haldia Dock System	700	11.5-13.7
	Tuticorin	1	PSA-SICAL Container Terminal	370	10.9
Japan	Osaka	1	Terminal C-1	350	13.5
		1	Terminal C-11	350	15
		1	Terminal C-2	350	13.5
	Tokyo	5	Aomi CT	1,570	13-15
	Yokohama	1	Terminal C-3	350	15
		1	Terminal C-4	350	15
Korea	Busan	5	Hutchison Busan Container Terminal	1,447	15
		1	Hutchison Gamman Container Terminal	350	15
		1	Hutchison Kwangyang Container Terminal	350	16
Malaysia	Port Kelang	4	Container Terminal 1&3	1,079	15
		6	Container Terminal 2	1,300	14
		9	Westport Terminal	2,600	15
	Tanjung Pelepas	10	Terminal	3,600	15-19
Singapore	Singapore	9	Brani Terminal	2,600	15
		14	Keppel Terminal	3,200	14.6
		8	Tanjong Pagar Terminal	2,300	14.6
		23	Pasir Panjang Terminal	7,900	16
Sri Lanka	Colombo	4	Jaya Container Terminals	1,292	12-15
		2	Unity Container Terminal	590	9-11
		3	South Asia Gateway Terminals	940	15
Taiwan	Kaohsiung	2	Terminal 2	684	14
		1	Terminal 3	320	14
Thailand	Laem Chabang	1	Leam Chabang International Terminal	400	14
		1	Leam Chabang International Terminal	500	16
		13	Port Authority of Thailand	5,600	16

SOURCE: CIHA Analysis

The following descriptions of key transshipment ports is drawn from the 2007 Transshipment and Feedering Trades, Operators, Ships report, which was graciously provided for this project by Dynamar BV.

2.20 CHINA

Prior to the development of the current generation of efficient container terminals specifically designed to handle direct shipments, much of China's imported container trade was transshipped at Hong Kong. Now, however, there are 10 direct ports of call in China (excluding Hong Kong) that feature on European and/or Transpacific schedules. In 2006, 1,346,000 TEUs, accounting for six percent of its overall throughput, were transshipped in Hong Kong with either a destination or origin in China (excluding Pearl River transit traffic).

Hong Kong's main Kwai Tsing (previously called Kwai Chung) terminal complex is able to handle around 18.5 million TEUs at its 24 berths with 15.5-metre water depth since. Substantial additional capacity is provided by surviving mid-stream operations (which also handle deep-sea ships, used primarily by cost conscious regional carriers), various wharves and the River Trade Terminal. In 2006, Kwai Tsing shifted 68 percent of Hong Kong's total (published) throughput of 23.5 million TEUs, up from 63 percent still in 2005.

The growth of Hong Kong was impacted by the operations at Shenzhen with its large Yantian, Chiwan, Shekou, and Da Chan Bay terminals, as well as Guanghzou (Huangpu and Nansha). Kwai Tsing is currently operating at around 70 percent capacity, which has led to debate over the necessity of an additional terminal (CT10). Possible locations for the site of the facility are either southwest Tsing Yi or northwest Lantau, to the west of the airport, although it is possible that the capacity of Kwai Tsing could be boosted to at least 24 million TEUs.

Since direct trade between Taiwan and mainland China remains an issue, Hong Kong continues to facilitate the exchange of container trade between the two areas. This effort makes up for a sizeable portion (around 1.5 million TEUs) of its transshipment activity. Should the trade ban be lifted, this activity would disappear. Kaohsiung, with its favorable central position both towards mainland China and the international shipping routes might then also be able to take over more of Hong Kong's transshipment activity.

A large amount of interlining (the transfer of containers between mainline ships of the same carrier (grouping) that serve different destinations) takes place at Kwai Tsing due to both its efficiency and the fact that nearly every with routes to China also calls at Hong Kong. This form of transshipment, which accounts for an estimated 40 percent of all transshipment handlings, does not involve feedering.

For "pure" feedering, Hong Kong has become expensive, although it is understood that stevedores have reduced transshipment handling rates in support of their gateway function. An abundance of regional services (which also take feeder boxes) offer a diverse network of connections.

2.20.1 BUSAN (KOREA)

South Korea's government aims to become the leading maritime logistics centre for the region by 2020. To support this effort, the costs of transshipment related handlings and tariffs at Busan have regularly been reduced, a move that has typically been matched by the neighboring competing port of Kwangyang.

The large scale Busan New Port terminal project (which will ultimately contain 30 deep-sea berths) is not only designed to replace the city terminals but also to secure and build upon Busan's position as Northeast Asia's major hub. The first three of nine new berths (with an installed capacity of 3.5 million TEUs) commenced operations in early 2006, although the ports overall volume for the year increased by only 1.6 percent despite the increased capacity.

Busan's transshipment share increased from 21 percent in 1997 to 43 percent ten years later, which is all the more impressive given the following developments:

- Many ports in China have changed (and continued to change) from feeder ports to fully fledged container destinations in their own right;
- 10,000 TEU ships can now call at Shanghai's Yangshan port;
- Deep-sea terminal complexes have been built in North China, which has been a feeder catchment area for Busan;
- Qingdao and Ningbo-Zhoushan in east China have transshipment expansion plans; and
- Foreign flag carriers are allowed to sail from Taiwan directly to any Chinese port (but not carry Taiwan-China cargoes). Previously an administrative call had to be made at Ishigaki (a Japanese island, east of Taiwan) or a route that stopped somewhere else first (such as Busan).

Although it will not be easy for Busan to become an enduring dominant transshipment centre, it supports the second most number of East-West and major North-South services after Hong Kong. Not surprisingly, both the CHKY Alliance (with South Korean partner Hanjin) and the New World Alliance (Hyundai) are the two largest operating groups in this respect.

The main feeder catchment areas for Busan are (north) China and Japan. International trade to and from Japan's secondary international ports is detoured through ports including Busan and Kaohsiung rather than via the five expensive Japanese primary ports. Much of the trade to Far East Russia is also transshipped via South Korean ports.

2.20.2 PORT KELANG (MALAYSIA)

In addition to begin Malaysia's main gateway, Port Kelang began to support its transshipment activity through rebates on port dues and handling rates in late 1990s and early 2000s. Most of these incentives have officially been withdrawn, such as the removal of the US$24/unit subsidy in the costs of shuttling boxes between the two terminals in early 2007. During the last few years, the transshipment share has stabilized at just over 50 percent.

Westport is the largest of the port's terminals, and has transshipment operations as a primary priority (61 percent of all handlings in 2006) at its nine berths, which have a total capacity of six million TEUs. Northport and Southport handle conventional and RoRo cargoes, but transshipment activities still accounted for 37 percent of their total TEUs in 2006. CMA CGM and China Shipping are solely focused on Southeast Asia transshipment (and thus feedering) activities at the port.

Port Kelang also serves as port of call for a number of North-South operations (Africa in particular) in addition to many regional intra-Asia services. Feeder operations focus on the Bay of Bengal (India East Coast, Bangladesh, Myanmar) and Southeast Asia, including Indonesia. Domestic transshipments, including those to/from Eastern Malaysia (situated on the north coast of Borneo) represent an important share.

2.20.3 PORT TANJUNG PELEPAS (MALAYSIA)

Port Tanjung Pelepas (PTP) was built at the southern tip of Malaysia almost directly opposite the Port of Singapore. Though an extensive free trade and industrial zone has been created to boost cargo scope, PTP's transshipment share still stands at 95 percent. The container yard has been designed to handle an annual throughput of eight million TEUs, and after the completion of the second phase of construction will offer 14 berths along over five kilometers of quayside.

PTP also represented considerable competition for Johor Port (Pasir Gudang), an established southern Malaysian container facility near Johore Baru (60 km to the east). MMC Corp, the main shareholder of the two facilities, has proposed concentrating all containers at PTP which would grow the latter's volume by nearly one million TEUs, although this proposal has its detractors.

The defection of (then) Maersk Sealand in 2001 and Evergreen one year later from the Port of Singapore to PTP is well known. They have remained the only two carriers (excluding their partners) that operate main East-West services at the port: eight and four respectively. However, they are joined by partner carriers Coscon, Hamburg Süd, and NYK. Evergreen and Maersk Liner initially set up a number of joint dedicated feeder services designed to serve specific markets, but most of these have since been replaced by standalone operations. This seems to further support the notion that while mainline carriers may engage in joint mainline services the same is not true for shortsea feedering operations.

2.20.4 SINGAPORE

The Port of Singapore (PSA) is the world's largest transshipment facility: if its share of this activity is conservatively estimated at 85 percent, 21 million TEUs did not leave the port in 2006 and were instead translated into nearly 7.5 million feeder-TEUs, assuming 30 percent of the port's transshipment volume concerned relay/interlining. Thirty-one of the fifty-seven Europe/Mediterranean-Far East services call at Singapore and out of these, 25 visit twice (once in each direction). In other words, eight vessels a day load or discharge boxes to or from Europe.

The four terminals areas (Brani, Keppel, Pasir Panjang and Tanjong Pagar) currently boast 44 berths (including 16 dedicated to feeders) at 15 to 16 meters draft on 12.8-kilometre quay with 143 ship-to-shore container gantries. Four more berths are already being built and another fifteen are to be developed thereafter, all at Pasir Panjang.

Since the loss of Maersk Sealand and Evergreen to Port Tanjung Pelepas, PSA has revised its inflexible pricing policies and updated its facilities, and no further defections have occurred thus far. Maersk Line has subsequently started calling at Singapore again; Coscon and MSC both have dedicated berths available – although they can also be used by other carriers. Such facilities will also be offered to other carriers once new berths at Pasir Panjang come available.

UASC and a joint service of Emirates Shipping Line, SCI, and TS Lines are the only operators calling at local competitor Jurong Port. Intra-Asia services, stretching from the Red Sea to Japan, make up for the majority of sailings: more than 80 per day. The feeder catchment areas of Singapore in particular are the countries bordering the:

- Gulf of Bengal: Sri Lanka, India East Coast, Bangladesh, Myanmar
- Gulf of Thailand: Malaysia, Thailand, Cambodia, Vietnam
- South Chinese Sea: South China, Philippines, Brunei, East Malaysia, Indonesia

In some of those countries (India, Vietnam, Brunei, East-Malaysia and Indonesia in particular) terminal projects are being planned that may ultimately cut into Singapore's transshipment volumes. While development is occurring quickly in Vietnam, the pace in India and Indonesia, which are among Singapore's largest catchment areas, is very slow.

2.20.5 COLOMBO (SRI LANKA)

The Port of Colombo is situated almost directly on the main East-West route between Europe and the Far East, and is the primary hub for the Indian Sub Continent and the sole maritime container gateway to Sri Lanka at the same time. The current overall capacity of 3.3 million TEUs could be increased to 3.7 million at the maximum before any major development is required.

After a five-year period of stagnation that ended in 2002 (during which time volumes hovered at around 1.7 million TEUs), activity increased almost 75 percent in the following four years to reach nearly 3.1 million TEUs in 2006. The Port asserts that a minimum of 70 percent of activity involves containers shipped to or from India. If correct, 35 percent of all Indian port throughput moved via Colombo in 2006, despite such facts as:

- Prior to Salalah (commissioned in late 1998), then Maersk Sealand was Colombo's biggest customer - which it is now once again;
- Private terminals have come on stream at India's main ports of Nhava Sheva (west coast) and Chennai (east coast) and at a number of smaller ports including Kandla, Kochi, Tuticorin, Vizakhapatnam;
- The emergence of new private ports: Mundra and Pipavav;
- The launch of many direct services between Indian ports and the Far East, the Mediterranean, North Europe, and North America since the start of this millennium – trades which all (except Europe) used to have a transshipment element before then. In 2007, two operations even added Chennai to the schedule of their routes to Europe; and
- Increased competition from hubs such as Dubai, Port Kelang and Port Tanjung Pelepas in Malaysia, and the Port of Singapore.

Colombo's transshipment business is currently fed by no less than 22 East-West services, seven more than three years ago. In addition, a number of North-South services between Asia, Australia, Africa and Latin America have Colombo on their schedules. Colombo offers feeder connections to and from Bangladesh and Pakistan in addition to the west and east coast ports of India.

2.20.6 KAOHSIUNG (TAIWAN)

Kaohsiung is located at the southern tip of Taiwan and is the only port in Northeast Asia with a dominant transshipment share, which is steady at around 55 percent. The Taiwanese carriers as well as the various alliance members and Maersk Line all have operations at Kaohsiung's five container terminals, which have a total of 23 berths. A sixth terminal will be opened shortly.

Part of the port's transshipment volume consists of trade between Taiwan and mainland China, between which direct trade is forbidden. Since 1997, Kaohsiung's offshore shipping centre has been the main Taiwanese port through which mainland China foreign trade is allowed for relay

with international deepsea services. This transshipment trade, restricted to Fujian-province ports (including Shantou, Xiamen, Quanzhou and Fuzhou) hovers at around 850,000 TEUs annually.

A number of smaller specialist feeder lines operate between Kaohsiung, Hong Kong, and the Chinese province of Fujian's ports. Other routes are primarily regional services, including those operated by the East-West carriers carrying the feeder containers, and international trade to and from the more than fifty Japanese secondary international ports.

2.21 HUB USE

There are currently 57 services offering service between the Far East and Europe (including the Mediterranean), versus 85 services that link to North America (including those that travel via the Panama Canal). The primary hubs used by East-West and North-South services in the study area are detailed in tables 5.5 and 5.6 respectively.

Table 2.38 Primary Hubs Used by Weekly East-West Services

Carriers/Groupings	Kelang	PTP	Singapore	Hong Kong	Kaohsiung	Busan	Slings
APL & Hapag-Lloyd	-	-	-	-	1	1	2
China Shipping	3	-	-	3	-	2	8
CHKY Alliance	2	-	9	18	8	11	48
CHKY Alliance & UASC	-	-	1	-	-	-	1
CHKY Alliance with MOL & UASC	-	-	1	-	-	-	1
CMA CGM	6	-	-	3	-	3	12
CMA CGM & China Shipping	1	-	1	3	-	2	6
CMA CGM & Coscon	1	-	-	1	-	-	3
CMA CGM & MOL	1	-	-	1	-	-	2
CMA CGM & MSC	-	-	-	1	-	-	1
CSAV Norasia	2	-	-	1	-	-	3
CSAV Norasia, Sinotrans, Wan Hai	-	-	-	-	-	1	1
Evergreen Line	-	4	9	7	6	2	19
Grand Alliance	3	-	1	7	7	6	32
Hapag-Lloyd	-	-	1	-	-	-	1
IRISL	1	-	3	-	-	-	2
Maersk Line	2	8	7	10	5	5	33
MSC	1	-	7	6	1	5	20
New World Alliance	1	-	-	11	8	7	34
New World Alliance & CMA CGM	-	-	1	1	-	-	1
PIL & Wan Hai	1	-	1	2	1	-	5
UASC	-	-	-	1	1	1	4
US Lines	-	-	-	1	-	-	1
Westwood	-	-	-	-	-	1	1
ZIM	1	-	1	1	-	1	3
ZIM & China Shipping	-	-	1	1	-	1	3
Total calls at Far East hubs	**26**	**12**	**44**	**79**	**38**	**49**	**247**

Source: Dynamar

Note: Only services operating on the Far East-Mediterranean-North Europe-North America and the Far East-North America axes are included in the above overview, thus no Far East-Indian Sub Continent-Middle East-Africa routes.

Table 2.39 Primary Hubs Used by Weekly North-South Services

Carriers/Groupings	Kelang	PTP	Singapore	Hong Kong	Kaohsiung	Busan	Slings
CCNI, Hamburg Süd	-	-	-	2	-	2	4
CMA CGM	-	-	-	1	-	1	2
CMA CGM, China Ship, Maruba	1	-	-	1	-	1	3
CMA CGM, Maruba	-	-	-	1	-	1	2
Coscon, Evergreen	-	1	1	2	-	-	4
CSAV	-	-	1	3	-	2	6
Hambürg Sud, Maersk Line, NYK	-	2	2	2	-	1	7
K Line, MOL	-	-	-	1	-	1	2
Maersk Line	-	-	-	1	-	-	1
MOL, PIL	-	-	1	1	-	1	3
MSC	-	-	-	1	1	1	3
NYK	-	-	-	2	-	2	4
Total calls at Far East hubs	1	3	5	18	1	13	41

Source: Dynamar

2.22 CURRENT EXPANSION PLANS

According to UN estimates, a total of 1,264 new container berths will be required to meet the forecast demand of 2015, including 530 new berths in the East Asia region, 154 in Southeast Asia, and 85 in South Asia.[6] The port operator Modern Terminals estimates that demand for additional terminal capacity in Southern China alone is six berths per year. This section details a number of current expansion plans in those ports that, for the most part, are located south of Shanghai, as the consultants do not consider any ports situated further north to be viable transshipment locations.

2.22.1 CHINA

Qingdao
Ten container berths recently became operational in Qianwan Harbour, providing a 3,408 meter long quay and capacity of six million TEUs. Ground breaking for the fourth phase of the Qianwan container terminal was held in September, 2007. This phase will construct a 2,640-m quay designed for eight berths and is scheduled for completion by 2010, when it will have an annual throughput capacity of 210 million tons and 10.6 million TEUs.

Shanghai
Yangshan Deep-Water Port has completed two of the four phases of its construction plan. The first two phases include nine berths along three kilometers of quayside. The third phase will add a further seven berths by the time it is completed in 2010. The end goal of the plan is to have at least 30 operational berths capable of handling 15 million TEUs by 2012.

Ningbo
A new container port is to be built on Mei Shan Island, about 25 km northeast of Ningbo.

Fuzhou
The Jiangyin Port Area of Fuzhou has begun construction on two additional berths that should be operational by October 2008, increasing handling capacity from 1.2 million to 3.0 million TEUs per year.

[6] Regional Shipping and Port Development Container Traffic Forecast 2007 Update, UN ESCAP

Xiamen
The Port of Xiamen is constructing a container terminal that it intends to utilize as a transshipment hub for southern China when it becomes operational in 2009.

Yantian/Shekou
Expansion at Yantian Port is underway, with Phase IIIb, consisting of six new berths and 2,100 meters of quay, set for completion later this year.
Phase IIIb of Shekou's expansion plans is scheduled to be completed in 2009, which will add an additional two berths along 890 meters of quay.

Da Chan Bay Terminal One is situated in the Western Shenzhen Port area, and has a designed capacity of 2.5 million TEUs a year. It is a new international container terminal serving the Pan-Pearl River Delta cargo catchment areas. The terminal was opened its first two berths in December 2007, with three more scheduled for completion in 2008. With the completion of Phase II in 2012, Dachan will offer 11 berths over 4,130 meters of quay.

Hong Kong
The Port of Hong Kong plans to continue development of the long-planned Container Terminal 10, despite disagreement between politicians, operational executives, and consultants about when the additional capacity will be required. Hong Kong experienced only a slight two percent increase in the number of TEUs handled in 2007 over 2006. Total port capacity is estimated at between 25 and 27 million TEUs.

2.22.2 KOREA

The Port of Gwangyang has completed the third phase of its long range plan. The terminal currently has 16 berths and a handling capacity of 5.48 million TEUS, and plans to add an additional four berths with a further 1.37 million TEU capacity by 2011. The port already has plenty of capacity however, and is facing increased competition from the port of Busan.

Busan
The New Port Construction project began in 1996 with the goal of creating 30 berths and a handling capacity of eight million TEUs by 2011. 43.9 percent of the TEUs handled by the Port of Busan in 2007 were transshipments.

2.22.3 MALAYSIA

Penang Port is about to begin construction on an expansion of its North Butterworth Container Terminal (NBCT), which currently has three 900 meter berths, a 12 meter deep approach channel, and an annualized capacity of 1.2 million TEUs. The expansion will add a 600 meter long wharf extension and new stacking areas that are expected to increase capacity to 1.8 million TEUs by the time the project is completed in 2010.

Malaysia's Tanjung Pelepas is planning to add two extra berths after container traffic grew 14.6 percent in 2007 to 5.5 million TEUs. The port took delivery of four new quay cranes and eight rubber-tired gantry cranes in 2007, and has additional equipment on order for 2008.

Port Kelang
Westport will expand facilities over the next three years, including a 600-metre expansion of its wharf. The terminal has also recently acquired four super post-panamax quay cranes. By June 2008, Westport will have an annual handling capacity of 7.2 million TEU.

Northport is building a new 9.7 hectare container yard, which will increase the total handling capacity to more than 2.2 million TEU at CT1 and 2.4 million TEU at CT2.

2.22.4 SINGAPORE

Over the past 10 years, the Port of Singapore has developed 26 berths in Pasir Panjang, with 13 already operational and another 13 scheduled to commence operations by 2009. This expansion will increase the port's total handling capacity to 35 million TEUs. The port recently placed an order for 79 units of rubber-tired gantry cranes for use at the new berths. Work has also commenced on the simultaneous construction of a further 16 new berths (with a capacity of 14 million TEUs) at the Pasir Panjang terminal, due for completion in 2013.

2.22.5 SRI LANKA

Colombo

The proposed Colombo South Harbour Development Project will construct three terminals, each with a quay length of 1,200 meters and three of four berths at 18 meters draft alongside. The terminals will be built on a build-operate-transfer basis, and the total facility is expected to handle 2.4 million TEUs per year. The Asian Development Bank (ADB) reached agreement with the Sri Lankan government in May for a $300 million dollar loan to start construction after changes in government bidding requirements for the operator of the first container terminal put the project on hold.

2.22.6 TAIWAN

Kaohsiung

The groundbreaking for a sixth container terminal at Kaohsiung took place at the end of last year. The plans call for four berths, each with a depth of 16 meters, to be constructed during the first phase. In all, an area totaling 75 hectares will be developed. After the completion of the first two deep-water berths in 2010, the remaining two will be in place by 2014, allowing an estimated increase in container volume of two million TEUs annually.

2.22.7 OTHER

Construction will begin in May on Vung Tau, a new deepwater port located 80 miles east of Ho Chi Minh City in Vietnam. The terminal will be able to handle 1.15 million TEUs when it becomes operational in 2010. The facility will offer two berths with a total quay length of 600 meters and a draft of 14 meters.

Construction on Indonesia's Bojonegara International Port began in December 2003, but was subsequently delayed due to investors' concerns about expansion plans at Tanjung Priok. If completed as originally planned, the port would have a total of five terminals and a capacity of 2.4 million TEUs and will be able to handle 7.4 million TEUs per year.

India's Port of Jawaharlal Nehru has announced plans to develop a fourth container terminal, on a build-operate-transfer basis, which will double the port's capacity from four million TEUs to eight million TEUs. The design and construction will require approximately four years. In general, India's ports are running at or near capacity, and the nation is planning to double its total port capacity over the next five years.

2.23 FEEDER REGIONS

The following descriptions of feeder regions is drawn from the 2007 Transshipment and Feedering Trades, Operators, Ships report, which was graciously provided for this project by Dynamar BV.

2.23.1 Indian Sub Continent

For the sake of feedering, the Indian Sub Continent (also referred to as South Asia) can be divided into two main regions:

- Arabian Sea, encompassing Pakistan, India West Coast, the Maldives and Sri Lanka; and
- Bay of Bengal, encompassing India East Coast and Bangladesh (and Myanmar).

However, since only the west coast of India is relevant to potential transshipment services in the Weh Island region it is the only area that will be examined.

Strong growth has attracted regional operators to extend their intra-Asia direct services to include South Asia, and an increasing number of Indian ports appear on the schedules of direct intercontinental services to Europe and the US East Coast. This has caused the market share of common feeder operators to remain more or less stagnant.

The growth of direct operations between China and India has rapid. The first direct box service between the two countries was launched in mid-2001, and by June 2007 there were 18 such links (six of which were dedicated). While maritime trade between India and China increased by 30 percent in 2006, container rates dropped by double that percentage. In December of that year an average base rate of around US$100 per TEU was reported, just one third of what was paid half a year before, and potentially due to the effect of the increased competition. From 2000 to 2006, port container throughput in the four seaboard countries of the Indian Sub Continent (excluding Colombo transshipment volumes) increased by 129 percent. In contrast, China, including Hong Kong, experienced growth of 186 percent over the same period.

There are 14 dedicated operations plus another 14 shared routes that connect Northeast Asia to the Middle East.

2.23.2 FAR EAST

During the last few years, the growth of the container movements amongst the various Southeast and Northeast Asian countries has been outpaced by the growth of East-West shipments, with China as the main driver as both a major supplier to and consumer of goods.

Unfortunately, there are no exact data: lack of reliable probably a lot of double counting; no generally adopted description of what intra-Asia actually is, no uniform assessment methodologies on the actual importance of this trade.

A lack of reliable statistics on loaded container traffic combined with a lack of consistency in how data is measured makes it difficult to depict inter-Asian trade accurately. For example, Japanese carriers classify intra-Asia cargo as that which is transported between their home country and the rest of Asia., while other carriers refer to intra-Asia as the trade between South and Northeast Asia. As such, estimates can and do vary greatly, as the following values for 2006 demonstrate:

- 12 million TEU between North and Southeast Asia (Citigroup)

- 22 million TEU for intra-Asia excluding South and West Asia (Global Insight)
- 37 million TEU intra-Asia unspecified (CMA CGM)
- 40 million TEU all intra-Asia, including South and West Asia (Citigroup)
- 44 million TEU intra-Far East, i.e. South and Northeast Asia (Drewry)

All the above figures refer to regional trade only, and as such do not include intra-Far East feedering, which amounts to approximately 26 million TEUs as based on the transshipment shares (adjusted for estimated relay/interlining) at the relevant main ports/hubs.

Southeast Asia
Southeast Asia broadly is the area between the Indian Ocean in the south-west and the Pacific Ocean in the north-east with the countries bordering the Andaman Sea, Strait of Malacca, Gulf of Thailand and the South China Sea, and includes Myanmar, Malaysia, Indonesia, Brunei, the Philippines, Thailand, Cambodia, and Vietnam. All but Malaysia and Thailand depend on feedering for at least 90 percent of their intercontinental foreign container trade.

Although Southeast Asia's primary hubs are Singapore, Port Tanjung Pelepas, and Port Kelang, a number of ports in other areas (including Vietnam, the Philippines, and the northern areas of Eastern Malaysia and Indonesia) are also within the catchment areas of Hong Kong and Kaohsiung. Indonesia, Thailand and southern Vietnam are major feeder destinations for Singapore (and Port Tanjung Pelepas) in particular.

In addition to the primary hubs, the only other ports in Southeast Asia that feature on the schedules of East-West operators are Jakarta (three Asia-Europe routes,) and Laem Chabang (one service to Europe and five to North America).

Indonesia
Numerous domestic carriers sail between the main regional ports of Jakarta and Surabaya (and to a lesser extent Makassar, Banjarmasin, Pontianak, and Belawan), and a multitude of smaller ports across the Indonesian archipelago. Few statistics are available, but shipments often include non-containerized cargoes.

Vietnam
Vietnam's growing export volumes should receive a boost from the country's accession into the WTO in January 2007. The ports around Ho Chi Minh City handled more than 2.5 million TEU at different terminals in 2006, although in general 1,700 TEUs is the maximum ship capacity any of these facilities service. Much of the current activity will likely relocate to new facilities in the Cai Mep-Thi Vai region of Ba Ria-Vung Tau province, the gateway to Southern Vietnam, which has a 14-metre draft being capable of accommodating much larger ships.

The recent developments have attracted many international investors and terminal operators and it is likely that by 2010 Ho Chi Minh City will receive direct calls by mainline services between both Europe and North America.

Thailand, Brunei, Cambodia, and Myanmar
Laem Chabang serves as Thailand's port for intercontinental services and also acts as a regional hub, while the port of Bangkok is a pure feeder (and regional) destination. If Laem Chabang's expansion plans proceed as planned, the port could reach 20 million TEU capacity by 2020.

Sihanoukville is the most important port of Cambodia and is served by four feeder operators, but trade via the River Mekong between Ho Chi Minh City and Phnom Penh using small seagoing river ships and barges has increased.

The port of Yangon in Myanmar relies on a few regional and feeder services for its modest foreign trade.

It is believed that larger ports along the South China Sea such as Ho Chi Minh City, Manila, Muara and Kuching, as well as Belawan and Penang on the Strait of Malacca could well feature on the schedules of future direct Asia/Europe service with cascaded ships. This would profoundly impact the feeder patterns between those ports and the current hubs.

Northeast Asia
Northeast Asia for the sake of this report consists of Hong Kong (like Macao a Special Administrative Region -SAR- of PR China), Taiwan, P.R. China, South Korea, North Korea, Japan and Far East Russia.

China - Hong Kong
The total container throughput of China's seaports (including Hong Kong) increased 186 percent from 40.5 to 108.3 million TEUs between 2000 and 2006, while total capacity is expected to reach 140 million TEUs by 2010. Typically, such an increase in container traffic would be accompanied by a dramatic expansion of feeder traffic from and to existing regional hubs.

Prior to the construction of China's modern ports that allowed for direct service to Europe and North America, a large proportion of the Chinese containerized foreign trade was transshipped via Hong Kong, ports in South Korea and Japan. Direct calls at ports in China were mainly confined to Chinese shipping lines.

Growth was accelerated with the country's accession into the WTO in 2001. Port growth was further facilitated by the Chinese Port Law that was introduced in 2004, which enabled foreign operators to own a majority in container terminals rather than the 49 percent maximum stake previously allowed. As Chinese output increased investment risk was reduced, and modern and efficient container facilities attracted more direct calls every year. This growth has come at the expense of transshipment share growth at the traditional hubs.

China-domestic
At present, around 25 percent of Shanghai's box volume is domestic transshipment, with the related feedering activities handled exclusively by Chinese operators. At Shanghai's new Yangshan port which is located 35 kilometers off shore, all feeder vessels are handled by postPanamax22 ship-to-shore gantries.

With the exception of Far Eastern Russia and North Korea, the main ports of all other Northeast Asian countries receive so many direct calls of East-West mainline operations that feeder operators have only a minor presence. Those routes that exist are often in co-operation with regional carriers or even through chartering slots.

The restrictive cabotage policies of most governments also decrease the feasibility of common feeder services in Northeast Asia. Since January 2004, shipping companies have been allowed to shift empty containers between Chinese ports, an important source of income for feeder operators. Until then, foreign lines could only move empties from one port in China to the other

via Hong Kong. China and Japan also now allow each other's carriers to cabotage empty containers between the ports of both their countries.

Japan
Much of the intercontinental trade for Japanese regional ports is transshipped at Busan, although Hong Kong and Kaohsiung are also key locations. Trucking in Japan is very expensive and Japanese importers/exporters prefer that ships unload at the closest available port. Asian cargo bound Far East Russia is often routed via South Korean ports, although their number has reduced since the Russian railways introduced considerable rate increases in 2006. Busan alone still connects more than 1.5 million TEUs of Chinese trade annually with East-West mainline services.

Taiwan
Since direct trade between Taiwan and mainland China is still not permitted, most of the commercial exchange of goods between the two is handled with transshipment at Hong Kong. If and when the ban is lifted, Kaohsiung may take over other Chinese transshipment traffic from Hong Kong (and perhaps Busan) as it has a more strategically central position.

Since 1997, containers may be transported from mainland China's Fujian province ports (including Shantou, Xiamen, Quanzhou and Fuzhou) to the offshore shipping centers at Kaohsiung (in addition to Keelung and Taichung) for transshipment to foreign destinations (either by sea or by air) and vice versa. Direct trade between mainland China and Taiwan has existed for a number of years, but is still restricted to two Taiwanese islands near China, Quemoy and Matsu, and the opposite mainland ports of Xiamen and Mawei.

A portion of Taiwan's manufacturing base has shifted to mainland China where the cost of labor is lower (as was the case with Japan and South Korea), though the currency of the Yuan (Renminbi) is no longer artificially pegged to the US dollar. Volumes at Kaohsiung, Keelung and Taichung have been relatively flat over the last five years.

Much of the Northeast Asia feeder activity is handled by:

- The deepsea carriers themselves, using their various service string combinations of East-West, North-South and regional operations, partly through the system of interlining (many of those carriers operate more than one sling) for the main ports;
- Dedicated feeder services; and
- An abundant number of regional operators.

2.24 THE FEEDER(ING) FUTURE OF THE ASIAN MARKETS

Container ships with capacities of between 8,500 and 14,300 TEUs entered the North Europe-Far East trade lanes in mid-2005, with larger ships on order. In terms of ship-to-shore gantry outreach more than 35 Asian ports are geared to handle ships of up to 22-boxes wide.

The number of ports with direct service continues to increase as container volumes continue to grow and as individual carriers and groupings continue to introduce additional service strings on their main-haul routes. This is allowing ports that previously played a secondary role to become regional hubs. This development has the effect of reducing the dependence on feeders in some areas and in turn poses a threat to the dominance of the major hub ports, particularly in South and Northeast Asia. Feedering services will continue, but will likely become more fragmented (and thus more expensive per unit). Feeder service will also continue to suffer from

the fact that the mainline ships are serviced first, even if that jeopardizes the integrity of the larger supply chain of which the feeder is an indispensable part.

Common feeder operators will continue to play an important role on the routes inside and between the Middle East, the Indian Sub Continent and Southeast Asia. Their presence in Northeast Asia will remain limited as the mainline carriers have other options through the large number of direct ports of call (interlining, regional services, dedicated feedering). Feeder ships will never reach the capacities of regional cargo vessels (which may in part also carry feeder boxes).

F-WEH ISLAND TRANSHIPMENT POTENTIAL

The capacity analysis used to establish the potential supply side in terms of capacity and to identify potential users of Weh Island is sourced from AXS-Alphaliner. Table 6.1 below is based on the nominal capacities of all ships employed on regular (full) container liner services on the Far East-Europe route, irrespective of the origin and final destination of the containers. The figures are adjusted to reflect the duration of rotations in order to calculate the respective operators' total capacities. This analysis aims to provide an appraisal of the slot capacity deployed on routes linking the Far East/Australasia sector and the Med/Europe sector. All calculations are based on the ships deployed on this route in May 2008, as per the AXS-Alphaliner database.

The table lists absolute capacities as well as market shares for all operators that have active liner services between Europe and the Far East. In this context, Europe includes all services covering the Mediterranean, the Black Sea, the Atlantic, and the British Isles, as well as Northern Europe. Australasia is considered as part of the "Far East sphere". The capacity of Europe-Australasia services have thus been retained (be they via either Suez or Panama).

Annual capacity values detailed in the tables that follow are extrapolations from current tonnage deployment, made under the assumption that the fleet will continue to trade "as is" for 52 weeks, basically freezing the status quo. Services calling en route or serving South Asian or Middle Eastern ports have been considered for their whole capacity.

Table 2.40 Far East-Europe Capacity Survey, May 2008

		Period : May 2008					Period : May 2007		Progression	
Rank	Carrier	TEU Weekly	TEU Annual	Share FE-Eur	Share World	Weight FE-Eur/Wld	TEU Weekly	Share FE-Eur	Progress per annum	Gain/Loss in share
1	Maersk Line	79,830	4,151,000	19.1%	16.4%	1,16	66,400	20.6%	20.2%	-7.3%
2	MSC	48,996	2,548,000	11.7%	10.4%	1,13	35,475	11.0%	38.1%	6.5%
3	CMA CGM	42,404	2,205,000	10.1%	7.4%	1,37	34,845	10.8%	21.7%	-6.1%
4	Evergreen	27,918	1,452,000	6.7%	5.1%	1,31	20,953	6.5%	33.2%	2.8%
5	COSCO Container	24,508	1,274,000	5.9%	3.7%	1,58	18,695	5.8%	31.1%	1.1%
6	Hanjin	20,706	1,077,000	4.9%	2.9%	1,71	16,702	5.2%	24.0%	-4.4%
7	Yang Ming	19,865	1,033,000	4.7%	2.3%	2,06	12,399	3.8%	60.2%	23.6%
8	Hapag-Lloyd	19,048	991,000	4.6%	4.2%	1,08	15,247	4.7%	24.9%	-3.6%
9	NYK	17,873	929,000	4.3%	3.3%	1,29	12,375	3.8%	44.4%	11.4%
10	CSCL	17,123	890,000	4.1%	3.6%	1,14	15,750	4.9%	8.7%	-16.2%
11	APL	11,911	619,000	2.8%	3.5%	0,81	8,352	2.6%	42.6%	9.9%
12	K Line	11,897	619,000	2.8%	2.5%	1,14	11,530	3.6%	3.2%	-20.4%
13	MOL	11,114	578,000	2.7%	3.1%	0,86	9,664	3.0%	15.0%	-11.3%
14	Zim	11,078	576,000	2.6%	2.3%	1,15	5,953	1.8%	86.1%	43.5%
15	CSAV Norasia	10,831	563,000	2.6%	2.3%	1,12	10,342	3.2%	4.7%	-19.3%
16	Hyundai MM	10,494	546,000	2.5%	1.9%	1,32	6,800	2.1%	54.3%	19.1%
17	OOCL	10,150	528,000	2.4%	2.9%	0,84	9,818	3.0%	3.4%	-20.2%
18	MISC Bhd	6,424	334,000	1.5%	0.8%	1,92	3,839	1.2%	67.3%	29.0%
19	UASC	5,407	281,000	1.3%	1.0%	1,29	1,652	0.5%	227.3%	152.3%
20	Wan Hai	3,481	181,000	0.8%	1.2%	0,69	2,126	0.7%	63.7%	26.3%
21	PIL	3,186	166,000	0.8%	1.4%	0,54	1,979	0.6%	61.0%	24.4%
22	IRIS Lines	2,662	138,000	0.6%	0.7%	0,91	634	0.2%	319.9%	222.9%
23	Hamburg-Süd	1,353	70,000	0.3%	2.3%	0,14	1,208	0.4%	12.0%	-14.0%
24	DAL	211	11,000	0.1%	0.1%	0,68	-	-	n/a	n/a
25	Marfret	93	5,000	0.0%	0.1%	0,31	93	0.0%	0.0%	-20.3%
	Total	**418,562**	**21,765,000**	**100.0%**	**85.3%**	**1,17**	**322,831**	**100.0%**	**29.7%**	**0.0%**

Source: AXS-Alphaliner

2.25 CONTAINER VOLUMES

The container volumes projected as potentially available for the Weh Island development are based on the forecast growth rates from Global Insight's World Trade Service. The compound annual growth rate over the forecast period, divided into five year groups, is applied to the transshipment volumes as well as to the available liftings data from the Carriers in 2006 and 2007 where available. The Southeast Asian trade by region, to 2025, is identified in Table 5.1. Transshipment growth will be driven by the average annual growth rates projected in this table. The average annual growth rate from 2005 to 2025 calculated from the Global Insight forecast for Southeast Asia is 7.9 percent per annum. This forms the baseline projection. Two scenarios, one a low growth at five percent and a high growth at 10 percent per annum are also projected. The two scenarios form the basic planning parameters for the new port.

The assumptions for the carriers are that the total amount of capacity will grow to match the demand side and that the actual Lines will be "frozen"; that is, the assumption is that there will be no change in the client base other than known growth of vessel capacity based on the current Orderbook through 2012.

The analysis below therefore approaches the potential future transshipment market from two angles. First, from the extrapolated port point of view using Table 5.3 as the base point; and second, from the Carrier liftings, using data based on a mixture of projected market share and 2007 liftings where available as the base point. The two sets of data produce different results. The former is a global representation based on container moves, which includes double handling, and based purely on port statistics, whereas the latter is focused on the primary trade route with the highest potential for transshipment: Europe. The latter is extrapolated into a projection of potential container moves, including full boxes, empties and transshipment.

The transshipment market potential can be assessed by using activity at regional ports that are within a sufficient distance to be considered part of the "global" market for Weh Island. Table 6.2 below projects the relevant ports transshipment volumes out to 2025 assuming no change in operations. It should be noted, however, that some ports (such as Hong Kong) are seeing fewer transshipment as main line ports in China develop. This is particularly true of the Pearl River Delta ports, where a significant part of the river traffic has been shifting to the new ports as this is more cost effective both in handling and transportation terms.

Table 2.41 Transshipment Volumes- Low Growth Scenario

Port	Millions TEUs	Compound Growth Average 5%		
	Base Year 2006	2015	2020	2025
Singapore	21.1	32.7	41.8	53.3
Hong Kong	9.6	14.9	19.0	24.3
Port Kelang	3.3	5.1	6.5	8.3
PT Pelepas	4.5	7.0	8.9	11.4
Laem Chabang	1.1	1.7	2.2	2.8
Colombo	2.4	3.7	4.8	6.1
Total	**42.0**	**65.2**	**83.2**	**106.1**

Source: HA extrapolation of Dynamar Base Year figures.

Under a conservative growth rate, the above volume projections suggest that Singapore will be the main port under pressure to deal with these volumes based on the terminal developments and expansion plans discussed in Section 5.

The projection of the transshipment volumes under a more optimistic assumption are presented below in Table 6.3. These assume that transshipment growth will continue at robust levels in line with the ULCs requiring calls at fewer ports and drawing in feeder services.

Table 2.42 Transshipment Volumes-High Growth Scenario

Port	Millions TEUs	Compound Growth Average 10%		
	Base Year 2006	2015	2020	2025
Singapore	21.1	34.3	55.2	88.9
Hong Kong	9.6	15.6	25.1	40.5
Port Kelang	3.3	5.4	8.6	13.9
PT Pelepas	4.5	7.3	11.8	19.0
Laem Chabang	1.1	1.8	2.9	4.6
Colombo	2.4	3.9	6.3	10.1
Total	**42.0**	**68.3**	**109.9**	**177.0**

Source: HA extrapolation of Dynamar Base Year figures.

The high growth scenario suggests that there will be significant shortages of capacity by 2015 in the whole of the Southeast Asia region to deal with the expanding volume of transshipment containers, and will therefore require new port and terminal developments beyond those currently under construction or consideration.

It is neither feasible nor practical to discuss a market share that Weh Island could expect to capture from the total market opportunity available, as the industry simply does not work like this. The Consultants were the initial advisors to PTP when it was at the feasibility stage, and that company faced the same issue. Effectively the volumes and market share will depend on the success of attracting two or three customers. This will cause throughputs to move in steps to specific levels rather than having a trend line per annum growth, and makes the marketing strategy all the more important.

The potential of the individual Lines as customers for Weh Island is discussed in the next section.

2.26 POTENTIAL CUSTOMERS

In order to arrive at a solid estimate of the potential container volumes that are available for Weh Island to attract to its facilities, it is essential to first recap on the services available to carry the trade volumes and from this identify the potential users. The Liner industry is dynamic and has undergone significant changes in its composition during the past ten years, including consolidation and the doubling, on average, of the fleet size. Another dramatic shift is now underway with the transition to much larger vessels, the Ultra Large Containerships. For the purposes of this study however, it must be assumed that the players will stay more or less the same, and while there may perhaps be some further consolidation the overall capacity growth will continue within the current framework. The exception to this is where the Orderbook justifies a market share shift and this has been factored into the forecast period.

The focal market is the Australasia to Europe trade, with additional volumes taken into account for the Bay of Bengal, West Coast of India and Pakistan as well as the Arabian Gulf. There are today some 25 operating groups active providing 73 service strings, excluding the Indian Sub-Continent and Arabian Gulf services (although some of the cargo for these is transshipped via the mainline services. AXS-Alphaliner estimate that these 73 strings offer a weekly capacity of over 400,000 TEU, equivalent to nearly 22 million TEU on an annualized basis by some 630 ships. Of these 73 strings, 19 today are with ships in excess of 7,500 TEU. This will change over the next five years and beyond as more and more ULCs are ordered and delivered. This data is based on May 2008 figures, and represents an increase of 30 percent over the year. This represents approximately 30 percent of the global container capacity.

Far East-Europe Service Strings: Vessels over 7,500 TEU*

- Maersk Line 5
- MSC 3
- CMA CGM 2 (including one with CSCL)
- CSCL 2 (including one with CMA CGM)
- Evergreen Line 1
- CKYH 3
- Grand Alliance 3
- New World Alliance 1

* (Excluding double count CMA CGM / CSCL half VLCS loops)
Source : Alphaliner

As highlighted in Table 2.42, the dominant world carriers are fully represented here. Maersk Line remains at the top of the league with 19.1 percent market share in terms of capacity, followed by MSC (11.7 percent), CMA CGM (10.1 percent), and Evergreen (6.7 percent). Geographically, the European carriers and the East Asian carriers have a similar market share, although it takes 14 carriers of the latter to match the seven Europeans.

The alliances, as noted in Section D, control a significant proportion of the total capacity. CKYH (COSCO, K Line, Yang Ming and Hanjin) have an 18.4 percent market share, followed by the Grand Alliance (Hapag Lloyd, NYK, OOCL and MISC) with 12.8 percent and the New World Alliance (APL, MOL and Hyundai) with eight percent of the total. The combination of the three alliances and the top four independent carriers equates to nearly 87 percent of the total available capacity. For capacity in this instance read potential clients.

The reality is that the market is, and will remain, highly concentrated in a mixture of three to four large independent carriers (increasingly working together in joint services) and three large alliances. This means that the potential client base for Weh Island is fairly restricted. Of the above carriers and groupings, Maersk and Evergreen are tied to Tanjung Palapas and Singapore and cannot be seen as prime candidates, and the three alliances have such a large number of services using Singapore that is would be exceedingly difficult to switch them away. In any case, the New World Alliance with APL would not countenance such a switch. Add to this that one would have to convince not just a single carrier but all members to change ports and it becomes even more difficult. An example of this difficulty is evidenced in the problems faced by NYK in Amsterdam where it owns the Ceres terminal which is heavily underutilized as their alliance partners refuse to leave Rotterdam where their transport logistics are coordinated.

The situation of PTP should also be taken into account. The port has been very successful and continues to develop its berth capacity and logistics park, but it must be pointed out that they effectively have only two major clients, Maersk Line and Evergreen, and both of these continue to also support Singapore.

Given this situation, the focus of the Weh Island development in attracting new clients and potential investors (as PTP has done) must be on the next tier of carriers within the top 20 that have sufficient capacity and cargo flows to sustain the development of the project. Many of these operate in joint vessel sharing agreements that complicate matters, but all carriers pay attention to slot costs and schedule reliability as operating costs increase. They will be looking for the most cost and operating efficient options available.

The potential carriers that can be attracted to Weh Island are listed below with their current market share:

- MSC 11.0%
- CMA CGM 11.0%
- China Shipping (CSCL) 4.1%
- Gold Star Line 2.6% *(This will grow to over 4% as new ships come on stream by 2012)*
- CSAV 2.6%
- UASC 1.6%
- IRIS Lines 0.6%

These must be seen as the primary client base. Added to this would be some local carriers and feeders such as PIL and perhaps the Shipping Corporation of India. The second phase of client acquisition will be to return to the top three and perhaps one of the alliances as the cargo volume growth reaches such an extent that the terminal capacity in Singapore will no longer be able to maintain growth to support it. This will cause some service strings to be switched to other available ports with modern and efficient facilities.

It is possible to extrapolate the volumes that might be carried in the future by the lines that currently provide service between the Far East and Europe. Based on industry data for 2007, the total market from the Far East to Europe is an estimated 13.6 million TEU Westbound. This report assumes that Southeast Asia accounts for approximately 3.2 million TEU in both directions, excluding transshipment and empty containers. This report uses that ratio to extrapolate volumes into the future. The projections in Tables 6.4 and 6.5 below assume that there will be no change in market share amongst the current lines active other than that discussed above.

The total market potential for Weh Island will be primarily based on the liftings of the seven carriers highlighted above. Their 2007 estimated liftings are projected out to 2025 using the three growth scenarios and then translated into potential lifts for Weh Island by assuming that the new port will succeed in attracting a combination of carriers amounting to 35 percent of the estimated total market.

This base line for growth is shown in Table 6.4 below. The TEUs have been translated into container moves on the following basis:

- Based on 70 percent 40 foot and 30 percent 20 foot containers;
- Container imbalance between full containers in both directions;

- A three percent allowance for operational empty containers;
- Two transshipment moves per mainline container; and
- One Lift equals 1.7 TEUs.

Table 2.43 Estimated Terminal Throughput 2007: Total Market

	Capacity Market share	Southeast Asia		Total Mainline		T/S Lifts	Imbalance	MTs	Total Lifts
		WB TEUs	EB TEUs	TEUs	Lifts				
MSC	11%	200,000	65,000	265,000	172,250	172,250	135,000	8,613	488,113
CMA CGM	11%	200,000	65,000	265,000	172,250	172,250	135,000	8,613	488,113
CSCL	4%	88,000	40,000	128,000	83,200	83,200	48,000	4,160	218,560
Gold Star	4%	88,000	40,000	128,000	83,200	83,200	48,000	4,160	218,560
CSAV	3%	66,000	30,000	96,000	62,400	62,400	36,000	3,120	163,920
UASC	2%	44,000	20,000	64,000	41,600	41,600	24,000	2,080	109,280
IRIS	1%	22,000	10,000	32,000	20,800	20,800	12,000	1,040	54,640
Total	**36%**	**708,000**	**270,000**	**978,000**	**635,700**	**635,700**	**438,000**	**31,785**	**1,741,185**
Total SEA Market		**2,200,000**	**1,000,000**	**3,200,000**					

Source : HA Analysis

The above is then extrapolated, using the three growth scenarios, to the following potential market out to 2025:

Table 2.44 Total Potential Market for Weh Island

Container Lifts	2007	2010	2015	2020	2025
Total Baseline 7.9%	1,741,185	2,187,305	3,199,016	4,678,684	6,842,754
Total Low Case 5%	1,741,185	2,015,639	2,572,523	3,283,264	4,190,369
Total High Case 10%	1,741,185	2,317,517	3,732,385	6,011,043	9,680,845

Source: HA Analysis

This translates into a potential market for Weh Island, assuming that at a minimum it will achieve a 35 percent market penetration of the total estimated market outlined above. Table 2.43 below shows this in annual lifts as well as weekly lifts to allow for terminal planning and berth calculations.

Table 2.45 Weh Island Annual Container Lifts with 35% Market Share

Lifts	2007	2010	2015	2020	2025
Annual Lifts					
Total Baseline 7.9%	609,415	765,557	1,119,656	1,637,539	2,394,964
Total Low Case 5%	609,415	705,474	900,383	1,149,142	1,466,629
Total High Case 10%	609,415	811,131	1,306,335	2,103,865	3,388,296
Weekly lifts					
Total Baseline 7.9%	11,720	14,722	21,532	31,491	46,057
Total Low Case 5%	11,720	13,567	17,315	22,099	28,204
Total High Case 10%	11,720	15,599	25,122	40,459	65,160

Source: HA Analysis

A further critical factor that will aid in the attraction of customers will be to establish a partnership with a terminal operator as PTP has done with APM Terminals. The choices of major world class companies available are:

- DP World
- Hutchison Port Holdings
- APM Terminals
- ICTSI
- SSA
- PSA
- Port of Rotterdam
- Shanghai International Port Holdings (includes China Merchants as shareholders)

In addition, a number of carriers are increasingly investing in new terminal facilities as a means to achieving guaranteed berths and cost efficiencies. Amongst these are:

- CMA CGM (Terminal Link)
- NYK
- Gold Star Line
- MSC
- APL Terminals
- Evergreen
- COSCO

Some of these carriers are already working with a number of terminal operators in joint ventures. The carrier provides cargo guarantees and the terminal operator the landside expertise.

To sum up, one can identify three separate targets for marketing initiatives to gain clients: carriers, global terminal operators, and carrier owned terminal operators. The marketing strategy for the new port at Weh Island will need to approach these separate options with a coordinated plan that combines carriers with terminal operators. This strategy will by necessity focus initially on those companies not deeply committed at a Southeast Asian port while at the

same time having a terminal operating arm themselves. This suggests CMA CGM, MSC, COSCO and Gold Star Line. Three of these companies currently use Port Klang as a transshipment hub. This port is probably more vulnerable than either Singapore or PTP.

SECTION 3
TECHNICAL ANALYSIS OF PORT DEVELOPMENT ALTERNATIVES

NOTE - The Weh Island facilities are being developed as potential container and petroleum products transshipment terminals. The container markets are well established at this time, and long-term predictions are both possible and reasonably accurate. However, global and dramatic variances in the petroleum markets, the viability and changeability of the OPEC Cartel, major world-wide alternate energy initiatives, and the on-going planning and construction of major Far Eastern oil pipelines, all make an accurate long-term prediction of the petroleum market as it relates to the Malacca Straits extremely difficult. For this reason, the project includes the siting and basic requirements of the petroleum terminal, but the actual market study and physical planning has been left for a future effort. This document therefore exclusively concentrates on the container terminal potential.

3.1 INTRODUCTION

The intended purpose of the proposed Indonesian Weh Island Container Terminal is to serve as a transshipment hub by super Post-PANAMAX vessels for offloaded cargo bound for Indonesia, Malaysia, India, Myanmar, Thailand, Sri Lanka, and Bangladesh and for outbound cargo destined for the Middle East, Europe, and the United States. There are a number of substantial advantages to the location of Weh Island. It is located in a Free Trade Zone, the island offers extremely deep waters, and the site is protected from seismically-induced tsunamis. Also, the volume of domestic (Weh Island) containers (imports and exports) that will be handled at the port is estimated to be less than 1% of the total. As a result, the Terminal will be relatively seamless, and the inbound/outbound gate operations will be relatively simplified when compared to other world class container terminals.

The primary operations will be the quay-side ship-to-shore and shore-to-ship transfer operation, as well as a major container storage yard. Nearly all inbound and outbound containers will be transferred from and then to other ships. This will require the container cranes to lift nearly all containers twice. Maximum efficiency of quay-side operations will be required for successful operations. The container yard operations must be able to accommodate surges generated by the wharf operations. There are a number of market, physical, social, operational, economic, and financial factors that affect the way these operations are designed, organized, and optimized, and these can be easily accommodated within the desirable framework of the nature of the site and the advantages posed by its status and location.

This report addresses the operational requirements for development of a Transshipment Terminal and provides a site selection evaluation to identify the most viable location on the island for construction of the new terminal. The purpose of this analysis is to provide a realistic and workable operating system to serve as a basis for estimating the probable cost of the project. In the end, the selection of operational methods and equipment will be made by the private operator. This decision will be based as much on professional and management preferences and experience as on technical analysis. Ship characteristics are applied to the analyses in order to determine the number, length, and draft of future berths. Container handling efficiency and cargo dwell time are used to project storage requirements.

3.2 WHARF SIZE REQUIREMENTS

3.2.1 BACKGROUND

In determining a nominal berth length for design purposes, consideration has to be given to vessel types in the relevant trades. The design needs to consider not only the largest vessels likely to be deployed, but also the median ship size. This process represents a

difficult analysis of trade-offs. A design that considers only the largest ships will most likely result in an oversized facility for which the operations will not be optimal. Appendix A provides a recent list of large-sized vessels.

Fortunately, modern berth designs can accommodate a range of vessel sizes. A single straight-line wharf with an appropriate number of Ship-to-Shore cranes allows the operator to accommodate ships of varying length, simultaneously. However, in determining the overall length of the wharf, it is important to choose a vessel LOA that reflects the trends in vessel design and the population of vessels most likely to call the planned facility. Shipping patterns impact these considerations as well. Only a limited number of shipping lines will deploy the largest vessels. Many of those lines may already be committed under long-term contract to competitor ports, or they may be operating their own facilities. It is reasonable to exclude those lines from consideration in the plans for Phase 1 of the Weh Island Transshipment Terminal, but circumstances may change in the medium and longer term and therefore must be considered for future phases.

3.2.2 WHARF DESIGN AND BACKLAND LAYOUT

The layout of the wharf and adjacent container handling area is the single most important functional characteristic of a modern transshipment container terminal. When possible, the wharf should be a unified, continuous straight-line design, with no corners or bends in the wharf face. Similarly, crane rails for the Ship-to-Shore cranes should be continuous. This allows the operator to deploy as many or as few cranes as may be needed against the ships on berth. The other benefit to this configuration is a flexible berth size. That is, the berths have a nominal length for planning purposes, but operationally the facility can accommodate a range of vessels along the wharf.

Contiguous backland is utilized for storing and sorting containers. These areas are commonly called Container Yards (CYs). The optimal configuration for a CY is rectangular. This allows straight roads, access lanes, and travel paths, where required. A modern transshipment facility also accommodates the need to transfer cargo between containers or to break down the cargo for onward shipment by a breakbulk vessel. This is particularly true at Weh Island, given its strategic position at the entrance to the Malacca Straights and the possibility of serving smaller regional ports and the East Bay of Bengal ports.

Typical container terminal designs capable of serving ships of 7,500 TEU capacity and higher will exhibit the characteristics shown in the following schematic and will include additional property adjacent to or in close proximity of the terminal for use as a Warehouse and Distribution Center or (CFS) area.

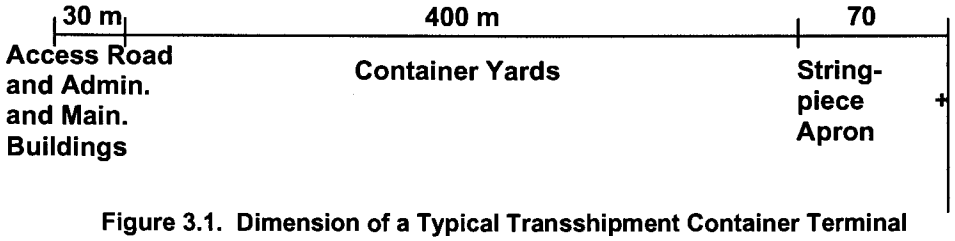


Figure 3.1. Dimension of a Typical Transshipment Container Terminal

3.2.3 NUMBER OF BERTHS

To allow the Weh Island terminal to grow to handle the market share projected in the earlier marketing analysis, it is recommended that the terminal be constructed in 2 phases. While conventional phased development of Container Terminals generally calls for an initial phase with two berths, for a transshipment facility the first stage should consist of a minimum of 3

berths. Two berths is the minimum required to assure operational reliability but shore-side and berth operations in a Transshipment facility require 3 berths to insure rapid turnaround and efficient container marshalling. The problem is summarized in the following schematic:

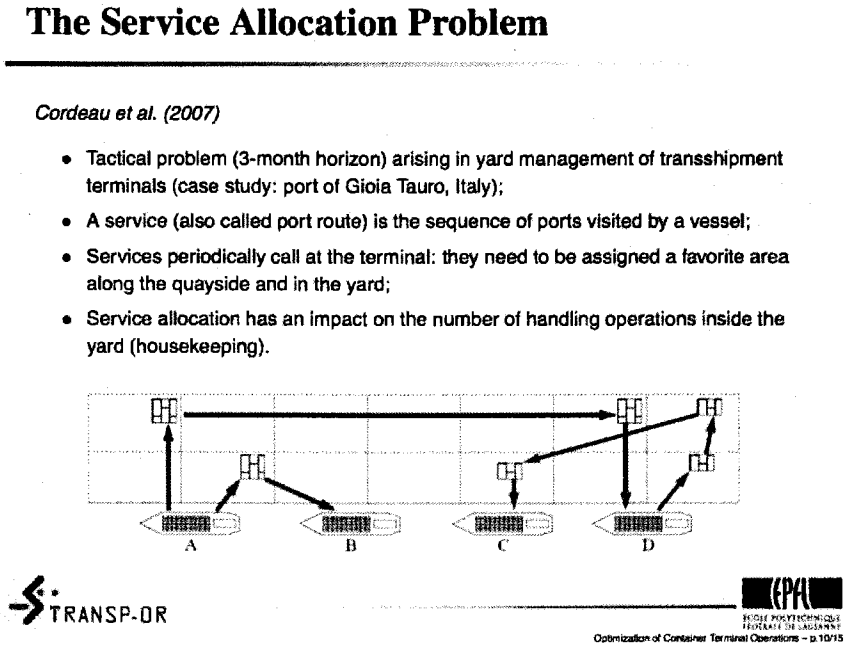


Figure 3.2 Port Service Allocation

A common misconception, even among experienced Managers of Container Terminals, is that the Ship-to-Shore crane operation is the throttle on facility efficiency and throughput. In fact, CY operations create berth congestion and slow crane productivity. Figure 3.2, taken from a presentation to the European Operations Research Organization, illustrates the housekeeping issues associated with a transshipment operation. This simple example uses a 4 berth facility. Compressing those operations to 2 berths is untenable and 3 berths is the minimum number required for a competitive facility.

3.2.4 BERTH LENGTH

Vessel particulars are the primary consideration when determining the length of berths for the facility design as well as the minimum working draft required. The primary characteristic of the world container fleet is continuous growth in carrying capacity as carriers seek to maximize economies of scale. Figure 3.3 provides some perspective on the current size of container ships and Figure 3.4 highlights the particulars of the Emma Maersk, the largest container ship afloat.

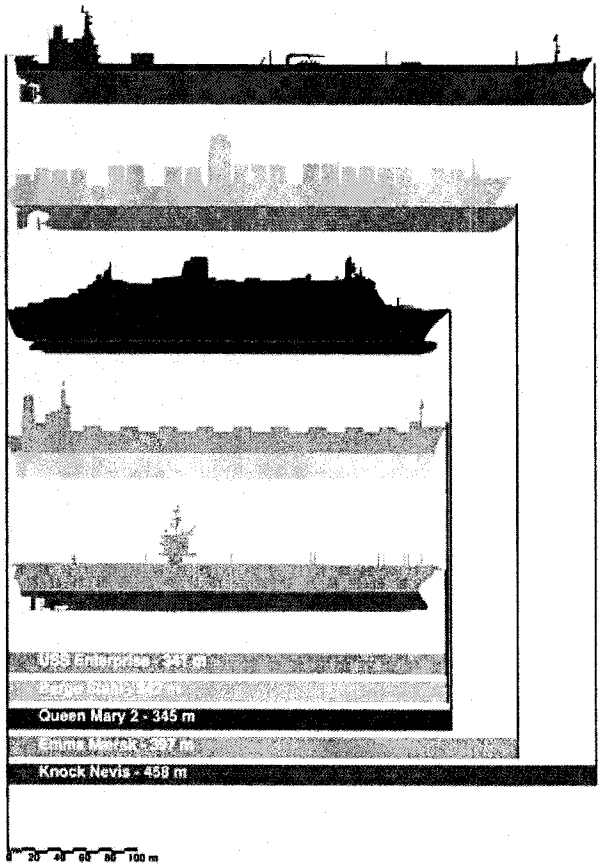
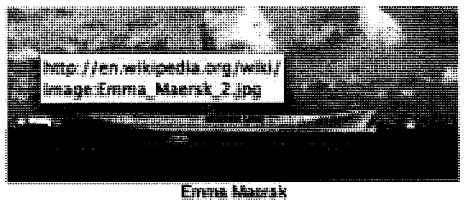


Figure 3.3 Current Vessel Sizes



Emma Maersk

Career	
Name:	Emma Maersk
Owner:	A. P. Moller-Maersk Group
General characteristics	
Tonnage:	170,974 GT 55,396 NT
Length:	397 metres (1,300 ft) LOA
Beam:	56 metres (180 ft)
Draft:	15.5 metres (51 ft)
Depth:	30 metres (98 ft) (deck edge to keel)
Propulsion:	80 MW (109,000 hp) Wärtsilä 14RT-Flex96c plus 30 MW (40,000 hp) from five Caterpillar 8M32
Speed:	over 25.5 knots (47.2 km/h/29.3 mph)
Capacity:	156,907 metric tons of deadweight (DWT) 11,000 TEU
Crew:	13, with room for 30

Figure 3.4 Emma Maersk

While the Emma Maersk is designed to carry 15,000 TEUs, Maersk has declared that the vessel capacity is 11,000 TEUs, based on the carrying capacity of the ship and an average container load of 14 Tons. Given that the largest ships are currently operated by Maersk, which has established operations at Tanjung Pelepas, it is unlikely that 15,000 TEU vessels will call at the proposed facility in the near term. A more likely typical ship range for consideration is vessels between 7,500 and 12,000 TEU capacity. Ships in this range typically have LOAs of 325 to 350 meters and drafts of -14.0 to -15.0 meters. A list of the largest container ships currently deployed can be found in Appendix A. In addition to the draft of the vessel, one to two additional meters for maneuvering should be included in determining channel depth and an additional 0.5 meter of depth is required alongside the wharf for safe berthing.

For planning purposes, when defining the length of a berth, it is necessary to add 50 meters (25m to each end) to the vessel LOA to allow for line handling, berthing and unberthing maneuvering and vessel movement due to wind and tides.

When considering all the guidelines discussed for determining the size and number of berths, the following wharf requirements were established:

Phase 1 (3 Berths)

1 Super Post-Panamax Vessel	380 meters
1 8,000 teu Capacity Vessel	330 meters
1 Feeder Vessel	290 meters
Space Allocation for Line Handling/Movement, etc	150 meters
TOTAL WHARF LENGTH (Phase 1)	**1150 meters**

Phase 2 (2 Additional Berths)

2 10,000 teu Capacity Vessels (2 x 350 meters)	700 meters
Additional Allocation for Line Handling/Movement, etc	100 meters
TOTAL ADDITIONAL WHARF LENGTH (Phase 2)	**800 meters**

TOTAL Phase 1 and Phase 2 (5 Berths)

Phase 1 Requirements	1150 meters
Phase 2 Requirements	800 meters
TOTAL WHARF LENGTH	**1950 meters**

3.3 Site Selection

Site Selection Goals

To establish potential sites for construction of the new wharf, three primary goals were identified. They included identifying a site that offers protection from wind and waves, provides adequate and efficient access for Super Post-Panamax vessels, and limits excessive cut and fill requirements when constructing the new wharf.

Minimized ship-to-shore and shore-to-ship container handling periods are an essential requirement for container ships sailing on tight time schedules. Wave induced ship motions at berth must be kept to a minimum to provide uninterrupted container handling operations. For these reasons, potential sites were initially evaluated with regard to

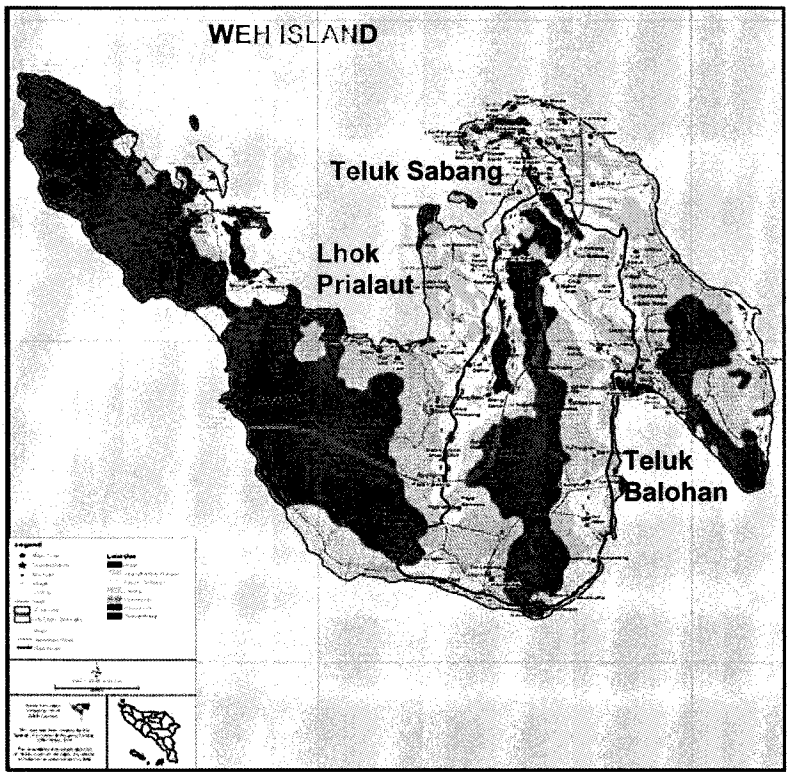


Figure 3.5 Potential Port Sites

coastal conditions, paying particular attention to the wind and wave climate and the potential effect of seismically-induced tsunamis.

The terrain of the island consists largely of volcanic rock, and severe slopes are found along much of the island's shoreline. To construct a 500 meter wide wharf, there will likely be a significant amount of cut and fill required. Due to the elevated costs associated with constructing a wharf in deep water and grading steep slopes, the goal of the site selection is to limit the depth of the water for the wharf construction to 20 meters, limit the required grading to an elevation of 25 meters, and balance the required cut and fill.

The selected site, not only has to accommodate the proposed wharf, it also has to provide access to the vessels calling at the port. As described previously, the new wharf is being designed to accommodate Super Post-Panamax vessels, which range in length from 338 to 400 meters, and require a turning basin of approximately 600 meters. Although many of the vessels calling on this Terminal will be smaller, this extreme case needs to be accommodated in order to attract the markets discussed.

There are three harbors on the island, all of which offer protection from the prevailing winds from the southwest and west. These are shown in Figure 3.5. The best possible potential site was selected in each harbor that best met the goals. Two of the sites are located on the north side of the island, in Teluk Sabang and Lhok Prialaut. The third site is located on the south side, in Teluk Balohan.

3.3.1 IDENTIFICATION OF POTENTIAL SITES

This section of the report provides a brief description of each site and evaluates the possible locations, based on a number of criteria. The criteria were developed based on a number of factors concerning constructability and impacts to the environment and surrounding community. The evaluation of each site is followed by the site recommendation and more detailed discussion on site development. For more detailed maps of each site, refer to Appendix B.

Teluk Sabang

Teluk Sabang is the harbor associated with the old Dutch harbor town of Sabang. Sabang is the most populated area on the island, which provides access to existing infrastructure and services. It is well protected and offers naturally deep waters and is the therefore the proposed location for the construction of a new container terminal in the Sabang Master Plan. As a result of the Master Plan, a Detailed Engineering Design was prepared by PT. ECOPLAN REKABUMI INTERCONSULT earlier this year (2008). The design proposes a deep-water Container terminal in Sabang Harbor, consisting of three wharfs. The useable area within the harbor is extremely restricted and therefore two of the three proposed wharfs (CT-1 and CT-2) are limited to 500 m and 800 m, respectively. This section of the harbor does not meet the 1150 m minimum requirements established for Phase 1 of the proposed wharf and therefore the

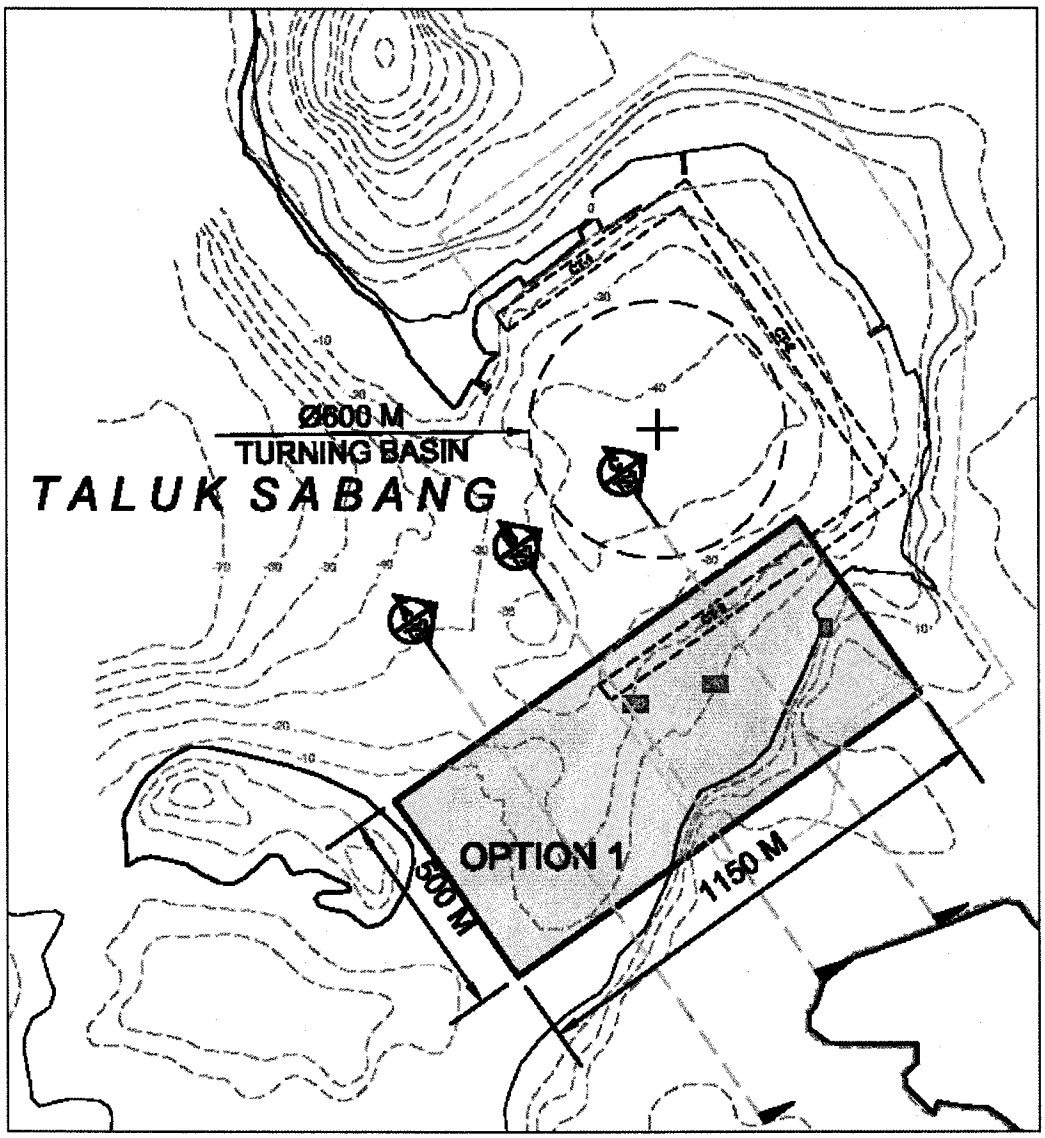


Figure 3.6 Teluk Sabang - Potential Port Site

proposed location of the new wharf in Teluk Sabang is limited to the shoreline that extends beyond the mouth of the harbor. Figure 3.6 shows the proposed wharf location in the vicinity of CT-3 and therefore assumes that if this site is selected as the Transshipment Terminal site, that the CT-3 wharf would not be constructed, as proposed in the design drawings prepared by PT. ECOPLAN REKABUMI INTERCONSULT. Cross-sections for the proposed Transshipment Terminal Wharf are illustrated in Figure 3.7.

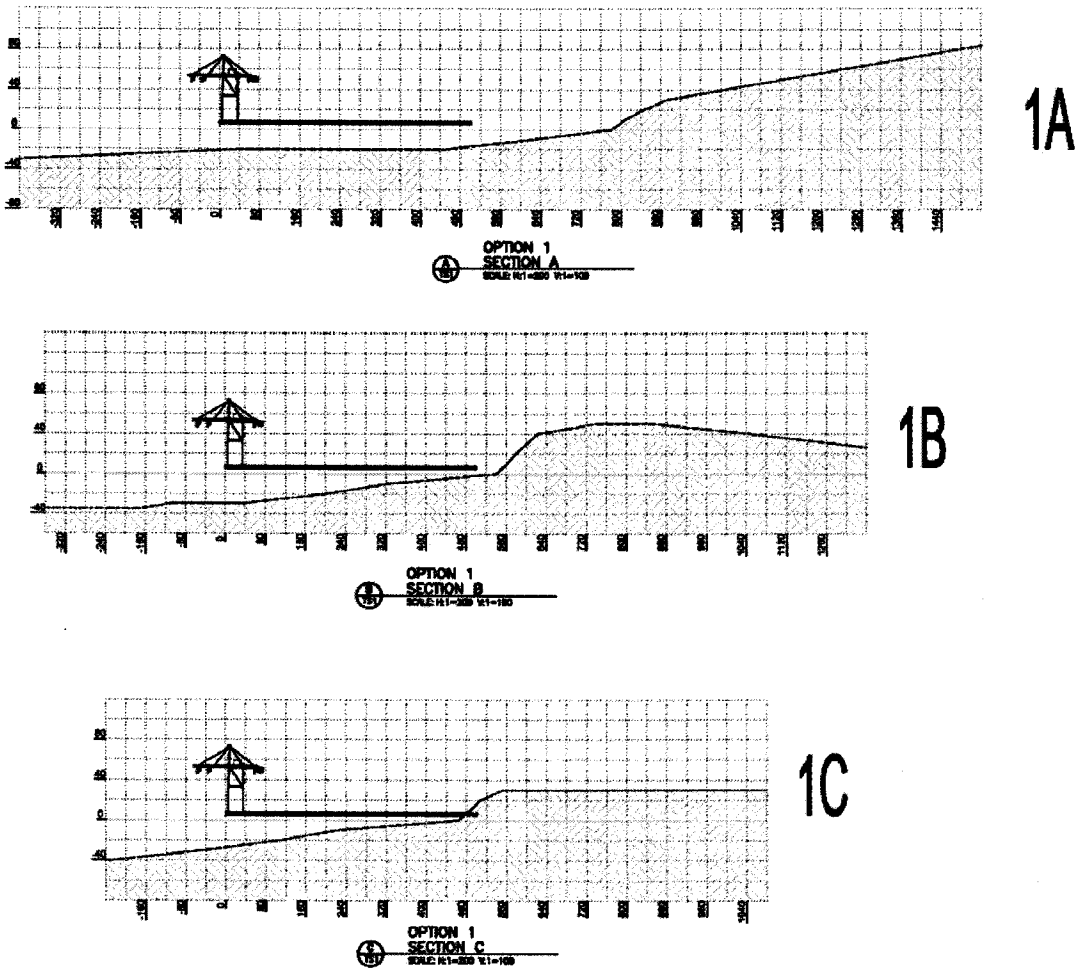


Figure 3.7 Teluk Sabang - Potential Terminal Wharf Cross-sections

Lhok Prialaut

Lhok Prialaut is located southwest of Sabang, near the towns of Seurui and Pria Laot. The entire shoreline along this harbor contains extremely steep slopes and deep waters, as seen in Figure 3.8. As mentioned, this site is protected from the prevailing wind and waves from the southwest and west and offers ample space for vessel access. There are two popular dive sites in the mouth of the harbor. There is limited development in the area and vehicular access is limited to secondary roads. Due to the sloping terrain, the area identified as Option 2 is not viable for the construction of a 500 meter wharf. Sections are provided in Figure 3.9. Therefore, the proposed wharf location is limited to the Option 1 location at the base of the harbor. This location limits the length of the wharf to 1,150 m. This is adequate space to complete the Phase I development, as proposed, but does not allow space for any expandability in Phase 2.

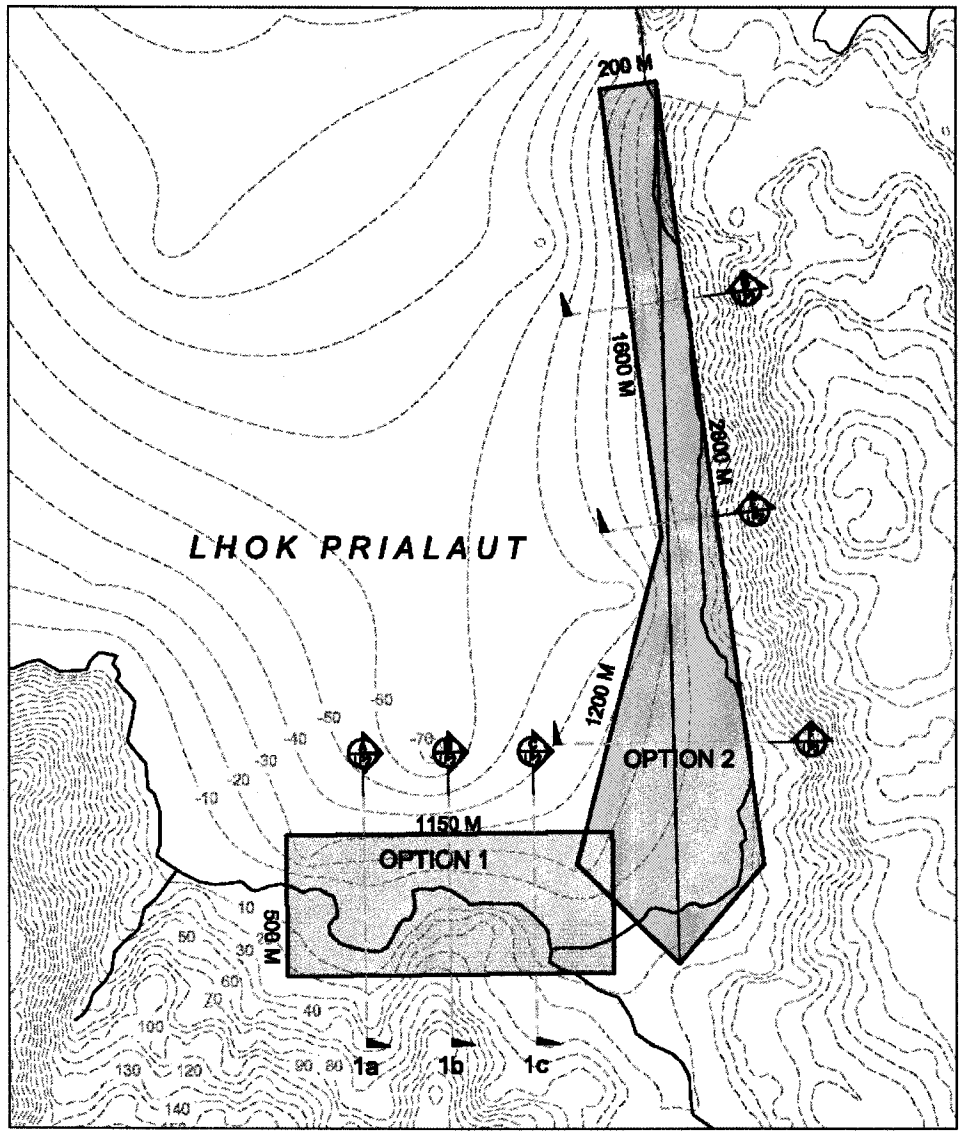


Figure 3.8 Lhok Prialaut - Potential Port Site

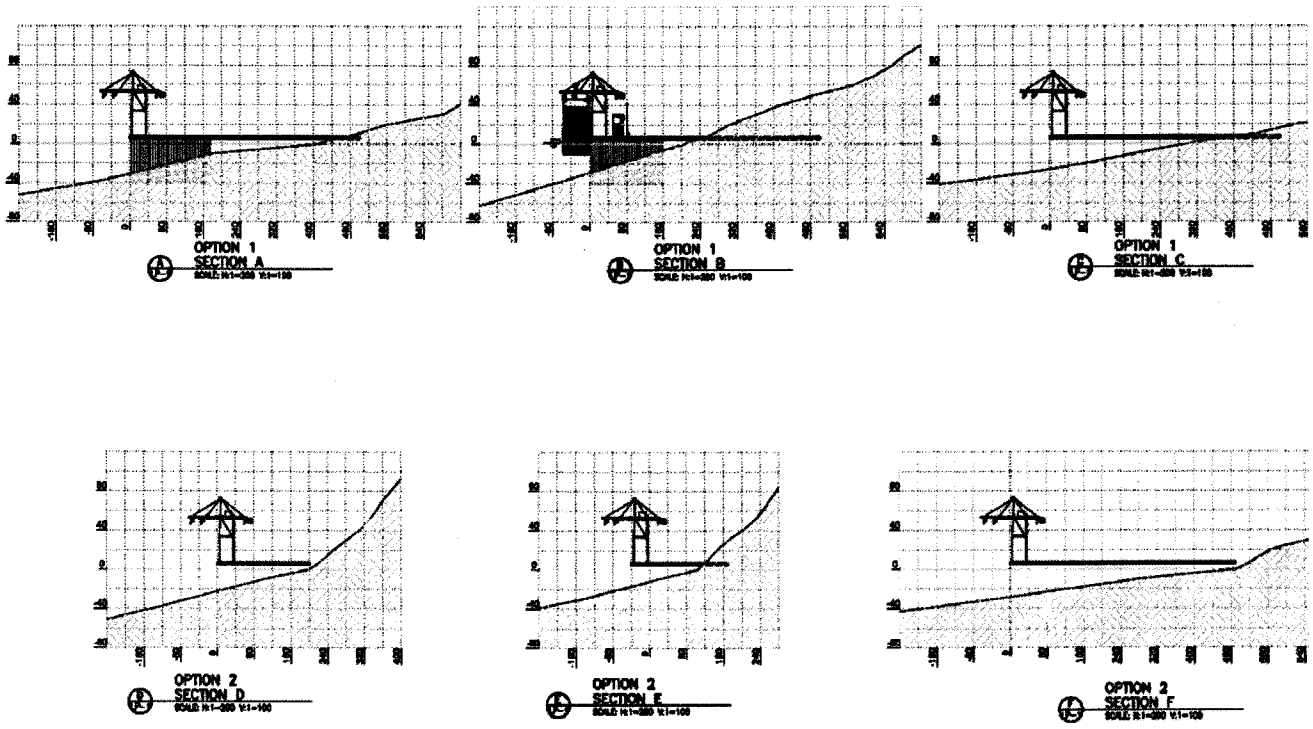


Figure 3.9 Lhok Prialaut - Potential Terminal Wharf Cross-sections

Teluk Balohan

Teluk Balohan is also protected from the prevailing wind and waves from the west and southwest. It is a large harbor that would offer ample access to vessels calling on the proposed terminal. Balohan is a major town, located within the harbor, and currently operates a ferry service between Weh Island and Aceh. There are main roads linking Balohan to Sabang and to the central portion of the island. The proposed wharf site is along the western shore of the Bay, as shown in Figure 3.10. As with the remainder of the island, the topography along the shoreline limits the viable locations for development, but the western shoreline offers some areas that predominantly meet the targets of 25 m elevations, 20 m depths and expandability to 1950 meters in the future. The elevations can be seen in the cross-sections included in Figure 3.11.

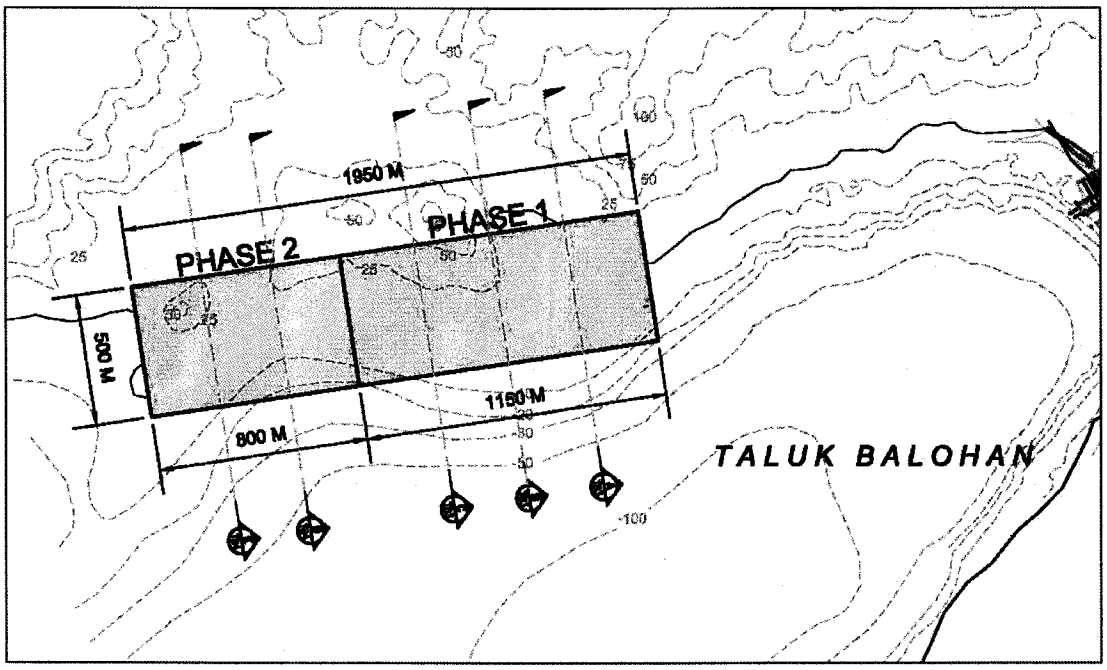


Figure 3.10 Potential Port Site – Balohan

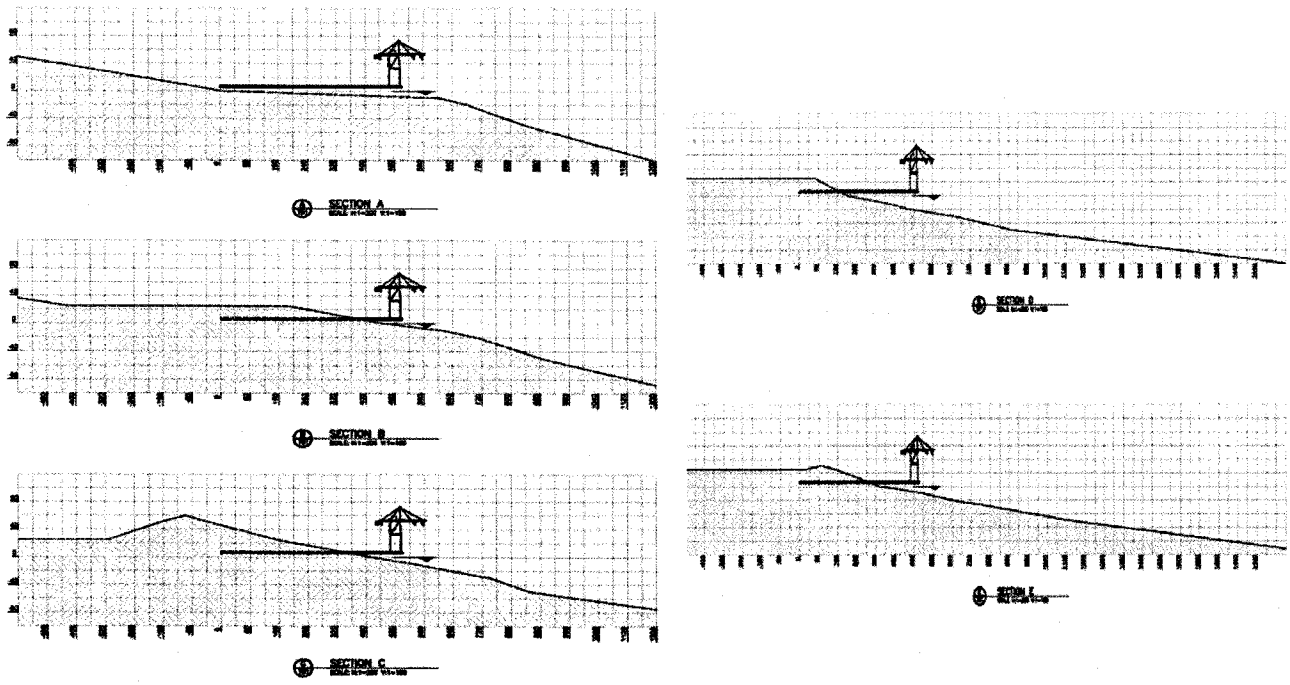


Figure 3.11 Teluk Balohan-Potential Terminal Wharf Cross-sections

3.3.2 SITE SELECTION CRITERIA AND EVALUATION PROCESS

In order to determine the site that best meets the functional requirements established as well as conforms to the interests of the island, a number of decision-making criteria were established. These criteria include a number of factors that impact the cost of constructing the new facility, as well as a number of non-economic factors that evaluate the impacts to the region. The relative importance of each criterion to the overall decision-making process varies and therefore a "Weight Factor" is assigned to each criterion. The Weight Factors range from 1, indicating the lowest relative importance to 5, which indicates critical importance. Below is a discussion of each criterion used in the evaluation process, the technical differentiation factors analyzed as well as the relative importance weight assigned to each factor.

CRITERION 1: Expandability Weight Factor: **5**

The site selected should maximize the ability to be expanded as container traffic increases. The Functional Requirements establish a wharf length of 1150 meters for Phase 1, which will accommodate the projected container traffic through approximately 2020. After 2020, the wharf length will need to be extended to 1950 meters to accommodate the projected increase in container traffic.

CRITERION 2: Vessel Accessibility Weight Factor: **5**

The site selected should maximize the accessibility of both the Super Post-Panamax vessels and the regional container carriers.

CRITERION 3: Access to Existing Infrastructure Weight Factor: **5**

The site selected should utilize existing infrastructure, such as roads, potable water distribution, and power lines to the greatest extent possible. Sites without access to these types of existing infrastructure will require costly design and installation of new infrastructure systems.

CRITERION 4: Cut and Fill Requirements Weight Factor: **5**

The site selected should minimize the cut and fill and dredging requirements.

CRITERION 5: Site Protection Weight Factor: **4**

The site selected should minimize the impact from wind, waves, tides, storms, earthquake, and tsunami.

CRITERION 6: Security Weight Factor: **4**

The site selected should minimize the potential impact from terrorist or other disruptive activities.

CRITERION 7: Impacts to Community During Normal Operations Weight Factor: **4**

The site selected should minimize the negative impacts to the local community during routine operations. Typically, negative impacts associated with routine operations include elevated noise levels and increased truck traffic. In the case of Weh Island, which is a popular scuba diving destination, normal operations may also restrict access to popular diving locations, which may impact local dive shops.

CRITERION 8: Impacts To Community During Construction Weight Factor: **3**

The site selected should minimize the negative impacts to the local community during construction. Community impacts associated with construction projects typically include noise, construction equipment traffic, construction debris, and may even require relocation of existing structures.

CRITERION 9: Impacts to the Environment During Normal Operations Weight Factor: **3**

The site selected should minimize the negative impacts to the local environment during routine operations. Any short-term impacts to the environment will typically be associated with the construction phase. The long-term impacts due to reduced habitat will also be associated with the normal operations of the terminal.

CRITERION 10: Impacts to the Environment During Construction Weight Factor: **3**

The site selected should minimize the negative impacts to the local environment during construction. Typically, wharf construction projects impact both the terrestrial and aquatic environments. There are potential short and long term impacts to both the habitats as well as the local species.

CRITERION 11: Proximity to Markets/Services Weight Factor: **3**

The site selected should maximize the proximity to locally available markets and services.

A Site Selection Team was assembled to facilitate the selection of the best site for the Weh Island terminal. The technical information related to each of the three potential terminal sites as well as the criteria for evaluation were provided to each team member and discussed among the team to ensure each member understood the requirements for analysis and the methodology for evaluation. Each member independently evaluated the three sites with regard to the criteria and the technical differentiators. Specifically, each team member designated scores for each differentiator, based on their independent technical evaluation of the ability of the site to meet the criteria. The selection team members met to discuss the results of the point assignments, and the final scores assigned to each criterion is the average of the independent scores received.

3.3.4 RATING SCALE

In order to perform the site evaluations, it was necessary to rate each proposed wharf location against the established criteria and associated weight factors. A five level rating scale was established, with ratings including "Low", "Medium-Low", "Medium", "Medium-High" and "High". For all criterion, "High" indicates the most favorable rating and is assigned a value of 5. Conversely, "Low" corresponds to the most negative rating and is assigned a value of 1.

3.3.5 POTENTIAL SITE EVALUATION

This section includes matrices for each of the potential wharf development sites. Each matrix lists the criteria and associated weight factor. A rating is assigned to each criteria, resulting in an overall score for each potential site. Based on this evaluation system, the site with the highest score best meets the requirements for the proposed wharf development.

Teluk Sabang

Table 3.1 Sabang Rating

Criteria	Weight factor	Rating	Rating Justification	Weighted Rating
Expandability	5	Low (1)	The initial 1150 m wharf nearly abuts the island in the harbor, which eliminates any options for lengthening the wharf in the future.	5
Vessel Access	5	Low (1)	Vessels are limited to the minimum turning basin for access to the wharf. There is no additional access space.	5
Access to Existing Infrastructure	5	High (5)	Due to its location in a densely populated area, most of the necessary infrastructure should be in close proximity of the site.	25
Cut/Fill Requirements	5	Medium (3)	The cut and fill volumes are fairly balanced, limiting the need to identify major sources of fill or large disposal areas.	15
Site Protection	4	Medium-High (4)	Proposed site in harbor is well protected from prevailing winds and waves.	16
Security	4	Medium-High (4)	Due to its location in a densely populated area, abnormal activity in the vicinity of the port would be more noticeable and more likely to be reported.	16
Impacts to Community During Normal Operations	4	Medium-Low (2)	Due to its location in a densely populated area, the noise and traffic from the port are likely to disturb the local community.	8
Impacts to Community During Construction	3	Medium-Low (2)	Due to its location in a densely populated area, the construction traffic, noise, and pollution are likely to disturb the local community.	6
Impacts to Environment During Normal Operations	3	Medium-High (4)	Due to its location in a densely populated area, there should be little impact to the environment that was not already disturbed as part of previous development.	12
Impacts to Environment During Construction	3	Medium-High (4)	Due to its location in a densely populated area, there should be little impact to the environment that was not already disturbed as part of previous development.	12
Proximity to Markets/Services	3	High (5)	Due to its location in a densely populated area, there should be easy access to a number of local markets and services.	15
TOTAL				135

Sabang Rating Summary

The Sabang site received high ratings for the criteria related to its location with respect to its protection from wind and waves as well as being in the most densely populated portion of the island. The proximity of the proposed wharf location to the Town of Sabang provides access to markets and services and to the Town's existing infrastructure. Also, since Sabang is already well developed, there would be less impacts to the environment. Conversely, since Sabang is the most densely populated area on the island, the community is more likely to be impacted during both construction and normal terminal operations. The limited harbor area does not provide a good alternative for the construction of the initial 1150 meter wharf. In addition, any expansion of the proposed wharf in the future would be impossible. The proposed Phase 1 wharf would obstruct access between the mainland and the small island and there would be very limited access for the large Super Post-Panamax vessels.

Lhok Prialaut

Table 3.2 Prialaut Rating

Criteria	Weight factor	Rating	Rating Justification	Weighted Rating
Expandability	5	Medium-Low (2)	Expansions east or west of the proposed "Option 1" would require excessive dredging and cutting into the hillside to accommodate the additional wharf length.	10
Vessel Access	5	High (5)	Naturally deep waters at the proposed entrance provide ample space for large vessels to access and maneuver, with little limitations on the turning basin.	25
Access to Existing Infrastructure	5	Low (1)	Due to its location in a sparsely populated area, there is likely to be little existing infrastructure with which to connect.	5
Cut/Fill Requirements	5	Low (1)	The extremely steep slopes create excessive amounts of cut and fill required to grade the proposed site.	5
Site Protection	4	Medium-High (4)	Proposed site in harbor is well protected from prevailing winds and waves.	16
Security	4	Medium (3)	Due to its location in a sparsely populated area, abnormal activity in the vicinity of the port could go unnoticed and is less likely to be reported.	12
Impacts to Community During Normal Operations	4	Medium (3)	Due to its location in a sparsely populated area, the noise and traffic from the port should not disturb the local community, but the proposed port will be an obstruction to a popular dive site.	12
Impacts to Community During Construction	3	Medium-High (4)	Due to its location in a sparsely populated area, the construction traffic, noise and pollution should not disturb the local community significantly.	12
Impacts to Environment During Normal Operations	3	Medium-Low (2)	Due to its location in a sparsely populated area, there will be significant impacts to the previously undisturbed environment.	6
Impacts to Environment During Construction	3	Medium-Low (2)	Due to its location in a sparsely populated area, there will be significant impacts to the previously undisturbed environment.	6
Proximity to Markets/Services	3	Medium-Low (2)	Due to its location in a sparsely populated area, there would not be easy access to many local markets and services.	6
TOTAL				115

Prialaut Rating Summary

The proposed Prialaut site provides a good location with respect to site protection and vessel access and since there is a limited population living in the vicinity of this proposed site, there would be limited impacts to the community during the construction of the wharf. However, this bay is the location of two popular dive sites and increased vessel traffic during normal terminal operations would significantly impact access to these sites. Also, the extreme slopes along the shoreline significantly limit the viability of the initial construction of the proposed wharf and future expandability is nearly impossible. This section of the island is less inhabited, which indicates less access to existing infrastructure, markets and services.

Teluk Balohan

Table 3.3 Balohan Rating

Criteria	Weight factor	Rating	Rating Justification	Weighted Rating
Expandability	5	Medium-High (4)	Space adjacent to proposed "Option 1" allows for 800 m expansion in future, but will require some cut and fill.	20
Vessel Access	5	High (5)	The wide harbor and naturally deep waters at the proposed entrance provide ample space for large vessels to access and maneuver, with little limitations on the turning basin.	25
Access to Existing Infrastructure	5	Medium (3)	Due to its location in a moderately populated area there is likely some existing infrastructure to connect to, but capacity may be limited.	15
Cut/Fill Requirements	5	Medium (3)	The cut and fill volumes are fairly balanced, limiting the need to identify major sources of fill or large disposal areas.	15
Site Protection	4	Medium-High (4)	Proposed site in harbor is well protected from prevailing winds and waves.	16
Security	4	Medium-High (4)	Due to its location in a moderately populated area with ferry traffic, abnormal activity in the vicinity of the port would be more noticeable and more likely to be reported.	16
Impacts to Community During Normal Operations	4	Medium (3)	Due to its location in a moderately populated area, the noise and traffic from the port should create some disturbance to the local community, and may also impact the ferry service.	12
Impacts to Community During Construction	3	Medium-High (4)	Due to its location in a moderately populated area, the construction traffic, noise and pollution should create just minimal disturbance to the local community.	12
Impacts to Environment During Normal Operations	3	Medium (3)	Due to its location in a moderately populated area, there will be some impacts to the previously undisturbed environment.	9
Impacts to Environment During Construction	3	Medium (3)	Due to its location in a moderately populated area, there will be some impacts to the previously undisturbed environment.	9
Proximity to Markets/Services	3	Medium-High (4)	Due to its proximity and easy access to Sabang, local markets and services are easily accessible.	12
TOTAL				161

Balohan Rating Summary

Balohan is also a populated area, although, not as populated as Sabang, and is the location of the ferry service between Weh Island and Aceh. Therefore, there is ample access to existing infrastructure, markets and services without as much impact to the surrounding community. However, the limited development in this area implies greater impacts to the environment during the construction of the wharf. The proposed location provides protection from the wind and waves and ample access for vessels calling at the port. As seen in the other two locations and the general terrain of the island, the steep slopes limit the location of the proposed wharf. However, in Balohan Bay, the length of the shoreline does offer descent locations for the proposed wharf that allow the option to expand in the future. There will be portions of the area that will require some major grading efforts, but there is a balance in the amount of cut and fill required.

3.3.6 SITE RECOMMENDATION

Based on the overall scores, the results of the matrices indicate the ranking of the potential wharf development sites is as follows:

1. Teluk Balohan: 161
2. Teluk Sabang: 135
3. Lhok Prialaut: 115

The Lhok Prialaut site is clearly not a viable option. The four most critical criteria include Expandability, Vessel Access, Access to Existing Infrastructure and Cut/Fill Requirements. For three of these four criteria, the proposed site received a "Low" or "Medium-Low" rating. The expense of constructing the wharf and bringing the necessary infrastructure to this site would be cost-prohibitive and no further consideration of this site is recommended.

The Teluk Sabang site received "Low" ratings for two of the four most critical criteria. Although the development within the surrounding community offers great access to existing infrastructure, there is limited space for constructing, expanding and accessing the site. In fact, these limiting factors do not provide a viable alternative for serving Super Post-Panamax vessels. Therefore, no further consideration of this site is recommended.

The overall scores indicate that Teluk Balohan location is the most viable site. It did not receive any "Low" ratings for the four most critical criteria. All four critical criteria ratings range between Medium and High. Although the island terrain does not provide an ideal location for the construction of a wharf, the space available in Teluk Balohan will provide the requirements necessary to construct a terminal capable of serving Super Post-Panamax vessels and able to support the transshipment volumes projected in the Market Study for both Phase 1 and Phase 2. Therefore, the Teluk Balohan site is the preferred location recommended for development of the proposed marginal wharf. All further discussion of wharf development is based on the assumption that the wharf will be constructed in Teluk Balohan.

3.4 EXISTING SITE CONDITIONS

The site selection process determined Balohan Gulf to be the most feasible location for the construction of a new wharf to meet the requirements established. Due to the steep contours on the east side of the Gulf, the most suitable site for the construction of the wharf is along the western side. The port will be created by dredging to a depth of 17.5 meters, where required and filling with excavated materials from the adjacent terrain.

Tide

The tides in Balohan Gulf are semidiurnal. The difference in height between the two rises and two falls is minimal. Observations performed in September 2006 indicate the following tide elevations for Balohan Gulf, in relation to the Lowest Water Spring.

Highest Water Spring (HWS): +1.81 m
Mean Sea Level (MSL): +0.90 m
Lowest Water Spring (LWS): +0.00 m (datum)

Wind and Waves

The data used to describe the wind climate at Balohan Gulf was obtained from BMG of Banda Aceh for the observation station in Sabang. It is currently the best available information. This location represents the conditions at the proposed development site. The available data is for a 10 year period from 1997 to 2006. Based on the analysis of this wind data, the annual dominant wind direction at Balohan Gulf is from the southwest with an occurrence of 43.25%, followed closely by wind from the West with an occurrence 38.67%. The dominant wind speed is between 5.0 - 7.0 m/second. The maximum wind speed recorded is 25.7 m/second from Southwest direction. An annual windrose for these conditions is shown in Figure 3.12.

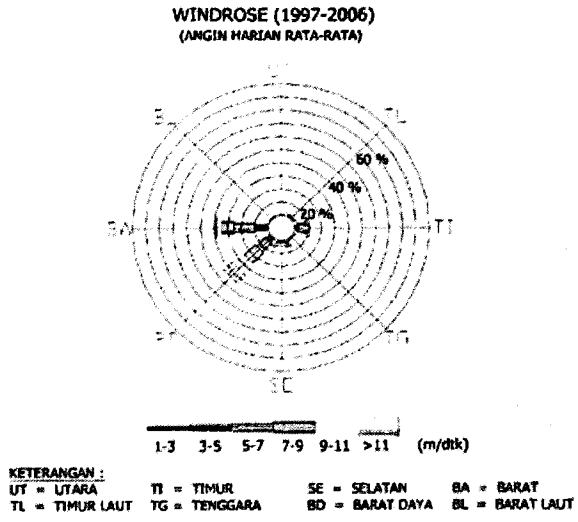


Figure 3.12 Wind Conditions at Balohan

The wave climate consisting of wave height and direction were developed through hindcasting. This was done because there was no complete wave data available covering a long enough time period to represent the wave conditions at the proposed project site. The location of this analysis is at the ferry terminal which represents the conditions at the proposed site. The wave hindcast analysis at Balohan Gulf was conducted based on the wind data observed at the station in Sabang (the data in 1997 – 2006) with the consideration that this station is the nearest station and is the station that has a complete set of wind data for a long period of time. Since the location of the proposed project is situated in a gulf, the wave forecast that was conducted is a wave forecast caused by the wind coming from sea with a limited fetch because there is a land hampering it. The forecast technique uses the hindcasting method by utilizing the past wind data to forecast the wind data in the future. This method is known as Swedrup, Munk, and Bretschnelder (SMB) method. The SMB method can only be done in a limited fetch condition; this means a region where the wind flows are limited by land, as in the Balohan Gulf.

Based on the results of the wave forecasting that was performed, the dominant waves at Balohan Gulf are from the Southwest with a wave height of between 0.1 – 0.3 m. The maximum wave entering the Balohan Gulf waterway is a wave from the South with height of 2.25 m but its occurrence frequently is less than 0.24% per year. The annual wave data is shown on Figure 3.13.

Based on this analysis the wind speeds and wave heights at the proposed project location should cause no significant movement to ships that will be berth there as to hamper loading or off-loading. Based on this there is no recommended wave reduction structures proposed for the project in this report. As part of the final design updated wind and wave information should be obtained for the project site. As an example only wave height and direction were determined. Wave period was not which can have an effect on ship movements as well as sediment transport. The updated information should be used to refine the berthing alignments.

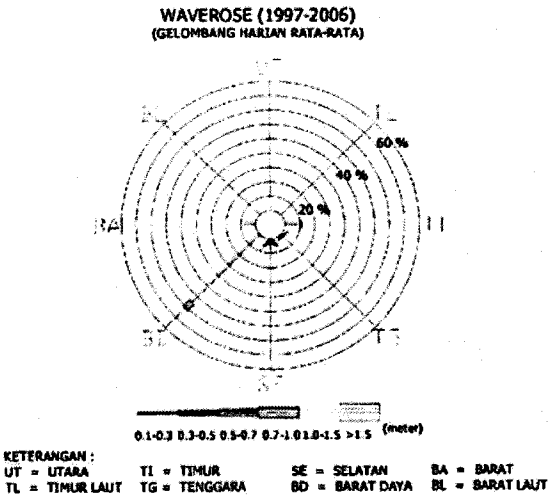


Figure 3.13 Wave Conditions at Balohan

Rainfall

Weh Island's wet season runs September to January. Based on precipitation data collected from 2002 to 2006, the average recorded rainfall is 180 mm/month, with an average of 13 rainy days per month. The highest rainfall occurs in December, with an average of 380 mm/month, and the lowest rainfall occurs in April, with an average of 70 mm/month.

Air Temperature

The Banda Aceh Bureau of Meteorology and Geophysics (BMG) reports an average air temperature of $26^0 - 27^0$C on Weh Island. This average temperature is relatively constant throughout the year.

Bathymetry

A bathymetric survey was performed for the Balohan Gulf in May 2008 by PT. SNC Lavalin – TPS. The bathymetric map included in the report illustrates the steep slopes along the shoreline. At the northern most portion of the gulf, the declivity of the bottom of the sea is around 21%, up to a distance of about 200 meters from the coast. Closer to the mouth of the gulf, declivity reduces to 8% up to a distance of 180 meters from the coast line.

Earthquake Zone

The Earthquake Zone Map issued by the Center for Research and Development for Indonesia indicates that Weh Island is included in zone 4, which is defined as a region that if affected by a tsunami, may experience wave heights between 6 – 10 meters. However, the Balohan Gulf has deep water and is protected from the sea, significantly reducing the impacts associated with a tsunami.

Geology

According to the Geology Map of Banda Aceh, produced in 1981 by the Center for Geology Research and Development of Bandung, the geology of Weh Island in the vicinity of Balohan Gulf includes alluvium stones and volcano mountain stones and there is a fault running in the north south direction. Alluvium stones comprise gravel, sand, mud and coral reef and are typically found along the low land area and seashore. Weh Island volcano mountain stone comprises andesit, tufa and agglomerate and is seen throughout the remainder of the island. The fault structure runs north along the Balohan Gulf, to U. Masara. Since Balohan

Gulf lies within a "high" category quake zone, the detailed design for all structures should meet seismic design requirements and include quake dampening components.

3.5 TERMINAL DEVELOPMENT REQUIREMENTS

The defining characteristics of a Transshipment Container Terminal are:

- The capability to accept ships of the type employed in the trade routes on which transshipment represents a viable business opportunity;
- Serviceability - the ability to load and unload containers quickly and efficiently;
- Supportability - the availability of ancillary services such as fresh water supply, bunkers, Surveyors and representatives of Classification Societies, ship side and topside repair; and
- Availability - of communications, access to airports and value added services.

3.5.1 CAPABILITY TO ACCEPT VESSELS

Wharf Dimensions

The capability of a terminal to accept vessels is primarily dependent on the dimensions of the vessels. Vessel dimensions determine berth length, draft alongside, minimum draft in the approach channels, and the dimensions and capacities of the Ship-to-Shore cranes. Vessel dimensions will naturally affect other elements of the berth design such as fender systems, rail gauge, shore power supply, fresh water supply and bunker supply. The marginal wharf dimensions developed in Table 3.1 are summarized in Table 3.6.

Table 3.4 Marginal Wharf Dimensions

Item	Value
Berth Length	340 to 430 Meters
Wharf Length	Phase 1: 1150 m Phase 1 & 2: 1950 m
Draft Alongside	-17.5 Meters
Apron Width	70 Meters
CY Width	400 Meters
Shore Power	Yes
Fresh Water Hydrants	Yes
Bunker Hydrants	Preferred
Crane Rail Gauge	30.4 Meters
Provision for Crane Electrical	Yes
Telephone + Internet	Yes

Container Yard Operations

Container Yard Operations is another major factor in establishing the capabilities of a terminal. The most common methods for transshipment operations are Rubber Tired Gantry (RTG) and Rail Mounted Gantry (RMG) systems. Standard RTG and RMG systems are typically manually operated, with little or no automation incorporated into their operations. There is another type of Container Yard Operations system that combines the use of specially designed RMGs and an automated control system. Integrated Automated Container Terminal (IACT™) systems can be installed in place of traditional RTG and RMG systems and increase the efficiency of the terminal operations and reduce the required footprint of the terminal. Appendix C includes a study comparing the efficiency of these systems to traditional RTG and RMG systems, as well as a few other smaller operating systems. As concluded in the attached study, the IACT system is the most efficient design for transshipment facilities. However, as seen in Appendix C, most of the competing ports primarily utilize RTGs for their container operations and therefore, for planning purposes, the proposed Weh Island Transshipment Terminal includes the implementation of an RTG system.

RTG Operations

RTGs are generally diesel electric and require support facilities that include a fuel farm or similar fuel and lubricant storage facility. Mechanical and electrical maintenance are normally performed in-situ. However, a maintenance shed should be provided for engine overhauls, spreader maintenance and other major mechanical repairs. RTGs run on guide paths that are generally concrete or high density pavers. Considering the high ambient temperatures on Weh Island, poured-in-place concrete is recommended for the guide paths.

Reefer Areas

The Weh Island Transshipment Terminal will include the storage of Reefer Containers. Reefers are typically stored and serviced while on chassis in dedicated areas. The capacity of the Terminal to store Reefers is generally expressed as the number of "Plugs" (electrical connections to domestic power) available. .

However, if there is limited space available, Reefer Containers may be stored and serviced in an arrangement similar to cells onboard the ships. They can be stacked up to 4 high and serviced from a scaffolding platform at the active end of the container. The platform can be equipped with electrical power, reefer monitoring equipment, communications, lubricants and compressed air. A fully equipped system of this nature will allow Reefer Containers to be serviced and pre-tripped without moving them to a Reefer Shop.

Equipment Requirements

Regardless of the type of operations system selected during the Terminal design, the following support and maintenance vehicles will be required:

- Crew and staff vans
- Security Patrol Cars
- Ambulance and Fire Fighting if not provided by local agencies
- Spreader Transport or dedicated Chassis
- Tugboats
- Pilot Boats [use tugs initially]
- Bunker Barges
- Fuel Trucks (Not required for RMG or IACT Operations Systems)
- Mechanical Maintenance Trucks
- Electrical Maintenance Trucks

3.5.2 SERVICEABILITY

The ability to "turn the ship" quickly is the overarching consideration of ship operators. It is a virtual cliché that a ship on berth is not earning money. Consequently, Ship Operators care little about the operational problems they impose on Terminal Operators by the continual introduction of ever larger ships. Because their focus is on the ship, their concentration is on the number of container moves per hour the Terminal Operator can achieve.

The Moves per Hour criterion however is fraught with traps. Not the least of which is that container throughput is measured in TEUs while the majority of containers in the major trades are 40' or longer. Measuring crane productivity in TEUs distorts the result in favor of the Terminal Operator and thus Port Authorities are reluctant to abandon it. A more accurate measure is Crane Moves or Spreader Moves per Hour.

In order to improve the actual number of containers moved per hour, Terminal Operators have resorted to Twin-Lift Spreaders capable of lifting 2 - 20' containers simultaneously. This has been followed by the introduction of Tandem Lift Spreaders capable of lifting 2 - 40' containers simultaneously. The containers are lifted in tandem; that is, as stowed athwart ships rather than end-to-end as with the Twin-Lift. More recently, the Quad Tandem Lift spreader has been introduced. As the name implies it is capable of lifting 4 containers simultaneously.

Each iteration in spreader design has added complexity to the design of the Container Crane as well as its operation. With multiple spreaders to control the Crane Operator has to contend not only with positioning and latching operations for 2 containers but other issues as well, such as collision avoidance, during a single lift. For the Twin-Lift Spreader the time penalty has not been severe. About a 10 to 15 per cent increase in crane cycle time against a doubling of the number of containers handled in a single lift.

The Tandem-Lift is more problematical. As explained by LiftTech and McKay Engineers:

> Tandem-Lift operations are much more complicated than single-hoist operations. The operator has more controls to manipulate. When two containers are hanging, they must be latched together so they will not collide during normal operations. The latching system needs to allow for list, trim, relative and absolute skew, differentials in longitudinal and transverse relative positions, and different-height adjacent containers. The latches must also automatically release if one container snags or if

for some other reason, moves too far away from the other container. When hanging headblocks are accidentally or intentionally unlatched, they cannot be moved quickly or they may collide.

Wharf Loading is also an issue. Tandem lift cranes are heavier and have greater corner wharf loading compared to conventional single-hoist cranes. Dead loads for a tandem lift, 80 LT crane are approximately 30% greater and operating wheel loads are approximately 40% greater than the corresponding loads for conventional 65 LT cranes with a 30.48 m (100 ft) rail gage. Storm wharf loads are also greater due to the increased surface area.

Most importantly for this discussion, although the speeds are the same as that of recent single-hoist cranes, because of the Operational issues cited above, as well as complicated positioning and spreader latching procedures, the cycle time can increase by 30 to 45%, provided the yard can keep up.

The real throttle on productivity is not the Ship-to-Shore cranes but Yard Operations. The use of Tandem Lift cranes only exacerbates the problem. Consequently, we recommend configurations that improve CY operations and automation rather than crane productivity. Crane productivity will increase as Yard Management and Inventory control improves. However, since the customers [Ship Operators] will be looking for the most modern container handling methods, it is recommended the STS cranes be equipped with Twin-Lift Spreaders, but not the Tandem-Lift Spreaders.

3.5.3 SUPPORTABILITY

Supportability refers to the ready access to what are commonly called "Ancillary Marine Services." Those that must be part of the Terminal Infrastructure include:

- Pilotage
- Towage
- Aides to Navigation including Vessel Traffic Service [VTS]
- Bunkers
- Fresh Water Supply
- Fire Fighting + Safety
- Oil Spill Response Capability

Other ancillary marine services such as the availability of Surveyors and representatives of Classification Societies, ship and engine repair services are not part of the infrastructure of the Terminal, but office space should be available in the administration building to house these operations.

We recommend that facilities for Pilots, the Harbour Master and tugboat crews be apart from the Container Berths, but nearby. These facilities should include offices, kitchen and dining areas and, if residential housing is not close by, bunk rooms.

The Tugboats can be moored at finger piers which should be outfitted with fuel lines, fresh water hydrants and small cranes for handling foam kits and oil spill containment equipment. The foam kits, life saving and firefighting supplies should be separate from the Spill Response storage area. The minimum requirement at startup is 2 tugboats of 4,500 to

5,000 HP. Modern tractor or twin-screw tugs of this rating are generally 30 to 35 meters in length.

Bunkering facilities should also be separate from both the Container Berths and the Pilot Harbour Master facilities. If it is necessary to build a bunker station, we recommend that the facility include holding tanks, settling tanks and a day tank to insure that the bunkers are not contaminated with solids or water. The tank farm should be located above the level of the wharf deck to providing gravity fed supply.

Fresh water should be available from hydrants at each berth supplied from a reliable sanitary source. We strongly recommend against a fresh water barge operation as these are notoriously unreliable and subject to contamination.

3.5.4 AVAILABILITY

The support services in this category are more a consideration of competitiveness from a business perspective than infrastructure requirements. But they should not be ignored. These include but are not limited to:

- Air Service
- Good Communications
- Local Hotels + Restaurants
- Medical Care

3.6 PHASED DEVELOPMENT PLAN

The recommended phased development plan, illustrated in Figure 3.14 and summarized in Tables 3.7 and 3.8, has the following fundamental objectives:

- To initiate the development in a cost effective and ordered manner;
- To permit flexibility in development options;
- To offer high level of service to potential port users;
- To maintain a balance between the initial infrastructure cost and user needs;
- To respond to environmental concerns;
- To respond to physical characteristics of the site and surrounding waters;
- To maximize the use of readily available resources in terms of material and construction capabilities.

In addition to the marginal wharf for the Container Terminal, there are a number of other marine support facilities, both on-site and off-site required for the successful operation of a transshipment terminal. The location of these facilities, as well as the planned location of the Petroleum Terminal, are identified in Figure 3.15. All of the ancillary facilities will be developed during Phase 1, and the Petroleum Terminal will be constructed during Phase 2 or later if the market fails to develop.

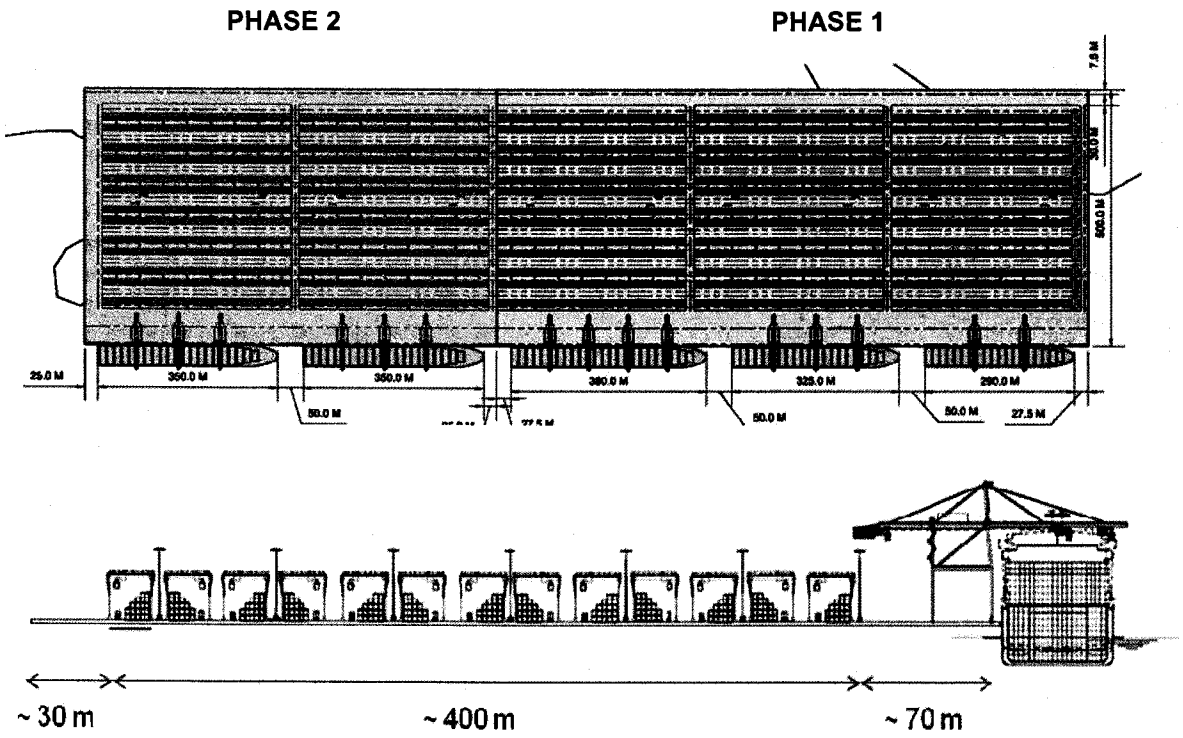


Figure 3.14 Container Terminal Phased Development Plan

Table 3.5 Details of Phased Container Terminal Development Plan

	PHASE 1	PHASE 2	TOTAL
Berths	3	2	5
Wharf Length	1150 meter	800 meter	1950 meter
Cut Requirements	3,500,000 m^3	2,500,000 m^3	6,000,000 m^3
Fill Requirements	3,000,000 m^3	2,700,000 m^3	5,700,000 m^3
Dredge Requirements	1,100,000 m^3	750,000 m^3	1,850,000 m^3
Cranes	9	6	15
Container Yard	45.7 hectares	32 hectares	77.7 hectares
Total Capacity	1,800,000 lifts	1,200,000 lifts	3,000,000 lifts per yr

3.6.1 PHASE 1 DEVELOPMENT PLAN

Phase 1 development is projected to begin in 2010. The basic planning criteria for the first phase development are to provide:

- Maximum unbroken length of marginal wharf to permit high levels of berth occupancy and flexibility in development
- Minimum fill requirements for the initial development
- Centralized port services within a manageable initial development area
- Maximization of initial land area in terms of port and port related development

3.6.2 PHASE 2 DEVELOPMENT PLAN

The planning and phasing of the second stage of development of the port will immediately precede demand. Currently, the market projections indicate that Phase 2 development will begin around 2020. If the actual market growth tracks more closely to either the "Low Growth" scenario or "High Growth" scenario, the Phase 2 development schedule will need to be modified accordingly.

3.6.3 PETROLEUM TERMINAL DEVELOPMENT PLAN

The planning and phasing of the second stage of development of the Petroleum Terminal will immediately precede demand. Currently, the market projections indicate that Phase 2 development will begin around 2020. If the actual market growth tracks more closely to either the "Low Growth" scenario or "High Growth" scenario, the Phase 2 development schedule will need to be modified accordingly. Figure 3.15 applies. The basic planning criteria for the Terminal development are to provide:

- Maximum length of pier to permit berth occupancy for 2 VLCC vessels and 2 petroleum transshipment vessels simultaneously
- Flexibility in development of the terminal to allow all variations of petroleum and natural gas transshipment and storage
- Minimum cut and fill requirements for the initial development
- Centralized port services within a manageable initial development area
- Maximization of initial land area in terms of port and port related development

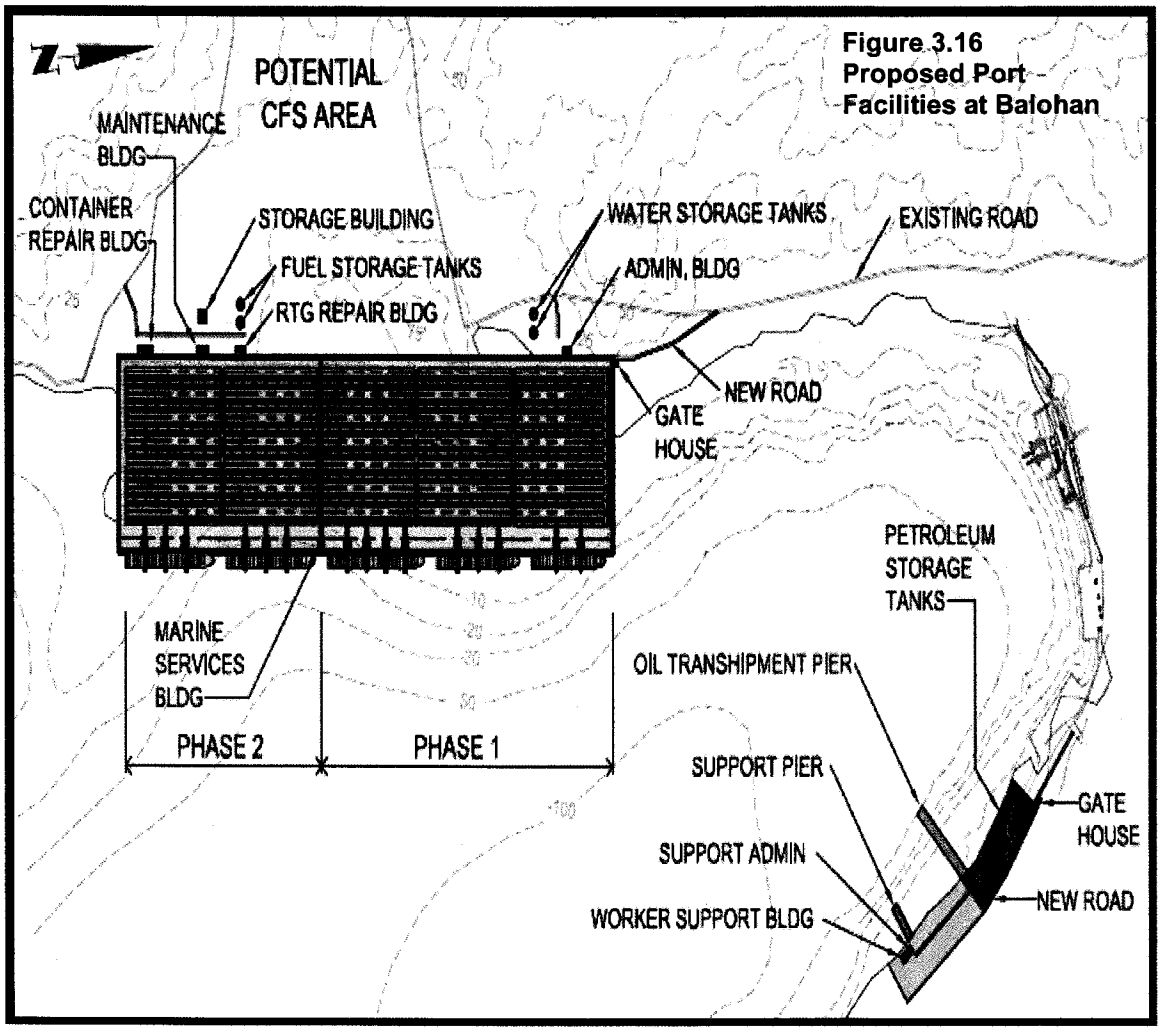


Figure 3.16 Proposed Port Facilities at Balohan

Figure 3.15 Petroleum Terminal Development Plan

STORAGE BUILDING									
Climate Controlled Warehouse - 1 Story - 30m X 30m	900	m2	$ 100	$ 90,000	900	m2	$ 100	$	90,000
Foundations (Pile supported columns and grade beams; floor on fill)	900	m2	$ 750	$ 675,000	900	m2	$ 750	$	675,000
Warehouse Finished Floor	900	m2	$ 10	$ 9,000	900	m2	$ 10	$	9,000
Lighting and Electrical	900	m2	$ 100	$ 90,000	900	m2	$ 100	$	90,000
			Sub-total	864,000			Sub-total		864,000
MARINE SERVICES BUILDING									
Climate Controlled Offices - 1 Story - 20m X 20 m	400	m2	$ 300	$ 120,000	-	m2	$ 300	$	-
Foundations (Pile supported columns and grade beams; floor on fill)	400	m2	$ 750	$ 300,000	-	m2	$ 750	$	-
Finished Floor	400	m2	$ 10	$ 4,000	-	m2	$ 10	$	-
Lighting and Electrical	400	m2	$ 100	$ 40,000	-	m2	$ 100	$	-
			Sub-total	464,000			Sub-total		0
RTG REPAIR BUILDING									
Climate Controlled Warehouse - 1 Story - 20m X 40 m	800	m2	$ 200	$ 160,000		m2	$ 450	$	-
Foundations (Pile supported columns and grade beams; floor on fill)	800	m2	$ 100	$ 80,000		m2	$ 1,000	$	-
Finished Floor	800	m2	$ 10	$ 8,000	-	m2	$ 10	$	-
Lighting and Electrical	800	m2	$ 100	$ 80,000	-	m2	$ 100	$	-
			Sub-total	328,000			Sub-total		0
CONTAINER REPAIR BUILDING									
Climate Controlled Warehouse - 1 Story - 20m X 60 m	1,200	m2	$ 200	$ 240,000		m2	$ 450	$	-
Foundations (Reinforced Concrete - Slab on Grade)	1,200	m2	$ 100	$ 120,000		m2	$ 1,000	$	-
Finished Floor	1,200	m2	$ 10	$ 12,000	-	m2	$ 10	$	-
Lighting and Electrical	1,200	m2	$ 100	$ 120,000	-	m2	$ 100	$	-
			Sub-total	492,000			Sub-total		0
MAIN GATE/SECURITY									
Climate Controlled PEB - 1 Story - 20m X 10 m	200	m2	$ 450	$ 90,000		m2	$ 450	$	-
Foundations (Reinforced Concrete - Slab on Grade)	200	m2	$ 100	$ 20,000		m2	$ 100	$	-
Finished Floor	200	m2	$ 10	$ 2,000	-	m2	$ 10	$	-
Lighting and Electrical	200	m2	$ 100	$ 20,000	-	m2	$ 100	$	-
			Sub-total	132,000			Sub-total		0
GENERAL SITE IMPROVEMENTS									
Clearing and Stripping - 50m X 500m	25,000	m2	0.50	$ 12,500	25,000	m2	0.50	$	12,500
Engineered Fill / Cut and Fill 50m X 1100m	55,000	m3	$ 30	$ 1,650,000	55,000	m3	$ 30	$	1,650,000
Retaining Walls (Cut and Retain Existing Hills)	1,200	lm	$ 100	$ 120,000	800	lm	$ 100	$	80,000
General-Use Roads	6,000	lm	$ 150	$ 900,000	4,000	lm	$ 150	$	600,000
Landscaping, Fencing	1	ls	$ 100,000	$ 100,000	1	ls	$ 75,000	$	75,000
Signage	1	ls	$ 25,000	$ 25,000	1	ls	$ 25,000	$	25,000
UTILITIES									
Power Generation - Geo-Terminal Power Supply	1	ea	$ 10,000,000	$ 10,000,000					
-Water Storage Tanks (2 @ 25,000 Gal)	2	ea	$ 300,000	$ 600,000	1	ea	$ 300,000	$	300,000
-Fuel Storage Tanks and System	2	ea	$ 500,000	$ 1,000,000	1	ea	$ 500,000	$	500,000
			Sub-total	$ 14,407,500			Sub-total	$	3,242,500
ROAD CONNECTIONS									
Port Access Road									
Site Work (Clearing/Cut and Fill) 10m X 1000m	10,000	m2	2.00	$ 20,000	10,000	m2	2.00	$	20,000
2-Lane Paved Access Road on Prepared Site - 10m X 1000m	1,000	lm	$ 150	$ 150,000	1,000	lm	$ 150	$	150,000
			Sub-total	170,000			Sub-total		170,000
Re-Route Public Road									
Site Work (Clearing/Cut and Fill) - 10m X 5000m	50,000	m2	2.00	$ 100,000				$	-
2-Lane Paved Road on Prepared Site 10m X 5000m	5,000	lm	$ 150	$ 750,000				$	-
Bridges (2)	2	ea	$ 500,000	$ 1,000,000					
			Sub-total	1,850,000			Sub-total		0
EQUIPMENT AND SYSTEMS									
GANTRY CRANES and RTGs									
Ship-to-Shore Gantry Cranes (Post Panamax)	9	ea	$ 8,500,000	$ 76,500,000	6	ea	$ 8,500,000	$	51,000,000
RTGs' (1 over 5, 6 wide)	24	ea	$ 1,500,000	$ 36,000,000	18	ea	$ 1,500,000	$	27,000,000
				$ -		ea	$ -	$	-
			Sub-total	112,500,000			Sub-total		78,000,000
MOBILE EQUIPMENT									
Forklifts	30.00	ea	$ 200,000	$ 6,000,000	20.00		$ 200,000	$	4,000,000
Carts	24.00	ea	$ 50,000	$ 1,200,000	18.00		$ 50,000	$	900,000
Trucks	24.00	ea	$ 50,000	$ 1,200,000	18.00		$ 50,000	$	900,000
Tugboats	8.00	ea	$ 1,000,000	$ 8,000,000	2.00		$ 1,000,000	$	2,000,000
Pilot Boats	2.00	ea	$ 500,000	$ 1,000,000	1.00		$ 500,000	$	500,000
Fuel Tender	2.00	ea	$ 300,000	$ 600,000	-		$ 300,000	$	-
			Sub-total	18,000,000			Sub-total		8,300,000
Operating Systems									
Operating System	1	ls	$ 10,000,000	10,000,000	1	ls	$ 10,000,000		10,000,000
Computer and Software	1	ls	$ 5,000,000	5,000,000	1	ls	$ 5,000,000		5,000,000
			Sub-Total	15,000,000			Sub-Total		15,000,000
PROJECT SUB-TOTAL			**SUB-TOTAL**	**355,774,200**			**SUB-TOTAL**		**256,685,900**
ENVIRONMENTAL MITIGATION									
	1	LS	2%	$ 7,115,484	1	LS	2%	$	5,133,718
			Sub-total	$ 7,115,484			Sub-total	$	5,133,718
			Total	$ 362,889,684			Total	$	261,819,618
Other Project Costs									
Insurance & Bonds			3.50%	$ 12,701,139			3.50%	$	9,163,687
Engineering & Procurement Services			5%	$ 18,144,484			5%	$	13,090,981
Construction Management Services			5%	$ 18,144,484			5%	$	13,090,981
			Sub-total	$ 48,990,107			Sub-total	$	35,345,648
			Total	$ 411,879,791			Total	$	297,165,266
Contingency			15%	$ 61,781,969			15%	$	44,574,790
			Total	**$ 473,661,760**			**Total**		**$ 341,740,056**

3.5.3 COST ESTIMATE

An estimate of probable costs for the project is itemized in Table 3.8. The estimated probable costs for Phase 1 and Phase 2 are $473,661,760 and $341,740,056 respectively, for a total of $816,401,816.

Table 3.6 Cost Estimate for Port Development at Balohan Bay

BALOHAN BAY								
	PHASE 1				PHASE 2			
PROJECT PLANNING	1	LS	250,000	250000	1	LS	150000	150000
PERMITS AND APPROVALS	1	LS	100,000	100000	1	LS	75000	75000
ENVIRONMENTAL STUDIES	1	LS	250,000	250000	1	LS	150000	150000
PROJECT MOB/DEMOB								
Mob/Demob	1	LS	$ 1,000,000	$ 1,000,000	1	LS	$ 250,000	$ 250,000
			Sub-total	$ 1,000,000			Sub-total	$ 250,000
DREDGING								
Mob/Demob	1	LS	$ 2,000,000	$ 2,000,000	1	LS	$ 2,000,000	$ 2,000,000
Dredging	1,100,000	m3	$ 10.00	$ 11,000,000	750,000	m3	$ 10.00	$ 7,500,000
Disposal		m3	$ 10.00	$ -		m3	$ 10.00	$ -
			Sub-total	$ 13,000,000			Sub-total	$ 9,500,000
HILLSIDE EXCAVATION								
Mob/Demob	1	LS	$ 500,000	$ 500,000	1	LS	$ 500,000	$ 500,000
Excavation	3,500,000	m3	$ 3.00	$ 10,500,000	2,500,000	m3	$ 3.00	$ 7,500,000
Rock Crushing	2,900,000	m3	$ 5.00	$ 14,500,000	2,700,000	m3	$ 5.00	$ 13,500,000
			Sub-total	$ 25,500,000			Sub-total	$ 21,500,000
TRANSSHIPPMENT CONTAINER WHARF								
Pipe Supported Wharf (with Crane rail)	1,150	lm	$ 70,000	$ 80,500,000	800		$ 70,000	$ 56,000,000
Fenders	1,150	lm	$ 2,743	$ 3,154,450	800	lm	$ 2,743	$ 2,194,400
Bollards and Marine Fittings	1,150	lm	$ 330	$ 379,500	800	lm	$ 330	$ 264,000
			Sub-total	$ 84,033,950			Sub-total	$ 58,458,400
CONTAINER TERMINAL								
Container Terminal Pavement (1150m x 420m)	50.4	ha	700,000	$ 35,280,000	50.4	ha	700,000	$ 35,280,000
Light Pavement (1150m x 25m)	3.0	ha	400,000	$ 1,200,000	3.0	ha	400,000	$ 1,200,000
Utilities, Drainage	50.4	ha	90,000	$ 4,536,000	50.4	m2	90,000	$ 4,536,000
-Potable Water and Sanitary Sewer	50.4	ha	$ 50,000	$ 2,520,000	50.4	ha	$ 50,000	$ 2,520,000
Power, Lighting, Communications	50.4	ha	160,000	$ 8,064,000	50.4	m2	160,000	$ 8,064,000
-Power Generation - 2000 kw Diesel Plants	3	ea	$ 500,000	$ 1,500,000	2	ea	$ 500,000	$ 1,000,000
-Packaged STP	1	ls	$ 500,000	$ 500,000		ls	$ 500,000	$ -
-Fire Protection	1	ls	$ 350,000	$ 350,000	1	ls	$ 350,000	$ 350,000
Reefer Plugs	1,500	ea	$ 4,500	$ 6,750,000	1,500	ea	$ 4,500	$ 6,750,000
Stripping, Signage	50.4	ha	7,500	$ 378,000	50.4		$ 7,500	$ 378,000
			Sub-total	$ 61,078,000			Sub-total	$ 60,078,000
SUPPORT BOAT WHARF/PIER - 100m x 20m								
Piles: (Assume 400mm steel pipe piles / 10m x 10m spacing)	40	ea	$ 2,040	$ 81,600	-	ea	$ 2,040	$ -
Cast in Place Concrete Deck and Pile Caps 100m X 20m	2,000	m2	$ 1,000	$ 2,000,000	-	m2	$ 1,000	$ -
Fenders	200	lm	$ 686	$ 137,150	-	lm	$ 686	$ -
Bollards and Marine Fittings	200	lm	$ 100	$ 20,000	-	lm	$ 100	$ -
Navigation Aids and Harbor Control	1	ls	$ 250,000	$ 250,000				
			Sub-total	$ 2,488,750			Sub-total	$ -
ADMINISTRATION BUILDING								
Climate Controlled Building - 3 Story - 20m X 30m	1,800	m2	$ 700	$ 1,260,000	-	m2	$ 700	$ -
Foundations (Pile supported columns and grade beams; floor on fill)	600	m2	$ 750	$ 450,000	-	m2	$ 750	$ -
Finished Floor	1,800	m2	$ 10	$ 18,000	-	m2	$ 10	$ -
Lighting and Electrical	1,800	m2	$ 100	$ 180,000	-	m2	$ 100	$ -
			Sub-total	$ 1,908,000			Sub-total	$ 0
WORKER SUPPORT BUILDING (Mess Hall and Bunk House)								
Climate Controlled Building - 2 Story - 20m X 20m	800	m2	$ 700	$ 560,000	800	m2	$ 700	$ 560,000
Foundations (Pile supported columns and grade beams; floor on fill)	400	m2	$ 750	$ 300,000	400	m2	$ 750	$ 300,000
Finished Floor	800	m2	$ 10	$ 8,000	800	m2	$ 10	$ 8,000
Lighting and Electrical	800	m2	$ 100	$ 80,000	800	m2	$ 100	$ 80,000
			Sub-total	$ 948,000			Sub-total	$ 948,000
MAINTENANCE BUILDING								
Climate Controlled Warehouse - 2 Story - 20m X 40 m	1,000	m2	$ 300	$ 300,000		m2	$ 300	$ -
Foundations (Pile supported columns and grade beams; floor on fill)	800	m2	$ 750	$ 600,000	-	m2	$ 750	$ -
Finished Floor	1,000	m2	$ 10	$ 10,000	-	m2	$ 10	$ -
Lighting and Electrical	1,000	m2	$ 100	$ 100,000	-	m2	$ 100	$ -
			Sub-total	$ 1,010,000			Sub-total	$ 0

SECTION 4
LEGAL AND REGULATORY ANALYSIS

4.1 OBJECTIVE

The objective of this section is to provide an Institutional, legal, and regulatory review to support the award of a port concession project in Weh Island (Aceh Province). This section provides a summary of the main legislation affecting investors focused on the development of a private port in Weh Island, and will extend to a general project risk assessment of the regulatory and legal environment in Indonesia. Further comments will be made on the appropriate risk mitigation measures and suggested strategies to minimize the legal and regulatory risk to investors in pursuing project goals.

4.2 REGULATORY INTRODUCTION – PORT DEVELOPMENT IN INDONESIA

The Government of Indonesia continues to act as the main port authority and has the responsibility for the following:

- Regulatory Issues
- Management and Supervisory Activities
- Sailing and Security
- Customs
- Immigration and Quarantine

Ports are regulated by the Ministry of Transportation (MOT). Any development associated with the main ports of Indonesia must be approved and regulated by the Department of Sea Transportation under the MOT. Feeder ports may additionally be regulated by the Provincial Governors, regents, or mayors.

The Directorate General of Sea Transportation under the MOT has five functional directories for the handling of shipping activities, which includes the administration of four port corporations titled **Pelindo** that have been established to administer port activities according to the geographical zones. The four Pelindo companies were created by the Government in order to improve public ports and administer port activities. They are managed as commercial entities and are 100% owned by the Indonesian Government.

Foreign and Domestic Investment in ports is regulated by the Indonesian Government according to the Law of Capital Investment; the most recent being Law 25/2007 (New Investment Law). This New Investment Law replaces investment laws that have been in place for the last 4 decades. The New Investment Law is intended to foster a better climate for investment; simplify the investment licensing process by offering one stop shop services; grant tax related incentives; grant a longer ownership period for land rights; simplify the immigration related processes; and provide clearer rules regarding nationalization. The Indonesian Government has also agreed to settle any investment dispute with foreign investors through international arbitration.

BKPM (Badan Koordinasi Penanaman Model) or the Indonesian Investment Coordinating Board is the investment service agency of the Indonesian Government created with the purpose to efficiently implement the enactment of laws on investment. Under the New Investment Law, it is no longer necessary for foreign investors to obtain approval for investments. If a line of business is open for investment, the investor can establish a

company immediately. After establishment, the company obtains all the requisite licenses to carry out its activities.
One of the key provisions within the Capital Investment Law is that all Foreign Investors investing in Indonesia must conduct their activities through a limited liability company. As such, the entity incorporated in Indonesia must comply with Indonesian Company Law (Law 40/2007) regarding limited liability companies. The latest revision of the Company Law was passed by the House of Representatives and signed into law by the President of Indonesia in August 2007.

The new Company Law revokes the old Law No 1 issued in 1995 and includes some enhancements and new concepts including business plans, Corporate Social responsibility, and Business segregation.

Private Port Development is governed by the Shipping Law (Law 17/2008), which in 2008 was amended ending the state monopoly on Port Ownership. The Bill allows foreign and domestic entities to operate ports in Indonesia without having to partner or seek the aid of the state port operator Pelindo, who also partly acts as port regulator. The Law is expected to take effect gradually over the next 3 years as the various implementing regulations are drawn up and approved. The law is seen to be more comprehensive than the previous 1992 law and integrates regulations covering areas of labor, investment, regional autonomy, and taxation.

4.3 Regulations for Foreign Investment in Indonesia

In April 2007 Indonesia passed a new Capital Investment Law (Law 25/2007-New Investment Law). The New Investment Law replaces two old laws: Law No 1 of 1967 regarding Foreign Investment and Law No 6 of 1968 regarding Domestic Investment both as amended. The new Law on Capital Investment accommodates both foreign and domestic investment.

It defines capital investment as all investment, whether by foreign or domestic investors, and can be an investment by foreigners alone or in partnership with domestic investors. A foreign investor is an individual, a foreign enterprise, or foreign government. Foreign capital is capital owned by a foreign state, a foreign citizen, a foreign enterprise, a foreign legal entity, and/or an Indonesian legal entity partly owned or wholly owned by foreigners. This is in line with the long standing international private law that a company takes its nationality from the country of its incorporation and not from the nationality of its owners. An Indonesian company with a foreign shareholding is not a foreign company.

There is no requirement to set up separate regimes for foreign and domestic investment and there are no time limits placed on permits. Under the repealed laws, foreign permits were limited to 30 years. There is no provision for foreign investment permits under the new capital investment laws. Also there is no requirement for divestment. This is an important and substantial new development.

4.3 Equal Rights

The New Investment Law establishes key investment policies promoting national development and these key policies are incorporated into the General Plan of Investment, thereby guaranteeing legal certainty, business certainty, and security to investors. The most significant guarantee is the establishment of Equal Rights; being the principle that foreign and domestic investors are equal under the law and that investors from any country will be treated equally and have equal opportunity. The law does recognize bilateral agreements

from countries where investments receive privileged rights based on the agreements with Indonesia.

Incentives are given to investments that meet one of the following criteria:

- Use many workers
- Make a high priority investment
- Invest in Infrastructure
- Provide Transfer of Technology
- Qualify as a Pioneer Industry
- Are located in a remote or under developed or border area
- Preserve the environment
- Provide research, development, and Innovation
- Develop partnerships with micro, small, or medium sized businesses and co-operatives
- Are industries that utilize domestic capital goods , machinery, or equipment

The types of facilities and rights granted under the new investment law can be identified as follows:

4.3.2 PROTECTION AGAINST NATIONALIZATION

The New Investment Law confirms that nationalization may not be implemented without the enactment of a law to that effect and that both the executive and legislative branches of government must be in agreement on the issue. Given the continuing emergence of a democratic Indonesia, it will become increasingly difficult for the Government to nationalize private companies in existence. However, in the event that the Government does nationalize, it will provide compensation to investors based on market value. The market value will be determined based on an internationally used method by independent appraisers appointed by the parties. Any dispute on the amount of compensation will be resolved through an arbitration process. The law actually goes further than the UN Charter of Economic Rights and Duties of State (1974) in that it sets a standard for compensation.

4.3.3 REPATRIATION OF PROFITS OR PROCEEDS OF LIQUIDATION OR SALE OF INVESTMENTS

The New Investment Law confirms that foreign investors are free to transfer funds relating to profits or proceeds of a liquidation or sale of investments in any currency, as long as taxes and other financial obligations payable to the Indonesian Government have been satisfied. Funds can be in the form of capital, profit, bank interest, dividends, funds for the purchase of raw materials and replacement of capital goods, funds for additional investment financing, loan repayments, royalties and other fees, as well as the income of foreign individuals derived from the investment, payments for technical and management assistance, and other fees.

4.3.4 TAX RELATED INCENTIVES

Certain income tax facilities may be granted to investors who invest in certain industries or certain regions in the form of a reduction of the income tax rate through the deduction of net income for a certain period of time. The exemption or reduction of corporate income tax up to an amount and for a certain period of time is only granted to new investments made in pioneering types of business such as industries that have a high level of interconnectivity,

provide high-added value and externality, introduce new technologies, and have a strategic role in national development.

The facilities may include a reduction in taxable income of up to 30% of the investment amount, accelerated depreciation or amortization, tax loss carry forward for up to 10 years, or a reduction in dividend tax of 10%.

4.3.5 IMPORT RELATED INCENTIVES

Investors in pioneering industries may also be exempted or obtain relief from some import duties, as well as an exemption or deferment on value-added tax, sales tax, income tax on capital goods, equipment and machinery for production, raw materials, and supporting materials. The Government may also grant a reduction in the rate of land and building tax for certain industries in certain areas.

NOTE - The implementation regulations on tax incentives are not entirely clear and the new law provides for the issuance of a ministry of finance regulation to do this.

4.3.6 EXTENDED LAND OWNERSHIP

The New Investment Law allows for extended land ownership for up to 95 years recognizing that some investments will require a long pay back period. This is significantly increased from the maximum of 30 years under the old legislation.

Under the classifications for land ownership in Indonesia, investors may be granted the following land titles:

- The Right to Use for Business (Hak Guna Usaha - HGU) – immediate initial ownership term of 65 years, renewable for another 35 years.
- The Right to Build (Hak Guna Bangunan – HGB) – immediate initial ownership term for 50 years, renewable for another 30 years.
- The Right to Use (Hak Pakai - HP) – immediate initial ownership for 45 years, renewable for another 25 years.
- The extension provisions are granted following an evaluation that the land is still intended for THE purpose of the land title.

4.3.7 IMMIGRATION RELATED INCENTIVES

For investments meeting a certain criteria, foreign investments may be granted certain license in obtaining immigration-related permits such as the granting of a temporary stay permit for 2 years and a multi re-entry permit for multiple entries for up to 2 years. The granting of such facilities is effected by the Directorate General of Immigration and is based on the recommendation of the BKPM.

4.3.8 INTERNATIONAL ARBITRATION FOR INVESTMENT DISPUTES

The New Investment Law stipulates that any investment dispute involving the Indonesian Government and foreign investors shall be resolved through an international arbitration agreed by the parties.

4.3.9 NOMINEE ARRANGEMENTS

Investors of a limited liability company are prohibited from entering into agreements which stipulate that share ownership in the company is for or on behalf of another party. If investors do violate the law and enter into nominee arrangements, the contracts that they enter into will be null and void. The intention of the law is clear and is designed to prevent foreign investors from investing in the name of others where a limited liability company has shareholder structure nominated under the name of one party but is substantially owned by another related party. While this may not have an immediate direct impact, it does present a risk where there is a dispute between parties involved in any nominee arrangements.

4.3.10 CORPORATE GOVERNANCE AND SOCIAL RESPONSIBILITY

Investors are expected to implement good corporate governance and corporate social responsibility (CSR) principles. CSR is also a requirement of the new companies' law.

4.4 BKPM , INVESTMENT AUTHORITY, AND ONE STOP LICENSING AND SERVICE CENTRE

The New Investment Law is intended to provide a 'one stop' service for investors at the Investment Coordinating Board (BKPM) and to reduce the start up time for direct capital investment. This would include the authority to license not only as a central agency but also for provincial and regional agencies. NOTE - The implementation of 'one stop' services will be by Presidential Decree. This has not been implemented yet.

The 'delegation of assignment of power' as stated under the law will take a considerable amount of inter-departmental, inter-agency, and inter-governmental cooperation and understanding before the 'one stop' service can be implemented but, if successful, will greatly expand BKPM powers and authority and realize the full potential of increasing foreign investment in Indonesia. It will reduce the approval time for permits and licenses necessary to commence activities.

As it stands, the New Investment Law has defined the role and duties of the BKPM, which broadly refers to the co-ordination of investment policy, analysis, and promotion. It appears to make no reference to previously legislated responsibilities to formulate policy and grant foreign investment approvals. As the BKPM role and duties are defined in law, it appears that foreign investment no longer requires BKPM approval. As previously stated, if the line of business is open to investment, a foreign investor may establish a company immediately. The Foreign Investor is therefore responsible for interpreting the "Negative List" which determines the areas of business open to foreign investment are set out in Presidential Decree No 77/2007.

In response to the apparent grey areas regarding Foreign Investment approvals in the New Investment Laws, The Chairman of the Investment Coordinating Board (BKPM) has issued Decree 1/P/2008 in April 2008 which amends guidelines and procedures for the application for foreign and domestic investment to comply with the New Investment Law (Law 25/2007). The Decree maintains that BKPM is still the sole institution that has the authority to process and approve foreign and domestic investment applications and licenses and, in fact, expands their authority. The exception to this is investments in mining, oil and gas, insurance, banking and finance. Decree 1/P/2008 could be considered as the first positive step to define the implementing regulations in regard to BKPM's position as a 'One stop shop' for foreign investors invest in Indonesian.

The Decree 1/P/2008 determines that BKPM will issue the approval letter for foreign investment based on a completed application form for obtaining a business permit attaching

to the Decree and this approval letter will be circulated by BKPM to all the relevant ministries and agencies relating to the investment. They are setting tighter timelines for investment approvals which is a positive step forward for investors who have faced long lead times for approvals in the past. Additionally foreign and domestic investors are still obliged to advise BKPM of any changes to the nature of the investment particularly share ownership, sources of financing, line of business, location or merger; all of which must be advised to the Chairman of BKPM in writing.

Under the Decree, BKPM also seek to support the apparent incentives laid out in the New Investment Law for foreign investors regarding tax relief on the import of capital goods and equipment for development by issuing release letters on behalf of the Ministry of Finance with circulation to Director Generals of Customs and Excise and Taxation.

All of these measures set out in Decree 1/P/2008 clearly re-enforce BKPM's continuing primary position as the regulator for foreign and domestic investment in Indonesia.

4.5 Lines of Business Open for Capital Investment

Following the enactment of the New Investment Law, the Government-issued Presidential Regulation No 76 of 2007 regarding the criteria and requirements for determining which business fields are closed or open with certain conditions for Investment (PR 76), and Presidential Regulation No 77 of 2007 regarding the list of fields that are closed or open with conditions for Investment (PR 77). PR 77 revokes Presidential decision No 96 of 2000 which contains the previous list.

In conjunction with the New Investment Law and PR 76, all business fields are open to investment other than those that are closed or open with certain conditions. The list of business fields that are closed or open with certain conditions are set out in PR 77 which contains the 'Negative List'. This list is reviewed every 3 years and implemented by the BKPM. The Negative List states the permissible foreign shareholding in many business sectors for Indonesia.

The latest shareholding limits stated in PR 77 do not apply to existing foreign investments whose approvals were obtained prior to the enactment of PR 77, however they will apply to any amendments to existing approvals. Existing entities will not have to adjust their shareholding composition immediately but will have to comply with the restrictions if there is a shareholdings change subject to BKPM implementing regulations and policies.

There have been some further developments with regard to PR 77 following negative comments and a draft amendment has already been prepared that will change certain parts of the Negative list. There is no indication when the amendment will be brought in by presidential decree.

Private Port Investment is an open area to foreign investment with certain conditions. The classification assigned under PR 77 is that private port development must be in a joint venture with a domestic investor and foreign investors can hold a maximum shareholding of 49%. That also applies to investing in stevedoring, port facilities, warehouses, container terminals, liquid bulk terminals, and Ro-Ro terminals.

4.6 Sabang Free Trade and Free Port Regulations

Law No 36/No 37/2000 established the Sabang Integrated Economic Development Zone comprising of the Sabang Free Port and Free Trade Zone (Sabang Zone). It is made up of the whole area covering Sabang Town, Weh, Klah, Rubiah, Seulako and Rhondo Islands,

Breuh Island, Nasi, Tenom Islands and all the minor islands around them. The Sabang Zone is approximately 245 square kilometers and bordered on Benggala Bay in the North, Indonesian Ocean in the South, Malacca Strait in the East, and Hindia Ocean in the West.

4.6.1 Location and Strategic Importance and Justifications

The creation of the Sabang Zone is intended to provide a focus for overseas investment in goods and services creating a hub for the development of important economic activities. It is strategically located as for the Indonesian market and other countries in South Asia and is near to major international and S.E Asia shipping lanes. It can therefore be seen as becoming central to regional services for International ship traffic and was also created to accelerate economic activity in Aceh and North Sumatra will promote development in the Malaysia-South Thailand special development zone.

4.6.2 Provisions Within the Law Governing Sabang Zone

Key Considerations
Sabang Zone is governed by the laws of Indonesia. However as a separate economic free trade zone and customs area, it is exempt from import duties, sales tax on luxury goods, and excise taxes. The Sabang Zone is guaranteed by law for a period of 70 years.

Management Structure of the Sabang Zone
The Sabang Zone is administered by both a Council and a Management Board. The President of Indonesia appoints the Council and the Chairman of the Council is the Governor of the province of Aceh. The Chairman and Council members are appointed for a period of 5 years and have a duty and authority to determine general policy and control and co-ordinate the activity of the Management Board.

The Management Board of the Sabang Zone is appointed by the Council and the Chairman, and members of the Board are appointed for a period of five (5) years and reside in Sabang Town. The Management board has the authority to implement the management plan for strategic development and expansion of the Sabang Zone.

The Management Board is funded through an allocation from the national budget, and financial statements are prepared and audited by a recognized financial audit institution. The Board is permitted to seek alternative domestic and offshore financing with the agreement of the Council who must seek approval from the Government.

4.6.3 Business Activities Allocated to the Sabang Zone

Economic activities are encouraged in fields such as trading, services industry, mining and energy, transportation, fishing, post and telecommunications, banking, insurance, tourism, and other fields within the Sabang Zone, which includes the equipping and development of transportation including seaports and airports and other types of infrastructure development.

4.6.4 Licensing and Regulations

The Management Board of the Sabang Zone has the authority to license investors who carry out business activities. They are also permitted by Law to regulate procedures relating to the traffic of goods, sea navigation, and the development and equipping of seaports.

The import and export of goods from the Sabang Zone from seaports and airports are under customs control are exempt from import duties, value added tax, and sales tax on luxury

goods. Licensed entrepreneurs are only allowed to import goods related to their business activity.

Prohibited goods are not allowed to enter the Sabang zone and Indonesian import regulations regarding quarantine for animal and fish and plants will apply in the zone.
The import of consumption goods which are for the benefit of the Sabang population are exempt from import duties, sales tax on luxury goods, and excise taxes. This exemption is determined by the Management Board.

Rupiah and foreign currency transactions can be conducted within the Sabang Zone and the Customs area. The Rupiah is the valid payment currency although foreign currency can be sold in the Sabang Zone through banks or licensed foreign currency trade. All transactions of international trade in the Sabang Zone are done in foreign currency by licensed banks.

Immigration laws are the same as those governing the Republic of Indonesia. However any amendments or incentives granted to foreign businesses who execute foreign trade in the Sabang Zone are regulated by the Human Rights and Judicial Affairs Ministry.

4.7 PORT OWNERSHIP

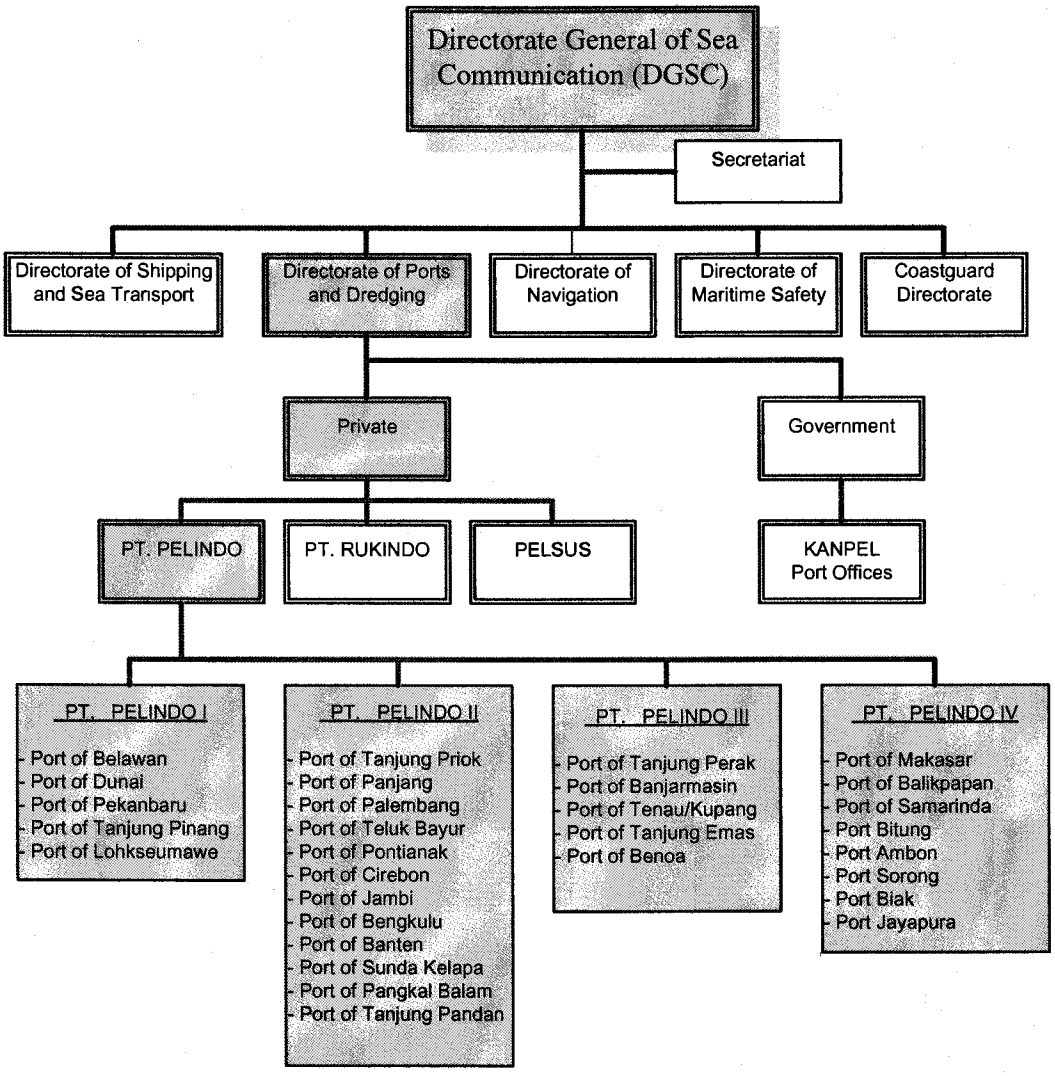
4.7.1 PELINDO

In an effort to improve public ports, the government of Indonesia decided that 110 public ports will be managed commercially by four port corporations (PELINDO I, II, III and IV). Each of the port corporations manage between 25 and 30 ports in their geographical location. Each port corporation covers the following locations:

- PELINDO I: Aceh; North Sumatra; Riau
- PELINDO II: West and South Sumatra; Jambi; Bengkulu; Lampung; Jakarta
- PELINDO III: Central and South Kalimantan; West and East Nusa Tenggara
- PELINDO IV: South, Central, and North Sulawesi; Maluku; Irian Jaya

The port corporations are for-profit limited liability companies (the government of Indonesia has a 100% share holding). Recently there has been discussion about merging the operations of PELINDO III and PELINDO IV in order to improve the competitive situation between the port corporations, but these plans have yet to be confirmed. An overview of the PELINDO ownership structure with some of the major ports is outlined below.

Figure 4.1 Ownership Structure of PELINDO I-IV



4.7.2 LOCAL GOVERNMENTS

The local governments manage the remaining 546 smaller public ports scattered around Indonesia on a non-commercial basis. These ports are under the direct administration of the Directorate General Sea Communication.

Recent developments in Indonesia have included decentralization and increased regional autonomy. As a result of this development, a tendency has arisen for local authorities to develop their own rules, regulations, and agendas. One example is a large port development which is still in the planning stages. The New Jakarta Port which is planned to be located close to Tanjung Priok has been proposed by the Government of the Special Province of

Jakarta (DKI) as a result of a request from Japanese car manufacturers. The basis for the development is the need to transport a large number of vehicles per annum as part of the ASEAN automotive trade.

According to the local government, however, Pelindo II has failed to respond to the proposed development. The issue appears to be that it cannot be built legally as it breaks government Regulation No. 69/2001 which places the proposed location under PELINDO II control. However, the local government's view is that it is legal under new decentralization legislation. The central government has so far refused its permission, but it may come under increasing legal pressure to approve the development plan.

This situation underlines a growing concern that this type of development will be carried out by local bodies without observing the port authority's master plan. Another concern is whether the local authorities will start developing their own port corporations.

4.7.3 PRIVATE OWNERSHIP IN PORTS

There are a large number of private industrial ports owned by private corporations in Indonesia. One such example is Cigading port in Cilegon (Banten) which is owned by Krakatau Steel. The Cigading port has served as a special industrial port facilitating mainly the import of industrial inputs and the export of manufactured products from the Krakatau Steel Industrial Estates. According to Krakatau Steel President, Faswar Bujang, the Cigading port will take over much of the bulk cargo from Tanjung Priok, making the port the country's largest port for bulk cargo, while alleviating the congestion at the Tanjung Priok port.

Some examples of Major Public-Private Partnership Projects include:

- Bojonegara Port Development
- Tanjung Perak Port Development at Lamong Bay
- Belawan Port Development
- Makassar Port Development

Source: Directorate General of Sea Transportation, Ministry of Transportation, Seaport Sector Reviews 2007.

In April 2008, Indonesian legislators approved the new Shipping Bill Law 17/2008 which ended decades of state owned monopoly on port ownership. The bill will allow foreign and domestic private entities to operate ports in Indonesian without having to partner or seek the aid of state port operators PT Pelindo I-IV. This is a move by the government to attract further private sector investment and improve efficiency by stimulating competition.

The Shipping Bill is a positive move forward by the Indonesian government and is generally viewed favorably by the international community. There are, however, still some concerns that relate to the limitations of foreign ownership in private port development to 49% and that this could become a major bottle neck to private investor participation in opening up Indonesia's development of terminals. Other factors also include the Indonesian Government plan to restrict the number of ocean going ports from 141 to 25, lack of clarity on port master plans, intervention in port tariffs, and lack of clarity for special/ports and terminals. The expectation is that private sectors business chambers and groups will continue to canvass the Government to revise the 'Negative' list to allow the foreign shareholding to increase up to 70%. Also in April 2008, the Minister of Transport stated that further government regulations in regard to port investment were urgently needed to enable

foreign investors to immediately invest in ports. These regulations would provide certainty for the state owned port operator Pelindo in the administration of domestic ports. This would significantly improve the prospects for private port development, and realize the interest already expressed by some major international groups to enter the Indonesian market.

4.8 Regulatory Positioning of the Weh Island Transshipment Facility

Weh Island is positioned within the Sabang Integrated Economic Development Zone which comprises of the Sabang Free Port and Trade Zone and is therefore regulated by the Law No 36/No 37/2000 managing activities within this area. The Management Board of Sabang Zone (BPKS) is authorized to issue licenses to investors for projects within the Sabang Free Port and Trade Zone. The BKPS is authorized to implement a strategy for economic development and maximize opportunities through incentives for businesses operating within the Sabang Zone. However, the area is still governed by all the relevant authorities and laws of the Republic of Indonesia.

Port Development is still governed by the relevant Government Agencies, particularly the Directorate General of Sea Communications under the Ministry of Transportation, and regulated by the provisions set out in the latest Shipping Law (17/2008), which refers to port development and operations.

Goods brought into and re-exported from a transshipment facility in Weh Island would not be subject to import tax or duty as this is a specific incentive for locating within the Sabang Free Trade and Port Zone.

Under the New Investment Law, a transshipment facility located in Weh Islands could be classified as a business that has a strategic role in national development and would therefore, as mentioned previously, be eligible for tax related incentives including exemption and relief on income tax and any import duties on Capital goods, equipment, and machinery utilized for the development of the port.

4.9 Project Related Risk Assessment

Project related risks facing foreign investors can be broadly categorized as Commercial and non commercial risks and can be mapped and analyzed in the overall project risk assessment. Commercial risks would include financial risks, operational risks, and business risks, and non commercial risks would include country and event risks.

From the perspective of an investor, risk can be defined as the potential for unexpected events to occur or for unexpected events not to occur either of which can affect the project returns and/or create fluctuations in revenue. Where returns or profitability of an investment are lowered, investors require a risk premium or compensation for undertaking the risk of the realized revenue becoming smaller than expected.

Project related risk assessments are designed to identify and evaluate the main risks associated with the project and to enable investors to identify strategies to mitigate or lower the risks that might impact the project and returns on investment.

Project risks can be described as potential future occurrences that will adversely affect the project in terms of cost, schedule, quality, or the scope of the project.

The assessment of project risks demands a disciplined procedure following accepted diagnostic steps. For the purposes of this study, the project risk assessment is confined to a high level overview of institutional, regulatory, and legal risks and to provide an outline of the

general strategies to mitigate these risks and reduce the likelihood of any occurrence or event to impact the overall success of the project. Detailed quantitative analysis is outside of the scope of this study and it is accepted that investors would in the course of their assessments conduct a more rigorous evaluation of risks and barriers prior to moving forward with an investment.
In the context of the review of the institutional, regulatory and legal environment for foreign investors in Indonesia specific to a transshipment facility located in Weh Island, the main risk factors can be considered as follows:

- Regulatory Risk
- Country and Political Risk
- Administrative Risk
- Legal and Tax Barrier Risk.

4.9.1 REGULATORY RISK

One of the biggest concerns, and certainly one of the major barriers to potential foreign investment, arises from regulatory risk of major government policy changes. The fundamental concern relates to the fact that any investment made under a policy regime may be subject to numerous changes which may take place between the time the investment is made and the time that investment capital is fully repaid from project cash flows. In general, any regulatory uncertainty may make financing difficult and in some cases impossible. Uncertainty concerning the time a government will support a policy regime may prevent longer term contracts being secured or be deeply discounted. With more long term certainty in the regulatory environment, investors will be able to create more value and security in realizing the intended rate of return on their investment.

4.9.2 COUNTRY AND POLITICAL RISK

Country and political risk assessments are important to investors especially where financial institutions are involved in the transaction. Where Lenders are involved in cross border lending, they are often hindered by limit restrictions mandated for certain countries depending on their location and regulatory standpoint. While investors look for some level of comfort, there is always the possibility that projects and transactions will be exposed to unforeseeable political risks. Certainly host governments seek to attract foreign capital and promote foreign investment; however politics is a constantly changing environment. Country and Political risk assessments will look at the risks of Confiscation, expropriation, nationalization of assets, sanctity of contract, and overall sovereign risk including currency inconvertibility, offshore currency remittances to service any debt, and policies regarding repatriation of profits, all of which will be factored in the risk premium calculation.

4.9.3 ADMINISTRATIVE RISK

There are risks to a project associated with the burden of complying with overly bureaucratic administrative procedures and the potential impact of complying with policy measures set by the government. Additionally there is a project risk in terms of lead times relating to lengthy approval processes in a highly regulated market which could add to the costs in the planning and project implementation stage and indeed, a permit delivery risk.

4.9.4 LEGAL AND TAX BARRIER RISK

Foreign investors will risk capital only to the extent that there is a sufficiently developed and well tested legal framework which supports legal recourse; defines liability under contract, is

clear on ownership issues, and recognizes enforcement through the relevant state judiciary. Similarly, there needs to be clearly defined tax policies and tax related incentives which will be critical to the overall assessment of project.

4.10 Risk Analysis

4.10.1 Regulatory Risk Environment

In 2007/ 2008, the Indonesian government already passed three new laws that would positively impact the overall risk assessment of foreign investors looking at investments in private port developments. These are the Capital Investment Law (Law 25/2007), the updated Company Law (Law 40/2007), and the Shipping Law (Law 17/2008). Additionally, the President of Indonesia has also issued updated regulations (Presidential Decree 76/77/2007) (Negative List) regarding lines of business that are open to investment and determining the maximum shareholding for foreign investors. Given that these laws were issued so recently, it is highly unlikely that the government will issue any substantial new policy changes in the immediate future. The focus for recent changes in the legislative environment is designed to enhance the market dynamic.

There is always the risk that there will be further amendments to the law that will negatively affect the position of foreign investors, and there may continue to be protectionist factions within the legislature that might argue that port development needs to be highly regulated due to its strategic national importance. Clearly, if there are any amendments, the precedent is for the Government not to impact existing contracts or if so, give some leeway to investors to implement changes over a reasonable time frame and not to the extent that these changes would have a catastrophic impact on the investment. The intention is to create a business environment that is favorable to inward investment.

Any major policy changes are unlikely, and it is generally perceived that the only possible amendment that may happen in the medium term will be changes to the Negative list that determines the lines of business are open to foreign investors. Any changes to the Negative List are likely to be positive for foreign investors rather than negative.

Foreign Investors are therefore in a position to focus on the existing laws and regulations governing port development and be confident that there will not be any substantial developments for some time.

The Indonesian Government, in issuing the new Capital Investment Law, has committed to providing a business environment more conducive to foreign investment. There is a commitment to making it easier for investors and, while there are some grey areas regarding implementation regulations, rights and incentives are granted and clearly set out. Foreign investors have the right to repatriate profits which recognizes the interests of institutional investors.

There is additional regulatory certainty established by the fact that the proposed location is within the Sabang Free Trade and is therefore governed by the authorities granted by the Law 36/37 2000. The Council and management of the Free Trade Zone are authorized to determine business use, grant licenses, and approve land use, and the free trade zone is guaranteed for a period of 70 years by law securing any concession agreements and long term investment.

The Shipping Law (17/2008) grants the right for foreign investors to invest in private port development and is therefore, by law, not beholden to the state owned port companies for co-operation or assistance, thereby reducing the risk of intervention and obstruction. It is a

comprehensive law that does recognize that the Indonesian government and its agencies must still retain control to ensure national strategic objectives and standards are achieved. The Government continues to maintain a strong supervisory, regulatory, and administration role but at the same time, the law recognizes the rights of private investors in development of ports and shipping in Indonesian.

Legal certainty and rights of recourse for foreign investors are improved through the New Foreign Investment Law (Law 25/2007) which additionally grants the right to investors to settle any contractual disputes with the Indonesian government through international arbitration. These are all measures that significantly improve the risk profile for investors in Indonesia.

Land rights are guaranteed for an extended period of up to 95 years giving the foreign investors further guarantees for the right to use land reducing the risk of land tenure dispute in long term investments.

4.10.2 POLITICAL RISK ENVIRONMENT

The Indonesian Government has attempted to build a country risk profile that provides a more secure risk environment based on a legislative platform that provides more certainty and security to foreign investors. They have guaranteed equal rights to foreign investors and passed laws that do not allow nationalization, expropriation, or confiscation of assets of projects or businesses once they are established.

This significantly reduces the Indonesian political risk for foreign shareholders. The Constitution in Indonesia has evolved to embrace and develop principles of democracy giving investors some continuity in the political process. The President is elected for a period of 5 years and is in a position to determine policy implemented by an appointed cabinet and approved by the legislature. The likelihood of major political upheavals is less likely under the current electoral and legislative process.

4.10.3 ADMINISTRATIVE RISK ENVIRONMENT

The Indonesian Government through the new investment law is moving towards streamlining administrative procedures for foreign investors by providing a one stop service through the BKPM (Investment Coordinating Board). There is, however, a continuing risk of a burdensome approval process which needs to be factored into lead times in the development stage. This is due to the fact that the implementing regulations have not been issued by the President outlining the authorities of the BKPM to license and approve projects at a national and regional level on behalf of all Government agencies and regional bodies. There is lack of clarity on this issue and therefore investors are still required to seek approval and licenses through existing government agency channels which are set out in the Shipping Law (Law 17 2008).

There is a moderate risk that this continuing bureaucratic process will slow the pace of development. The risk of significant impact to the project of failure to obtain licenses is low given the rights of investors set out in the new investment and shipping laws.

4.10.4 LEGAL AND TAX RISK ENVIRONMENT

The current legal risk environment for foreign investors has improved in Indonesia given the recent enhancements to the Company Law (40/2007) and also as previously referred to in the provisions and rights detailed in the New Foreign Investment Law (25/2007). While the state judicial body has well established steps in the event of litigation, it is still viewed as

weak. There has been some inconsistency in judgments from the courts in the past and a perceived weakness in their interpretation of the law. Unfortunately, there is still a history of parties obtaining favorable judgments in the courts by influencing the court officials through corrupt practices. This is a risk to foreign investors especially if there is a long drawn out legal process. This would be considered as a moderate impact to any investment.

Investors have the opportunity to maximize their tax benefits under incentives granted under the New Foreign Investment Law and also under the incentives granted under the Free Trade Zone. The approval and application of these tax benefits are subject to implementation regulations issued by the Ministry of Finance. There is a minimal risk that the Ministry of Finance may pursue a policy change on tax benefits according to the needs and requirements of the state budget and any amendments may adversely impact some assumptions made in the financial models.

4.11 Strategies for the Mitigation of Institutional, Legal, Regulatory Risks

There has been satisfactory progress in Indonesian legal and regulatory environment which has improved the overall Indonesian risk profile particularly in the area of political risk exposures. The Indonesian government has continued to commit to policies that are designed to make Indonesia an attractive proposition for foreign investors compared to other countries in Asia. They still lag behind some of their neighboring countries in Asia however they are gradually becoming more competitive.

In spite of this progress at a macro level, Indonesia still has cumbersome bureaucratic processes related to foreign investment and the operating environment in general. Investment decisions by international investors are hindered by the continuing lack of clarity in relevant legislation regarding port development and also by some continuing grey area regarding the authorities of various state governing institutions. This extends to a lack of co-ordination between the National, regional and local government institutions regarding agreement on development objectives and regulatory obligations for foreign investors. Investors need to navigate through layers of bureaucracy which requires special attention, time and resources. The challenge of navigating through the development process, despite the regulatory improvements implemented at a national level, still represents an inherent risk for investors.

The inherent risks described are not unique to Indonesia and the same challenges exist in other developing countries, however there is still an ingrained culture of bureaucracy and over reliance on state institutions, right down to the local government level, which are often outdated in their work practices, poorly staffed and lacking in resources which can result in a complicated, lengthy and expensive project development process.

Despite these inherent weaknesses in the system and inherent risks to investor, the overall legislative platform had been established and, as already stated, the work at national level has been done. There is unlikely to be any more significant changes to the relevant regulatory framework and foreign investors' rights have been recognized including the essential right to remit profits offshore after tax.

Country risk premiums will already be factored into proposed projects in Indonesia and certainly the political risk environment has improved. The key risk factors are more apparent at a micro level relating to completion and delivery risk of the project and the threat of any delay in startup which may impact future cash flows and any obligations to repay debt. The challenge for private port development, as with any major project in Indonesia, is to adequately plan and allocate resources in country locally to mitigate the primary risk which is navigating through the administrative and bureaucratic process to ensure the project is

approved, delivered and becomes operational according to the project schedule and is in compliance with all of the relevant regulatory and legal requirements. This includes all capital investments where equipment and civil works comply with the technical and performance standards for Indonesia.

There are some basic elements to mitigating this micro risk that can be simply stated and for which a foreign investor in private port development should consider as essential considerations for investing in Indonesia:

- Appoint a qualified and experienced law firm with a strong Indonesian team with international affiliations who can advise on all legal aspects for the project.
- Identify a recognized and well respected joint venture partner who is well connected and has strong local political connections.
- Consider maintaining the interest of the state owned corporation, PELINDO, in the project structure.
- Appoint a local project development firm that could act as lobbyist and liaison with all of the relevant government ministries and agencies.
- Establish generous lead times for the project to allow for a bureaucratic approval process.
- Establish the cost benefits of a political risk insurance strategy that would enhance the risk profile of the project for potential institutional investors.

The list is not intended to be exhaustive however identifies some key actions investors should consider to overcome some of the characteristics of the Indonesian market which can be challenging and requires local expertise and knowledge.

SECTION 5
FINANCING AND IMPLEMENTATION PLAN

5.1 PROJECT FINANCE STRUCTURES

Project finance today, for ports, has become popular with institutional lenders such as the IBRD and IDA windows of the World Bank for public sector projects, International Finance Corporation for private sector undertakings, Asian Development Bank for both public and private sector projects, sovereign wealth funds, government pension funds, private equity funds, equity investors such as Macquarie Bank, Terminal operators and shipping lines themselves. Typically an equity investor will enter the market on his own when bidding for an existing facility that is fully operational. It is more rare to see them invest in Greenfield sites. The new Greenfield port developments have seen most of their investments come from either terminal operators such as Hutchison Port Holdings, or somewhat less commonly individual shipping lines. This is in a state of change however as we are beginning to see joint ventures between terminal operators and shipping lines and in some cases also equity investors.

With the increasing amount of private investment and private management, of what was traditionally a public service, in ports the relationships between the players involved have become complex and multidimensional. What is common to all investments is the risk element which essentially is twofold. The first major risk is the cost of construction and the second is the cargo throughput.

No investor will take the risk of developing a new Greenfield site without explicit contract terms that are clear and enforceable within a properly functioning regulatory structure. Typically the investors are looking for long term concessions, usually for a minimum of 30 years, and ideally for 50 years. Ideally an investment without a timeframe is the most preferred.

An investor, particularly if he is a terminal operator, will be looking for the freedom to set tariffs and to have clearly defined lease arrangements. Tax levels also need to be agreed in advance. The cargo throughput risk can be minimized substantially if a shipping line or two are also investors in the terminal development. They bring the cargo with them and guarantee a minimum throughput. The advantage to the shipping Line(s) is that there is guaranteed berth space and a profit share in the cargo movement activity. The terminal operator and if there is an equity investor involved will have significantly reduced the risks with this type of partnership. Building a new port or terminal on the basis of a public enterprise investment with purely an operating lease to a terminal operator can end up disastrously if the principle of "if you build it they will come" does not work due to regional competition. The net result will be a huge loss of money and a white elephant. In the U.S. the Port of Portland, Oregon suffers this fate to some extent because it remains a port authority operated facility with many competitors and not the ideal location. They do not get much support from shipping lines. This aspect is fully appreciated by potential lenders as well. For instance, the International Finance Corporation would like to see firm throughput commitments of fully 80 percent before it will favorably consider a new Greenfield port project opportunity such as this proposed project.

In addition, the Indonesian law limiting foreign ownership to a maximum of 49 percent can be a problem if there is insufficient interest from Indonesian companies. Moreover, it is understood by the TEC Team that Indonesia's largest and most credible potential strategic investor has already been cautioned by the Port Authority of Singapore that if it invests in this project, then it will lose access to Singapore for its feeder shipping line. However, there are different ways for concessions or allowable foreign investments to be developed. As we are looking at a restricted foreign investment permissible it does limit some of the choices. As an example, the Port of Salah, Yemen was concessioned in 1997 to Salalah Port Services (SPS) which was awarded a 30-year concession to equip and operate the Port of Salalah in Oman. SPS is a joint venture with 30 percent foreign investment and 70 percent Omani Government and public/private investment. The concession contract covers the container terminal, the conventional port, and the Free Trade Zone.

Investment in the port comprised the following proportions:

- Omani Government: 20%
- Government pension funds: 11%
- Sea-Land Services: 15%
- Omani private investors: 19%
- Public offering: 20%
- Maersk / A.P. Moller: 15%

The initial capitalization was US $260 million. The Government built the infrastructure. This investment structure was ideal in that it brought together two shipping lines, both with terminal companies, an equity investor in the shape of the pension fund, private investors, the Government and the public. The port is operated highly profitably today.

According to the World Bank Port Reform Toolkit, there are basically four types of port management models ranging from purely public control to mainly private control. These are highlighted below. For Balohan Bay, we are recommending the Private Service Port given the very large investment needed and the total lack of local hinterland cargo. The facility would be a pure transshipment port with possible free zone activity aligned with it.

Table 5.1: Basic Port Management Models

Type	Infrastructure	Superstructure	Port Labor	Other Functions
Public Service Port	Public	Public	Public	Majority Public
Tool Port	Public	Public	Private	Public/Private
Landlord Port	Public	Private	Private	Public/Private
Private Service Port	Private	Private	Private	Majority Private

Before 1980, ports were mainly financed by Governments as part of their infrastructure development plans and regional economic policies. The general infrastructure of landlord ports typically was financed jointly by the Government and the Port Authority, and the terminal superstructure and equipment by private operators. Fully privatized ports were the exception.

The role of private enterprise in the port sector exerts a direct influence both on port management and operations, as well as on the way capital projects are financed. The private sector is increasingly involved in financing the construction of entire terminals including quay walls, land reclamation, dredging, superstructure and equipment. This has given rise to a large variety of financing and management schemes such as BOT (Build, Operate, Transfer), BOOT (Build, Own, Operate, Transfer) and BOO (Built, Own, Operate). Each is designed to mobilize private capital while balancing public and private interests.

BOT

The BOT structure includes finance, design, construction, and operation of facilities for a specified period. After the concession period ends, ownership is transferred back to the granting entity. During the concession the project proponent is allowed to charge the users of the facility appropriate tolls, fees, rentals, and charges stated in the concession contract. This enables the project proponent to recover its investment, operating and maintenance expenses in the project.

Due to the long-term nature of the arrangement, the fees are usually raised during the concession period. The rate of increase is often tied to a combination of internal and external variables, allowing the proponent to reach a satisfactory internal rate of return for its investment. Examples of countries using BOT are India, Croatia, Japan, Taiwan (Republic of China), Malaysia, Philippines and Hong Kong. However, in some countries, such as Canada and New Zealand, the term used is Build-Own-Operate-Transfer (BOOT).

The main elements of project financing are:

1. The lenders to the project look primarily at the earnings of the project as the source from which loan repayments will be made. Their credit assessment is based on the project, not on the credit worthiness of the borrowing entity.

2. The security taken by the lenders is largely confined to the project assets. As such, project financing is often referred to as "limited recourse" financing because lenders are given only a limited recourse against the borrower.

Once the project's risks are identified, the likelihood of their occurrence assessed and their impact on the project determined, the sponsor must allocate those risks. Briefly, its options are to absorb the risk, lay off the risk with third parties, such as insurers, or allocate the risk among contractors and lenders. The sponsor will be acting, more often than not, on behalf of a sponsor at a time when the equity participants are unknown. Nevertheless, each of the participants in the project must be satisfied with the risk allocation, the creditworthiness of the risk taker and the reward that flows to the party taking the risk. In this respect, each party takes a quasi-equity risk in the project.

The BOT structure is ultimately based on lease contracts and concession contracts that share the same principal characteristics:

- The Government or public Port Authority conveys specific rights to a private company;
- They have a defined term (10-50 years);
- They are geographically delimited; and
- They directly or implicitly allocate financial and operational risks.

The leasehold agreement allows the Landlord ports to derive a substantial part of their income from leases. In the case of Balohan Bay, we are only concerned about land.

There are three basic forms of lease in use today: flat rate, "mini-max," and shared revenue leases. Flat rate leases give the lessee the right to use a fixed asset for a specific period of time in exchange for periodic payments of an agreed fixed amount. In the case of a land lease, this can be a fixed payment per year per square meter. The main advantage of this form of lease is that the lease rent is known to both parties in advance.

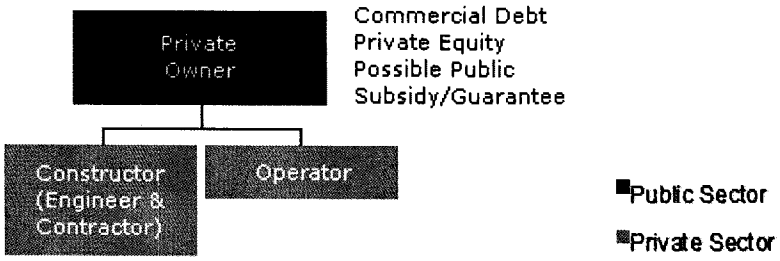
According to the World Bank there are many disadvantages associated with concession contracts including:

- The need for continuing close government regulation and oversight;
- the system can work properly only when the legal framework permits
- transfer of land rights to a private party;
- winning bids are sometimes based on unrealistic financial projections,
- placing the sustainability of the concession agreement in jeopardy; and
- the Government would normally be responsible for the construction of the main infrastructure.

BOO

With the BOO (build-own-operate model), a private company is granted the right to develop, finance, design, build, own, operate, and maintain a transportation project. The private sector partner owns the project outright and retains the operating revenue risk and all of the surplus operating revenue in perpetuity. While this approach is more common in the power and telecommunications, it has also been used to develop transportation infrastructure.

Figure 5.1: BOO Ownership Structure



Given the nature of the development at Balohan Bay, combined with the current global financial situation that has severely restricted available credit and is plunging container shipping lines into heavy losses for 2008 and 2009 at least and most likely into 2010, the recommendation is to structure this investment in a similar way to that utilized in Salalah. In other words, the Federal and State Government, together with domestic Indonesian investors take on the responsibility of developing the infrastructure. A foreign terminal operator, ideally linked with one of the major shipping lines, then contracts to be the terminal operator. This terminal operator can also be a shareholder in the infrastructure part of the enterprise. This solution allows the State to participate as a public entity, and helps to overcome the financial issues created by the global financial crisis. The terminal operator enters into a long term agreement that ensures that it

provides all the equipment needed to operate a terminal together with necessary structures and manpower. In exchange they pay an annual license fee, to be mutually agreed as well as a tax per container move to compensate the infrastructure investors.

5.1.1. SOURCES OF EQUITY INVESTMENTS

As private sector involvement in financing port and other infrastructure works has increased, the tools for financing these facilities have become increasingly sophisticated and the legal conditions to be satisfied by the project more strict. The private sector will evaluate its participation in port infrastructure/superstructure projects based on the following elements:

- Expected yield;
- Adequate debt/equity financing structure (e.g., 60/40, 65/35, 70/30, 75/25);
- Strong sponsorship;
- Solid legal contracts;
- Transparent legal framework;
- Fair and open bidding procedures;
- Credible feasibility analyses (technical, institutional, financial, economic and environmental) and
- Clearly defined and credible exit strategy.

The capital intensive nature of the investments; and the continuing risks associated with operations make it difficult to finance a project of the size of Balohan Bay without the involvement of major industry players whose primary objective is to achieve a minimum acceptable level of return on operations and investment. The investments that the operator makes typically are substantial and have extended lifetimes, meaning that they can be depreciated and yield a proper return only over longer periods. They are generally "nonrecoverable".

In today's world of globalization we have seen the emergence of a number of new sources of finance for port development beyond the normal institutions of the International Finance Corporation, the World Bank, the Asian Development Bank, and Government bonding. Going hand in hand with privatization and long term concessioning, there has been a growth of private equity and sovereign wealth funds shifting their attention to port infrastructure for their investments.

The broad range of companies involved in port and terminal investments is summarized below. It is not inclusive, but it highlights the most visible players in the market.

Table 5.2 Potential Sources of Port Infrastructure Development Finance

Private Equity Companies	Port & Terminal Operators	Container Lines Terminal Operating Companies
AIG Global Investment Group	DP World	APL Terminals
Carlyle Leasing	APM Terminals	CMA CGM Terminal Link

Saratoga Capital	PSA	Evergreen
Goldman Sachs	Hutchison Port Holdings	NYK
Deutsche Bank (RREEF)	SSA Marine	Hapag Lloyd
Calatrava Advisors PTE Ltd	ICTSI	Hyundai

In addition, the International Finance Corporation and the private infrastructure group of the Asian Development Bank are also potential sources of equity for privatized port projects. Moreover, participation by such multilateral financing institutions provides comfort to other equity participants and lenders alike, as well as acts as an additional insurance policy against expropriation or capricious meddling on the part of host governments and local port authorities.

Equity is a financial resource that is flexible enough to earn its return over a variable and unspecified time frame, without creating any risk of financial sanction by the equity holders.

As an additional source of finance, due to the restriction on foreign ownership at a maximum of 49 percent, the involvement of the public sector is critical. There are many ways that it can participate in port investments.

This will depend on the financial situation of the federal and or local government as well as the ownership of the land. The government can contribute assets, i.e. the land. This investment can be calculated and can be repaid via the concession agreement or throughput tax per container move.

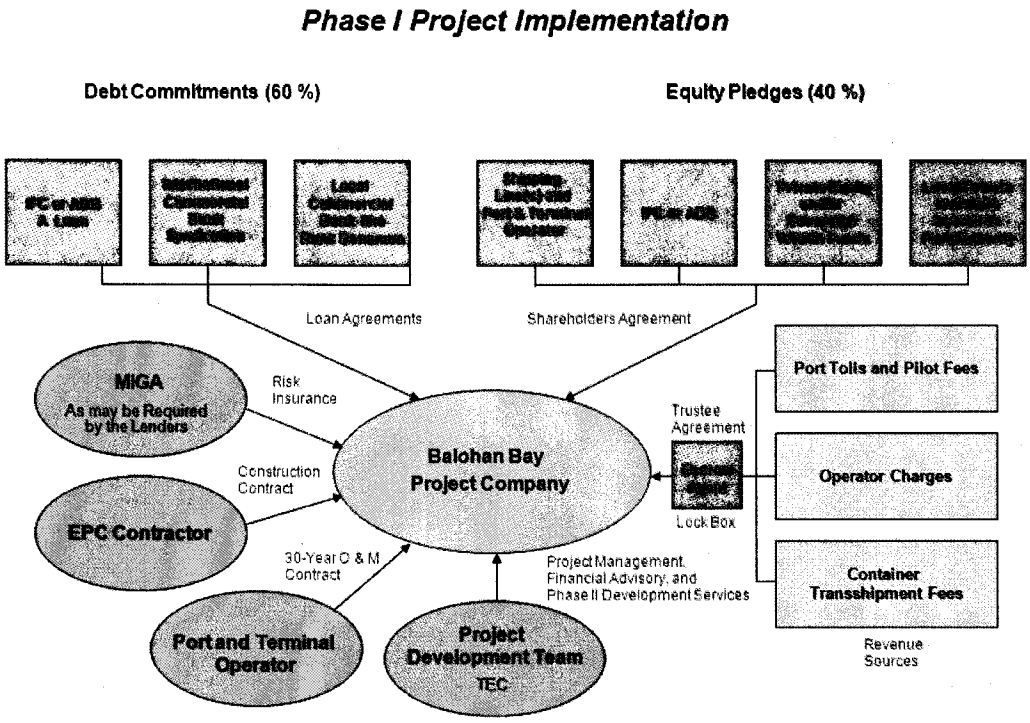
It is of course feasible that the government or public authority may wish to participate with a direct equity cash contribution as a means of getting a good return on the business venture in the future. Another option in the case of a Greenfield port project, investment subsidies could be provided for financing swell protection structures because of the discontinuous (lumpy) nature of this investment. The concessioning public authority offers a minimum revenue guarantee, a guaranteed return on invested capital, or a guarantee to make good on liabilities in the case of force majeure.

The market is highly competitive and there remains a significant amount of interest in developing new port facilities due to the general belief that there will be a shortage of throughput capacity going beyond 2015. This is partly due to the location of many ports close to, or within city boundaries and subsequently they have a limited amount of land space available for expansion. This is certainly true for Singapore. Those ports that have expanded by going further out to sea by use of landfill find this relatively expensive as the landside remains congested. This is the case in many European ports.

Summarizing the above discussion leads to the recommendation that a consortium of investors should be the primary target as investors in Balohan Bay. The mix of private equity participation, with longer term strategies, terminal operators looking for investment vehicles to place their profits from existing facilities and shipping lines looking for guaranteed space combined with a good return on investment, makes for the ideal solution. This is where the marketing effort to develop the new port should be focused.

An indicative transaction structure embodying such a recommendation is presented In Figure 5.2 below based on a relatively conservative 60/40 level of gearing. As can be seen, this structure encompasses a number of private sources of equity into the consortium, as well as includes the private sector arm of a multilateral development bank in an effort to spread risks as broadly as possible.

Figure 5.2: Indicative Transaction Structure



5.1.2 MARKETING FINDINGS

5.1.2.1 Outreach

The consultants prepared a presentation designed as a marketing document that summarized the key elements of the feasibility study of the Weh Island Transshipment Port Project. This document was presented to 12 of the companies that were identified in the previous section. Not all of the identified companies were approached, as the consultants considered that only the ones that could provide a mixture of financial capability and/or sufficient traffic volumes to make the project a success, would be the prime candidates.

The short list of companies excluded those that were committed to existing terminals either by long term contracts or through an investment vehicle. This left a very small number of companies, and includes some which are effective competitors. The companies identified in

table 5.3 below were approached by the consultants, but some did not respond to the requests for discussion.

Table 5.3: List of Companies and Financial Intermediaries With Which Marketing Discussions Were Held

Company or Institution	Location
Babcock & Brown	Singapore
MacQuarie Infrastructure investment Funds	Seattle
Toronto Teachers Pension Association	Toronto
DP World	Dubai
APM Terminals	The Hague
PSA	Singapore
HPH	Hong Kong
SSA Marine	Seattle
Terminal Link	Marseille
ICTSI	
MSC	Geneva
Gold Star Line/ZIM	Hong Kong/Haifa
International Finance Corporation	Washington DC and Jakarta
Asian Development Bank	Jakarta
Bank Danamon	Jakarta
Sarasota Capital	Singapore
Calatrava Advisors PTE Ltd	Singapore
Principia Management Group	Singapore and Jakarta

Since completing the Draft Interim Report for Task 5, the world has entered an appreciably different economic climate. The financial crisis which has led to a near collapse of the banking institutions resulting in a major loss of capitalization and a near total freeze on credit and interbank liquidity. This has altered the way companies are approaching new investments.

The loss of available credit combined with a sharp downturn in trade volumes has forced companies to revert to a partnership with the institutions and governments trying to privatize their infrastructure. In other words, the investors are looking for financial support by way of actual funds invested or by way of provision of a near complete infrastructure complex that only requires the final phases of development by the leaseholder. Essentially this means that the investor is looking for the infrastructure to be completed to the "minus one meter" level. In other words, preparation of the infrastructure up to the level of the final cement and equipment level. This is critically different from the situation that was prevalent six months previously.

5.1.2.2 Marketing Results

The results of the market survey and presentation material review can be summarized under the following points:

1. Existing port operators such as APM Terminals, the PSA, SSA Marine and ZPL believe that it is very difficult, if not impossible to develop and new freshfield facility without the participation of a major shipping line that could supply a volume throughput of at least two million TEU. Most of them also believed that a pure transshipment facility was going to have a more difficult time in being profitable as it did not have the benefit of domestic hinterland cargo that would provide a good starting base.

2. Carriers were more reluctant to consider such a venture due to partly to the financial investment requirements and the logistical restructuring of their networks in order to provide enough throughput. Essentially only two candidates at the carrier level were considered potential investors. CMA CGM and MSC. The latter is however fairly closely associated with the PSA and the consultants believe that a new expansion phase in Singapore being built by the PSA is being developed for MSC.

   The Carriers are also concerned about the impact of their taking a public interest in the Weh Island project would have with their current service providers. Lines calling at Singapore as well as Port Kelang felt that the reaction to their activities would result in a deteriorating service at their existing facilities. This they need to avoid at all costs.

   Carriers also felt that there would be significant pressure exerted on regional feeder operators not to call at the new Weh Island facility by the PSA and Port Kelang.

3. Investment institutions were generally interested in investing in existing facilities which would provide an immediate revenue flow to cover the investment costs. They were less interested in pure Greenfield sites and only then if there was a partnership with a major global carrier with a sufficient throughput commitment to ensure the viability of the investment. This was before the collapse of the financial institutions in October 2008.

   Institutions voiced a belief that the management team responsible for the operation of a facility was as important a criterion for its success as its location. Several institutions also noted the requirement of an exit strategy.

   Other potential sources of concern included the belief that the expansion of existing ports would potentially be cheaper than the creation of a Greenfield port at a new location, and that limited or negative cash flows in the preliminary years of operation increased the risk associated with the project.

   If the final proposal for the Weh Island facility met with the approval of one institution, they would consider an "A" loan, mezzanine financing, or an equity stake. Typical loans would be on the order of a 10 year repayment period after a four year grace period, with interest rates set at between 3.0 and 4.5 percent above LIBOR.

   A number of those interviewed for the marketing report mentioned that Indonesia was in need of an oil transshipment and bunkering facility. However, this proposition is beyond the scope of this project.

   Finally, the Port Authority of Singapore cautioned their prime Indonesian shipping company prospect that they would lose access to Singapore for their feeder shipping line if they participated in the Weh Island Port Project.

   The conclusion of the marketing efforts resulted in essentially only one company and one financial institution being interested in the project. These were Terminal Link, the terminal operating arm of CMA CGM, and the International Finance Corporation of the World Bank Group and their interests were qualified.

Their perspective is that there is insufficient credit available to self fund an investment of nearly $1 billion. They would be interested if the concessioning party would provide part of the finance for the development of the infrastructure up to the "minus one meter" level. Terminal Link would then provide the equipment, the management, and the throughput volumes required to make the investment a success. They effectively would be the operating and management company of the Weh Island transshipment port rather than the owners or leaseholders. They saw the investment requirement initially limited to phase I, with phase II being self financed by the first phase. They also foresaw the need of a phase III to cater for over two million TEUs of throughput annually.

5.1.2.3 Implications of the Marketing Review

Whereas the consultants had initially suggested that an investor(s) would supply the majority of the investment funds rather than first building a facility and then attracting users, the global financial crisis has largely impacted and undermined such an approach.

The concept of "build it and they will come" remains faulty. It was clear from interviews and discussions that the intertwining agreements in the region and the business pressures that would follow a shift to a new facility was enough to dissuade most, if not all Carriers from switching, as independents, to a new facility that competed with Singapore.

However, the combination of investment and development of a new terminal by the concessionaire, linked with a terminal operator combined with a sufficiently large carrier is a viable strategy coupled with inclusion of the private sector arm of a major multilateral development bank to mitigate and spread project risks. Essentially this means that BPKS needs to immediately halt the expenditure of funds on the Sabang development project and instead work with interested parties to help them define which facility is better suited, Sabang or Balohan Bay. With this, the government funding could then be pledged to the chosen facility and developed with the contractual understanding that the terminal/carrier investor would be the operating and managing terminal partner.

5.1.3 INVESTMENT RECOMMENDATIONS

The investments in new, Greenfield ports requires large amounts of funding, usually $500 million and more. In the case of the Balohan Bay project, the total funding requirement to bring the project to self sustaining operations is shown below. The total investment requirement is just over US$900 million in present day dollars for the total project excluding financing charges, and as such is a relatively high risk venture for a Greenfield development. However, Phase 2 construction would only commence once sufficient cash reserves existed, and as such presents limited risk. The total investment requirement for Phase 1 is $667.3 million based on the assumption that the Government will provide basic infrastructure as part of its contribution. Equipment and operations would be concessioned after completion of the construction.

Table 5.4: Weh Island Transshipment Terminal Project Costs (Present Year $)

	Phase 1	Phase 2	Total
Capital Construction	$279,949,608	$-	$486,823,402
Equipment	$-	$-	$-
Project Cost Total	**$279,949,608**	**$-**	**$279,949,608**
Interest Payments	$387,345,043	$-	$387,345,043
Overdraft Interest	$-		$-

The cost and associated risk clearly defines the type of investors that this project will require in order to minimize the risks and to facilitate the borrowing against future operations rather than assets. This is increasingly common in transportation related infrastructure projects of this nature.

The recommendation is for the Balohan Bay project to be funded for Phase I only in the initial stage, with the infrastructure up to the –minus one meter level funded by the Indonesian Government (Federal and Province) together will local investors and everything beyond this provided by the terminal operating company. The financial model has been developed to take into consideration all of the above alternatives, but the recommendation is as per the above.

5.2 FINANCIAL MODEL

A financial model was developed in order to estimate a series of realistic cost projections for both the development and operation of the proposed port. The model also incorporates modules to ensure that the financing of the port would be sufficient to ensure that no cash-flow problems arose, and to forecast the number of employees that would be required to handle the operation of the facility. The financial model is followed by a simplified but integrated model that combines the revenues and costs of the landlord and the leaseholder who would operate the terminal. The initial discussion focuses on the financial results without taking into account the leaseholder, while the year-to-year division of costs and revenues are detailed in the Pro Forma Scenario section (Section 5.6).

The financial model was built in Microsoft Excel, and was designed in a modular format to increase functionality (including capital costs, equipment purchases, employment levels, debt structure, and cash flow). A series of inputs entered in a central location flow through the modules, thereby allowing for easy adjustment of key variables to determine their impact on the financial viability of the port. Key variables will be discussed in detail in the following subsections, but include interest rates, split between debt and equity shares for loans, and forecast container activity. Table 5.5 below lists all the inputs utilized by the model, while Table 5.6 lists all variables that can be adjusted in the model to allow for alternate scenarios. The original model was based on assessing the viability based on a complete costing basis, that is, including the operations of the terminal with related income.

Table 5.5 Financial Model Inputs

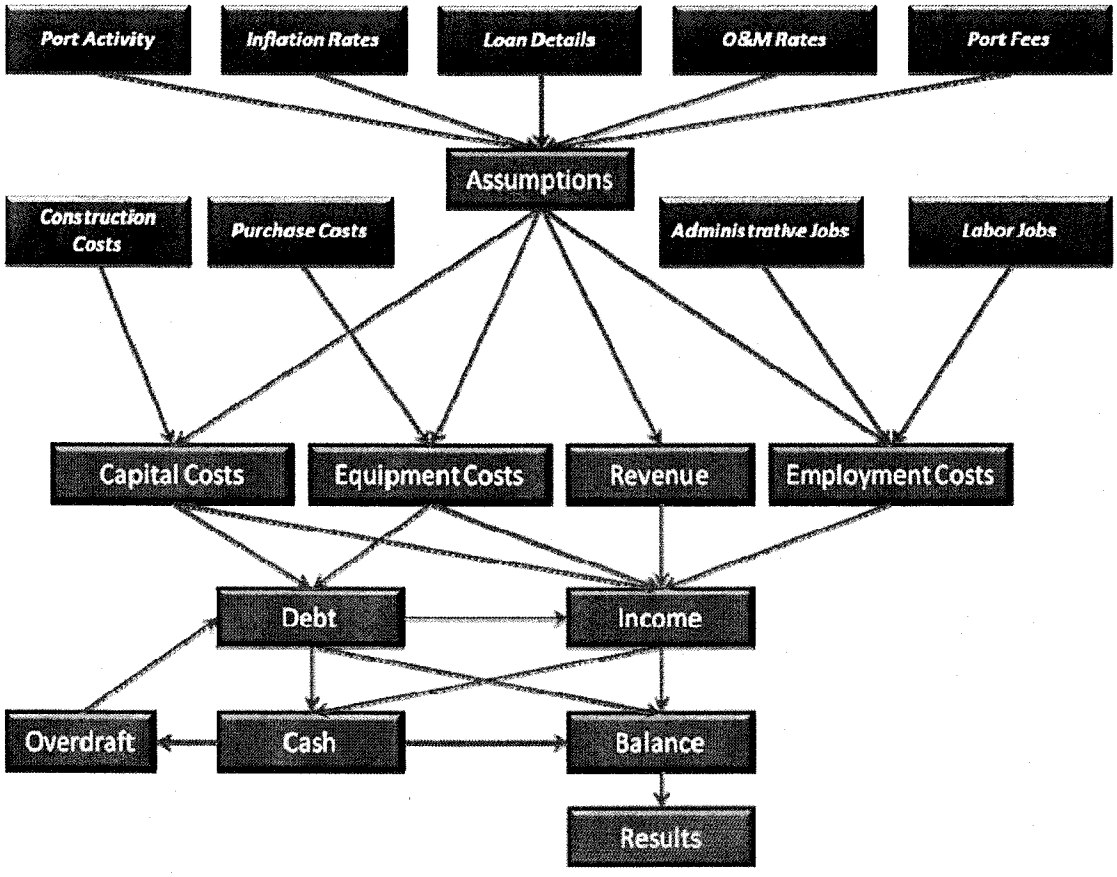
• Container forecast volumes	• Capital costs
• Utility rates	• Capital spending timeline
• Insurance/permit rates	• Equipment purchases
• General employee hourly rates	• Equipment purchase timeline
• Administration staff monthly salary rates	• Capital costs

Table 5.6: Financial Model Variables

• Global annual inflation rate	• Loan rate for equipment purchases
• Use TEUs or container moves	• Need to issue debt for Phase 2 equipment
• Full/Empty Container Ratio	• Operations and Maintenance rate for port
• Container growth rate beyond forecast year	• Operations and Maintenance rate for equipment
• Lift charge for full containers	• Loan length for revolving credit line
• Lift charge for empty containers	• Loan rate for revolving credit line
• Operator charge	• Borrowing beyond capital/equipment needs
• Port fee per call	• Crane gang rate per hour
• Container moves per ship	• Lifts per hour per crane
• Value of annual lease payment	• Labor workers per crane
• Cost overrun adjustment	• Labor worker shifts per day
• Loan length for capital debt	• Gang hours per lift
• Loan rate for capital debt	• Ratio of yard employees to labor workers
• Loan length for capital equity	• Number of gate clerks required
• Loan rate for capital equity	• Yard worker rate per hour
• Need to issue debt for Phase 2 capital	• Number of administration staff required
• Equipment costs	• Number of training staff required
• Loan length for equipment purchases	• Length of time training staff required

The following figure (Figure 5.3) highlights the modular format of the model.

Figure 5.3: Structure of the Financial Model



5.2.1 Financial assumptions

The loan re-payments are based on constant payments and a constant interest rate.

As a public-private partnership, a key aspect of the port development is the split in financing for any loans made. For those loans made to cover the cost of the construction of the port facility, a split of 60 percent debt and 40 percent equity is utilized. In both cases, the loan period is 15 years; however, the interest rate for the loans varies between 7.5 percent for regular debt and 15 percent for equity funding. Debt payments would commence immediately, while equity payments would start only when operations at the port had commenced.

The model assumes that if a negative cash balance is carried at the end of the year (i.e. an overdraft), a short-term loan will be taken to offset the outstanding balance. Such loans would be issued for a three year period at a rate of six percent, and would not contain an equity component. However, no overdraft financing is required in either the baseline scenario or alternate scenario. The model incorporates the revised-assumptions based on the findings of the marketing report.

5.2.2 PROJECT CONSTRUCTION AND EQUIPMENT COSTS

The model utilizes the construction costs developed by TEC Inc. The Balohan Bay project calls for total capital project costs of $280 million for Phase 1 and $207 million for Phase 2, in present value dollars. These totals include a 15 percent contingency fund; insurance and bond costs (3.5 percent); engineering and procurement service fees (five percent); construction management fees (five percent); and environmental mitigation costs (two percent). The assumed start date for construction of the first phase is 2013, with the loans required to cover the project costs split between the three year construction period of 2013 to 2015, split 40 percent in the first year and 30 percent in each of the remaining two years. The second phase is not modeled, as it is assumed it would be built using accumulated cash funds if and when it was required. The total value of the loans incorporates inflation costs (at three percent per year) plus a multiplier to cover debt repayments in the preliminary years. Table 5.7 below portrays the loans associated with the project's construction costs. The equity can be in the form of governmental infrastructure expenditure which does not require an ROI.

Table 5.7: Planned Capital Loans for the Weh Island Transshipment Facility

Phase	Year	Construction Cost	Debt	Equity	Annual Debt Payment	Annual Equity Payment	Total Loan Cost
1a	2013	$ 126,034,300	$ 84,695,049	$ 56,463,366	$ 8,925,459	$ 8,396,694	$ 259,832,295
1b	2014	$ 97,361,496	$ 65,426,926	$ 43,617,950	$ 6,894,917	$ 6,486,446	$ 200,720,448
1c	2015	$100,282,341	$ 67,389,733	$ 44,926,489	$ 7,101,764	$ 6,681,040	$ 206,742,061

The total value of the loans are $362.5 million, of which $217.5 million is debt and $145.0 million is equity. The total value of debt payments is $343.8 million, while the total value of equity payments is $323.5 million, for a total of $667.3 million.

The borrowing includes an additional 12 percent to cover debt repayments in the years prior to commencement of operations.

The model bases revenue projections on the equipment estimates provided by TEC Inc. The model assumes that the lessee covers the cost of all equipment required in the operation of the port. Table 5.8 below depicts the equipment purchases required for Phase 1.

Table 5.8: Planned Equipment Purchases for the Weh Island Transshipment Facility

Phase	Year	Gantry Cranes	RTGs	Forklifts	Carts	Trucks	Tugboats	Pilot Boats	Fuel Tender	Operating System	Computer/ Software
1a	2013	4									
1b	2014	2	12	15	12	12	8	2	2	1	1
1c	2015	3	12	15	12	12					
Total	-	**9**	**24**	**30**	**24**	**24**	**8**	**2**	**2**	**1**	**1**

This equipment should be sufficient to handle forecast activity until 2018, at which point Phase 2 equipment would need to come online.

5.2.3 PROJECT LABOR AND MANAGEMENT COSTS

All project labor and management costs would be borne by the lessee.

5.2.4 OTHER ANCILLARY COST ITEMS AND VARIABLES

Additional costs modeled include:

- Overhead costs such as utilities, insurance and permits, and administration expenses would all be paid for by the lessee.
- Operations and maintenance costs are excluded from the model, as they are assumed to be covered by the lessee.
- A flat-fee of $5 million (this would be negotiated with the lessee) per year was included for lease payments to the government, following the commencement of operations.

5.2.5 REVENUE ASSUMPTIONS

The number of containers moved by the port was developed from the marketing study interim report submitted in May, based on the market share and economic growth assumptions. The forecast covers the first year of operations in 2015 to 2025; following this, a growth rate of seven percent per year was utilized. Since different rates are charged for full versus empty containers, a ratio of 65:35 of full-to-empty containers was used. **The cost per move fee applied to full containers was $60, while empty containers had a fee of $50, for 2009, and were inflated by three percent per year. These values are based on an analysis of the region's competitive port fee structures.** This charge is based on the PTP charges which are reportedly the lowest in the region. These revenues would accrue to the Lessee, less a tax applied by the Port Authority/Infrastructure investors.

Table 5.9 below details the listed THC costs (as opposed to reduced long-term rates that are either preferentially offered or ultimately negotiated) for twenty-foot and forty-foot containers in a number of ports that are charged by Carriers to their customers. This is the income of the Carriers, not the port terminal operators.

Table 5.9: Comparison of Regional THC Costs

Port	*20' Dry*	*40' Dry*
Singapore	$ 182	$ 198
PTP	$ 91	$ 136
Port Kelang	$ 103	$ 154
Shanghai	$ 44	$ 66
Indonesia	$ 125	$ 190

A port fee of $5,000 per call was incorporated, with an average 2,900 moves per vessel.

5.3 FINANCIAL ANALYSIS OF THE BASELINE SCENARIO

The baseline scenario utilizes the variables detailed in Section 5.2. It does include the revenue generated by terminal leaseholders operation. An analysis of the financial results without this would be continuously in the red as there is not enough income available from either taxation of the container lifts nor the vessel port calls. The consultants therefore decided to demonstrate that the Weh Island project could be profitable as a combined investment. Not measured for the

Government part of the investment is the ancillary benefits of increased employment, private investment in Free Zone activities and eventual tax income.

The table below (5.10) summarizes the key variables:

Table 5.10: Value of Key Variables Used in Baseline Scenario

Variable	Value
Inflation Rate	3%
Project Cost Overrun	-
Capital Debt Length / Interest Rate	15 years / 7.5%
Capital Equity Length / Interest Rate	15 years / 15%
Cargo Adjustment Rate	-
Lift Charges	$60 full / $50 empty
Container Full Rate	65%

5.3.1 CASH FLOW

In 2013, the first year of the project, the profit/loss before tax and amortization (PL) is a loss of $8.9 million, which represents the first year of debt payments on the first capital loan. The commencement of equity payments occurs in the first year of operations, in 2015, which increases total debt-related payments to $31.3 million for the year. The baseline scenario is not forecast to attain a positive PL until 2016, which represents the fourth year of the project and the second year of operations. Only at this stage do cash reserves begin to accumulate beyond what is needed for pending construction or pending equipment purchases. Chart 5.1 below details the P/L for the first 21 years of the project, from 2010 through 2030. Chart 5.2 depicts cash flow by year until 2030, and the cumulative cash flow balance until 2023. Again, it must be noted that this excludes all of the equipment, structures, labor and management costs of the terminal operator and it excludes any assumptions made about the split of the terminal operations revenue.

Chart 5.1 Profit/Loss for Baseline

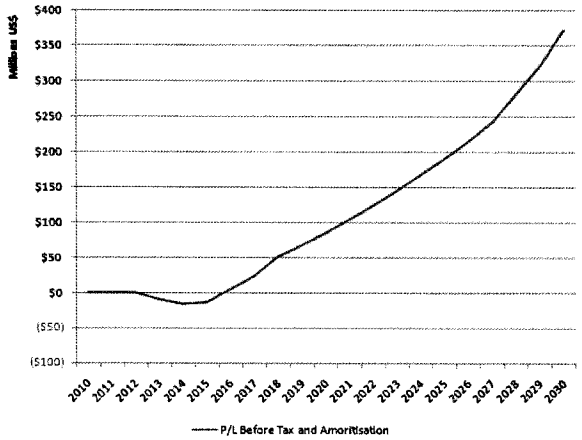
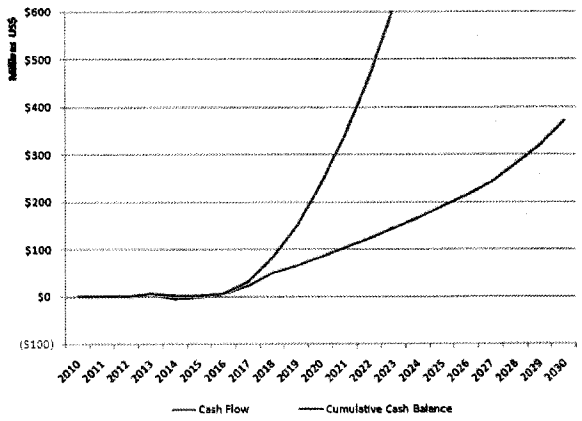


Chart 5.2 Cash Flow for Baseline



The baseline scenario requires $667.3 million in payments for debt and equity loans. There are no years in which the existing cash reserves are insufficient to cover all of the facilities expenses and debt repayments. Chart 5.3 below details the total annual debt/equity loan payments made between 2010 and 2030 (the last year in which debt and equity payment are required is 2031). Chart 5.4 below depicts the division of debt and equity loan payments.

Chart 5.3 Annual Debt Payments for Baseline

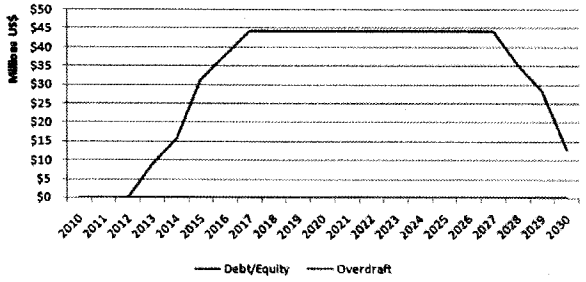
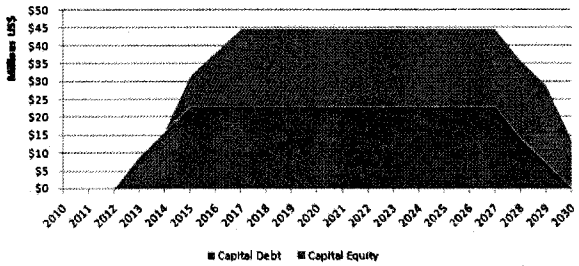


Chart 5.4 Debt/Equity Loans for Baseline



The Weh Island Transshipment Terminal's modeled first year of operations is 2015, during which it is forecast to handle 400,000 containers and to generate $23.4 million in revenues. Although the operational costs are just $5.0 million that year, the $31.3 million in debt payments lead to an overall loss of $13.0 million for the year. By the 15th year of operation in 2029, total revenue from container handling charges is forecast to be $347.3 million, with an additional $7.0 million in revenue from port charges. Chart 5.5 below plots the income from the container handling and port charges. Chart 5.6 depicts the breakdown of operational costs. It should be noted that the lessee is responsible for all equipment and capital facility operations and maintenance costs, as well as all employment and administration costs.

Chart 5.5 Port Revenues for Baseline

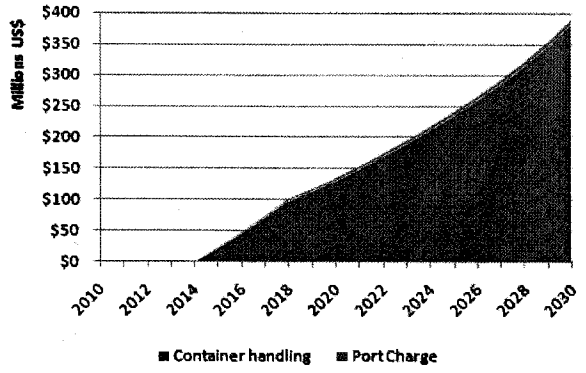
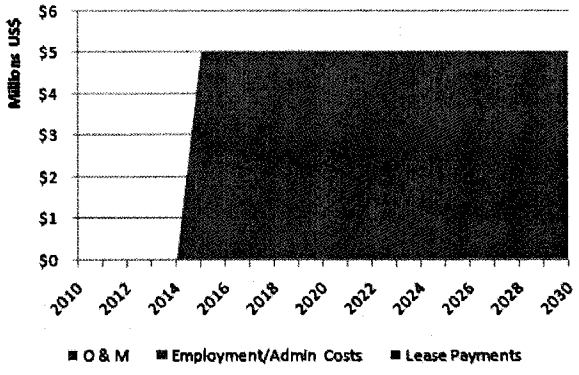


Chart 5.6 Port Expenditures for Baseline



Given the large size of cash flow produced by the proposed project, the shareholders and equity investors can jointly decide to close out loans early as well as paying off equity shareholders. This would reduce profitability for a single year, but would improve the company's financial position in subsequent years as the interest payments are no longer due.

5.3.2 FINANCIAL INDICATORS

The following table (Table 5.11) details the modeled financial performance of the Weh Island Transshipment Terminal between 2010 and 2029.

Table 5.11: Financial Performance of Baseline Scenario

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Revenue										
Container Handling	$0.0	$0.0	$0.0	$0.0	$0.0	$22.6	$46.6	$71.9	$98.8	$114.5
Port Charge	$0.0	$0.0	$0.0	$0.0	$0.0	$0.8	$1.5	$2.0	$2.8	$3.0
Total Revenue	$0.0	$0.0	$0.0	$0.0	$0.0	$23.4	$48.1	$73.9	$101.5	$117.5
Expenditures										
O&M	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Employment/Admin	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Lease Payments	$0.0	$0.0	$0.0	$0.0	$0.0	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)
Debt Payments	$0.0	$0.0	$0.0	($8.9)	($15.8)	($31.3)	($37.8)	($44.5)	($44.5)	($44.5)
Overdraft Financing	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Total Expenditures	$0.0	$0.0	$0.0	($8.9)	($15.8)	($36.3)	($42.8)	($49.5)	($49.5)	($49.5)
Profit/Loss	$0.0	$0.0	$0.0	($8.9)	($15.8)	($13.0)	$5.3	$24.4	$52.0	$68.0
Cash Flow	$0.0	$0.0	$0.0	$6.2	($4.1)	($0.9)	$5.3	$24.4	$52.0	$68.0
Cash Flow after Overdraft Loans	$0.0	$0.0	$0.0	$6.2	($4.1)	($0.9)	$5.3	$24.4	$52.0	$68.0
Cumulative Cash Balance	$0.0	$0.0	$0.0	$6.2	$2.1	$1.1	$6.4	$30.8	$82.9	$150.8

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Revenue										
Container Handling	$131.0	$149.8	$169.6	$190.4	$212.3	$235.4	$259.4	$285.9	$315.1	$347.3
Port Charge	$3.5	$3.8	$4.3	$4.5	$5.0	$5.3	$5.8	$6.0	$6.5	$7.0
Total Revenue	$134.5	$153.5	$173.8	$194.9	$217.3	$240.6	$265.2	$291.9	$321.6	$354.3
Expenditures										
O&M	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Employment/Admin	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Lease Payments	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)
Debt Payments	($44.5)	($44.5)	($44.5)	($44.5)	($44.5)	($44.5)	($44.5)	($44.5)	($35.6)	($28.7)
Overdraft Financing	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Total Expenditures	($49.5)	($49.5)	($49.5)	($49.5)	($49.5)	($49.5)	($49.5)	($49.5)	($40.6)	($33.7)
Profit/Loss	$85.0	$104.0	$124.3	$145.4	$167.8	$191.2	$215.7	$242.4	$281.0	$320.6
Cash Flow	$85.0	$104.0	$124.3	$145.4	$167.8	$191.2	$215.7	$242.4	$281.0	$320.6
Cash Flow after Overdraft Loans	$85.0	$104.0	$124.3	$145.4	$167.8	$191.2	$215.7	$242.4	$281.0	$320.6
Cumulative Cash Balance	$235.9	$339.9	$464.2	$609.6	$777.4	$968.6	$1,184.3	$1,426.7	$1,707.7	$2,028.3

The two financial indicators used to assess the overall financial profitability of the projects are net present value (NPV) and internal rate of return (IRR). Both NPV and IRR are discounted cash flow methods that factor the time value of money into the evaluation of the Weh Island Transshipment Terminal. In both cases, the calculations are based on the series of future payments (negative cash flow), income (positive cash flow), and losses (negative cash flow) that the financial model returns.

The NPV returns the net value of the cash flows in current dollars, and is a good indicator of how much value the project adds, with an NPV larger than zero adding value and smaller than zero subtracting value. The IRR builds upon the NPV by calculating the specific rate of return for the project, determining the efficiency of an investment (whereas the NPV determines the magnitude).

The NPV of the baseline scenario for the 18 year period from the start of construction in 2013 until 2030, using a discount rate of 10 percent, is $650.0 million. The internal rate of return for the baseline project, between 2010 and 2030, is 62 percent. Both values are very high in part because of the cost borne by the lessee, who will pay for the project's equipment costs and ongoing operations and maintenance costs.

The debt service coverage ratio (DSCR) is the ratio of net operating income to total debt payments, and highlight's the port's ability to produce sufficient revenue to cover the annual debt service. A ratio greater than 1.0 indicates that the facility is able to meet its debt obligations based on net earnings. The following table (Table 5.12) details the DSCR for the baseline project. There is no DSCR in those years when there are no earnings or no debt payments. As the table indicates, the project is unable to meet debt repayments using only net income in just the first year of operations.

Table 5.12: Financial Performance of Baseline Scenario

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EBIT	$-	$-	$-	$-	$18.4	$43.1	$68.9	$96.5	$112.5	$129.5
Debt Pmts.	$-	$-	$8.9	$15.8	$31.3	$37.8	$44.5	$44.5	$44.5	$44.5
DSCR	-	-	-	-	0.59	1.14	1.55	2.17	2.53	2.91
Year	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
EBIT	$148.5	$168.8	$189.9	$212.3	$235.6	$260.2	$286.9	$316.6	$349.3	$385.2
Debt Pmts.	$44.5	$44.5	$44.5	$44.5	$44.5	$44.5	$44.5	$35.6	$28.7	$13.2
DSCR	3.34	3.79	4.27	4.77	5.30	5.85	6.45	8.90	12.18	29.26

5.4 Scenario and Risk Analysis

A single alternate scenario was modeled in order to assess the financial viability of the proposed project with higher interest rates for debt. The table below (Table 5.13) details the variables changed in the alternate scenario.

Table 5.13: Value of Variables Used in Scenarios

Variable	Baseline	Alt 1
Inflation Rate	3%	3%
Project Cost Overrun	-	-
Capital Debt Interest Rate	7.5%	9%
Capital Equity Interest Rate	15%	15%
Cargo Adjustment Rate	-	-
Lift Charge Rate Full/Empty	$60/$50	$60/$50

5.4.1 Alternate Scenario 1- Increased Debt Interest Rate

Alternate Scenario 1 assumes that the interest rate required to issue debt is low, and is 1.5 percent higher, at 9.0 percent. Aside from this, all other variables remain unchanged from the baseline.

The total payments on the capital loans increase from the baseline scenario as a result of the higher interest rates. $219.5 million of debt and $146.3 million in equity must be raised to cover total construction costs of $365.8 million. The total debt and equity payments increase from

$667.3 million to $701.0 million, with debt payments totaling $374.7.3 million and equity payments totaling $326.4 million.

In 2013, the first year of the project, the profit/loss before tax and amortization (PL) is a loss of $9.7 million, which represents the first year of debt payments on the first capital loan. The commencement of equity payments occurs in the first year of operations, in 2015, which increases total debt-related payments to $33.5 million for the year. First year revenue in 2015 remains the same at $23.4 million, but the net loss for that year increases from $13.0 million to $15.1 million. The baseline scenario continues to accumulate a cash reserve starting in 2016. Accumulated cash reserves in 2029 decrease from $2.03 billion in the Baseline Scenario to $2.00 billion.

The NPV for Alternate Scenario 1 for the 18 year period between 2013 and 2030 is $634.5 million, while the IRR is 58 percent. Both metrics remain very high, and as such indicate that the project remains viable with increased interest rates.

The following six charts (Charts 5.7 through 5.12) and two tables (Tables 5.14 and 5.15) depict the discussed financial indicators over the 20 year period between 2010 and 2029.

Chart 5.7 Profit/Loss for Alternate 1

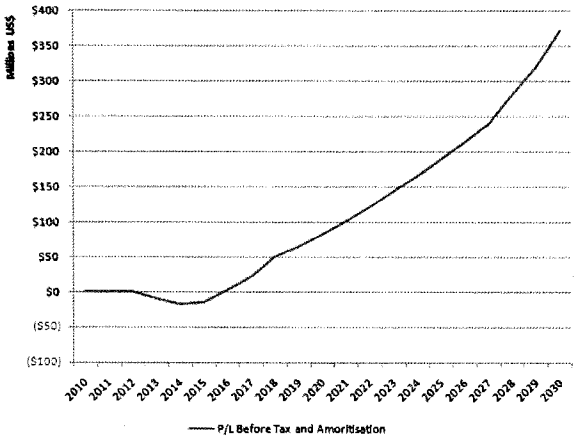


Chart 5.8 Cash Flow for Alternate 1

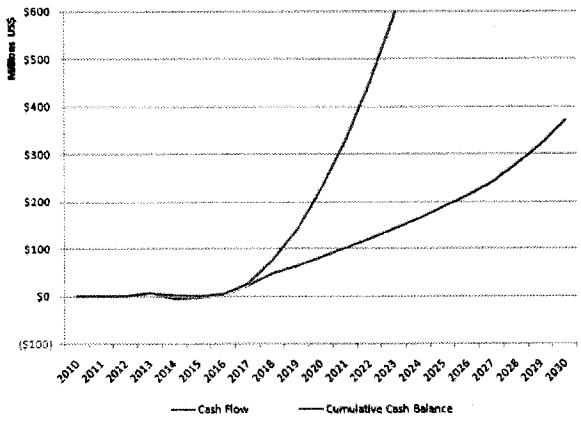


Chart 5.9 Annual Debt Payments for Alternate 1

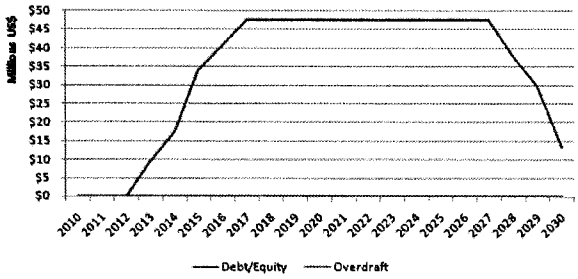


Chart 5.10 Debt/Equity Loans for Alternate 1

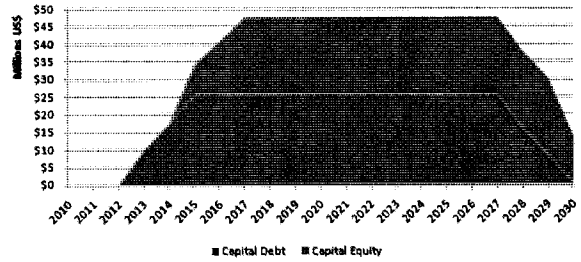


Chart 5.11 Port Revenues for Alternate 1

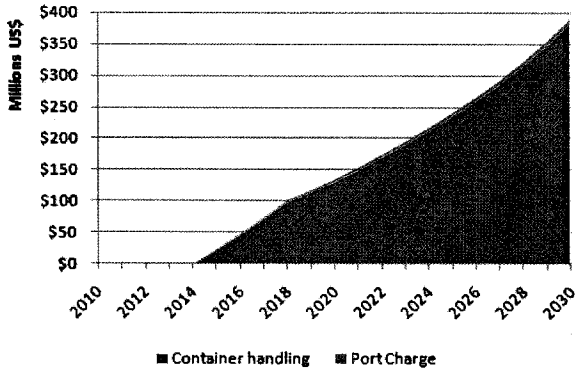


Chart 5.12 Port Expenditures for Alternate 1

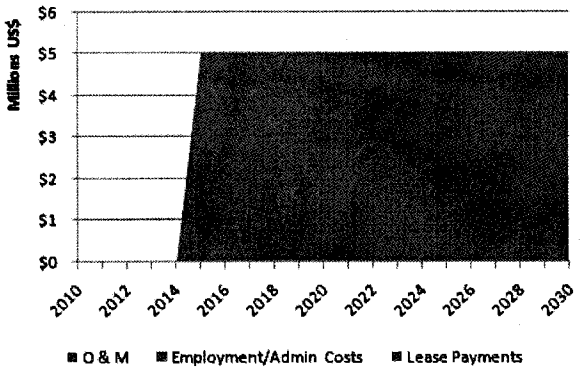


Table 5.14: Financial Performance of Alternate Scenario 1

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Revenue	$0.0	$0.0	$0.0	$0.0	$0.0	$22.6	$46.6	$71.9	$98.8	$114.5
Container Handling	$0.0	$0.0	$0.0	$0.0	$0.0	$0.8	$1.5	$2.0	$2.8	$3.0
Port Charge	$0.0	$0.0	$0.0	$0.0	$0.0	$23.4	$48.1	$73.9	$101.5	$117.5
Total Revenue										
Expenditures	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
O&M	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Employment/Admin	$0.0	$0.0	$0.0	$0.0	$0.0	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)
Lease Payments	$0.0	$0.0	$0.0	($9.7)	($17.2)	($33.4)	($40.0)	($46.7)	($46.7)	($46.7)
Debt Payments	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Overdraft Financing	$0.0	$0.0	$0.0	($9.7)	($17.2)	($38.4)	($45.0)	($51.7)	($51.7)	($51.7)
Total Expenditures	$0.0	$0.0	$0.0	($9.7)	($17.2)	($15.1)	$3.1	$22.2	$49.8	$65.7
Profit/Loss	$0.0	$0.0	$0.0	$6.7	($4.6)	($2.1)	$3.1	$22.2	$49.8	$65.7
Cash Flow	$0.0	$0.0	$0.0	$6.7	($4.6)	($2.1)	$3.1	$22.2	$49.8	$65.7
Cash Flow after Overdraft Loans	$0.0	$0.0	$0.0	$6.7	$2.1	$0.0	$3.1	$25.3	$75.1	$140.8
Cumulative Cash Balance	$0.0	$0.0	$0.0	$0.0	$0.0	$22.6	$46.6	$71.9	$98.8	$114.5

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Revenue										
Container Handling	$131.0	$149.8	$169.6	$190.4	$212.3	$235.4	$259.4	$285.9	$315.1	$347.3
Port Charge	$3.5	$3.8	$4.3	$4.5	$5.0	$5.3	$5.8	$6.0	$6.5	$7.0
Total Revenue	$134.5	$153.5	$173.8	$194.9	$217.3	$240.6	$265.2	$291.9	$321.6	$354.3
Expenditures										
O&M	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Employment/Admin	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Lease Payments	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)	($5.0)
Debt Payments	($46.7)	($46.7)	($46.7)	($46.7)	($46.7)	($46.7)	($46.7)	($46.7)	($37.0)	($29.5)
Overdraft Financing	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Total Expenditures	($51.7)	($51.7)	($51.7)	($51.7)	($51.7)	($51.7)	($51.7)	($51.7)	($42.0)	($34.5)
Profit/Loss	$82.8	$101.8	$122.1	$143.1	$165.6	$188.9	$213.4	$240.2	$279.6	$319.8
Cash Flow	$82.8	$101.8	$122.1	$143.1	$165.6	$188.9	$213.4	$240.2	$279.6	$319.8
Cash Flow after Overdraft Loans	$82.8	$101.8	$122.1	$143.1	$165.6	$188.9	$213.4	$240.2	$279.6	$319.8
Cumulative Cash Balance	$223.6	$325.4	$447.4	$590.6	$756.1	$945.0	$1,158.5	$1,398.7	$1,678.2	$1,998.0

Table 5.15: Financial Indicators for Alternate Scenario 1

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EBIT	$-	$-	$-	$-	$18.4	$43.1	$68.9	$96.5	$112.5	$129.5
Debt Pmts.	$-	$-	$9.7	$17.2	$33.4	$40.0	$46.7	$46.7	$46.7	$46.7
DSCR	-	-	-	-	0.55	1.08	1.47	2.07	2.41	2.77

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
EBIT	$148.5	$168.8	$189.9	$212.3	$235.6	$260.2	$286.9	$316.6	$349.3	$385.2
Debt Pmts.	$46.7	$46.7	$46.7	$46.7	$46.7	$46.7	$46.7	$37.0	$29.5	$13.3
DSCR	3.18	3.61	4.06	4.54	5.04	5.57	6.14	8.55	11.84	29.00

5.5 Suggested Exit Strategy for Potential Investors

Several possible exit strategies exist for the equity partners, including an initial public offering on the Jakarta Stock Exchange—possibly within three to four years of the successful completion of the planned Phase I port project However, probably the most credible of these exit strategies is either a partial stock sale to a strategic investor interested in obtaining a strategic site location in the Straits of Malacca for a future oil transshipment facility and also a possible strategic petroleum reserve for Indonesia or else a friendly takeover offer from one of the existing project participants.

5.6 Pro Forma Scenario

Following the market research and the global economic downturn, the financial plan was adjusted to reflect the more conservative lending climate and a simplified Pro Forma Scenario was created. The updated scenario for the development of Weh Island would feature securing a shipping firm able to commit to both utilizing the facility and taking a stake in the operation of the development. Funding for the first phase of the project would be provided by a mix of public and private investment (10 percent private, 30 percent public), with the remainder financed. The total value of the private equity stake is $32.9 million, while the total value of the public equity stake is $98.6 million. The remaining $197.2 million would be raised through the issuance of debt.

The fundamental underlying cost and revenue assumptions are derived from those utilized in the model, although they are adjusted to reflect the change in the global economy following the credit crunch. As such, interest rates for capital and equipment loans have decreased, but so too has the percentage of total project costs that will be supported through debt. Only the first phase of the project would utilize a mix of public, private, and debt funds; capital costs associated with phase two would be funded entirely by revenue.

The container handling charge was set at a flat rate of $55 per container, regardless of whether it was full or empty, while the rent fee paid to the facility owner by the lessee was doubled to $10 million for the first year of operations (with the amount doubling again when Phase 2 of the facility began operations, with the rent increasing annually in line with inflation). Since the port operator would be linked with a shipping company, the flow of containers through the facility would be virtually guaranteed, and as such the forecast activity for the first year of operations is 800,000 containers. This would increase to 1.1 million containers in the second year, after which the growth rate would be 12 percent per year. Cash flow short falls of $18 million over the first three years of the project would be addressed through additional debt issuance.

The key variables utilized in the Pro Forma analysis are presented in Table 5.16 below.

Table 5.16: Value of Key Variables Used in Pro Forma Analysis

Variable	Value
Private Equity Stake	10%
Public Equity Stake	30%
Debt Financed State	60%
Inflation Rate	3% per year
Capital Debt Length / Interest Rate	20 years / 6.0%
Equipment Debt Length / Interest Rate	15 years / 7.0%
Cargo Adjustment Rate	-
Lift Charges	$55/Container
Base Year Activity	800,000 Containers
Long Term Activity Growth Rate	12% per year

The facility owner would receive income through three separate revenue streams. First, an annual rent payment for the use of the facility once operations commenced in 2015 (valued initially at $10 million, with annual increases of three percent, and doubling in 2020 when Phase 2 of the facility commenced operations). Second, the facility owner would receive the $5,000 per ship port call fee. Finally, the owner would receive a portion of the fee collected per container handled by the facility (initially $10 per container in 2015, increased by three percent per year). The owner would be responsible, however, for paying off the interest and principal on the construction loan debt.

The facility operator would receive income from the fees collected for each container moved, less the portion paid to the facility owner and the annual rent payment. The container fees would first be used to pay for all administration and labor costs, as well as for maintenance and operation costs. The facility operator would also be responsible for the purchase of all equipment capital and maintenance costs.

The responsibility for costs and recipient of revenue streams are summarized in Tables 5.17 and 5.18 below:

Table 5.17: Responsibility for Project Costs

	Owner	Operator	Terminal Client
Construction Costs/Debt	X		
Rent		X	
Container Handling Fee			X
Port Call Fee			X
Labor and Administration		X	
Equipment Purchase		X	
Maintenance and Operations		X	

Table 5.18: Recipient and Value of Revenue Streams in 2015

Revenue Stream	Owner	Operator
Container Handling Fee	$10 per container	$45 per container
Rent	$10 million per year	-
Port Call Fee	$5,000 per ship	-

In the first year of operation, the total rent to the port's owner from the facility operator would be $18.5 million, although total debt service for the year would be $18.7 million. By the second year of operation, however, net cash flow would be $3.6 million on revenue of $22.4 million. Total cash flow to the port owner over the first ten years of operation would be $18.7 million, although a portion of this would be payable to the private equity holder. Total debt payments for Phase 1 of the project would be $392.5 million, with Phase 2 totaling a further $458.8 million, bringing the combined debt cost to $851.4 million. As noted previously, Phase 2 would be fully funded by operational profits, and could be delayed if necessary.

Although there would be an operational loss of $9.7 million for the port operator for the first year of operations, by the second year the profit would be positive at $4.0 million. The total accumulated value of profits and losses for the operator over the first ten years of operation would be $197.7 million. The ten-year period includes $146.3 million in labor and administration costs, $200.2 million in equipment costs, and $184.6 million in operations and maintenance costs (for a total of $531.2 million in terminal operational costs). Charts 5.13 through 5.16 depict the revenue and profit for the port owner and operator through 2030.

Chart 5.13: Gross Revenue and Debt Service for Port Owner, 2013-2030

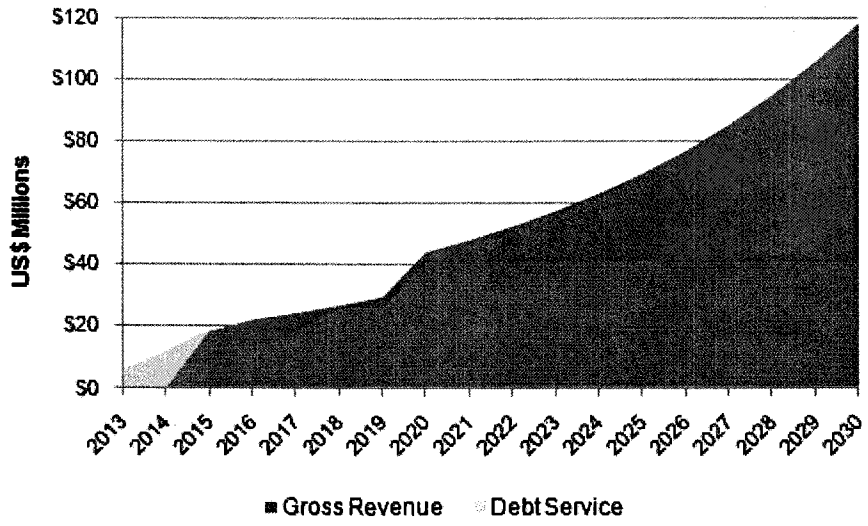


Chart 5.14 Gross Revenue and Debt Service for Port Operator, 2015-2030

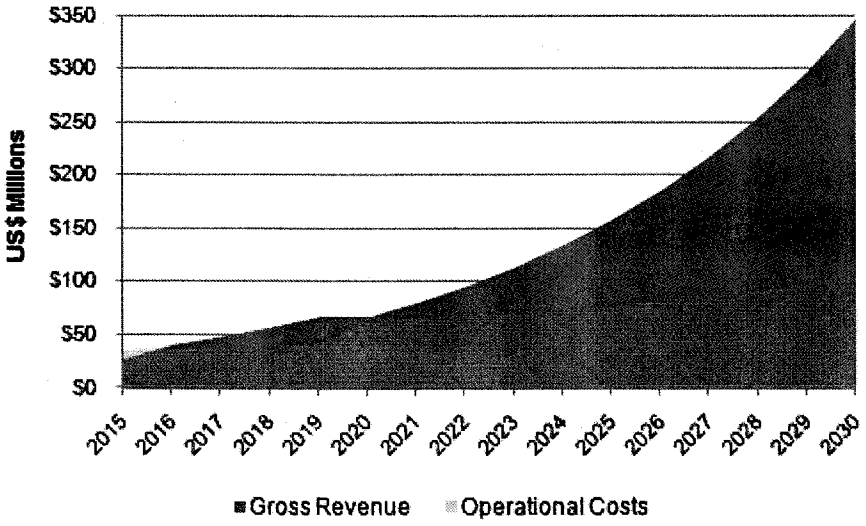


Chart 5.15 Gross Revenue for Port Owner and Operator, 2015-2030

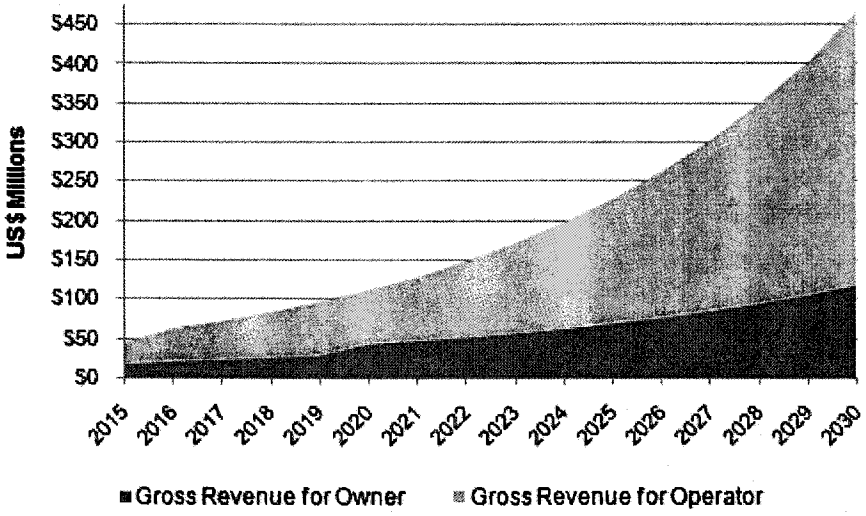


Chart 5.16 Profit/Loss for Port Owner and Operator, 2013-2030

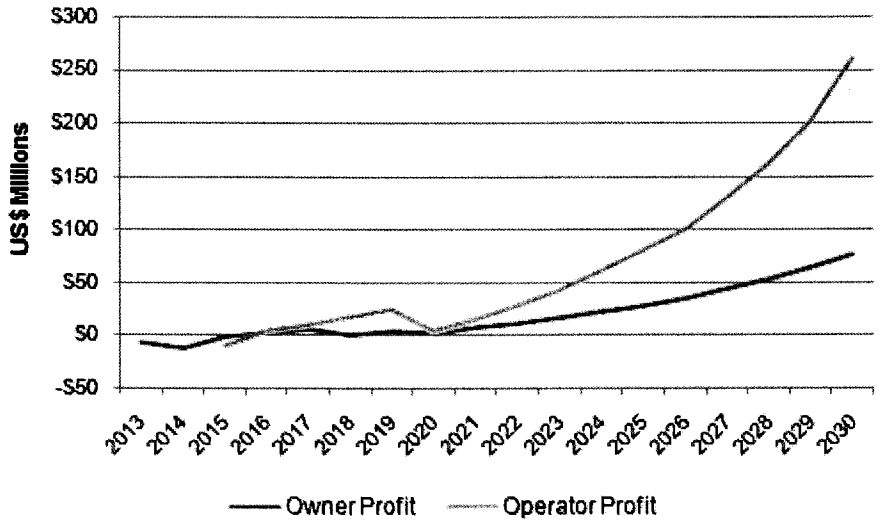


Table 5.19 Financial Performance of Pro Forma Scenario

		2013	2014	2015	2016	2017	2018	2019	2020	2021
Revenue	Container Throughput			$44.0	$62.3	$71.9	$82.9	$95.7	$110.4	$127.3
	Ship Call Fee				$0.5	$0.7	$0.8	$0.9	$1.0	$1.3
Owner	Throughput Revenue			$8.0	$11.3	$13.1	$15.1	$17.4	$20.1	$23.1
	Rent Fee			$10.0	$10.3	$10.6	$10.9	$11.3	$23.2	$23.9
	Ship Call Fee			$0.5	$0.7	$0.8	$0.9	$1.0	$1.2	$1.3
	Total Revenue			$18.5	$22.4	$24.5	$26.9	$29.7	$44.4	$48.3
	Total Debt Service	($5.9)	($11.8)	($18.7)	($18.7)	($18.7)	($26.0)	($26.0)	($41.0)	($41.0)
	Net Cash Flow	**($5.9)**	**($11.8)**	**($0.2)**	**$3.6**	**$5.8**	**$1.0**	**$3.7**	**$3.4**	**$7.4**
Operator	Throughput Revenue			$36.0	$51.0	$58.8	$67.9	$78.3	$90.3	$104.2
	Rent Payment			($10.0)	($10.3)	($10.6)	($10.9)	($11.3)	($23.2)	($23.9)
	Labor & Administration			($8.6)	($9.3)	($9.8)	($12.3)	($13.1)	($13.9)	($16.8)
	Equipment Costs			($15.1)	($15.1)	($15.1)	($15.1)	($15.1)	($25.0)	($25.0)
	O&M			($11.9)	($12.3)	($12.7)	($13.0)	($13.4)	($22.8)	($23.5)
	Total Operating Costs			($35.7)	($36.6)	($37.6)	($40.4)	($41.6)	($61.7)	($65.3)
	Net Cash Flow			**($9.7)**	**$4.0**	**$10.6**	**$16.5**	**$25.4**	**$5.4**	**$15.0**

		2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenue	Container Throughput	$146.9	$169.4	$195.4	$225.5	$260.1	$300.1	$346.1	$399.3	$460.6
	Ship Call Fee	$1.4	$1.6	$1.8	$2.0	$2.3	$2.6	$2.9	$3.2	$3.6
Owner	Throughput Revenue	$26.7	$30.8	$35.5	$41.0	$47.3	$54.6	$62.9	$72.6	$83.8
	Rent Fee	$24.6	$25.3	$26.1	$26.9	$27.7	$28.5	$29.4	$30.3	$31.2
	Ship Call Fee	$1.4	$1.6	$1.8	$2.0	$2.3	$2.6	$2.9	$3.2	$3.6
	Total Revenue	$52.7	$57.8	$63.4	$69.9	$77.3	$85.6	$95.2	$106.1	$118.5
	Total Debt Service	($41.0)	($41.0)	($41.0)	($41.0)	($41.0)	($41.0)	($41.0)	($41.0)	($41.0)
	Net Cash Flow	**$11.8**	**$16.8**	**$22.5**	**$28.9**	**$36.3**	**$44.7**	**$54.2**	**$65.1**	**$77.5**
Operator	Throughput Revenue	$120.2	$138.6	$159.9	$184.5	$212.8	$245.5	$283.2	$326.7	$376.9
	Rent Payment	($24.6)	($25.3)	($26.1)	($26.9)	($27.7)	($28.5)	($29.4)	($30.3)	($31.2)
	Labor & Administration	($17.9)	($21.3)	($23.3)	($24.9)	($29.0)	($32.4)	($34.7)	($39.9)	($42.9)
	Equipment Costs	($25.0)	($25.0)	($25.0)	($25.0)	($25.0)	($25.0)	($25.0)	($25.0)	($9.9)
	O&M	($24.2)	($25.0)	($25.7)	($26.5)	($30.3)	($31.2)	($32.1)	($33.1)	($34.1)
	Total Operating Costs	($67.1)	($71.2)	($74.0)	($76.3)	($84.3)	($88.5)	($91.8)	($97.9)	($86.8)
	Net Cash Flow	**$28.5**	**$42.1**	**$59.8**	**$81.3**	**$100.9**	**$128.4**	**$162.0**	**$198.5**	**$258.9**

The NPV of the owner's cash flow in the Pro Forma scenario for the 18 year period from the start of construction in 2013 until 2030, using a discount rate of ten percent, is $82.8 million. The internal rate of return for the owner for the same period is 31 percent. Both values are very high in part because of the costs borne by the operator, who will pay for the project's equipment costs and ongoing operations and maintenance costs.

The new Pro Forma Scenario, in the view of the current economic environment, is the most feasible scenario for attracting a leaseholder and a private equity stake. The scenario also allows for the payment of a higher return to the private equity investors through the accumulation of profit by the facility owner. This might be necessary in order to attract an equity investor willing to commit $32.9 million to an infrastructure project, and would not detract from the government owner's core goals of expanding employment and tax revenues.

SECTION 6
MARKETING PLAN AND MARKETING BRIEF

6.1 INTRODUCTION

The consultants prepared a presentation designed as a marketing document that summarized the key elements of the Feasibility Study of the Weh Island container terminal project. This document was presented to 12 companies which had been identified in the Task 5 Interim Report. Not all potential Private Partner companies were approached, as the consultants considered that only the ones that could provide a mixture of financial capability and/or sufficient traffic volumes to make the project a success

As had been pointed out in the Task 3 Market Summary, the number of companies that were considered to be prime candidates was limited based on their ongoing relationships either with other ports or other shipping lines (i.e., the "Allegiances"). The short list excluded those companies that were committed to existing terminals either by long term contracts or through an operational investment vehicle. This left a very small number of companies with the potential to be attracted to the proposed new port complex on Weh Island. These are listed below in Table 6.1 included a couple of companies that were effective competitors. They were included as the consultants wanted to gauge their views of the project.

Table 6.1
Marketing Presentations Made

Company	Location
Babcock & Brown	Singapore
MacQuarie Infrastructure investment Funds	Seattle
Toronto Teachers Pension Association	Toronto
DP World	Dubai
APM Terminals	The Hague
PSA	Singapore
HPH	Hong Kong
SSA Marine	Seattle
Terminal Link	Marseille
ICTSI	Miami
MSC	Geneva
Gold Star Line/ZIM	Hong Kong/Haifa

Since completing the Market Analysis (Interim Report 3) the world has entered an appreciably different economic climate. The financial crisis which has led to a near collapse of many banking institutions has resulted in a major loss of capitalization and a near total freeze on credit and inter-bank liquidity. This situation has altered the way companies are approaching new investments.

The loss of available credit, combined with a sharp downturn in trade volumes, has forced companies to revert to considering a partnership with the institutions and governments trying to privatize their infrastructure. In other words, investors are looking for financial support by way of actual funds invested or by way of provision of a near complete infrastructure complex that only requires the final phases of development by the leaseholder. Essentially this means that the investor is looking for the infrastructure to be completed to the "minus one meter" level. In other words, preparation of the infrastructure up to the level of the final cement and equipment level. This is critically different from the situation prevalent six months ago.

6.2 MARKETING RESULTS

The results of the market survey and presentation material review can be summarized under the following headings.

1. **Existing port operators** such as APM Terminals, PSA, SSA Marine, and ZPL believe that it is very difficult, if not impossible to develop and new "Greenfield" facility without the participation of a major shipping line that could supply a volume throughput of at least two million TEU. Most of them also believed that a pure transshipment facility on Weh Island was going to have a more difficult time in being profitable as it did not have the benefit of domestic hinterland cargo that would provide a good starting base.

2. **Container Carriers** were reluctant to consider such a venture due partly to the financial investment requirements, but also because of the logistical restructuring of their networks required in order to provide enough throughput. Essentially only two candidates at the carrier level were considered potential investors. These are CMA CGM and MSC. The latter is however fairly closely associated with PSA, and the consultants believe that a new expansion phase in Singapore being built by PSA is being developed for MSC.

   The Carriers are also concerned about the impact their taking a public interest in the Weh Island project would have with their current service providers. Lines calling at Singapore as well as Port Kelang felt that the reaction to their activities would result in a deteriorating service and support from the local authorities at their existing facilities. This they need to avoid at all costs.

   Carriers also felt that there would be significant pressure exerted on regional feeder operators not to call at the new Weh Island facility by PSA and Port Kelang.

3. **Investment Institutions** such as the World Bank were generally interested in existing facilities which would provide an immediate revenue flow to cover the investment costs. They were less interested in pure Greenfield sites, and only then if there was a partnership with a major global carrier with sufficient throughput to ensure the viability of the investment. This was before the collapse of the financial institutions in October 2008.

The conclusion of the marketing efforts resulted in the discovery that essentially only one company was interested in the project. This was Terminal Link, the terminal operating arm of CMA CGM, and their interest was qualified.

Their perspective is that there is insufficient credit available to self fund an investment of nearly $1 billion. They would be interested if a "Development Company" could finance the project. Terminal Link would then consider a "lease" option to be the terminal operating company and could possibly provide part of the finance for the development of the finished infrastructure facilities (up to the "minus one meter" level) and the equipment. Terminal Link would then provide the equipment, the management, and the throughput volumes required to make the investment a success. They would be the leaseholder or Operating and Management Company of the Weh Island transshipment port rather than the owners. They saw the investment requirement initially limited to Phase I, with Phase II being self financed by the first phase. They also foresaw the potential need of a possible Phase III to accommodate two million TEUs of throughput annually.

6.3. IMPLICATIONS OF THE MARKETING REVIEW

Whereas the consultants had initially suggested that an investor (s) would supply the majority of the investment funds rather than the having the "government" first build a facility and then attract users, the global financial crisis has impacted that approach.

The concept of "build it and they will come" remains faulty. It was clear from interviews and discussions that the intertwining agreements in the region, and the business pressures that would follow a shift to a new facility, were enough to dissuade most, if not all Carriers from switching, as independents, to a new facility in direct competition with Singapore.

However, the combination of investment and development of a new terminal by a concessionaire under a Public-Private-Partnership (PPP), linked with a terminal operator, and combined with a sufficiently large carrier is a viable strategy. Essentially this means that BPKS needs to immediately halt the expenditure of funds on the Sabang development project and instead work with interested parties to help develop a viable PPP that can define which facility is better suited, Sabang or Balohan Bay. With this, the government funding could then be pledged to a PPP to build the facility and develop the terminal under a proposed "lease agreement" with a shipping line with the contractual understanding that the terminal/carrier investor take a long-term "lease" on the facility to be the operating and managing terminal partner.

6.4 MEETINGS WITH POTENTIAL INVESTORS AND LENDERS

In addition to the Team's meetings with the various shipping lines and terminal operators, Team members also meet with representatives of potential lenders and other possible private investors. The results of those meetings was the development of the proposed Financial Plan presented in Section 5 of this report. Of significant interest were the impressions of the project presented by the IFC staff in Washington, DC.

6.4.1 MEETING IN WASHINGTON, D.C. WITH THE IFC

In August, Team Members met with Mr. Ravi S. Bugga, Senior Manager for Transportation in IFC's Infrastructure Department, and also Mr. Ammon Mates, Senior Consultant to the Transportation Group. The purpose of the meeting was to introduce IFC headquarters staff

to the planned Weh Island Transshipment Port, as well as to assess whether IFC may have any interest in participating in this project either as a lender or equity partner. This meeting was suggested by Helen Hahn of IFC's Resident Representative Office in Jakarta who has been kept apprised of this project on several occasions over the past year as the TEC Team has continued to work on the market plan and preliminary feasibility study report.

Key points and issues raised by IFC staff during these meetings included their assessment that the designated operator management team is just as important a criteria for success as location. .

The representatives of the IFC was reluctant to get much further into the actual review of this proposed port opportunity without first having a strong sponsor who is willing to make a serious commitment to the project and has pledged a share of the required funding. In this regard, the litmus test for IFC is whether or not there is a shipping line and/or operator willing to put dollars on the table from the outset.

However, it was stated that the IFC would be more interested in this project if there were identified, serious potential customers and/or other investors who are willing to pledge at least 80 percent of the port's capacity over time. In such a case, then IFC would be willing to consider an "A" loan, mezzanine financing (i.e. – quasi equity subordinated debt with some kind of upside kicker), and even participatory equity.

Regarding potential terms and conditions regarding IFC funding, typical loans might be in the order of 10 year repayment plus 4 year grace period, and 300 – 450 basis points above LIBOR for interest rates. Debt service cover ratio requirements for IFC will be 1.4 to 1.5.

After having finally expressed some interest in the project towards the end of the meeting, the IFC concluded with several additional comments and concerns about the financial aspects and/or other considerations of the proposed project that would be required before the IFC could consider any possible loan structure:

1) The need for an identified specific proposed transaction structure
2) A proposed finance plan or strategy that is clearly spelled out
3) An exit strategy for potential investors

SECTION 7
ENVIRONMENTAL IMPACT ANALYSIS

7.1 INTRODUCTION

The purpose of the Feasibility Study for a Transshipment Port on Weh Island is to examine the technical, economic, financial, and environmental requirements for establishing a combined oil and container transshipment port facility on Weh Island in Aceh Province, Indonesia. This proposed new terminal would provide the international shipping industry with a strategic location to transfer cargo to smaller, regional vessels serving local markets throughout South and Southeast Asia. The rationale of the Study is to assist the Management Board of Sabang Free Port and Free Trade Zone – BPKS in its efforts to develop such a facility. This section examines the likely impact of the project on the local environment and within the project's area of influence. Specifically, the objectives of this task as presented in the Terms of Reference (TOR) are to:

1. Make a preliminary review of the Project's anticipated impact on the environment with reference to local requirements and those of multilateral lending agencies.
2. The review will identify potential negative impacts, discuss the extent to which they can be mitigated and develop plans for full environmental impact assessment in anticipation of the Project moving forward to the implementation stage.
3. The review includes identification of the steps that will need to be undertaken subsequent to the completion of the study and prior to Project implementation.
4. The review will include analyses of any impacts attributable to offsite infrastructure that may be required.

5. Produce a map showing the Project site and the Project's area of influence.

7.2 ENVIRONMENTAL LAW AND INSTITUTIONS

According to the review, Indonesia's environmental regulations are in line with those established by the World Bank, United Nations and the Asian Development Bank. Environmental Impact Assessment (EIA) guidelines for port development were first established in Indonesia in 1986 by Government Regulation No. 29, regarding the Analysis of Impacts upon the Environment. The current legislation governing environmental activities in Indonesia was established in 1997. Officially it is known as Act No. 23 of 1997 concerning the Management of the Living Environment. The objective of the Act is "environmental management consistent with national responsibility and sustainable development." The Act states that projects with impacts on the environment must perform an Environmental Impact (EIA) analysis. Further updates on EIA regulations were made in 1999 and 2000 (Regulation 27/1999 and Decree No. 8/2000), which specify public involvement in the EIA process. The process of EIA development is known as AMDAL (Analysis Mnegenai Dampak Lingkungan). AMDAL is applied to both public and private sector projects.

The government institution responsible for environmental management and coordination is the Office of the State Minister for the Environment. This office, based in Jakarta, primarily plays a coordinating role and has little enforcement ability in the provinces. In 1990, an institution known as BAPEDAL (Badan Pengendalian Dampak Lingkungan) was established which reports directly to the Indonesian President and has jurisdiction at the provincial level. BAPEDAL is recognized as the agency responsible for the environmental impact assessment and is the overall coordinator for the EIA and has the authority to supervise the reviewing process of EIA

which extends across multiple ministries. Port and harbor development projects are typically deemed Category A, i.e. 'likely to have significant, adverse environmental impacts that are sensitive, diverse or unprecedented, and affect an area broader than the sites or facilities subject to physical works.' Category A projects are required to have a full EIA which is undertaken to evaluate the direction and magnitude of environmental changes due to the proposed project.

The first step in the Indonesian EIA procedure is for the project proponent to contact BAPEDAL to screen the project based on a prescribed list as set forth in EMD No. 3/2000. Upon determination that an EIA is required, the project advocate is directed to prepare Terms of Reference (TOR) (also called "Scope of Work") for the EIA study. Upon approval of the TOR, an Environmental Impact Statement (EIS) and Environmental Management Plan (EMP) must be prepared and submitted for review. Both review processes are conducted within a maximum of 75 days. Approval of the EIA documents is made at the national level by the Office of the State Minister for the Environment and at the provincial level by the governor of Nanggroe Aceh Darussalam (NAD).

Opportunities for public involvement in the EIA process are set forth by Decree No. 08/2000 which allows for a community representative on the EIA commission and provides guidelines on public notification before the TOR are prepared. In addition, members of the public have a right to review EIA documents before they are submitted to BAPEDAL for final review and approval.

7.3 NATURAL ENVIRONMENT

Weh Island is at the far northern end of the Indonesian archipelago, approximately 16 kilometers from Northern Sumatra. The land area of Weh Island or Sabang as it is locally known is 153 km^2 with an average altitude of 28 meters above sea level. The topography is 52% hilly to mountainous, 35% hilly, 10% wavy plain and 3% low land. There are five fresh water lakes on the island. Weh Island is divided into two districts: Sukakarya (73 km^2) which represents 8 villages and incorporates the city of Sabang (administrative capital) and the surrounding area on the northern and western sides of the island as well as the small coral islands of Klah, Rubiah, Seulako, and Rondo and the other District,Sukajaya (80 km^2),represents 10 villages and includes the community of Balohan and the surrounding area on the eastern and southern sides of the island. According to Government statistics, the total population of the island in 2006 was 28,894. Roughly one-third of the total population lives in or near the city of Sabang. Economic activity is dominated by fishing, tourism, and small-scale agriculture. Given the steep terrain, there is some competition in low lying areas between agricultural production and aquaculture.

The hills on Weh Island are a dominant feature of the landscape from the shoreline up to 200 meters inland. They are composed of stony and gravely dipping river deposits and lahar deposits from former volcanic activities. The soil material is very unstable—if the vegetative cover is removed, erosion and landslides are highly likely. Due to its topography, Weh Island is considered to have naturally sensitive ecosystems—forested land with a slope of more than 20%, narrow coastal plains with mangroves, brackish water fish ponds (tambaks), coastal greenbelt vegetation, and natural springs. The coastal land tends to be quite narrow and typically drops sharply to sea level. According to the Spatial Plan of Sabang, the topographical features in both Sukakarya and Sukajaya districts are roughly the same.

Weh Island is known for its tourism which incorporates activities such as scuba diving, snorkeling, and boat excursions. Tourism activities are concentrated on the northern and northwestern sides of the island where both black and white sandy beaches are located as well as coral reefs. In this region there are two environmentally-protected areas--a 2,600 hectare marine reserve around Rubiah Island and a 1,300 hectare forest reserve northwest of the city of Iboih. Conservation International estimates that the marine protected area contributes about 60% to regional Gross Domestic Product (GDP) or roughly $230,000 in entrance fees per annum.

7.3.1 GEOLOGICAL ENVIRONMENT

Weh Island is located in the Andaman Sea, where two groups of islands, the Nicobar Islands and Andaman Islands, are scattered in one line from Sumatra on the north up to the Burma plate. The Andaman Sea lies on an active, moving small tectonic plate (microplate). A complex geological fault system and volcanic arc islands have been created along the length of the sea by the movement of the microplate. The highest peak is a fumarolic volcano which reaches 617 meters. The last known eruption is estimated to have occurred in the Pleistocene age. As a result of this eruption, the mountain partially collapsed, was filled by the sea and thus a separate island was formed. At nine meters depth close to Sabang city, underwater volcanic fumaroles emerge from the seabed. A volcanic cone is found in the jungle. There are three mudpot fields on the island: one is 750 meters southeast of the summit and the others are 5 kilometers and 11.5 kilometers northwest of the summit on the western shore of Lhok Perialakot Bay. Weh Island is comprised of 70% volcanic rock, 17% sedimentary rock, and 13% igneous rock.

7.3.2 MARINE ENVIRONMENT

The marine environment around Weh Island is characterized by fringing reefs and deep waters. The ecosystem supports internationally-endangered Leatherback, Hawksbill, and Green sea turtles, although sightings are rare. Mangroves and sea grasses around the island serve to trap coastal sediments and provide protection from high waters. Large pelagic species such as whale sharks, manta rays, and reef sharks, as well as a wide variety of tropical fish attract tourists throughout the year. The coral reefs around Weh Island can be divided into two categories: Marine Protected Areas (MPA), which includes the marine reserve as well as traditionally-managed areas known as Panglima Laot in which fishing restrictions are in place; and open access areas in which fishing is unrestricted. Studies by the Wildlife Conservation Society (WCS) have shown that the condition of the coral in marine managed areas is considerably better than in areas where fishing activity is unrestricted. In addition, WCS has confirmed that the use of dynamite and cyanide in unprotected areas has severely damaged coral over the years.

The epicenter of the 2004 earthquake and tsunami was less than 300 kilometers from the eastern shore of Weh Island—just opposite Banda Aceh. In the aftermath of these disasters, scientific assessments of coral health and reef fish abundance were carried out to determine the extent of the damage. Surveys at 15 sites around the island in 2005 showed damage ranging from barely detectable breakage to severe impacts. The coral reef at Gapang Lagoon (a tourist area on the northwestern side of the island) was essentially destroyed and reduced to rubble, rock and detached mangrove trees. The sand in the lagoon was completely sucked out by the tsunami and washed into deeper water. Approximately 14 hectares (60%) of mangrove forests fringing the bay were also destroyed. Almost 75% of the reefs near Iboih village were totally destroyed.

There was a predictable pattern in the damage: shallow reef flats in bays or narrow channels suffered the greatest damage, while sites with a steep shoreline plunging into deep water were usually undamaged. More than 90% of the damage occurred at depths less than 10 meters, and reefs sheltered from the open ocean were generally less affected. Lightly affected areas are expected to rapidly recover in a few years, although severely impacted sites (such as Gapang Lagoon) may take decades to fully recover. Tsunami-related damage at other sites was patchy and directly linked to the sea bottom topography and shape and the structure of the reefs. Firmly attached corals on a solid base were largely unaffected by the tsunami with only occasional broken branches. Based on numerous technical appraisals, it was noted that previously destructive fishing practices, including the use of dynamite and cyanide were far more responsible for the decline in reef health and fish quantities than the natural disasters.

7.3.3 CLIMATE

At 95° east latitude and nearly 6° north of the equator, Weh Island has a tropical climate. The dry season in Aceh Province (NAD) usually lasts from February through August and the rainy season begins in September and lasts until January. The average annual rainfall ranges from 2,000 mm to 3,000 mm, with temperatures varying from 25 to 30° Celsius. In the highlands, the average temperature is 20° Celsius. The humidity varies from 65 to 75 percent. The prevailing winds on Weh Island are from the west or southwesterly direction. Winds and storms are relatively mild due to the near-equatorial location. Typhoons or hurricanes do not typically occur here.

Climate Change

Based on the World Bank and Intergovernmental Panel on Climate Change studies, Indonesia is likely to experience significant impacts from climate change over the next 25 years due to global warming. These predicted impacts include more intense rainfall (2-3 % more per annum), moderate ambient temperature increases (0.3°C), sea level rises (up to 0.1 m), land surface decline (0.8 cm per year), and sea temperature increases (0.2 to 2.5°C). The implications are far-reaching with respect to coastal livelihoods, marine biodiversity, food security, and human health (e.g. an expected increase in water-borne diseases) for the Indonesian people and their natural environment.

7.3.4 OCEAN CONDITIONS

With the exception of the extensive shallow coral reef flats that extend 200-500 meters from shore on the northern side of the island, Weh Island is surrounded by deep water with depths ranging from 100 to 600 meters. There are strong tidal currents between the mainland of North Sumatra and Weh Island. Wave heights, however, are relatively low—0.1 m to 0.3 m on average. On the north coast, annual wave direction is principally out of the northwest during the warm, moist southwest monsoon and out of the northeast during the cooler, drier northeast-monsoon. Observed annual wave heights rarely exceeds 1 meter. On the south coast at Balohan Bay, winds are from either the southwest or west approximately 40% of the time. There is not a large variation between tide phases—the highest spring tides are approximately 1.8 meters while the lowest spring tides are about 0.90 meters below mean sea level.

7.3.5 POTENTIAL ENVIRONMENTAL IMPACTS OF PROPOSED PORT FACILITY AT BALOHAN BAY

According to internationally-accepted guidelines, the potential adverse impacts associated with port development are related to the location of the port;

- Construction;
- Port operation (including ship traffic and discharges);
- Cargo handling and storage; and
- Land transport.

There are nine main areas to be considered when examining potential environmental impacts:

- Water quality;
- Coastal hydrology,
- Bottom contamination,
- Marine and coastal ecology;
- Air quality,
- Noise and vibration;
- Waste management,
- Visual quality, and
- Socio-cultural impacts.

As detailed in Section 3 on site selection, the proposed Balohan Bay port project site covers approximately 100 hectares and includes wharf, container yard and associated outbuildings for Phases 1 and 2. Following are the potential environmental impacts of the proposed project by environmental category, first during the construction and then as a result of port operations.

7.3.6 WATER QUALITY

The water quality in the Bay of Balohan is generally considered to be good due to low population and lack of heavy industry in the area which usually contribute to sea degradation. Port construction activities such as dredging, sand compaction and pile driving can temporarily affect water quality by creating suspended sediments and turbidity. Work vessels can cause oil spills, discharge of rubbish, and leakage of other substances into water. Concrete work can diffuse into the water creating pollution. Potential adverse impacts during construction can be mitigated by selecting the appropriate equipment for pile driving and dredging; use of silt curtains during dredging to minimize turbidity; proper disposal of construction materials as well as dredged material; and careful monitoring of work vessel discharges. As part of the proposed project, the dredged material will be used as fill for construction activities on land and will not be dumped into the bay. The impacts on Water Quality from construction and dredging activities will be minimal and temporary.

Once the port is operational, potential impacts on water quality include runoff from raw material storage, spills from bulk cargo handling, and wind-blown dust. Accidental oil spills or other toxic leaks or discharges are also possible sources of water contamination. Measures to mitigate runoff include enclosing or covering raw material storage areas; using appropriate cargo handling and transport equipment such as pneumatic unloaders or covered conveyors; and establishing suitable procedures to reduce the influence of rain and wind such as runoff treatment systems.

7.3.7 COASTAL HYDROLOGY

The factors to be considered with respect to coastal impacts include currents, tidal flow, beach erosion, littoral drift, water drainage, sediment deposition, and groundwater flow. The proposed port site is a Greenfield site with no prior development. The wharf will be constructed along the land's edge and will thereby directly affect up to 1950 meters (combined Phase I and 2) of the coastline. Dredging will be required up to 20 meters below the wharf site as part of construction activities. Dredging can potentially cause changes in the sea flow patterns or littoral drifts in the shore zone which can in turn facilitate beach erosion. The effect of dredging on flow of currents is usually not significant and can be gauged by simulation models of current flow. Beach erosion can be alleviated through the precise planning of dredging slope steepness and the deviation from the shore line. Overall, careful site selection and port design can minimize changes in coastal hydrology. The use of computer modeling and simulations can assist in the development of a suitable wharf design as well as assessing potential changes in currents due to construction of the wharf.

Management of Dredged Materials

The potential impacts of dredging are: short-term increases in water turbidity which can affect the metabolism of marine species as well as interfere with spawning activities; dislodgement of benthic (seabed) substrates and subsequent injection of the substrates into the water column; and release of toxic chemicals from bottom sediments into the water.

The proposed port stipulates construction of a wharf with an elevation of 7.5 meters. This will require dredging at 20 meters below the wharf site. The total cut amount (combined Phase 1 and 2) will be 6 million cubic meters. The total fill amount (Phases 1 and 2) will be 5.6 million cubic meters. The total dredge amount will be 1.9 million cubic meters. The resulting dredge material will be removed and placed on land in a temporary containment area for dewatering. The dredged material will be passed through a filter fabric such that the silt will be retained and clean water will be returned to the ocean. Once dry, the dredge material will be used as fill material for construction activities. Prior to commencement of construction, borings will need to be taken from the dredged material to determine the actual content before it is used as fill.

The adverse effects of dredging can be minimized by appropriate selection of equipment for dredging, use of silt curtains to contain turbidity, and suitable transport of dredged materials to land.

With respect to the operational impacts of the port on the coastal hydrology, the proposed site was selected as the most viable option based on a weighted rating system which incorporated such factors as protection from wind and waves. The wind and wave analysis presented in Section 3 indicates on a preliminary basis that these are not expected to have a significant impact on ship movement and that construction of a breakwater is not necessary. Tides are not normally affected by port construction except in cases where a very large amount of land is reclaimed in a closed bay system. Currents around the marine structures are likely to be altered, but can be evaluated through computer simulation models and predicted changes incorporated into the operational planning process. Therefore, the impacts on Coastal Hydrology from construction and dredging activities will be minimal.

7.3.8 BOTTOM CONTAMINATION

Another category of potential impacts from port development is contamination of bottom sediments by toxic or harmful substances, oils, oily mixtures and other hazardous materials. Construction work and dredging disturb bottom sediments and induce resuspension, dispersal

and settlement of these sediments. Dumping of dredged material directly into the sea alters bottom configuration and benthic organisms. As the proposed site has not previously been developed, and there is very little activity from human settlements and no industry in the area, it reasonably assumed that contamination of bottom sediments is non-existent or of little consequence at present. However, a survey of contamination of bottom sediments should be undertaken before dredging as a precautionary measure. As stated previously, the dredged material will be used as fill material for construction activities and will not be dumped into the bay. Therefore, the impacts on Bottom Contamination from construction and dredging activities will be minimal.

7.3.9 MARINE AND COASTAL ECOLOGY

Port development has potential impacts on marine and coastal ecosystems. These systems include aquatic flora and fauna ranging from bacteria to coral, seaweed and fish as well as terrestrial flora and fauna such as mangroves and wetlands. Impacts include loss of bottom habitat and fishery resources. The location of a port affects aquatic flora and fauna through changes in water quality, coastal hydrology and bottom contamination. Flora and fauna in the shore zone are affected when aeration capacity is diminished.

The waters in Balohan Bay are not protected by legislation to restrict fishing activity, i.e. there are no marine protected areas, only open access fishing. Fishing operations consist of very small boats (less than 4 people) using nets, but having a relatively small range. Most commercial fishing takes place on the northern side of the island around Sabang city. The coastal typography at the proposed port site consists of scrub-like vegetative cover and palm trees on relatively steep hillsides which end at the sea with no beaches. There are no mangroves or sea grasses at the proposed port site to serve as eco-filters for the area.

It should be noted that Weh Island is reportedly home to a threatened toad species, *Bufo valhallae* which is on the 2007 International Union for Conservation of Nature (IUCN) red list of threatened species. However, according to IUCN, adequate information is not available to determine if the toad still inhabits the island or has been exterminated due to loss of habitat through human activity such as deforestation and settlement.

Mitigation measures against adverse effects of port construction include careful site selection and port design as well as thorough surveys of the ecological characteristics of the project area to determine the endangered and fragile species potentially impacted through port construction and operation. It is recommended that a survey identifying the presence of *Bufo valhallae* be carried out prior to construction activities.

With regard to port operations, cargo handling and storage may cause runoff, spills or leakage which can possibly include toxic or harmful materials, oily compounds, or organic matter. The resulting water pollution and bottom contamination from these materials can adversely impact aquatic organisms and fishery resources. Mitigation measures focus on water quality particularly with regard to regulations governing ship discharges and provision of reception facilities to control emissions and effluent. Recovery vessels, oil fences and treatment chemicals should be readied on site to minimize accidental spills. In addition, periodic cleanup of floating wastes is required to preserve water quality. Therefore, the impacts on Marine or Coastal Ecology from construction and dredging activities will be minimal.

7.3.10 AIR QUALITY

Air quality in the vicinity of the proposed port is generally quite good due to the lack of significant development in the area. There are no major industries or population centers to create substantial air pollution through industrial emissions or traffic.

In the short term, potential impacts on air quality during construction include emissions from construction equipment, work vehicles and water-based vessels, as well as dust created through construction activities. Dust emissions can be controlled by water scattering on the construction site the use of appropriate transport methods for excavated material, and dust screens and stockpile covers around the construction site.

Once the port is fully operational, there are two major sources of potential air pollution— ship emissions and cargo handling activities, the former being the most noteworthy. Ships emit fumes, gasses, smoke and soot when operating. Nitrogen dioxide and sulfur dioxide are commonly generated by ocean-going vessels as they maneuver and berth at port facilities. Mitigation measures include regulation and proper detection of ship emissions in an effort to reduce pollutants. In addition, port authorities could prohibit the use of heavy diesel oil as a fuel and thereby diminish potential pollution. As reported in Section 3, the prevailing winds on the island are from the southwest and west which will potentially distribute any ship emissions toward the harbor and community of Balohan on the north side of the bay. The movement and distribution of ship emissions should be carefully evaluated as part of the port planning process.

Air pollution from cargo handling activities is linked to dust from bulk cargo handling and gasses from cargo handling equipment. With respect to liquid cargo handling, vapors released from cleaning of storage tanks as well as from breather systems mitigating changes in ambient temperature can be potential sources of air pollution. In addition, accidental leaks can create hazardous airborne emissions through fumes and odors. Alleviation measures should include strict monitoring of air quality to ensure acceptable emissions levels. Dust emissions can be controlled through the use of cover, screens, enclosures, and other containment methods. The environmental management plan associated with the development of this port should stipulate all emissions regulations in accordance with internationally-accepted standards. Therefore, the impacts on Air Pollution from construction and dredging activities will be minimal.

7.3.11 NOISE AND VIBRATION

Construction activities and port operations can generate noise and vibration which is considered a nuisance to the local population. During construction, noise levels will increase due to road traffic, cutting, filling, dredging, and building activities. Possible mitigation measures to reduce noise and vibration are the adoption of low noise equipment or installation of sound padding fences. In addition, limitations on working hours during construction can lower the nuisance factor. Normal port operations will increase noise levels in the area, but this is not expected to be of great significance in terms of a decreased in quality of life for the surrounding community given the very low population near the proposed site. Therefore, the impacts on Noise and Vibration from construction and dredging activities will be minimal and temporary.

7.3.12 WASTE MANAGEMENT

A variety of wastes are generated through port construction and operations. These range from dredged material, rubbish and oily mixture discharges from ships, wastes from cargo operations, and discharges from waterfront industry activities. Disposal of dredged material is the most significant waste issue during construction activities. Land disposal of dredged

material can cause destruction of plants, loss of vegetation, leakage of contaminated materials and salt, odor, and unpleasant views. Sea disposal can adversely affect benthic organisms and contaminate the sea bed. As previously stated, under the proposed project, dredged material will be used as fill for construction activities and will not be disposed permanently on land or in the sea. Disposal of dredged material should be done in accordance with the London Dumping Convention to which Indonesia is a signatory.

During port operations, ships generate oily wastes such as bilge, ballast, and washing waters, as well as lubricant oil wastes; sewage and rubbish; and cargo residues. Discharges and spills of these wastes create oil pollution, floating debris, odor, and degradation of water quality. The proposed port can mitigate these adverse impacts by providing facilities to the berthing ships to receive their residues, oily mixtures, sewage and rubbish. By providing these services and carefully monitoring ship discharges, port operators can ensure successful waste management practices.

Cargo operations create wastes such as the remains of bulk cargo storage, rubbish from unpacking, wood bark from log handling, floating rubbish, and other wastes from daily activities. Landfills in the port area could provide deposition sites for such waste. Sewage or rubbish from port activities can be handled by municipal treatment systems or through the construction of the port's own treatment facilities. Therefore, the impacts on Waste Management from construction and dredging activities will be minimal.

7.3.13 VISUAL QUALITY

The appearance of the landscape as impacted by the construction and operation of port facilities can influence the aesthetic value of an area. Lighting during night operations can create a visual nuisance to the local community and wastes from port construction and operation can be unsightly. The design of the port should allow it to blend to a certain extent with its surroundings. Creation of a green belt zone around the port facilities can mitigate unpleasant views and choice of facility colors and landmarks can improve the scenery. In addition, designing storage areas so that they are blinded from roads or residential areas can be effective in reducing unpleasant views. However, the proposed Terminal is a very large facility extending out onto the water, and the impacts on Visual Quality from construction and dredging activities will be substantial and permanent.

7.3.14 SOCIO-CULTURAL IMPACTS

These impacts center on the influence of the proposed port on the livelihoods of local communities which can cause ethnic, cultural, tribal or religious conflicts between community members. Building a port often requires relocating the portion of the population living near the site. Industrialization and modernization can change cultural traditions. Most people living in the Balohan Bay area live near the existing national port and ferry terminal facilities located on the north side of the Bay. There is very little development in the area of the proposed port site. Human settlement at or near the project site is limited to a few residences to the west of the proposed site. For these few households, an appropriate resettlement plan can minimize disturbances to the community and facilitate a smooth transition.

Community participation in the environmental impact assessment process is very important in order to document and address any issues associated with local cultural, ethnic, historical and

religious traditions. Success of the proposed project may be hindered without local community consultations to examine coastal zone economic resources, particularly fisheries and recreational resources such as snorkeling and scuba diving. In addition, informing the public regarding the proposed economic benefits of the port facility as well as mitigation measures for any potential environmental impacts will improve the prospects for community "buy-in" and support in moving forward.

However, the new port will create hundreds of local jobs that are well-paying, and will raise the standard of living throughout the island. Therefore, the impacts on Socio-Cultural issues from construction and dredging activities will be significant and positive.

Section 8 of this report covers the development impacts of the proposed port in detail.

7.4 AREA OF INFLUENCE

Figure 7.1 below represents a map of Balohan Bay showing the primary (circled in green) and secondary (circled in red) areas of influence created by the proposed port. Following is a discussion of those areas relative to the existing environment.

Primary Area of Influence

The proposed port facility will alter the existing physical environment both on the landside and on the waterside. The proposed construction site is on the western side of Balohan Bay and will require cutting, filling, and grading the steep hillsides to an elevation of 25 meters above sea level. An entrance road to the facility will be created as a branch of the existing coastal road. There will be an increase in road traffic due to construction and operation activities. Traffic will increase on the road between the port site and the town of Balohan and traffic will increase on the road between Balohan and Sabang city.

Figure 7.1 Area of Influence Map

In addition to the marine services building, other support facilities such as storage buildings, water and fuel storage tanks, and repair buildings (container and Rubber Tired Gantry) will be constructed. The potential Container Freight Storage (CFS) area is located roughly 500 meters behind the wharf which will require some leveling. On the opposite side of the bay, administrative and worker support buildings as well as a support pier will be constructed near the shore.

The waterside area of influence will be the berthing area, turning basin, and channel areas. As detailed in the previous section on potential impacts, careful design and monitoring of construction activities can mitigate or limit the overall impact on land and water features that are disturbed during port construction and operations.

Secondary Area of Influence

The operations of the new terminal will essentially influence the entire Bay of Balohan area. On the landside, vehicle traffic will come into the port area from the existing road network (south, west and north of the site). Cargo operations, air emissions, noise and vibration, light from night operations, and waste disposal are additional factors to consider. On the waterside, there will be an increase in sea traffic coming in and out of the bay as both very large container and petroleum vessels and smaller transshipment vessels use the proposed port. Movement of these vessels will have an impact on existing fishing operations in the bay as well as local waterborne traffic such as the passenger and vehicle ferry services from Ulee Lheue in Aceh Province.

7.3.15 Conclusion

The proposed port development represents significant direct and indirect economic benefits to the local communities in the Balohan Bay area (and for Weh Island as a whole) in terms of job creation and demand for support services (e.g., housing, food, maintenance work). As this area is largely undeveloped, careful planning is required to minimize the environmental impacts associated with the port. Through comprehensive planning which includes creation of a detailed Environmental Impact Assessment (approved by BAPEDAL) which incorporates the environmental management methods mentioned in the preceding sections, the construction and operation of the proposed port at Balohan Bay should not pose a significant threat to the environment of Weh Island.

SECTION 8
DEVELOPMENTAL IMPACT ANALYSIS

8.1 INTRODUCTION

In 2000, the Government of Sabang (Kota Sabang) identified the establishment of a major international port complex at or near Sabang as a top priority. It was recognized that creation of such a port was integral in supporting the goal of promoting privatization opportunities in the Aceh Province, and providing facilities to enhance the overall economic growth. After the devastating earthquake and tsunami, the economic impetus for a hub port has increased. As presented in Section 3, which analyzed alternative port sites, construction of a hub port at Balohan Bay is the most viable option in terms of location, logistics, and marketability to private shipping lines/port operators. The development of such a facility at Balohan Bay requires a strong public-private partnership (PPP) between the Management Board of Sabang Free Port and Free Trade Zone – BPKS, and a shipping line/terminal operator. Development of a major transshipment port complex will serve as a catalyst for additional industrial development on Weh Island and Aceh in general. This section examines the likely development impact of the project on the local population. Specifically, the objectives of this task, as presented in the Terms of Reference (TOR), are to provide an analysis of key Host Country development impacts such as:

- The likely developmental impact if the project is implemented according to the study recommendations;
- Any additional developmental benefits that may result from project implementation including spin-off and demonstration effects; and
- Consideration of factors such as infrastructure, market-oriented reform, human capability building, technology transfer, productivity enhancement, and economic growth.

8.2 BACKGROUND

As detailed in Section 7, the topography of Weh Island is primarily hilly to mountainous with moderate to steep slopes. Only a few areas are moderately flat and level. Most of the soils are classified as latosols which are suitable for production of crops such as cloves and coconut. Economic activity on Weh Island is comprised primarily of fishing and agriculture (predominantly food gardens) and some tourism. Cash and estate crops such as cloves, coconut, cocoa, and betel nuts are also produced.

The island is divided into two administrative districts: Sukakarya which represents 8 villages and includes the city of Sabang (district capital) and the surrounding area on the northern and western sides of the island; and Sukajaya which represents 10 villages and includes Balohan (district capital) and the surrounding area on the eastern and southern sides of the island. In Sukakarya district, land use comprises nearly 50% forest cover, 13% human settlements and associated food gardens, and 35% estate crops such as coconut. In Sukajaya district, total land use is comprised of forest cover (35%), estate crops (40%) and human settlements and associated food gardens (20%).

8.3 DEMOGRAPHICS

According to Sabang municipal government statistics, the population of Weh Island in 2006 was 28,894. From the years 2000 to 2006, Sukajaya district experienced a 36% increase in population, (from 10,178 to 13,814 persons) while the population of Sukakarya increased by 12

percent (13,476 to 15,080 persons) over the same period. Given that the earthquake and tsunami damage experienced on Weh island was relatively much less than that experienced in the rest of Aceh Province, these figures are consistent with average growth rates in Indonesia. The population of the Island is divided fairly equally along gender lines with 51% male and 49% female inhabitants. If the local population growth follows projections made by the Asian Development Bank for Indonesia as a whole, average annual growth rates of roughly 1% per annum over the next 10 years are anticipated on the island.

8.3.1 LIVELIHOODS

Based on 2003 data from the Asian Development Bank, the largest employer on the Island is the local and provincial government (including military and police forces), employing roughly 23% of the work force. Government offices are located in Sabang city. Other key employment sectors are services (public services, transportation, manufacturing services, hotels, and hospitals) (20%), trading (8%) and construction (5%). In addition, according to Badan Rehabilitasi & Rekonstruksi[1] (BRR), an estimated 15% of the workforce is involved in agricultural or fishing activities as their primary source of income. Based on BPS statistics, per capita income for Weh Island inhabitants was $918 in 2006.

According to a 2008 BRR report, an estimated 30% of all rural residents and 15% of all urban residents in Indonesia lived in poverty in 2006. The incidence of poverty in Aceh Province (26.5%) was significantly higher than in the rest of Indonesia (17.8%) primarily due to the conflict between Acehnese separatists and the Indonesian government which only ended in 2005. It was estimated that less than 5% of the total population on Weh Island fell below the poverty threshold of $1.55 per day in 2006. It should be noted, however, that people living in rural areas who depend upon agriculture for their livelihoods are particularly vulnerable to economic shocks such as increases in food prices which could easily send them into the poverty category.

8.4 MAJOR ECONOMIC ENTERPRISES

The economy of Weh Island is small and based on primary production, i.e., raw and/or minimally processed products such fish, copra, and cocoa. Small-scale industries such as salted fish processing and copra production provide employment to largely unskilled workers. According to BPS[2], there are about 313 small scale industries on the island and 316 formal industries (agriculture and forestry, metals, machines, and chemicals). Small-scale manufacturing is a growing sector, but is limited by lack of investment. Tourism has strong potential, but is also limited by lack of major investment. The coral reefs draw visitors for scuba diving and snorkeling, but infrastructure such as hotels are rather basic, attracting lower budget tourists.

Agricultural production and fishing are the mainstays of economic activity on the island. Subsistence agriculture in the form of rice, vegetables, livestock, (chicken, ducks, goats, cows, sheep, and buffaloes) and aquaculture are prevalent. Rice production was only 3 MT in 2006, down from nearly 18 MT the previous year. Shrimp and milkfish are produced in brackish water ponds called tambaks. Tambaks are more common on the mainland of Aceh province around

[1] BRR is the Indonesian agency established to direct reconstruction and rehabilitation efforts after the 2004 earthquake and tsunami.
[2] Central Statistics Board of Sabang Municipality (BPS)

Banda Aceh due to the availability of more flat, lowland areas for production. According to BPS figures, fishing catch in 2006--including inland production and sea catch—was 1,523 metric tons (MT) in Sukakarya district and 1,096 MT in Sukajaya district. Fishing operations are relatively small scale—typically a maximum of 4 persons per motorized boat.

Tourism, particularly related to scuba diving, has been growing slowly in the aftermath of the earthquake and tsunami which destroyed some marine resources such as coral reefs and reef fishes. As noted in Section 7, in many cases, destructive fishing practices have played a bigger role in loss of marine habitat than the effects of the tsunami. Limited infrastructure and support services for the tourism industry (hotels, restaurants, entertainment etc.) have also contributed to the relatively slow growth of tourism on the island.

8.5 INFRASTRUCTURE

Weh Island has a road network of 202 kilometers, which is mostly paved and in fair condition. The cities of Sabang and Balohan are linked by road as well as other major towns to the east, south and west. The main road crossing the island is four-lane, which is in relatively good condition. There is a small airport southeast of Sabang city which is controlled by the Indonesian military, although there are plans to turn operating control over to the State-owned airport operating company (PT Ankasa Pura) sometime in the near future.

Current port facilities are located at Sabang and Balohan. As mentioned in Section 1 of this report, based on the Sabang Master Plan, a new container terminal is being constructed at the existing port of Sabang, and a national port facility is planned for Balohan Bay near the existing ferry terminal, including development of a small container terminal along the east side of the Bay. This port facility will serve the planned Industrial Development area at Balohan Bay and provide for direct shipping between Banda Aceh and other regional ports. There are daily ferries that run from Banda Aceh to Balohan Bay for passengers as well as for vehicles and their passengers (Roll on/Roll off). A 10 km road links the ferry port at Balohan Bay to the main port of Sabang.

8.6 POTENTIAL IMPACTS OF PROPOSED PORT DEVELOPMENT

The nearest village to the proposed port site on the west side of Balohan Bay is Jaboi which is about 1 kilometer away from the southern end of the proposed wharf (Phase II). Balohan is about 1.8 kilometers away from the northern end of the site. According to a 2006 Asian Development Bank Field Assessment report, Jaboi had an estimated population of 660 people in 2006. By contrast, the city of Balohan had an estimated population of 2,600 in the same year. According to the same report, the main occupations in Jaboi were agriculture, fishing, and government service while the primary occupations in Balohan were agriculture, fishing, trading, government administration, and general services.

As detailed in Section 3 of this report on site selection, it is anticipated that development of the port will have medium to medium-high impacts on the nearby communities and the environment. Due to the low population in the immediate vicinity of the proposed port, construction activities should have limited impacts in terms of traffic, noise and pollution. Conversely, given the lack of previous development activities in the area, the impact on the environment during construction is likely to be greater. As noted in Section 7, careful environmental planning undertaken prior to

construction should mitigate any significant impacts. During normal operations, however, it is projected that the environment will be only slightly affected.

Development of a transshipment port facility at Balohan Bay may require relocation of a few settlements near the proposed site, but this would only be necessary in advance of Phase II of the project, which is anticipated to take place approximately 10 years beyond Phase I (based on projections of market demand). The environmental impact statement that will need to be prepared before any construction takes place will include an evaluation of the potential impact on the nearby communities. Public participation in the EIS process will facilitate community buy-in to the overall direct and indirect benefits of the project in terms of employment and income for neighboring communities as well as Weh Island inhabitants at large.

8.6.1 HUMAN CAPACITY BUILDING

The construction, operation, and maintenance of the proposed transshipment port facility at Balohan Bay will create both short-term and long-term employment. It is estimated that as many as 3,000 construction jobs will be created for Phase I activities and up to 2,000 construction jobs will be created during Phase II. In addition, it is estimated that as many as 1,159 personnel will be required for the operation and maintenance of the port at full capacity (Phase I and II). Table 8.1 below details the types and numbers of long-term positions typically created through transshipment port operations. Some of these positions can be filled by local workers (Indonesian) while other positions will require bringing highly experienced and skilled personnel to the site, including several expatriates.

Table 8.1 Personnel Requirements for Proposed Balohan Port Development

Job Category	Number of Personnel Required
Management and Administration	
Top management	3
Finance and administration	45
Operations	61
Engineering and maintenance	19
Information Technology	9
Productive Labor	878
Maintenance and Workshop	144
Total	**1,159**
Estimated local jobs	1,155
Estimated expatriate jobs	4

8.6.2 TECHNOLOGY TRANSFER/PRODUCTIVITY ENHANCEMENT

The control systems at the proposed port will be highly automated requiring specialized computer training for port operations personnel. There will be comprehensive training at the startup of operations as well as ongoing training to incorporate changes and updates in the computer software governing the control systems. The highly sophisticated nature of the automation which includes management information systems and process technologies will require highly-trained personnel. The operations technology will be transferred to the ports workforce, thereby increasing their skills and productivity.

In addition to the operational training of the workforce, the project will introduce health, safety, and environmental training as part of the port development. This training involves strict standards and guidelines for the protection of human health and safety in the workplace, as well as protecting the health of the environment. Indonesia subscribes to the United Nations Environmental, Health and Safety (EHS) guidelines for ports, harbors, and terminals which will be followed for the development and operation of the port facility at Balohan Bay. The guidelines will be used at all stages of port development to ensure that the workforce is aware of potential hazards and properly trained to prevent or address them.

The intent of the proposed transshipment port facility at Balohan Bay is to optimize turnaround times for large and very-large container vessels unloading and loading their cargo, thereby reducing the time spent at port to2 days per vessel. The strategic location of the proposed port allows transshipment activities to take place relatively quickly which is very attractive to shipping companies, given the high running costs of these large vessels. The resulting efficiency allows the throughput of more vessels per year at the port, and more cargo to transferred, bringing greater economic benefit to the area in terms of direct, indirect, and induced jobs.

8.6.3 ECONOMIC GROWTH

The impact of the proposed port development will generally be positive for the inhabitants of Weh Island in terms of employment, incomes, and economic growth. The construction and operation of the port will create more than 6,150 direct and support jobs at full capacity. Local expenditure of these incomes produces further employment and income in the services sector.

In addition to the direct employment created, the proposed port will generate indirect and induced jobs. Indirect jobs will be created as the demand for housing, food, transport, and other services increases due to the construction and operations of the port. Induced employment will be created as income from direct and indirect employment circulates through the local economy. While it is difficult to quantify these impacts at such an early stage, it is reasonable to assume an indirect multiplier effect of at least 1—i.e., for every job created as a result of the port-related activities, at least 1 job will be created in the market area. Given the relatively small size of Weh Island, the market area would include not only the Balohan Bay area, but also Sabang city and other populated areas on the island which would provide housing, food, transport, and other services to the direct labor associated with the port.

8.7 CONCLUSION

Implementation of the proposed port project at Balohan Bay will have positive, long-term, benefits for the economy of Weh Island and its people as well as for regional trade. There will be short-term direct and indirect employment created through construction activities, and there will be long-term direct, indirect, and induced employment created through port operations and maintenance. Given the projected steady growth in the volume of regional trade in Asia, as detailed in Section 2 of this study, there are strong incentives for ships to call at the Balohan Bay port due to the anticipated efficiencies of the facility. In addition, shipping lines and terminal operators interested in investing in the facility and its operations will be attracted to Sabang as a Duty Free and Free Trade Zone.

In the short term, there may be disruptions to the small community surrounding the construction site due to cutting, filling, and dredging operations, but only during Phase II which is likely to be

at least 10 years away. The short-term disruptions will be mitigated, however, by the positive, long-term benefits of the port in terms of direct and indirect job creation. Significant employment opportunities will be created through the construction and subsequent operation and maintenance of the proposed port. The facilities will take advantage of the projected regional growth in container traffic through the development of a modern and efficient transshipment facility. This translates into positive economic growth for Weh Island as well as the Aceh region in general.

SECTION 9
U.S. SOURCES OF SUPPLY

POTENTIAL U.S. SUPPLIERS OF EQUIPMENT, MATERIALS, AND SERVICES FOR CONTAINER TERMINAL FACILITIES

ITEM	SUPPLIER
Port Planning/Design/Construction Management	**TEC Inc.** 619 Severn Avenue, Suite 202 Annapolis, MD 21403 Phone: (410) 990-0299 Fax: (410) 990-0455 Contact: Jim Hunt **Wilbur Smith** 3060 Williams Dr. Suite 300 Fairfax, VA 22031 Phone: (703) 208-2166 Fax: (703) 280-1631 Contact: Carmenza Becerra **Moffat Nichol** 3780 Kilroy Airport Way, Suite 750 Long Beach, CA 90806 Phone: (562)590-6500 Fax: (562) 590-6512 Contact: Eric Nichol **Parsons Brinkerhoff** One Penn Plaza New York, NY 10119 Phone: (212) 465-5000 Fax: (212) 465-5096 Contact: Patrick Lun **The Louis Berger Group** 2445 M Street NW Washington, DC 20037 Phone: (202) 331-7775 Fax: (202) 293-0787 Contact: Charles Bell **Halcrow HPA** 22 Cortlandt Street 33rd Floor New York, NY 10007 Phone: (212) 608-3990 Fax: (212) 566-5059 **CH2MHill** 15010 Conference Center Dr. Suite 200 Chantilly, VA 20151 Phone: (703) 376-5000 Fax: (703) 376-5010

	URS Headquarters 600 Montgomery St. 26th Floor San Francisco, CA 94111 Phone: (415) 774-2700 Fax: (415) 398-1905
Port Construction	**Washington Group International** 720 Park Blvd., [P.O. Box 73] Boise ID 83729 Phone: (208) 386-5510 Contact: Stephen Johnson **Bechtel Corporation** 5275 Westview Drive Frederick, MD 21703 Phone: (301) 228-6000 Fax: (301) 228-2200 Contact: Riley Bechtel **Shaw Group** 4171 Essen Lane Baton Rouge, LA 70809 Phone: (225) 932-2500 Fax: (225) 932-2661 Contact: J.M. Bernhard, Jr. **Turner International** 375 Hudson Street New York, NY 10014 Phone: (212) 229-6275 Contact: Charles Murphy
Container Crane	**Paceco Corporation** (through license agreements) 3854 Bay Center Place Hayward, CA 94545, USA Phone: (510) 264-9288 Fax: (510) 264-9280
Rubber Tired Gantry Cranes (RTGs)	**Taylor Machine Works** 650 North Church Avenue Louisville, MS 39339 Phone: (602) 773-5406 Fax: (602) 773-9146 **Mi-Jack Products** 311 W. 167th Street Hazel Crest, IL 60429 Phone: (708) 596-5200 Fax: (708) 225-2312 **Paceco Corporation** (through license agreements) 3854 Bay Center Place Hayward, CA 94545, USA Phone: (510) 264-9288 Fax: (510) 264-9280

Reach Stackers/Top Picks	**Taylor Machine Work** 650 North Church Avenue Louisville, MS 39339 Phone: (602) 773-5408 Fax: (602) 773-9146 **Mi-Jack Products** 311 W. 167th Street Hazel Crest, IL 60429 Phone: (708) 596-5200 Fax: (708) 225-2312
Fork Lift Trucks	**Hyster Company** P.O. Box 334 Danville, IL 61834 Phone: (217) 446-4888 **Yale Materials Handling Corporation** 1400 Sullivan Drive Greenville, NC 27834 Phone: (252) 758-9253 Fax: (252) 931-7873
Tractors	**Ottawa Truck Inc.** 415 East Dundee Street Ottawa, KS 66067 Phone: (919) 242-5490 **Capacity of Texas** 401 Capacity Drive Longview, TX 75604 Phone: (903) 759-0610
Chassis/Bombcarts	**Pratt Industries Inc.** 2979 W. Bay Drive, Suite 19 Belleair Bluffs, FL 33770 Phone: (727) 584-1414 Fax: (727) 584-2323 **Chassis King, LLC** 13008 Golf View Drive Longview, TX 75604 Phone: (727) 585-1500 **Interpool, Inc. (lessor)** 211 College Road East Princeton, NJ 08831 Phone: (609) 452-8900 Fax: (609) 452-8211
Spreaders	**Paceco Corporation** (through license agreements) 3854 Bay Center Place Hayward, CA 94545, USA Phone: (510) 264-9288 Fax: (510) 264-9280

Refrigerated Reefers	**CL 1** 1500 Newell Avenue, Suite 600 Walnut Creek, CA 94596 Phone: (925) 946-4290 Fax: (925) 946-4295 **Utility Trailer Sales** 15567 E. Valley Blvd. Fontana, CA 92334 Phone: (909) 428-8300 Fax: (909) 823-9662 **Cassone** 1950 Lakeland Ave. Ronkonkomo, NY 11779 Phone: (631) 585-7800 Fax: (631) 585-7895
Terminal Management/Automation Systems	**Navis Corporation** 1616 Franklin Street, Suite 204 Oakland, CA 94612 Phone: (510) 763-5715 Fax: (510) 763-2516 **Maher Terminals Logistic Systems, Inc.** Journal Square Plaza Jersey City, NJ 07306 Phone: (201) 963-2100 Fax: (201) 963-2073 **Paceco Corporation** 3854 Bay Center Place Hayward, CA 94545 Phone: (510) 264-9288 Fax: (510) 264-9280 **Tideworks Technology** 1129 SW Klickitat Way Seattle, WA 98134 Phone: (206) 382-4470 Fax: (206) 382-0443 **Embarcadero Systems Corporation** 1701 Harbor Bay Parkway Alameda, CA 94502 Phone: (510) 749-7400 Fax: (510) 749-3800

	WhereNet 2858 De La Cruz Blvd. Santa Clara, CA 95050 Phone: (408) 845-8500 **APS Technology Group** 8250 Vickers Street, Suite E San Diego, CA 92111 Phone: (858) 571-4444 Fax: (858) 571-4450 **Perceptics Corporation** Northrop Grumman Information Technology Pellissippi Office Center, Suite 200N 9737 Cogdill Road Knoxville, TN 37932-3350 Phone: (865) 966-9200 Fax: (865) 966-9330
Dock Fittings (Fenders, Bollards, Hooks, Capstans, etc)	**Seaward International, Inc.** 3470 Martinsburg Pike Clearbrook, VA 22624 Phone: (800) 438-6091 **Trellex Fenders** 3588 Main Street Keokuk, IA 52632 Phone: (319) 524-8430 **Maritime International, Inc.** 204 Ida Road Broussard, LA 70518 Phone: (337) 837-7160 Fax: (337) 837-3610 **UltraPoly** 2926 South Steele Street Tacoma, WA 98409-7638 Phone: (253) 272-1217 Fax: (253) 272-1457

	Schoellhorn-Albrecht Machine Co., Inc. 575-105 Rudder Road St. Louis, MO 63026 Phone: (314) 351-3333 Fax: (314) 351-5780 **J.C. MacElroy Company, Inc.** 91 Ethel Road West Piscataway, NJ 08855 Phone: (732) 572-7100 Fax: (732) 572-7112
Crane Rail & Accessories	**L. B. Foster Company** 125 Windsor Drive, STE. 122 Oak Brook, IL 60523 Phone: (800) 253-5050 Fax: (630) 954-1429 **Cavotec Gantrex USA Inc.** 124 Hatfield Road Statesville, NC 28625 Phone: (704) 873-3009 Fax: (704) 873-3093
Aids to Navigation	**Tideland Signal Corporation** P.O. Box 52430 Houston, TX 77052 Phone: (713) 681-6101 Fax: (713) 681-6233 **OkSolar** 5011 SW 152 AVE Hollywood FL. 33027 Phone: (347) 624-5693 Fax: (347) 534-9155 **Automatic Power, Inc.** P.O. Box 230738 Houston, Texas 77223-0738 Phone: (713) 228-5208 Fax: (713) 228-3717

Tugs & Pilot Boats	**Crowley Maritime Corporation** 1102 SW Massachusetts Street Seattle, WA 98134 Phone: (206) 332 8230 Fax: (206) 332-8530 **Washburn & Doughty Associates, Inc.** P.O. Box 296, Enterprise St. East Boothbay, ME 04544 Phone: (207) 633-6517 Fax: (207) 633-7007 **Bollinger Shipyard** P.O. Box 250, Lockport, LA 70374 8365 Hwy. 308 South, Lockport, LA 70374 Phone: (985) 532-2554 Fax: (985) 532-7225 **Bender Shipbuilding & Repair Co., Inc.** 265 South Water Street, Mobile, AL 36603 Phone: (251) 431-8000 **Gladding-Hearn Shipbuilding** One Riverside Avenue, BOX 300 Somerset, MA 02726-0300 Phone: (508) 676-8596 **Eastern Shipbuilding Group** 2200 Nelson Street Panama City, FL 32401 Phone: (850) 763-1900 Fax: (850) 763-7904 **Horizon Shipbuilding, Inc.** 13980 Shell Belt Road Bayou La Batre, AL 36509 Phone: (251) 824-1660 Fax: (251) 824-1664

Container Crane Drives & Control System	**GE INDSYS Solutions** 3636 Sherwood Forest Blvd., Suite 400 Baton Rouge, LA 70816 Phone: (225) 295-8695 Fax: (225) 295-8683 **Rockwell Automation** US Bank Center 777 East Wisconsin Avenue Suite 1400 Milwaukee, WI 53202 USA Phone: (414) 212-5200
Generators	**Caterpillar, Inc.** Caterpillar Inc. 100 N.E. Adams St. Peoria, IL 61629 Phone: (309) 675-1000 **Cummins Power, Generation** 1400 73rd Avenue N.E. Minneapolis, MN 55432 Phone: (763) 574-5000 **Kohler Power, Inc.** Kohler, WI 53044 Phone: (920) 565-3381 **Generac Power Systems** Hwy. 59 & Hillside Road P.O. Box 8 Waukesha, WI 53187

Dredging Companies	**Great Lakes Dredge & Dock Company** 2122 York Road Oak Brook, IL 60523 USA Phone: (630) 574-3000 **Weeks Marine, Inc.** 4 Commerce Drive Cranford, NJ 07016-3598 Phone: (908) 272-4010 Fax: (908) 272-4740 **Bean Stuyvesant, L.L.C.** 1055 St. Charles Ave. Suite 520 New Orleans, LA 70130 Phone: (504) 587-8700
Construction	**Zachry Construction Corporation** 527 Logwood San Antonio, TX 78221 Phone: (210) 475-8000 Fax: (210) 475-8060

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List of largest container ships

From Wikipedia, the free encyclopedia

Biggest container ships in the world, listed by capacity expressed in Twenty-foot equivalent units or TEU.

Built	Name	Length o.a.	Beam	Maximum TEU	GT	Owners/Flag
2007	Ebba Mærsk	397.7 m	56.4 m	14,500	151,687	Maersk Line/Denmark
2007	Edith Mærsk	397.7 m	56.4 m	14,500	151,687	Maersk Line/Denmark
2007	Eleonora Mærsk	397.7 m	56.4 m	14,500	151,687	Maersk Line/Denmark
2007	Elly Mærsk	397.7 m	56.4 m	14,500	151,687	Maersk Line/Denmark
2006	Emma Mærsk	397.7 m	56.4 m	14,500	151,687	Maersk Line/Denmark
2006	Estelle Mærsk	397.7 m	56.4 m	14,500	151,687	Maersk Line/Denmark
2008	Eugen Mærsk	397.7 m	56.4 m	14,500	151,687	Maersk Line/Denmark
2007	Evelyn Mærsk	397.7 m	56.4 m	14,500	151,687	Maersk Line/Denmark
2009	MSC Beatrice	380.0 m	51.0 m	13,296	135,000	MSC/Panama
2009	MSC Bettina	380.0 m	51.0 m	13,296	135,000	MSC/Panama
2009	MSC Camille	380.0 m	51.0 m	13,296	135,000	MSC/Panama
2008	MSC Daniela	380.0 m	51.0 m	13,296	135,000	MSC/Panama
2009	MSC Emanuela	380.0 m	51.0 m	13,296	135,000	MSC/Panama
2009	MSC Eva	380.0 m	51.0 m	13,296	135,000	MSC/Panama
2009	MSC Gaia	380.0 m	51.0 m	13,296	135,000	MSC/Panama
2009	MSC Irene	380.0 m	51.0 m	13,296	135,000	MSC/Panama
2009	MSC Kalina	380.0 m	51.0 m	13,296	135,000	MSC/Panama
2008	MSC Ivana	380.0 m	51.0 m	13,200	135,000	MSC/Panama
2009	MSC Danit	380.0 m	51.0 m	13,200	135,000	MSC/Panama
2009	MSC Luciana	380.0 m	51.0 m	13,200	135,000	MSC/Panama
2010	MSC Melatilde	380.0 m	51.0 m	13,200	135,000	MSC/Panama
2010	MSC Paloma	380.0 m	51.0 m	13,200	135,000	MSC/Panama
2010	Mærsk Edinburg	366.0 m	48.2 m	13,092	135,000	Rickmers & Cie/Singapore
2010	Mærsk Eindhoven	366.0 m	48.2 m	13,092	135,000	Rickmers & Cie/Singapore
2010	Mærsk Emden	366.0 m	48.2 m	13,092	135,000	Rickmers & Cie/Singapore
2010	Mærsk Essen	366.0 m	48.2 m	13,092	135,000	Rickmers & Cie/Singapore
2009	MSC Francesca	366.0 m	45.6 m	11,312	120,000	MSC/Panama
2008	MSC Sola	366.0 m	45.6 m	11,312	120,000	MSC/Panama
2009	CMA CGM Hydra	346.5 m	43.2 m	10,980	109,000	NSB Niederelbe /Germany
2009	CMA CGM Musca	346.5 m	43.2 m	10,980	109,000	NSB Niederelbe /Germany
2008	CMA CGM Thalassa	346.5 m	43.2 m	10,980	109,000	NSB Niederelbe /France
2008	CMA CGM Vela	346.5 m	43.2 m	10,980	109,000	NSB Niederelbe /France
2006	Georg Mærsk	367.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2006	Gerd Mærsk	367.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2005	Gjertrud Mærsk	367.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2005	Grete Mærsk	367.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2005	Gudrun Mærsk	367.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2005	Gunvor Mærsk	367.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2008	Marchen Mærsk	372.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2008	Margrethe Mærsk	372.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2008	Cosco Africa	349.2 m	45.6 m	10,046	108,000	COSCO Container Lines/China
2008	Cosco America	349.2 m	45.6 m	10,046	108,000	COSCO Container Lines/China

2007	Cosco Asia	349.2 m	45.6 m	10,046	108,000	COSCO Container Lines/China
2008	Cosco Europe	349.2 m	45.6 m	10,046	108,000	COSCO Container Lines/China
2009	Cosco Atlantic	348.5 m	45.6 m	10,000	101,000	COSCO Container Lines/China
2008	Cosco Indian Ocean	348.5 m	45.6 m	10,000	101,000	COSCO Container Lines/China
2008	Cosco Oceania	348.5 m	45.6 m	10,000	101,000	COSCO Container Lines/China
2008	Cosco Pacific	348.5 m	45.6 m	10,000	101,000	COSCO Container Lines/China
2008	CMA CGM Butterfly	350.0 m	42.8 m	9,661	109,000	Offen-Claus Peter/Liberia
2008	CMA CGM Ivanhoe	350.0 m	42.8 m	9,661	109,000	Offen-Claus Peter/Liberia
2008	CMA CGM Orfeo	350.0 m	42.8 m	9,661	109,000	Offen-Claus Peter/Liberia
2008	CMA CGM Pelleas	350.0 m	42.8 m	9,661	109,000	Offen-Claus Peter/Liberia
2006	CSCL Le Havre	336.7 m	45.6 m	9,580	107,200	Danaos Shipping/Cyprus
2007	CSCL Long Beach	336.7 m	45.6 m	9,580	108,069	Seaspan Container Line/Hong Kong
2006	CSCL Pusan	336.7 m	45.6 m	9,580	107,200	Danaos Shipping/Cyprus
2007	CSCL Zeebrugge	335.0 m	45.6 m	9,580	107,200	Seaspan Container Line/Hong Kong
2008	Maersk Alfrik	335.0 m	45.6 m	9,580	106,700	Maersk Line/Singapore
2008	Maersk Algol	335.0 m	45.6 m	9,580	106,700	Maersk Line/Singapore
2007	Maersk Altair	335.0 m	45.6 m	9,580	106,700	Maersk Line/Singapore
2007	Maersk Antares	335.0 m	45.6 m	9,580	106,700	Maersk Line/Singapore
2007	MSC Asya	335.0 m	45.6 m	9,580	107,849	MSC/Panama
2007	MSC Candice	335.0 m	45.6 m	9,580	107,849	MSC/Panama
2007	MSC Pina	335.0 m	45.6 m	9,580	107,849	MSC/Panama
2007	MSC Sindy	335.0 m	45.6 m	9,580	107,200	MSC/Panama
2007	Xin Beijing	335.0 m	45.6 m	9,580	107,200	CSCL/Hong Kong
2007	Xin Hong Kong	335.0 m	45.6 m	9,580	107,200	CSCL/Hong Kong
2006	Xin Los Angeles	336.7 m	45.6 m	9,580	107,200	CSCL/Hong Kong
2006	Xin Shanghai	336.7 m	45.6 m	9,580	107,200	CSCL/Hong Kong
2006	Cosco Beijing	350.0 m	42.8 m	9,469	99,833	Costamare Shipping/Greece
2006	Cosco Hellas	350.0 m	42.8 m	9,469	99,833	Costamare Shipping/Greece
2006	Cosco Guangzhou	350.0 m	42.8 m	9,469	99,833	Costamare Shipping/Greece
2006	Cosco Ningbo	350.0 m	42.8 m	9,469	99,833	Costamare Shipping/Greece
2006	Cosco Yantian	350.0 m	42.8 m	9,469	99,833	Costamare Shipping/Greece
2006	CMA CGM Fidelio	350.0 m	42.8 m	9,415	99,500	CMA CGM/France
2006	CMA CGM Medea	350.0 m	42.8 m	9,415	95,000	CMA CGM/France
2006	CMA CGM Norma	350.0 m	42.8 m	9,415	95,000	CMA CGM/Bahamas
2006	CMA CGM Rigoletto	350.0 m	42.8 m	9,415	99,500	CMA CGM/France
2004	Adrian Mærsk	352.6 m	42.8 m	9,310	93,496	Maersk Line/Denmark
2004	Albert Mærsk	352.6 m	42.8 m	9,310	93,496	Maersk Line/Denmark
2003	Anna Mærsk	352.6 m	42.8 m	9,310	93,496	Maersk Line/Denmark
2003	Arnold Mærsk	352.6 m	42.8 m	9,310	93,496	Maersk Line/Denmark
2003	Arthur Mærsk	352.6 m	42.8 m	9,310	93,496	Maersk Line/Denmark
2003	Axel Mærsk	352.6 m	42.8 m	9,310	93,496	Maersk Line/Denmark
2006	MSC Ines	348.5 m	42.8 m	9,204	107,551	MSC/Liberia
2006	MSC Madeleine	348.5 m	42.8 m	9,204	107,551	MSC/Liberia
2006	NYK Vega	338.2 m	45.6 m	9,200	97,825	Nippon Yusen Kaisha/Panama
2007	NYK Venus	338.2 m	45.6 m	9,200	97,825	Nippon Yusen Kaisha/Panama
2007	NYK Vesta	338.2 m	45.6 m	9,200	97,825	Nippon Yusen Kaisha/Panama
2007	NYK Virgo	338.2 m	45.6 m	9,200	97,825	Nippon Yusen Kaisha/Panama
2005	MSC Bruxelles	336.7 m	45.6 m	9,178	90,449	Offen Claus-Peter/Liberia

2005	MSC Chicago	336.7 m	45.6 m	9,178	90,449	Offen Claus-Peter/Liberia
2006	MSC Esthi	336.7 m	45.6 m	9,178	99,500	MSC/Liberia
2006	MSC Joanna	336.7 m	45.6 m	9,178	99,500	MSC/Panama
2007	MSC Lisbon	336.7 m	45.6 m	9,178	99,500	MSC/Liberia
2006	MSC Maria Elena	336.7 m	45.8 m	9,178	107,849	MSC/Panama
2005	MSC Pamela	336.7 m	45.6 m	9,178	90,449	MSC/Liberia
2006	MSC Roma	336.7 m	45.6 m	9,178	99,500	Offen Claus-Peter/Liberia
2005	MSC Susanna	336.7 m	45.6 m	9,178	90,449	MSC/Liberia
2006	NYK Oceanus	336.0 m	45.8 m	9,120	89,000	Nippon Yusen Kaisha/Panama
2006	NYK Olympus	336.0 m	45.8 m	9,120	99,500	Nippon Yusen Kaisha/Panama
2006	MSC Ines	348.5 m	42.8 m	9,100	107,551	MSC/Liberia
2006	MSC Madeleine	348.5 m	42.8 m	9,100	107,551	MSC/Liberia
2008	MOL Cosmos	336.0 m	45.5 m	9,100	92,700	Mitsui OSK/Panama
2006	Hannover Bridge	336.0 m	45.8 m	9,040	89,000	Kawasaki Kisen Kaisha/Japan
2007	Harbour Bridge	336.0 m	45.8 m	9,040	89,000	Kawasaki Kisen Kaisha/Japan
2007	Humen Bridge	336.0 m	45.8 m	9,040	89,000	Kawasaki Kisen Kaisha/Japan
2002	Charlotte Mærsk	347.0 m	42.8 m	8,890	91,690	Maersk Line/Denmark
2002	Clementine Mærsk	347.0 m	42.8 m	8,890	91,690	Maersk Line/Denmark
2002	Columbine Mærsk	347.0 m	42.8 m	8,890	91,690	Maersk Line/Denmark
2002	Cornelia Mærsk	347.0 m	42.8 m	8,890	91,690	Maersk Line/Denmark
2008	Hyundai Faith	339.0 m	45.6 m	8,750	88,900	Hyundai Merchant Marine/Panama
2008	Hyundai Force	339.0 m	45.6 m	8,750	88,900	Hyundai Merchant Marine/Panama
2008	Mærsk Salalah	335.0 m	43.0 m	8,750	100,000	Blue Star GmbH/Cyprus
2008	Mærsk Salina	335.0 m	42.8 m	8,750	110,000	Blue Star GmbH/Singapore
2008	Mærsk Savannah	335.0 m	43.0 m	8,750	100,000	Blue Star GmbH/Cyprus
2008	Mærsk Stepnica	335.0 m	43.0 m	8,750	100,000	Blue Star GmbH/Cyprus
2008	Mærsk Stockholm	335.0 m	42.8 m	8,750	110,000	Blue Star GmbH/Singapore
2007	Osaka Express	335.0 m	42.8 m	8,750	93,750	Hapag-Lloyd/Germany
2007	Tsingtao Express	335.0 m	42.8 m	8,750	93,750	Hapag-Lloyd/Germany
2005	Colombo Express	335.5 m	42.8 m	8,749	93,750	Hapag-Lloyd/Germany
2006	Chicago Express	335.5 m	42.8 m	8,749	93,750	Hapag-Lloyd/Germany
2005	Kyoto Express	335.5 m	42.8 m	8,749	93,750	Hapag-Lloyd/Germany
2007	Hanover Express	335.5 m	42.8 m	8,749	93,750	Hapag-Lloyd/Germany
1999	Clifford Mærsk	347.0 m	42.8 m	8,680	91,690	Maersk Line/Denmark
1998	Sally Mærsk	347.0 m	42.8 m	8,680	91,690	Maersk Line/Denmark
1998	Sine Mærsk	347.0 m	42.8 m	8,680	91,690	Maersk Line/Denmark
1999	Skagen Mærsk	347.0 m	42.8 m	8,680	91,690	Maersk Line/Denmark
1998	Sofie Mærsk	347.0 m	42.8 m	8,680	91,690	Maersk Line/Denmark
1999	Sorø Mærsk	347.0 m	42.8 m	8,680	91,690	Maersk Line/Denmark
1997	Sovereign Mærsk	347.0 m	42.8 m	8,680	91,690	Maersk Line/Denmark
1997	Susan Mærsk	347.0 m	42.8 m	8,680	91,690	Maersk Line/Denmark
1999	Svend Mærsk	347.0 m	42.8 m	8,680	91,690	Maersk Line/Denmark
1998	Svendborg Mærsk	347.0 m	42.8 m	8,680	91,690	Maersk Line/Denmark
2000	A.P. Møller	347.0 m	42.8 m	8,660	91,690	Maersk Line/Denmark
2000	Caroline Mærsk	347.0 m	42.8 m	8,660	91,690	Maersk Line/Denmark
2000	Carsten Mærsk	347.0 m	42.8 m	8,660	91,690	Maersk Line/Denmark
2001	Chastine Mærsk	347.0 m	42.8 m	8,660	91,690	Maersk Line/Denmark
2001	Cornelius Mærsk	347.0 m	42.8 m	8,660	91,690	Maersk Line/Denmark

2008	Hyundai Brave	339.0 m	45.6 m	8,652	88,600	Hyundai Merchant Marine/South Korea
2008	MOL Celebration	316.0 m	45.5 m	8,600	89,370	Mitsui OSK/Bahamas
2008	MOL Competence	316.0 m	45.5 m	8,600	89,370	Mitsui OSK/Bahamas
2007	MOL Creation	316.0 m	45.5 m	8,600	89,370	Mitsui OSK/Bahamas
2008	Hyundai Courage	339.0 m	45.6 m	8,562	100,000	Hyundai Merchant Marine/South Korea
2009	Hyundai Global	339.6 m	45.6 m	8,562	93,600	Zodiac Maritime/South Korea
2009	Hyundai Loyalty	339.6 m	45.6 m	8,562	93,600	Zodiac Maritime/Liberia
2009	Hyundai Mercury	339.6 m	45.6 m	8,562	93,600	Zodiac Maritime/South Korea
2009	Hyundai Splendor	339.6 m	45.6 m	8,562	93,600	Zodiac Maritime/Liberia
2005	CMA CGM Otello	335.0 m	42.8 m	8,488	91,400	CMA CGM/France
2005	CMA CGM Tosca	335.0 m	42.8 m	8,488	91,400	CMA CGM/France
2006	CMA CGM Nabucco	335.0 m	42.8 m	8,488	91,400	CMA CGM/France
2006	CMA CGM La Traviata	335.0 m	42.8 m	8,488	91,400	CMA CGM/France
2004	CSCL Europe	334.0 m	42.8 m	8,468	90,645	Danaos Shipping/Cyprus
2005	CSCL Africa	334.0 m	42.9 m	8,468	90,645	Seaspan Container Line/Cyprus
2004	CSCL America	334.0 m	42.90 m	8,468	90,645	Danaos Shipping /Cyprus
2004	CSCL Asia	334.0 m	42.9 m	8,468	90,645	Seaspan Container Line/Hong Kong
2004	CSCL Oceania	334.0 m	42.9 m	8,468	90,645	Seaspan Container Line/Hong Kong
2004	MSC Baltic	334.0 m	42.9 m	8,468	90,645	Danaos Shipping/Cyprus
2004	MSC Baltic	334.0 m	42.9 m	8,468	90,645	Seaspan Container Line/Cyprus
2004	Mærsk Sana	335.0 m	42.8 m	8,452	97,612	Blue Star GmbH/Liberia
2005	Mærsk Santana	335.0 m	42.8 m	8,452	94,724	Blue Star GmbH/Liberia
2005	Mærsk Sarnia	335.0 m	42.8 m	8,452	94,724	Blue Star GmbH/Liberia
2006	Mærsk Seville	335.0 m	42.8 m	8,452	94,724	Blue Star GmbH/Liberia
2006	Mærsk Sheerness	335.0 m	42.8 m	8,452	94,724	Blue Star GmbH/Liberia
2007	Mærsk Singapore	335.0 m	42.8 m	8,452	97,612	Blue Star GmbH/Liberia
2007	Mærsk Sofia	335.0 m	42.8 m	8,452	94,724	Blue Star GmbH/Liberia
2005	Mærsk Sydney	335.0 m	42.8 m	8,452	94,724	Blue Star GmbH/Liberia
2007	Mærsk Saigon	332.4 m	43.2 m	8,402	108,180	Blue Star GmbH/Liberia
2007	Mærsk Semarang	332.0 m	43.2 m	8,402	94,322	Offen Claus-Peter/Germany
2006	Mærsk Seoul	332.0 m	43.2 m	8,402	94,322	Blue Star GmbH/Liberia
2006	Mærsk Stralsund	332.4 m	43.2 m	8,402	108,180	Blue Star GmbH/Liberia
2007	Mærsk Taikung	332.0 m	43.2 m	8,402	94,322	Maersk Line/Singapore
2007	Mærsk Tanjong	332.0 m	43.2 m	8,402	94,322	Maersk Line/Denmark
2006	MSC Heidi	332.4 m	43.2 m	8,400	95,000	MSC/Panama
2005	MSC Rania	332.4 m	43.2 m	8,400	95,000	MSC/Panama
2006	MSC Silvana	332.4 m	43.2 m	8,400	95,000	MSC/Panama
2006	MSC Tomoko	332.4 m	43.2 m	8,402	95,000	MSC/Panama
2005	Houston Express	332.4 m	43.2 m	8,400	95,000	Norddeutsche Reederei/Germany
2005	Savannah Express	332.4 m	43.2 m	8,400	95,000	Norddeutsche Reederei/Germany
2006	Mærsk Stralsund	332.4 m	43.2 m	8,400	95,000	Blue Star GmbH/Liberia
2006	Mærsk Saigon	332.4 m	43.2 m	8,400	95,000	Blue Star GmbH/Liberia
2007	Mærsk Semarang	332.0 m	43.2 m	8,400	98,400	Offen Claus-Peter/Germany
2006	Mærsk Seoul	332.4 m	43.2 m	8,400	95,000	Blue Star GmbH/Germany
2006	Mærsk Surabaya	332.0 m	43.2 m	8,400	98,400	Offen Claus-Peter/Germany
2004	CMA CGM Hugo	334.1 m	42.8 m	8,238	90,745	NSB Niederelbe/Germany
2004	CMA CGM Vivaldi	334.1 m	42.8 m	8,238	90,745	CMA CGM/Bahamas
2004	MSC Rachele	334.1 m	42.8 m	8,238	90,745	MSC/Germany

2004	MSC Texas	334.1 m	42.8 m	8,238	90,745	NSB Niederelbe/Germany
2004	Pacific Link	334.1 m	42.8 m	8,238	90,745	NSB Niederelbe/Germany
2006	CMA CGM Carmen	335.0 m	42.8 m	8,204	89,800	E R Schiffahrt/Liberia
2006	CMA CGM Don Carlos	335.0 m	42.8 m	8,204	89,800	E R Schiffahrt/Liberia
2006	CMA CGM Don Giovanni	335.0 m	42.8 m	8,204	89,800	E R Schiffahrt/Liberia
2006	CMA CGM La Traviata	335.0 m	42.8 m	8,204	91,410	CMA CGM/France
2006	CMA CGM Nabucco	335.0 m	42.8 m	8,204	91,410	CMA CGM/France
2006	CMA CGM Parsifal	335.0 m	42.8 m	8,204	89,800	E R Schiffahrt/Liberia
2005	Cosco China	335.0 m	42.8 m	8,204	91,649	E R Schiffahrt/Liberia
2006	Cosco Germany	335.0 m	42.8 m	8,204	89,800	E R Schiffahrt/Liberia
2006	Cosco Napoli	335.0 m	42.8 m	8,204	89,800	E R Schiffahrt/Liberia
2006	MSC Xian	335.0 m	42.8 m	8,204	91,649	E R Schiffahrt/Liberia
2007	MSC Bengal	335.0 m	42.8 m	8,204	91,649	E R Schiffahrt/Liberia
2008	YM Uberty	333.5 m	42.8 m	8,200	90,000	Yang Ming Line/Liberia
2009	YM Uniform	333.5 m	42.8 m	8,200	90,000	Yang Ming Line/Liberia
2008	YM Upward	333.5 m	42.8 m	8,200	90,000	Yang Ming Line/Liberia
2009	YM Utility	333.5 m	42.8 m	8,200	90,000	Yang Ming Line/Liberia
2008	YM Utopia	333.5 m	42.8 m	8,200	90,000	Yang Ming Line/Liberia
2007	YM Ultimate	335.0 m	42.8 m	8,189	90,389	Yang Ming Line/Liberia
2006	YM Unison	335.0 m	42.8 m	8,189	88,600	Yang Ming Line/Liberia
2006	YM Unity	335.0 m	42.8 m	8,189	90,389	Yang Ming Line/Liberia
2006	YM Utmost	335.0 m	42.8 m	8,189	88,600	Yang Ming Line/Liberia
2005	MSC Beijing	324.8 m	42.8 m	8,089	89,954	Offen Claus-Peter/Panama
2005	MSC Busan	324.8 m	42.8 m	8,089	89,954	Offen Claus-Peter/Panama
2006	MSC Charleston	324.8 m	42.8 m	8,089	89,954	Offen Claus-Peter/Panama
2005	MSC Lucy	324.8 m	42.8 m	8,089	89,954	MSC/Panama
2005	MSC Maeva	324.8 m	42.8 m	8,089	89,954	MSC/Panama
2005	MSC Rita	324.8 m	42.8 m	8,089	89,954	MSC/Panama
2006	MSC Toronto	324.8 m	42.8 m	8,089	89,954	Offen Claus-Peter/Panama
2006	MSC Vittoria	324.8 m	42.8 m	8,089	89,954	MSC/Panama
2005	Ever Champion	339.9 m	42.8 m	8,073	90,449	NSB Niederelbe/Marshall Islands
2005	Ever Charming	339.9 m	42.8 m	8,073	90,449	NSB Niederelbe/Marshall Islands
2006	Ever Chivalry	339.9 m	42.8 m	8,073	90,449	NSB Niederelbe/Marshall Islands
2006	Ever Conquest	339.9 m	42.8 m	8,073	90,449	NSB Niederelbe/Marshall Islands
2006	Ital Contessa	339.9 m	42.8 m	8,073	90,449	NSB Niederelbe/Marshall Islands
2005	LT Cortesia	339.9 m	42.8 m	8,073	90,449	NSB Niederelbe/Marshall Islands
2006	OOCL Asia	323.0 m	42.8 m	8,063	89,097	OOCL/Hong Kong
2005	OOCL Atlanta	323.0 m	42.8 m	8,063	89,097	OOCL/Hong Kong
2006	OOCL Europe	323.0 m	42.8 m	8,063	89,097	OOCL/Hong Kong
2004	OOCL Hamburg	323.0 m	42.8 m	8,063	89,097	OOCL/Marshall Islands
2003	OOCL Long Beach	323.0 m	42.8 m	8,063	89,097	OOCL/Marshall Islands
2004	OOCL Ningbo	323.0 m	42.8 m	8,063	89,097	OOCL/Marshall Islands
2004	OOCL Qingdao	323.0 m	42.8 m	8,063	89,097	OOCL/Hong Kong
2004	OOCL Rotterdam	323.0 m	42.8 m	8,063	89,097	OOCL/Hong Kong
2003	OOCL Shenzhen	323.0 m	42.8 m	8,063	89,097	OOCL/Hong Kong
2007	OOCL Southhampton	323.0 m	42.8 m	8,063	89,097	OOCL/Hong Kong
2005	OOCL Tianjin	323.0 m	42.8 m	8,063	89,097	OOCL/Hong Kong
2007	OOCL Tokyo	323.0 m	42.8 m	8,063	89,097	OOCL/Hong Kong

Notes

- The size of a container ship is defined throughout the world in terms of TEU capacity. The exception is the Maersk Line. It does not quote the TEU capacity, but instead the maximum load capacity in terms of *filled* TEUs with an average 14 tonne total weight. This value is always less than the raw TEU capacity. These values are noted in the table above.
- Information on true container ship capacities is commercially sensitive and may be several thousand TEUs higher.
- This list is updated as large ships are completed.

References

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APPENDIX B

Contractor and Subcontractor Contact Information

CONTRACTORS

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Annapolis, MD 21403
USA
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Fax: (410) 990-0455
Contact: Jim Hunt – Team Leader

SUB-CONTRACTORS

1. **PT Glendale Partners**
   Wisma Dharmala Sakti 18th Floor
   Jl. Jend. Sudirman 32
   Jakarta 10220 Indonesia
   Phone: (021) 570-4578
   Fax: (021) 570-4647
   Contact: Dr. Scott Younger

2. **Eric Lovette, P.E.**
   Park Royale No. 2433
   Jakarta, Indonesia 10210
   Phone: (62-81) 181-4374

3. **Hackett Associates**
   1850 M Street, NW
   Suite 110
   Washington, DC 20036-5845
   Phone: (202) 481-9218
   Fax: (202) 481-9301
   Contact: Ben Hackett

4. **Enertech**
   48 Greenwood Shoals, Suite 200
   Grasonville, MD 21638
   Phone: (410) 827-0520
   Fax: (410) 827-6808
   Contact: Ken Wentzel

5. **BRR**
   Komplek Mitra Sunter Boulevard
   Blok E-1 No. 3A-5
   Jl Yos Sudarso Kav. 89
   Jarkarta Utara, Indonesia
   Phone: (021) 6510332
   Fax: (021) 6513658
   Contact: Swinder Singh

6. **Global Insight**
   Global Insight, Inc.
   1000 Winter Street
   Waltham, MA 02451-1241
   Phone: (781) 487-2100
   Fax: (781) 890-6187

US Sources of Supply

SERVICES

Port Planning/Design/Construction Management

Firm	Contact	Address	Phone	Fax
TEC Inc	Jim Hunt	619 Severn Ave. Annapolis, MD 21403	(410) 990-0299	(410) 990-0455
Wilbur Smith	Carmenza Becerra	3060 Williams Dr. Suite 300 Fairfax, VA 22031	(703) 208-2166	(703) 280-1631
Moffat Nichol	Eric Nichol	3780 Kilroy Airport Way, Suite 750 Long Beach, CA 90806	(562) 590-6500	(562) 590-6512
Parsons Brinkerhoff	Patrick Lun	One Penn Plaza New York, NY 10119	(212) 465-5000	(212) 465-5096
The Louis Berger Group	Charles Bell	2445 M Street NW Washington, DC 20037	(202) 331-7775	(202) 293-0787
Halcrow HPA		22 Cortlandt Street 33rd Floor New York, NY 10007	(212) 608-3990	(212) 566-5059
CH2MHill		15010 Conference Center Dr. Suite 200 Chantilly, VA 20151	(703) 376-5000	(703) 376-5010
URS Headquarters		600 Montgomery St. 26th Floor San Francisco, CA 94111	(415) 774-2700	(415) 398-1905

Port Construction

Firm	Contact	Address	Phone	Fax
Washington Group International	Stephen Johnson	720 Park Blvd., [P.O. Box 73] Boise, ID 8372	(208) 386-5510	
Bechtel Corporation	Riley Bechtel	5275 Westview Drive Frederick, MD 21703	(301) 228-6000	(301) 228-2200
Shaw Group	J.M. Bernhard, Jr.	4171 Essen Lane Baton Rouge, LA 70809	(225) 932-2500	(225) 932-2661
Turner International	Charles Murphy	375 Hudson Street New York, NY 10014	(212) 229-6275	

EQUIPMENT

Refrigerated Reefers

Firm	Contact	Address	Phone	Fax
CLI	Mark Fehrenbach	1500 Newell Avenue, Suite 600 Walnut Creek, CA 94596	(925) 946-4290	(925) 946-4295
Utility Trailer Sales	R. Thrasher	15567 E. Valley Blvd. Fontana, CA 92334	(909) 428-8300	(909) 823-9662
Cassone		1950 Lakeland Ave. Ronkonkomo, NY 11779	(631) 585-7800	(631) 585-7895

Evaluation of Container Terminal Operating Methods

Operating Methods for Container Terminals can be broadly categorized as:

- **Wheeled** - Containers are stored on Chassis and are drayed to and from the Container Yards [CYs] with Yard Tractors or Hustlers;[1]
- **Top Pick/Reach Stacker** - Top Picks and Reach Stackers are specialized Container Handlers fitted with spreaders that attach at the top of the container. Containers are stored on the ground in blocks generally 3 or 4 high and 3 rows deep, depending upon the reach capacity of the Machine. Containers are drayed to and from the CYs with Chassis Hustler combinations;
- **Straddle Carrier** - Straddle Carriers or "Strads" are rubber-tired mobile cranes that span a single container [1 wide] and are capable of stacking containers 2 or 3 high. The containers are stored in long rows that run either parallel or perpendicular to the berths. The Strads move over the containers and pick or deck the container with an integral spreader. Containers are moved between blocks and the berths by the Straddle Carrier, thus eliminating the Chassis Hustlers from the equipment list;
- **Rubber Tired Gantry [RTG] Cranes** - RTGs are mobile cranes that span up to 6 rows of containers plus one truck lane. The RTGs transfer containers between the stack and the truck or Chassis Hustle combination. Containers are stored on the ground in blocks that are generally 5 or 6 containers wide and 5 containers high. The largest RTGs in operation are at Singapore, Hong Kong and Shanghai. They are 6 wide [plus 1 truck lane] and capable of stacking 1 over 5 [total stack height is 6];
- **Rail Mounted Gantry [RMG] Cranes** - RMGs are similar to RTGs except that they are larger and run on steel wheels and rails rather than rubber tires and guide paths. Common RMGs are 8 to 12 rows wide and capable of stacking 1 over 5 or 6 high. Methods of operation vary. Conventional RMG facilities are very similar to RTG operations. Chassis Hustlers Combinations are used to dray the containers to and from the CYs. In those operations, the container blocks are generally arrayed parallel the berths;
- **Automated RMGs** - Recently a few operators have taken advantage of positioning accuracy of RMGs to automate Container Yard operations. The RMGs are similar to those used in conventional operations except that no trucks or Chassis Hustlers are required in the CY. Containers are moved from the Truck Load/Unload areas toward the berths by the RMGs with a Gantry Move. To achieve this capability, the container blocks are arrayed perpendicular to the berths. Containers are moved between the container blocks and the berths by Chassis Hustlers, Automated Guided Vehicles [AGVs] or specialized Straddle Carriers called Container Movers or some variation thereof;
- **Integrated Automated Container Terminal [IACT™]** - The IACT utilizes large cantilever RMGs built to a steel mill standard. The cranes typically have a main beam span of 100 meters and a gauge of 60 meters. They are capable of spanning 38 rows and stacking 1 over 8 or 9 high. Container blocks are arrayed parallel to the berths and containers are transferred between the Truck Load/Unload Stations to the berths by the RMGs executing a series of Trolley Moves. The automated move to the Ship-to-Shore [STS] Crane is accomplished

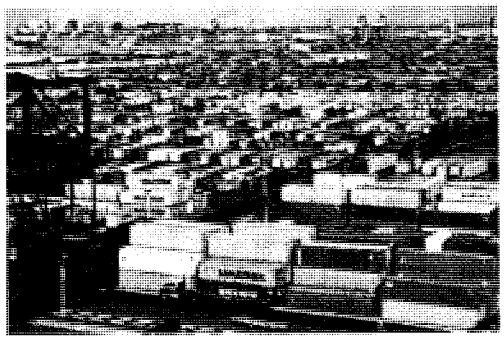
1 A note on terminology. Yard Tractors are commonly called "Hustlers" on the East and Gulf Coast of the United States. On the West Coast they are known as "Hostlers". In Europe and parts of Asia they are called "Tractors". We use Hustler and Chassis Hustler Combinations to describe the tractor and the device on which the containers are transported within a Container Terminal.

using a conveyor that interfaces with the STS. If the facility is more than one CY deep, the transfer between CYs is accomplished using a conveyor and the RMGs.

When considering the suitability of the various operating methods for a Transshipment Terminal, two criteria are of paramount importance:

- The amount of land required to handle the projected annual throughput; and
- The efficiency of the Terminal Operating Method.

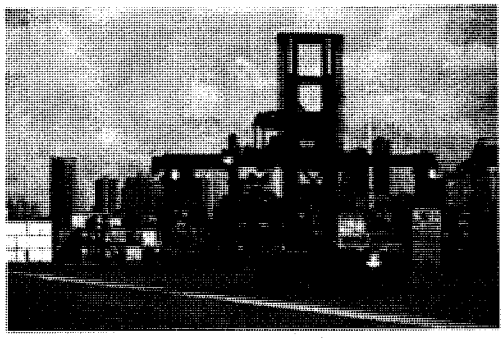
A secondary consideration but one of growing importance is the environmental impact of the facility. The "greener" the facility the more likely it will be accepted by the community. A properly engineered facility that is environmentally friendly has the potential for significant cost savings as well.



Considering these criteria we examine the methods enumerated above:

- **Wheeled** - Containers enter the facility on Chassis which are drayed by Over-the-Road truckers. The truckers are instructed to park the Chassis in a designated spot. Containers are stored on the Chassis and are drayed to and from the Container Yards [CYs] with Yard Tractors or Hustlers. The principal benefit of this method is the immediate availability of any container at any time. Containers are not stacked on one another and are therefore readily accessible. Further, it does not require a sophisticated Yard Planning system to function.

  On the other hand, the land required for even a moderately large facility is significant. Not only must space be provided for chassis parking, but additional land is required for roads, turnouts, marshaling areas and maintenance for a large equipment fleet. In addition, once the facility achieves a reasonable level of throughput congestion and pollution become significant issues. This method is not a candidate for the proposed facility.



- **Top Picks and Reach Stackers** - Over-the-Road trucks enter the facility and proceed to a designated container block where the export container is removed from the Chassis and placed on the ground or in the stack by the Reach Stacker. Containers are stored in blocks generally 3 or 4 high and 3 or 4 rows deep, depending upon the reach capacity of the Stacker. Containers are drayed between the berths and the CYs with Chassis Hustler combinations. The density of container stow in the CY is greater than that of the Wheeled Operation. However, both Top Picks and Reach Stackers require substantial maneuvering room. Thus the container blocks are separated by relatively wide aisles. All of the equipment is diesel powered and particulate pollution is a concern. This method is not a candidate for the proposed facility.

- **Straddle Carrier** - Over-the-Road trucks enter the facility and proceed to a designated Truck Service Area. Containers are removed from the road chassis by Straddle Carriers. The trucks do not enter the CYs. The containers are moved to the CYs by Straddle Carriers and stored in long rows that run either parallel or perpendicular to the berths. The density of the stow in the CY is greater than that of the Top Pick/Reach Stacker operation. The Straddle Carrier also eliminates the need for Chassis Hustle combinations in the CYs and on the berths. The Straddle Carrier can also move containers from one container block to another or between berths fairly rapidly. A positive attribute when considering transshipment operations.

  However, all of the equipment in a Straddle Carrier operation is diesel powered. Although the particulate emissions from Over-the-Road trucks are reduced, the Strads are substantial pollution contributors.

- **Rubber Tired Gantry [RTG] Cranes** - As in the case of Wheeled and Top Pick/Reach Stacker operations, Over-the-Road trucks enter the facility through gates and are directed to a location within the Container Yard for pickup or delivery of a container. Containers are picked from the Chassis or delivered to the Chassis by an RTG.

  Containers are stored on the ground in blocks that are generally 5 or 6 containers wide and 5 containers high. Transfers between the container blocks and the berths are accomplished by Chassis Hustler combinations. The RTG picks a container from the stow and transfers it to the Chassis which is then drayed to the appropriate berth and Container Crane.

  In some RTG operations, to avoid having Over-the-Road Trucks enter the CYs, containers are removed from the Truck Chassis in a designated Load/Unload Area with Top Picks or scaled-down RTGs that are only 2 or 3 rows wide and capable of stacking 2 high.

  All of the equipment is diesel powered. However, some operators have started to consider converting RTGs to shore power to reduce pollution.

- **Rail Mounted Gantry [RMG] Cranes** - RMGs are more robust than RTGs and allow the Terminal Operator to increase stack density in the CYs. Machines capable of spanning up to 12 rows and stacking 1 over 5 have been deployed. All

implementations to date are very similar in design to RTGs. That is, without cantilevers, although some cantilever cranes have been deployed in European operations.

Methods of operation vary. Conventional RMG facilities are very similar to RTG operations, except that RMGs are capable of handling loaded containers in all 3 motions simultaneously; i.e., hoist, trolley and gantry. RMGs are also more easily automated than RTGs. Steel wheels on fixed steel rails allow higher position accuracy. The efficiency of crane operations is therefore increased.[2] Chassis Hustlers Combinations are used to dray the containers to and from the CYs. In those operations, the container blocks are generally arrayed parallel the berths.

Most RMGs either are or can be electrically powered and those have regeneration capability thus reducing diesel emissions. Pollution is also reduced from Over-the-Road Trucks and Chassis Hustlers because crane operations are more efficient.

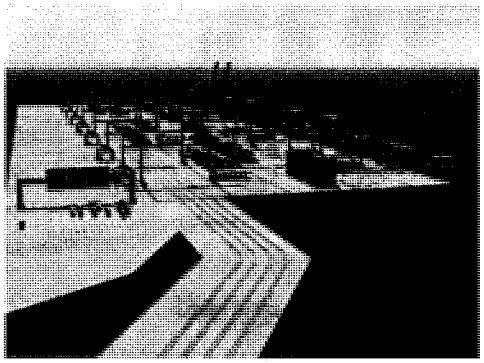
- **Automated RMGs** -In this iteration, the CY blocks are arrayed perpendicular to the berths. No trucks or Chassis Hustlers are required in the CYs. Containers are moved from the Truck Load/Unload areas toward the berths by the RMGs with a Gantry Move. Containers are moved between the container blocks and the berths by Chassis Hustlers, Automated Guided Vehicles [AGVs] or specialized Straddle Carriers called Container Movers or some variation thereof.

The RMGs are electric and use shore power, thus eliminating diesel emissions from the Yard Cranes. Further reduction in hydrocarbon emissions is achieved by limiting Over-the-Road Truck traffic to the backland immediately adjacent to the Gate Complex. However, transfers between the CY and the berths as well as to and from the Rail Yard are still accomplished using diesel powered equipment.

The principal disadvantage of this configuration in a transshipment operation is the relative inefficiency of berth operations. Congestion on the berths is concentrated at the waterside end of each container block. Further, there is not efficient way to move containers between the blocks thus increasing the housekeeping complexity attendant to transshipment operations.

2 RTGs cannot gantry with a loaded container on the spreader. RTGs are therefore constrained to operate as "Pick and Deck Machines." Loading and unloading containers in a single row before moving to another position. Some RTGs have been designed to gantry with a loaded container, but these have generally been limited to Intermodal Operations and the gantry speed is very low.

- **Integrated Automated Container Terminal [IACT™]** - The IACT is an all-electric, fully automated integrated hardware - software solution to Container Terminal Operations. It addresses most, if not all, of the operational issues highlighted in the foregoing discussion.

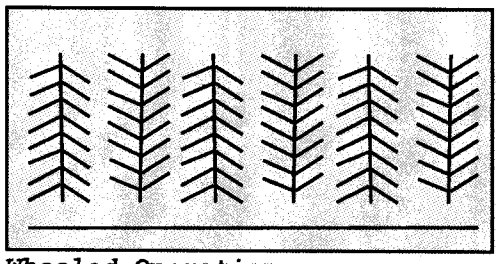


The IACT utilizes large cantilever RMGs built to a steel mill standard. The cranes typically have a main beam span of 100 meters and a gauge of 60 meters. They are capable of spanning 38 rows and stacking 1 over 8 or 9 high. Container blocks are arrayed parallel to the berths and containers are transferred between the Truck Load/Unload Stations to the berths by the RMGs executing a series of Trolley Moves. The automated move to the Ship-to-Shore [STS] Crane is accomplished using a conveyor that interfaces with the STS. If the facility is more than one CY deep, the transfer between CYs is accomplished using a conveyor and the RMGs.

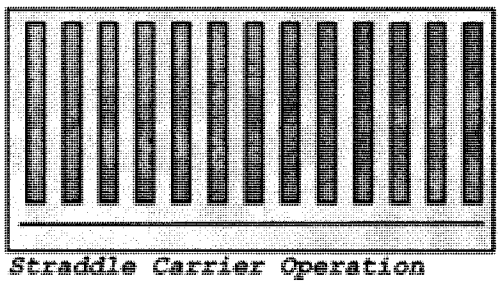
Trucks are restricted to the Load/Unload Stations which are capable of loading and unloading containers [a double-move] in 90 seconds or less. Pollution from diesel equipment, whether from Over-the-Road Trucks or Chassis Hustlers is virtually eliminated. The use of large, robust machines reduces the machine count [1 IACT - RMG replaces up to 6 RTGs or 4 smaller RMGs] and full automation allows 24/7 operations.

Volumetric Efficiency

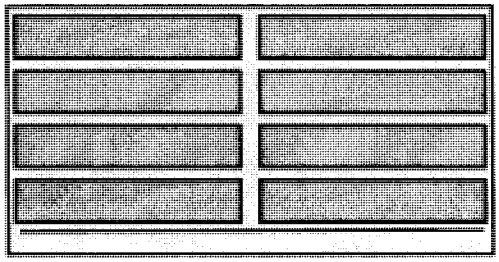
Volumetric Efficiency refers to the degree of utilization that a particular configuration achieves when compared to others. In this case, we define a rhomboid analog for a container berth 305 meters long and 305 meters deep. The Z component is a 6-high container stack, the maximum stack height for RTGs and conventional RMGs currently in operation. We then layout typical facility plans on the 305 X 305 footprint for Wheeled, Straddle Carrier, RTG and RMG operations. We then calculate the number of container lots available within each configuration.



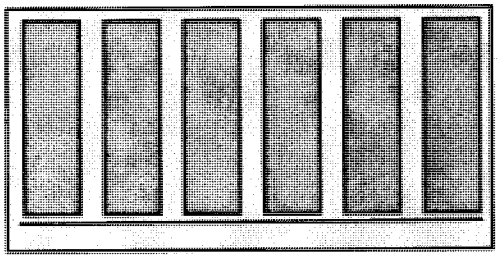
Wheeled Operation



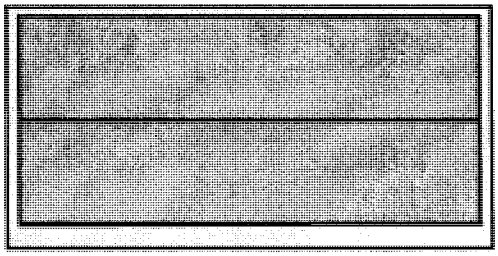
Straddle Carrier Operation



RTG Operation

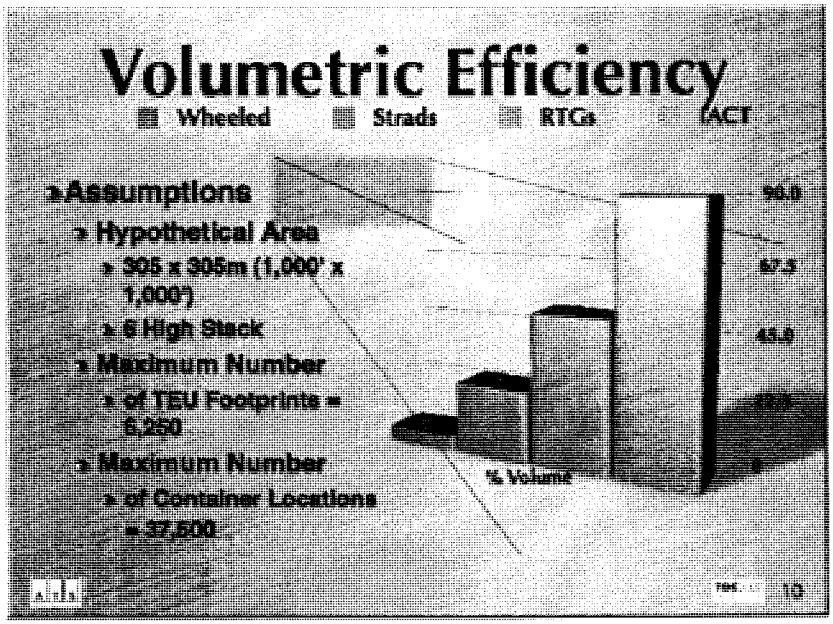


RMG Semi-Automated Operation



IACT Operation

Each configuration from Wheeled to Straddle Carrier to RTG and RMG increases the density of the container stow and the amount of land that can be used for the particular operation. The results are shown on the following slide:

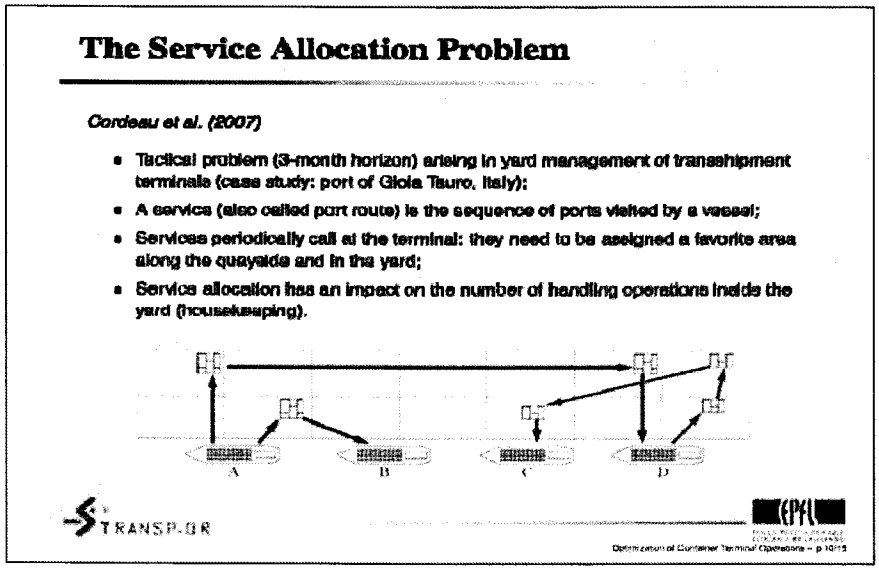


Available Container Slots - Volumetric Comparison

Given the limited land available for expansion on Wey Island, the volumetric utilization of the Container Terminal is an important consideration.

Transshipment Housekeeping Efficiency

Every engineering and operational design decision entails a trade-off. In this particular instance, as the container blocks grow and the stack density increases, the ability to quickly retrieve a container or access any particular slot degrades. In a transshipment operation the problem is exacerbated because it is necessary to shift containers between operating areas to marshal them efficiently for the onward transportation. In busy transshipment terminals it is often necessary to shift containers between berths while the line haul vessel and the onward feeder ship are both on berth. The essential problem is illustrated in the accompanying slide.



A minimum of 3 moves is required to transfer a container between the line-haul vessel and the feeder ship if the container enters the stow. [Shown in Blue.] A ship-to-ship move, shown in Green, requires 2 moves and the most common transfer, shown in Red, involves an interim housekeeping move when container dwells in the facility for any time beyond 1 or 2 days.

Wheeled Operations Top Pick and Straddle Carrier operations have little difficulty moving containers between berths or between the CYs and the berths. The problem they encounter is traffic congestion on the berth which in turn degrades crane efficiency.

The transshipment problem is most difficult for conventional RTG operations because the RTG is essentially a stationary pick-and-deck machine. Because it cannot gantry from position A to position B with a loaded container, a Chassis Hustler combination is necessary to make the relocation move. Each time a relocation is required at least 2 RTGs and 1 Chassis Hustler Combo is required. Slots have to be allocated and the inventory maintained accurately and in real-time. Still, with Chassis Hustlers in the operation, transfers between berths can be accomplished relatively easily.

RMG facilities oriented with the container blocks perpendicular to the berths have a particular problem, whether the CY to berth transfer is accomplished with Chassis Hustlers, Container Movers, or AGVs. There is no way to transfer containers between container blocks except at either end of the blocks. Because the landside end is designed to accommodate Over-the-Road Trucks, these transfers are accomplish on the berths. Berth

congestion becomes the greatest operational constraint, even when the facility does not cater to the transshipment trades.

The IACT is the most efficient design for transshipment facilities. Transfers within each block or CY are accomplished by the RMGs alone or between RMGs using an automated Yard-to-Yard Conveyor. Transfers between berths or between the CYs for each berth can be accomplished using an automated Shuttle Car System or by the RMGs playing "Pitch-and-Catch" to move the containers laterally.

Evaluation Matrix

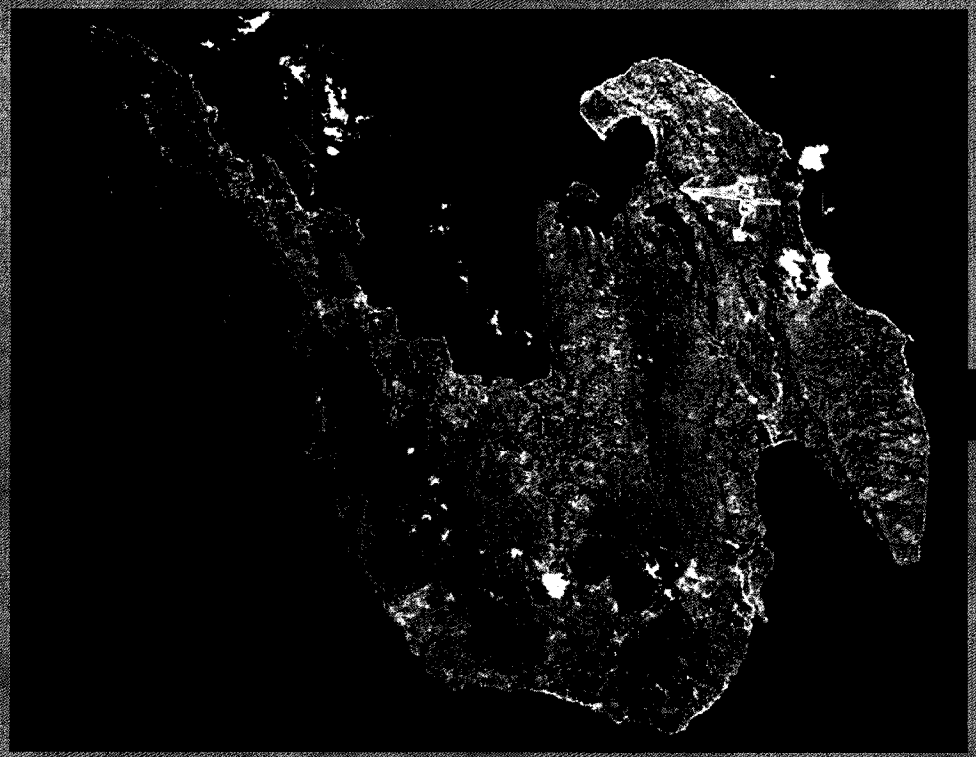
The following Matrix summarizes the principal considerations discussed above when implementing a Transshipment Facility. Each factor is assigned a value from 1 to 5 [Poor to Best].

Factor	Wheeled	Top Pick	Strads	RTG	RMG	IACT
Density	1	2	2	3	4	5
Yard Ops	2	2	3	2	4	5
Berth Ops	3	3	3	3	2	5
Automation	1	2	2	3	4	5
Environmental	1	1	2	2	3	4
Totals	8	10	12	13	17	24

Clearly, the three most viable operating methods are RTG, RMG and the IACT. All three can be implemented on the same footprint and with the same basic berth and yard infrastructure described elsewhere in this report. It is up to the Terminal Operator to make that decision. However, it is in the interests to of the client to foster the most competitive configuration--one that will enable Weh Island to attract business in the face of very strong competition.

BPKS
BADAN PENGUSAHAAN
KAWASAN SABANG

Weh Island Transshipment Port Invesment Opportunity



James Hunt – TEC Inc

Ben Hackett – Hackett Associates

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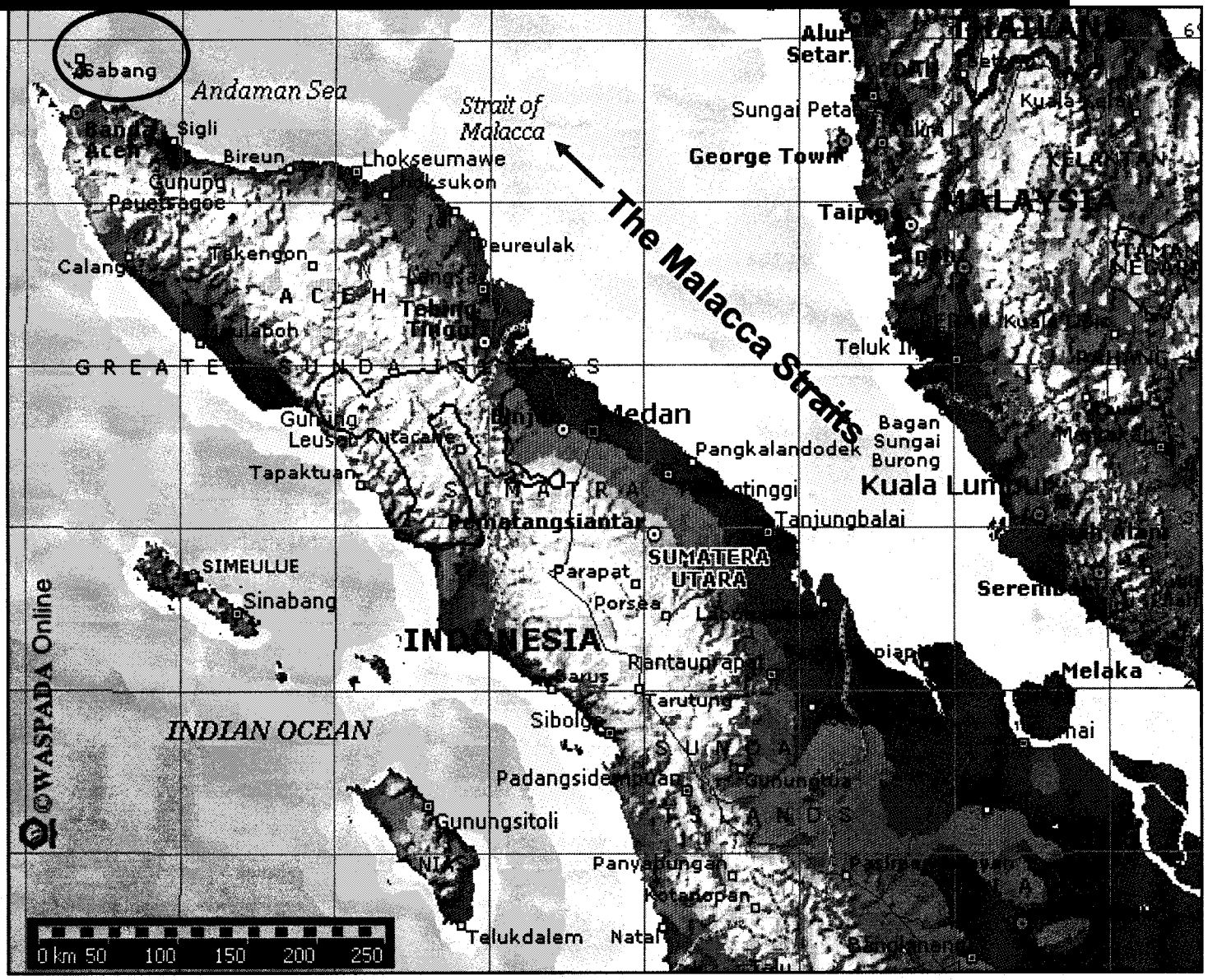
Strategic Location



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Study Objective

- A "market driven" plan for development of an international transshipment container port for Weh Island
  - Shipping Lines Control the Market
  - With Super Post-Panamax Container Vessel (over 10,000 TEUs), shipping companies are looking at "transshipment" terminals
  - Terminal Location/Use must be compatible with regional shipping patterns and other regional port calls

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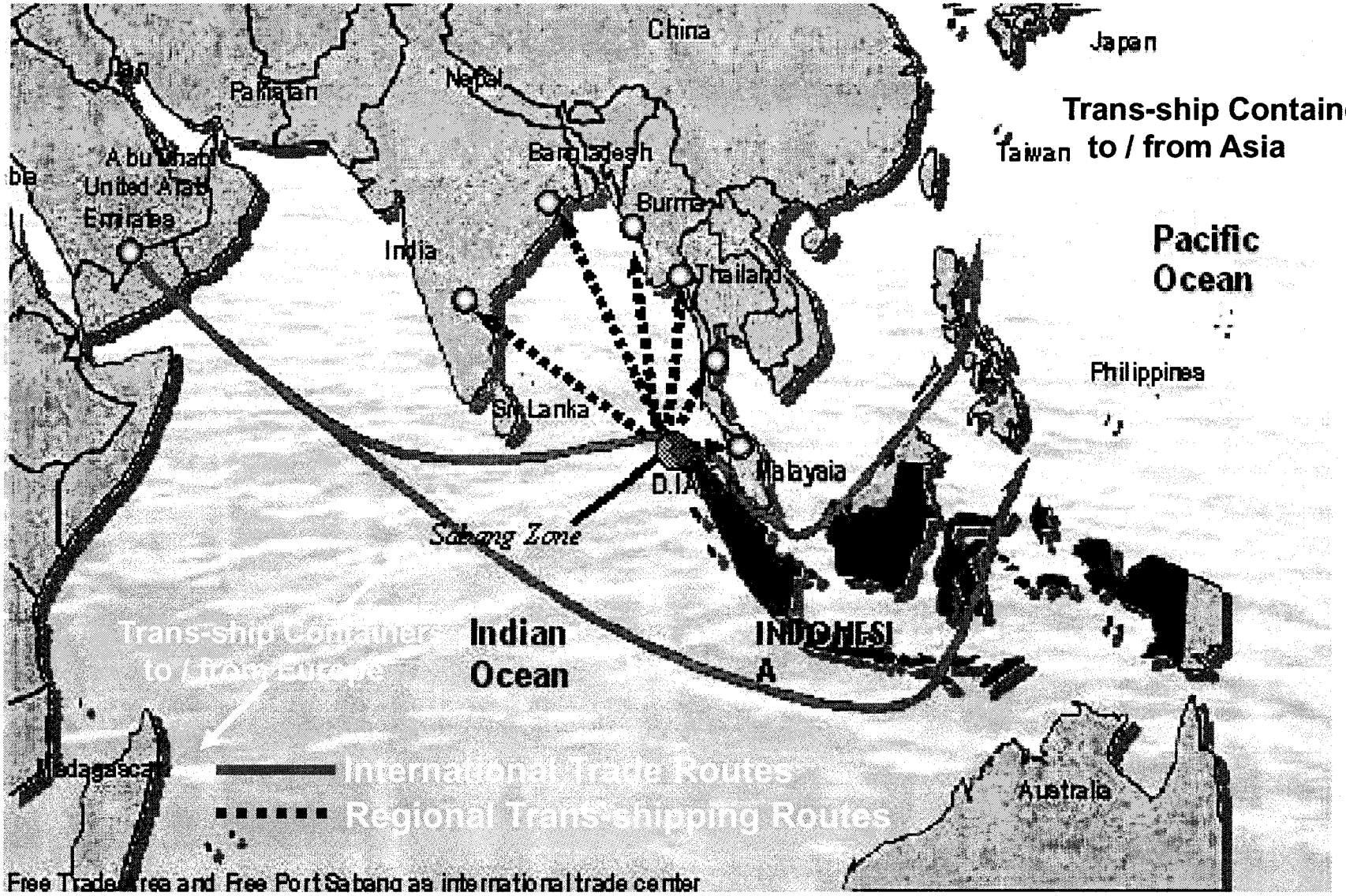
Weh Island is Central to a Number of Existing Transportation Routes



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Transshipment Terminal Development Requirements

- Capability to accept ships in the trade routes on which transshipment represents a viable business opportunity
- Serviceability – the ability to load and unload containers quickly and efficiently
- Supportability – access to "Ancillary Marine Services"
- Availability of support services/value added services from a business perspective

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WEH ISLAND LEGAL REVIEW

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Sabang Free Trade Zone

- Law 37/2007
- 245 square miles around Weh Island
- Exempt from import duties, sales tax on luxury goods, and excise taxes.
- Chairman is Governor of Aceh Province
- Management Board – 5 Members – reside in Sebang City
- Authority to License Businesses
- Authority to Implement Economic Development

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Weh Island Legal Review

Recent Indonesian Legislation

- New Investment Law (25/2007) –
  - Better Climate for Investment
  - Simplify Licensing
  - Tax and Import Duty Incentives
  - Extended Land Ownership Periods
  - Equal Rights to foreign Investment Owners
  - Reduced Risk of nationalization
  - Allows repatriation of Profits
  - International Arbitration Allowed
- Shipping Law (17/2008) –
  - Ended State Monopoly on Port Ownership
  - Allows Foreign Operators to Own/Operate Ports
  - Tax Incentives
  - Extended Land Ownership Periods
  - Reduced Risk of nationalization

Private port development must be in a joint venture with a domestic investor and foreign investors can hold a maximum shareholding of 49%.

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MARKET ANALYSIS

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The Market

- The Competition
- Potential Clients
  - Unlikely Customers
  - Potential Customers
- Potential Investors
  - Terminal Operators
  - Equity Funds
  - Indonesian Equity
    - Private
    - Public
- Market Size Defined

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The Market: Transshipment Volumes At Existing Ports

Port	Millions TEUs Base Year 2006	Compound Growth Average 10% 2015	2020	2025
Singapore	21.1	34.3	55.2	88.9
Hong Kong	9.6	15.6	25.1	40.5
Port Kelang	3.3	5.4	8.6	13.9
PT Pelepas	4.5	7.3	11.8	19.0
Laem Chabang	1.1	1.8	2.9	4.6
Colombo	2.4	3.9	6.3	10.1
Total	**42.0**	**68.3**	**109.9**	**177.0**

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Potential Customer Selection

- Not members of an Alliance
  - Grand Alliance
  - New World Alliance
  - CHKY Alliance
- Not a Lessor in an existing Terminal
  - Maersk/APMT
  - Evergreen
- Not a Major User of Singapore

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Potential Investors

Private Equity Companies	Port & Terminal Operators	Container Lines
•AIG Global Investment Group	•DP World	•UASC
•Carlyle Leasing	•APM Terminals	•CMA CGM
•Babcock & Brown	•PSA	•MSC
•Goldman Sachs	•Hutchison Port Holdings	•CSAV
•Deutsche Bank (RREEF)	•SSA Marine	•China Shipping (CSCL)
•Macquarie Infrastructure Investment Fund	•ICTSI	•Gold Star Line
•Toronto Teachers Association	•Terminal Link	

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Projected Weh Island Throughputs Based On One Major Carrier, Plus a Secondary Carrier

Lifts	2015	2016	2018	2020	2025
Annual Lifts					
Baseline 7.9%	400,000	800,000	**1,600,000**	2,000,000	3,100,000
Low Case 5%	-	600,000	1,200,000	1,400,000	2,500,000
High Case 10%	-	1,00,000	2,000,000	2,600,000	3,600,000
Weekly lifts					
Baseline 7.9%	7,700*	15,400	30,800	38,500	59,600
Low Case 5%	-	11,500	23,100	27,000	48,100
High Case 10%	-	20,000	38,500	50,000	69,200

Estimated Transshipment TEUs for 2020 for Regional Ports: 109.9 Million

*Assumes slow start up

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Recommended Investment Strategy

- Private Public Partnership
  - Current global financial crisis has impacted structure of investment
  - project finance based on infrastructure investment
- Develop Phase I only, later Phase II will be self funded
- Allow for foreign and national investors to work together
- Indonesian PPP company created to act as developer
  - with 40% + equity share
  - 60% international loan components
  - Concession lease to a terminal operator linked with a Line
- During the concession the leaseholder is allowed to charge the users of the facility appropriate tolls, fees, rentals, and charges.
- Leaseholder pays a concession fee and throughput tax to development company
- Both Development company and Leaseholder goals are to recover investment,s operating and maintenance expenses in the project and make a profit.

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Alternative Private Sector Concession

- Either BOT or BOO
  - project finance based on operations
- Allow for foreign and national investors to work together
- Can function with public participation
- Includes finance, design, construction, and operation of facilities for a specified period
- During the concession the leaseholder is allowed to charge the users of the facility appropriate tolls, fees, rentals, and charges.
- Leaseholder pays a concession fee to government
- Leaseholder goal is to recover its investment, operating and maintenance expenses in the project and make a profit.

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BALOHAN BAY TRANSSHIPMENT

TERMINAL DEVELOPMENT

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Transshipment Container Terminal

Size Requirements Established By:

- Length of Vessels
  - Consider maximum length and average length to establish **length of wharf**
- Vessel Draft
  - Add maneuvering depth to maximum vessel draft to establish **depth of channel and wharf edge**
- Marshalling Operations
  - Consider CY marshalling operations to determine minimum **number of berths** required
- Backland Operations
  - Consider backland operations to determine **overall wharf width**

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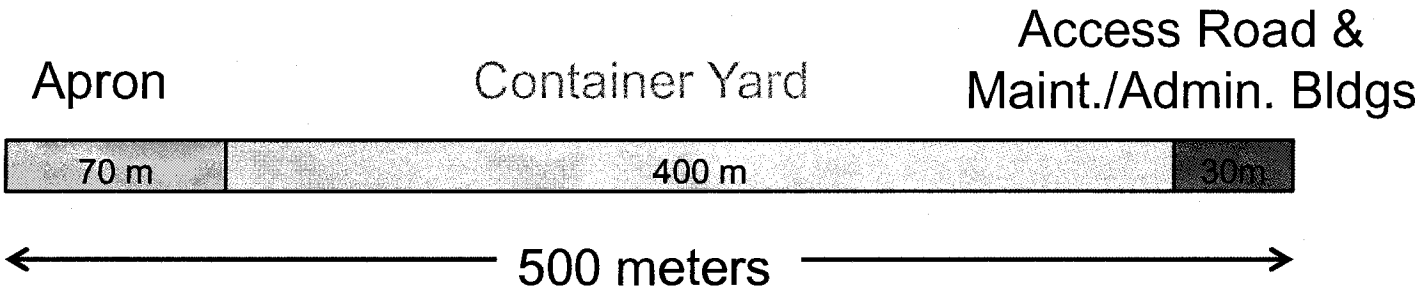
Wharf Requirements

- Wharf - Width



- Wharf - Draft Alongside
  - Maximum Vessel Draft -15 m
  - Maneuvering in Approach Channel -2 m
  - Safe berthing -0.5 m

TOTAL -17.5 meters

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Wharf Requirements

Wharf Length

- Phase 1 (3 Berths)
  - 1 - Super Post-Panamax Vessel 380 m
  - 1 - 8,000 TEU Capacity Vessel 325 m
  - 1 – Feeder Vessel 290 m
  - Space for line handling/movement 150 m

  TOTAL 1145 m USE **1150 m**
- Phase 2 (2 Additional Berths)
  - 2 - 10,000 TEU Capacity Vessels 700 m
  - Space for line handling/movement 100 m

  TOTAL **800 m**
- TOTAL (5 Berths)
  - Phase 1 Requirements 1150 m
  - Phase 2 Requirements 800 m

  TOTAL **1950 m**

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Transshipment Terminal Development Requirements

BERTH REQUIREMENTS

Item	Value
Berth Length	Maximum 380 meters
Crane Reach	22 Containers Wide
Draft Alongside	-17.5 meters
Shore Power	Yes
Fresh Water Hydrants	Yes
Bunker Hydrants	Preferred
Crane Rail Gauge	30.4 meters
Apron Width	70 meters
Provision for Crane Electrical Power	Yes
Telephone and Internet	Yes

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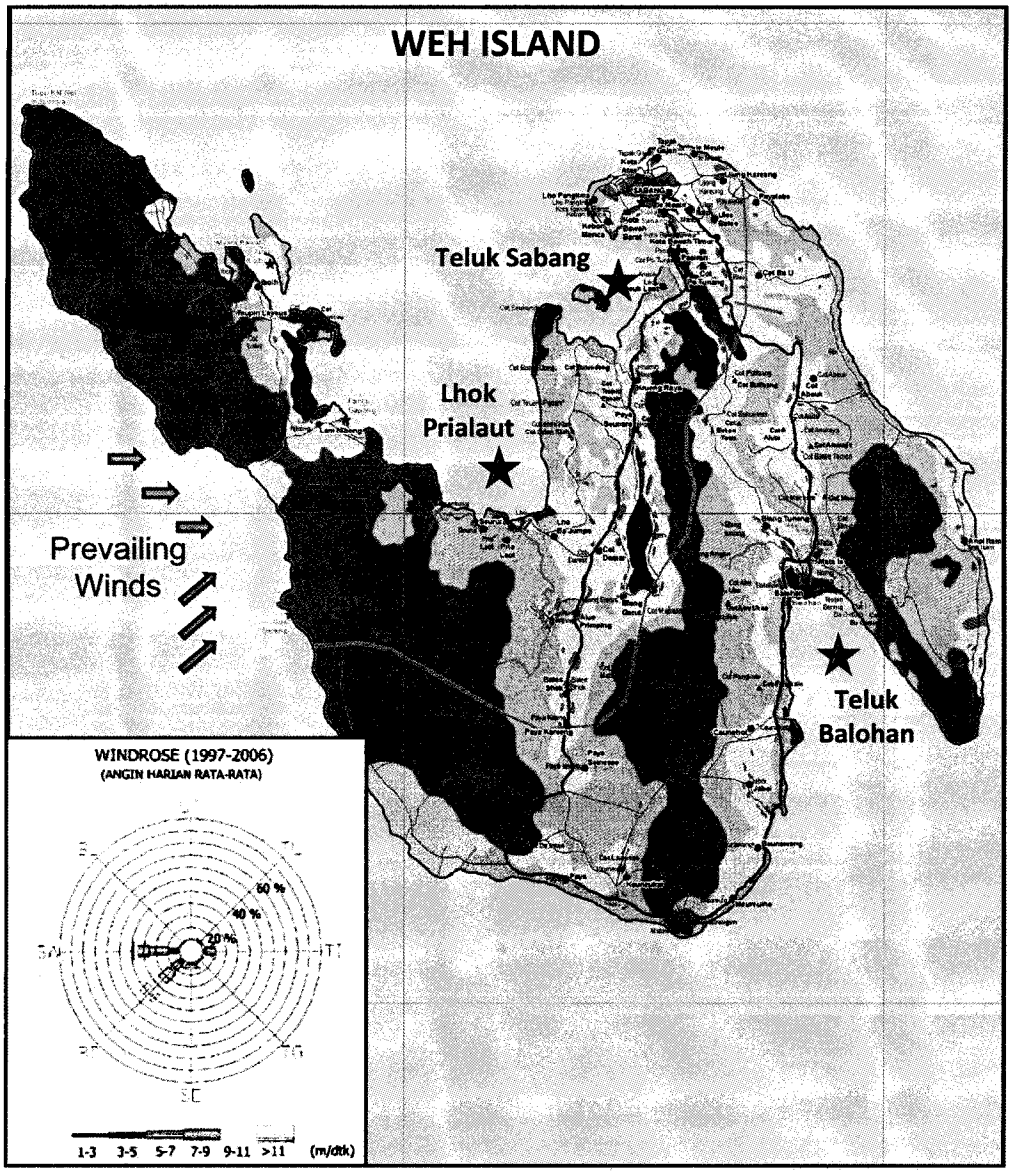
Site Selection Goals

- Protection From Wind and Waves
- Accessible to Super Post-Panamax Ships
- Limit Excessive Cut and Fill Requirements During Construction



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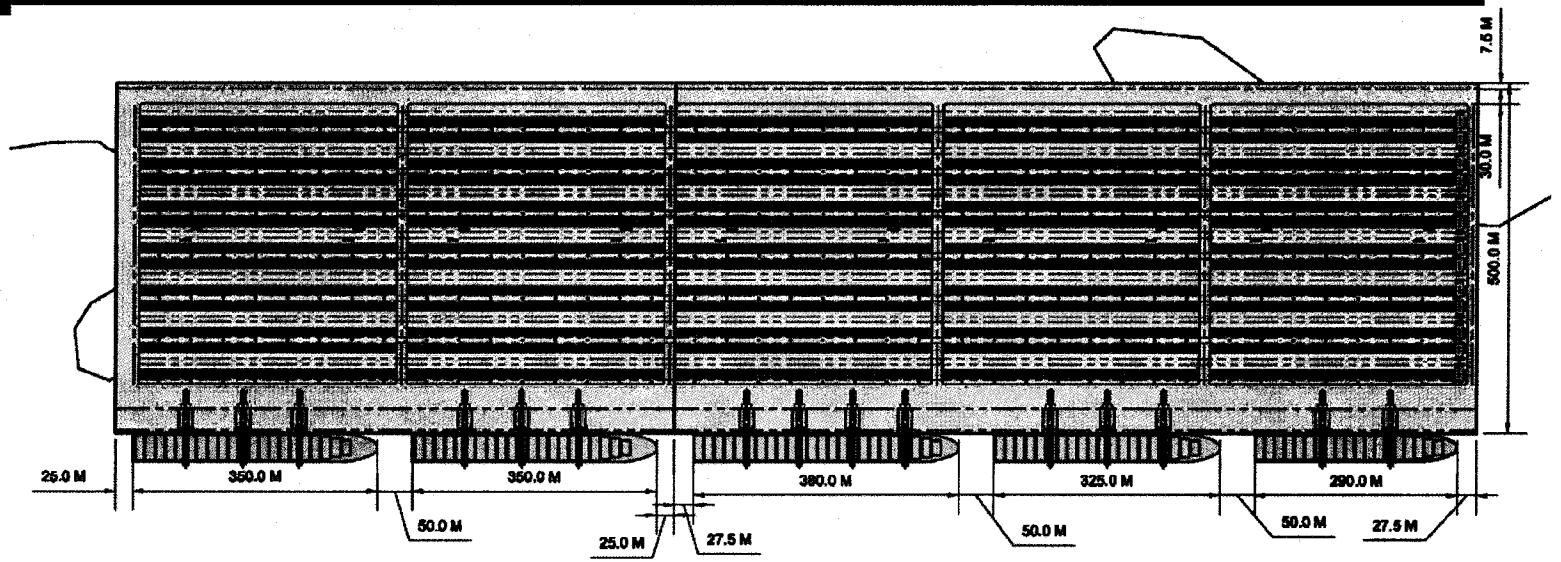
Development Plans



	Phase 1	Phase 2 / TOTAL
Berths	3	2 / 5
Wharf Length	1150 meters	800 m / 1950 m
Cut Requirements	3,500,000 m^3	2,500,000 m^3 / 6,000,000 m^3
Fill Requirements	3,000,000 m^3	2,700,000 m^3 / 5,700,000 m^3
Dredge Requirements	1,100,000 m^3	750,000 m^3 / 1,850,000 m^3
Cranes	9	6 / 15
Container Yard	45.7 ha	32 / 77.7 ha
Capacity (TOTAL)		3,000,000 lifts/yr

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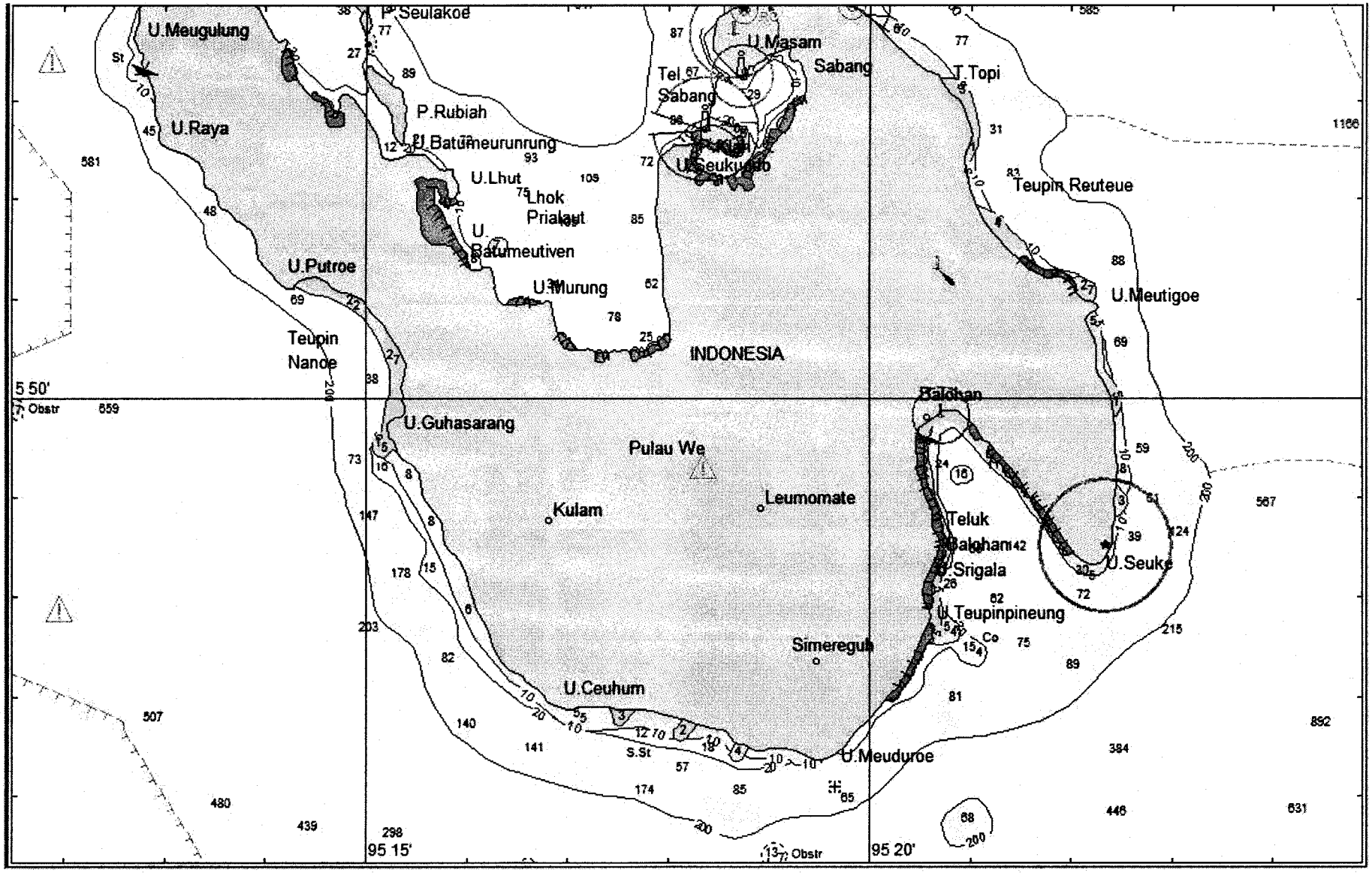
Weh Island has Natural, Well Protected Deep-Water Bays



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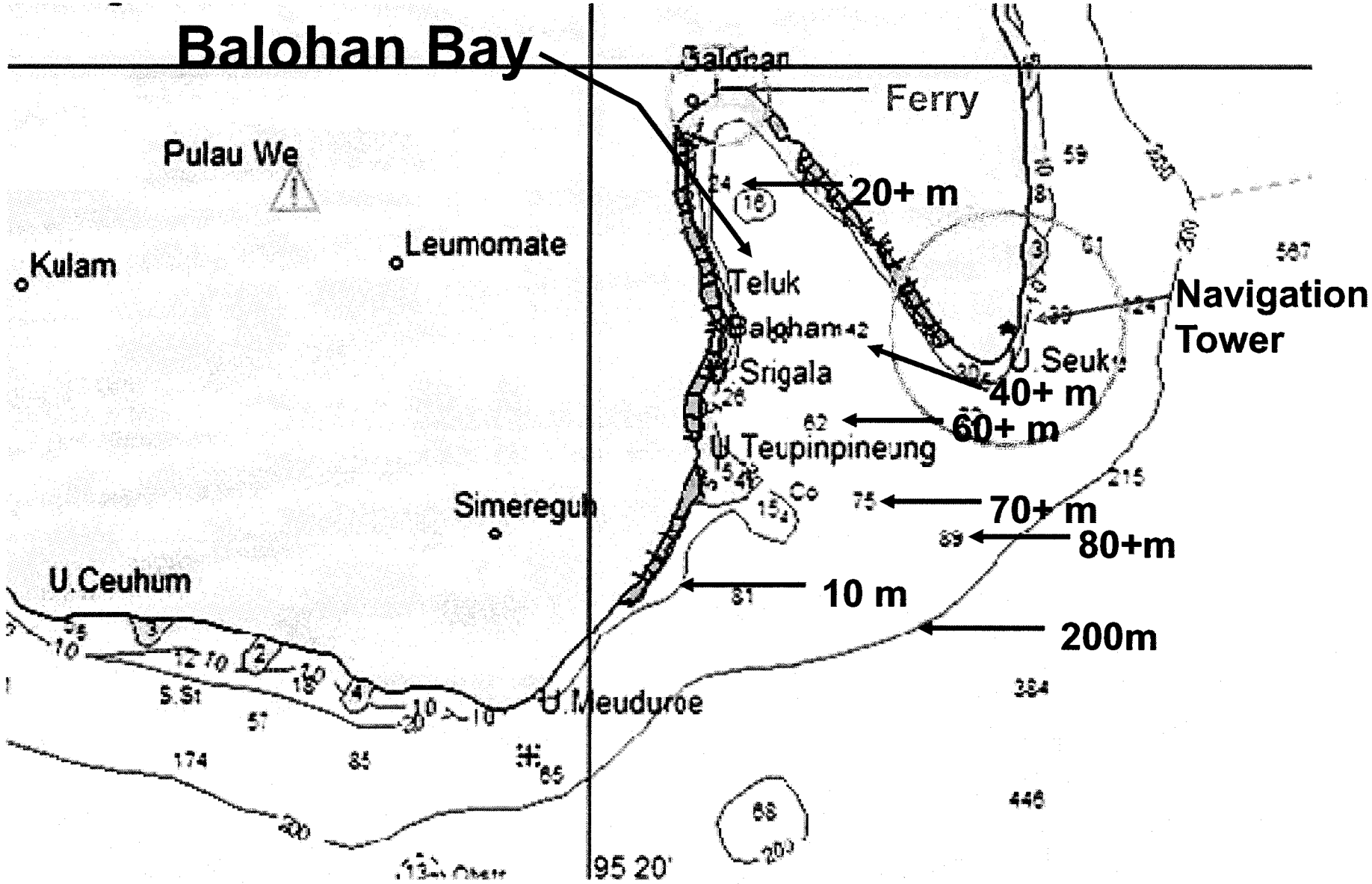
One of which is Balohan Bay



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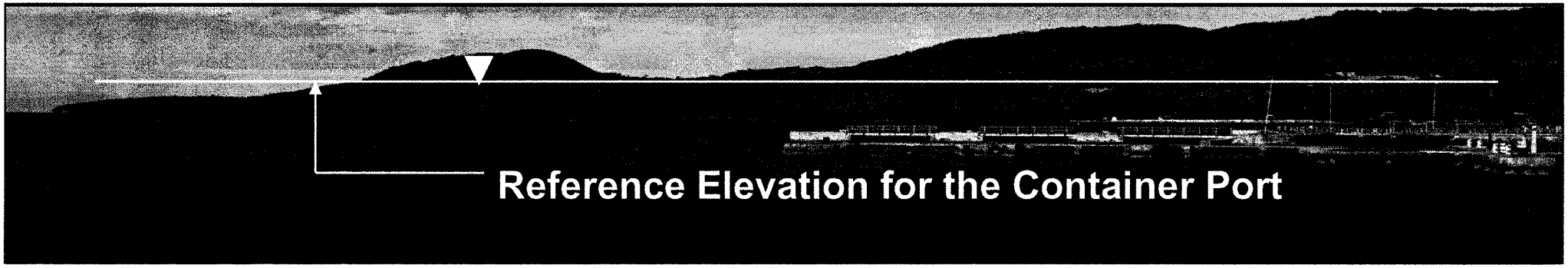
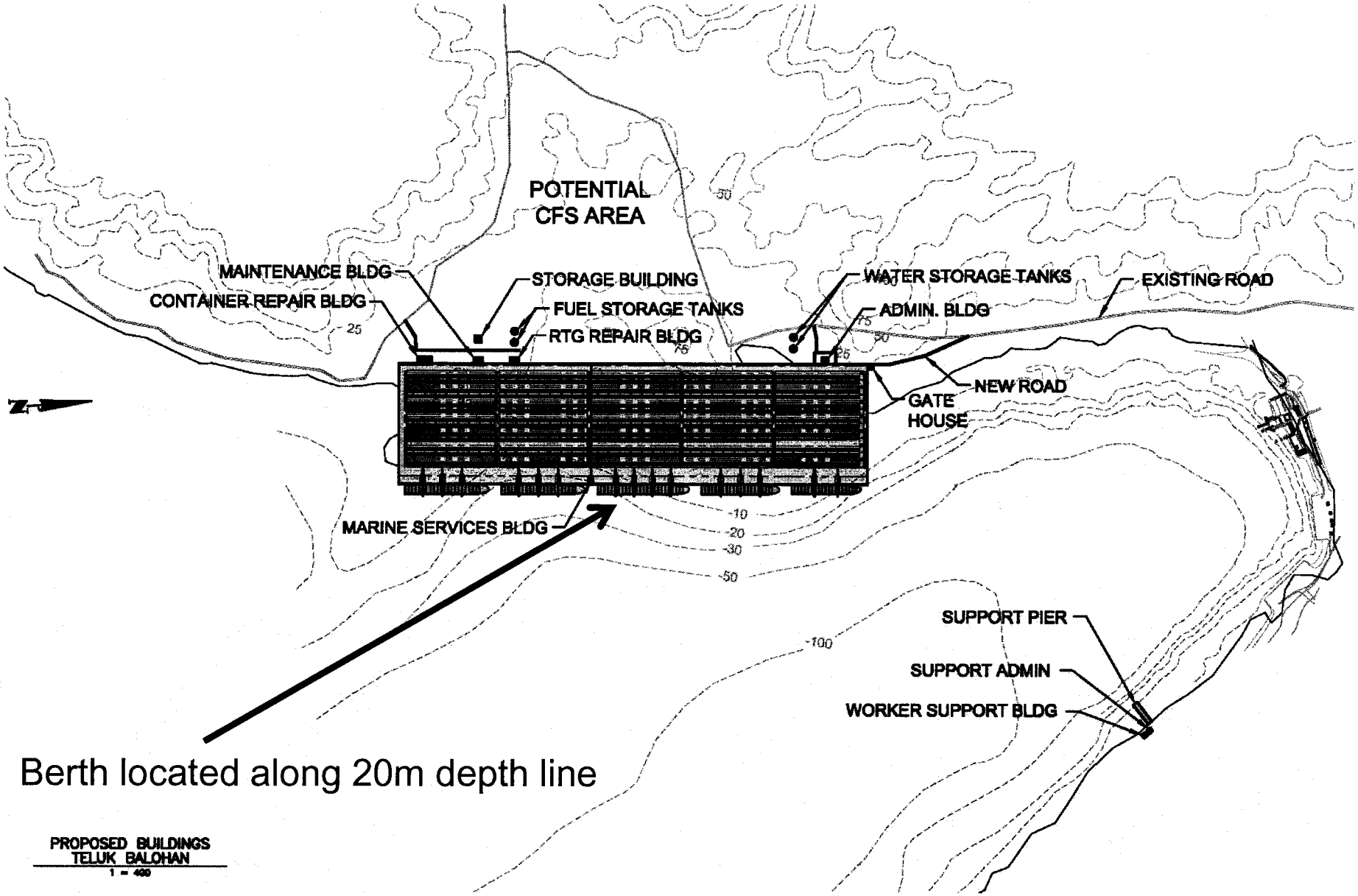
Balohan Bay Today

The west shore of Balohan Bay is relatively level and very wide with more than 850 hectares available for the port

Balohan Bay Looking at the West Shoreline and the Port (6,750 meters of shoreline visible)



Balohan Bay Terminal Facilities



Berth located along 20m depth line

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Cost Estimate – Capital Costs

DESCRIPTION	Phase 1	Phase 2
PROJECT PLANNING	$250,000	$150,000
PERMITS AND APPROVALS	$100,000	$75,000
ENVIRONMENTAL STUDIES	$250,000	$150,000
PROJECT MOB/DEMOB	$1,000,000	$250,000
DREDGING	$13,000,000	$9,500,000
HILLSIDE EXCAVATION	$25,500,000	$21,500,000
TRANSSHIPMENT WHARF	$84,033,950	$58,458,400
CONTAINER TERMINAL	$61,078,000	$60,078,000
SUPPORT BOAT WHARF/PIER - 300m x 20m	$2,488,750	$0
ADMINISTRATION BUILDING	$1,908,000	$0
WORKER SUPPORT BUILDING (Mess Hall and Bunk House)	$948,000	$948,000
MAINTENANCE BUILDING	$1,010,000	$0
STORAGE BUILDING	$864,000	$864,000
MARINE SERVICES BUILDING	$464,000	$0
RTG REPAIR BUILDING	$328,000	$0
CONTAINER REPAIR BUILDING	$492,000	$0
MAIN GATE/SECURITY	$132,000	$0
GENERAL SITE IMPROVEMENTS	$14,407,500	$3,242,500
MOBILE EQUIPMENT	$18,000,000	$8,300,000
GANTRY CRANES AND RTGs	$112,500,000	$78,000,000
OPERATING SYSTEMS	$15,000,000	$15,000,000
ROAD CONNECTIONS	$2,020,000	$170,000
PROJECT SUB-TOTAL	**$355,774,200**	**$256,685,900**
ENVIRONMENTAL MITIGATION	$7,115,484	$5,133,718
Insurance & Bonds (3.5%)	$12,701,139	$9,163,687
Engineering & Procurement Services (5%)	$18,144,484	$13,090,981
Construction Management Services (5%)	$18,144,484	$13,090,981
Contingency @ 15%	$61,781,969	$44,574,790
TOTAL PROJECT COSTS	**$473,661,760**	**$341,740,056**

TOTAL: $815,401,816

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FINANCIAL REVIEW

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Financial Model Based on BOT

Project Cost in Millions US$

	Phase 1 (2010-15)	Phase 2 (2020-23)	Total
Capital Construction	$280.0	$206.9	$486.8
Equipment	$193.7	$134.9	$328.6
Project Cost Total	**$473.7**	**$341.7**	**$815.4**
Interest Payments	$361.5	$258.6	$620.1
Overdraft Interest	$14.7		$14.7

2009 Costs. Model inflates all costs to YOE$

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Financial Model for PPP Phase I Development Co. builds Infrastructure

Project Cost in Millions US$

	Phase 1 (2010-15)	Phase 2 (2020-23)	Total
Capital Construction	$280.0	$-	$280.0
Equipment	$-	$-	$-
Project Cost Total	**$280.0**	**$-**	**$280.0**
Interest Payments	$387.3	$-	$387.3
Overdraft Interest		$-	$-

2009 Costs. Model inflates all costs to YOE$

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Revenue Assumptions

Port	*20' Dry*	*40' Dry*
PTP (current)	MR 140	MR 140

Balohan Bay Proposed Charge per Lift

$60 for a full container
$50 for an Empty container

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PPP EQUITY STAKES

Variable	Value
Private Equity Stake	10%
Public Equity Stake	30%
Debt Financed State	60%
Inflation Rate	3% per year
Capital Debt Length / Interest Rate	20 years / 6.0%
Equipment Debt Length / Interest Rate	15 years / 7.0%
Cargo Adjustment Rate	-
Lift Charges	$55/Container
Base Year Activity	800,000 Containers
Long Term Activity Growth Rate	12% per year

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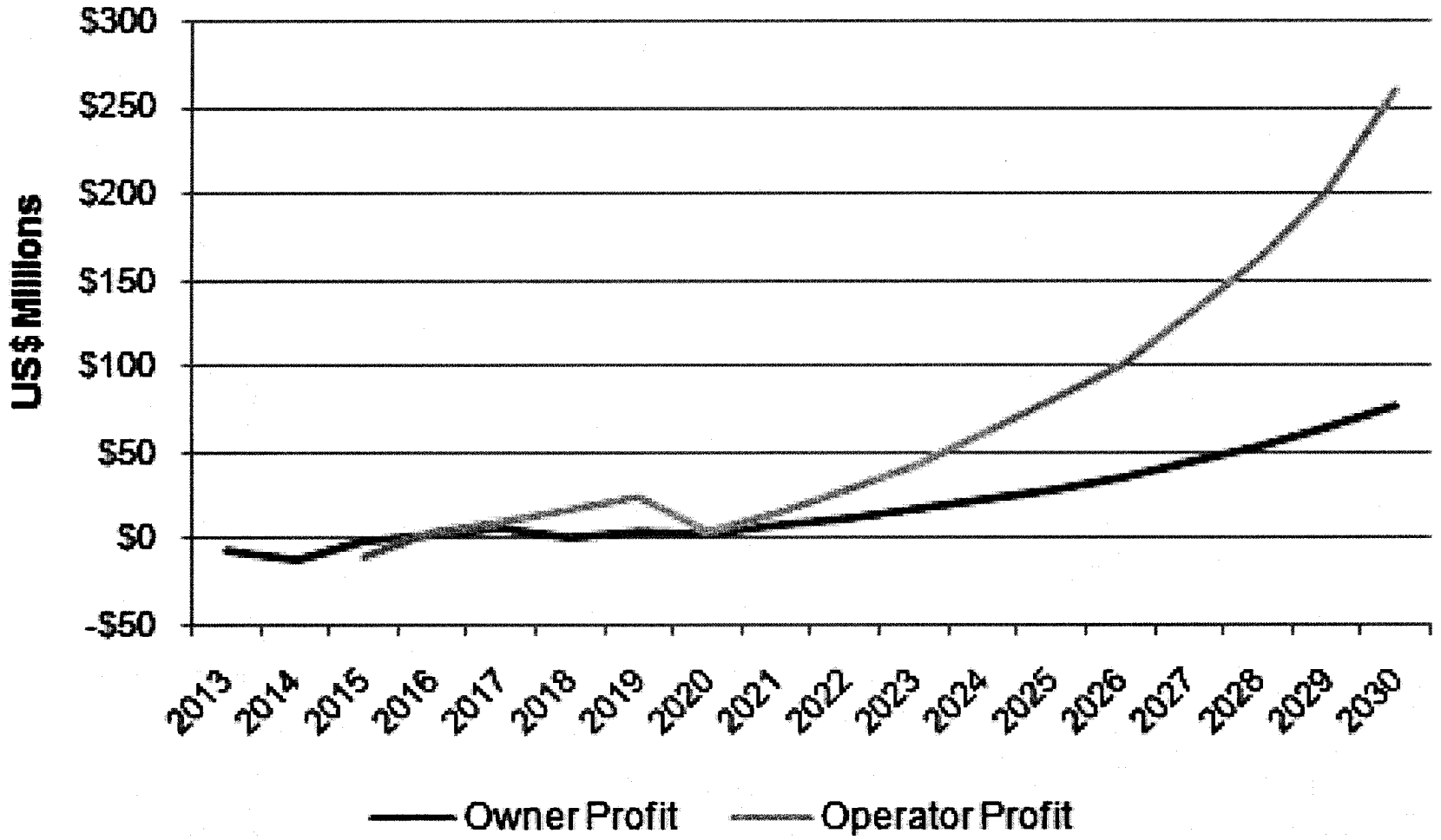
PPP Project Cash Flow



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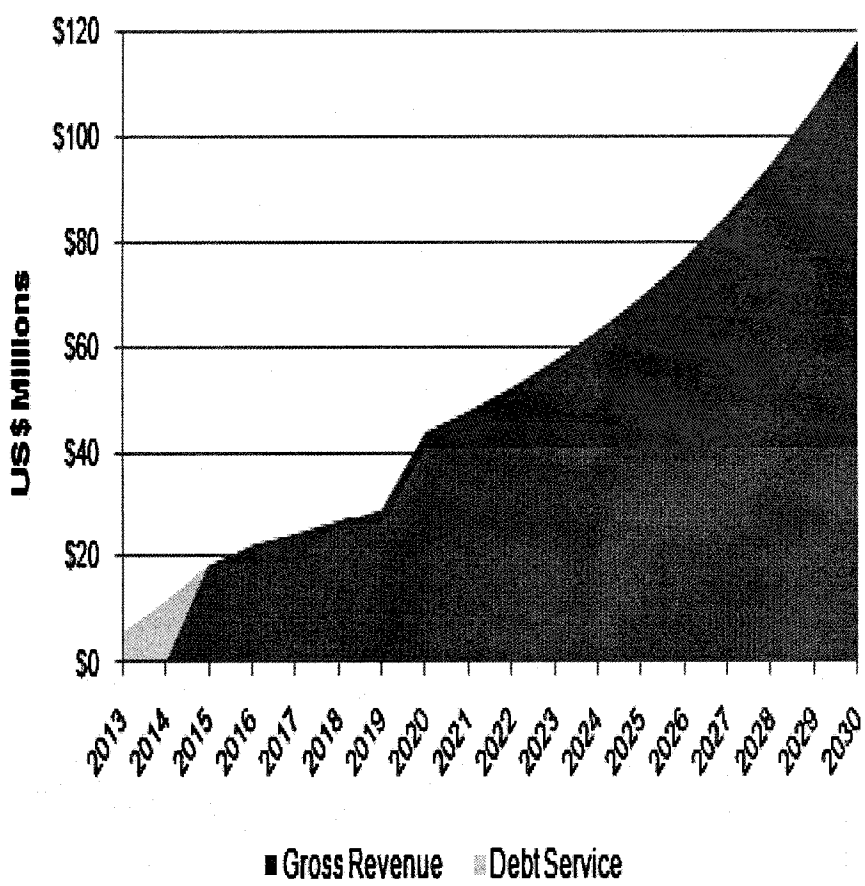
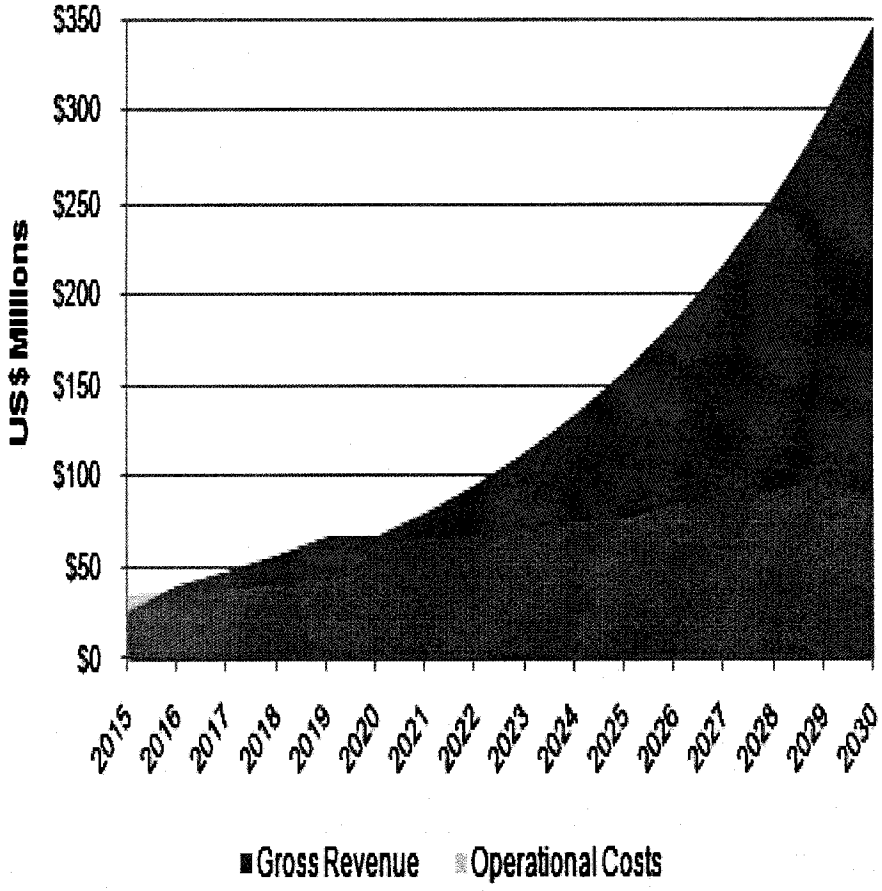
PPP Terminal Operational Income & Expenditures
(Assumes total throughput revenue)





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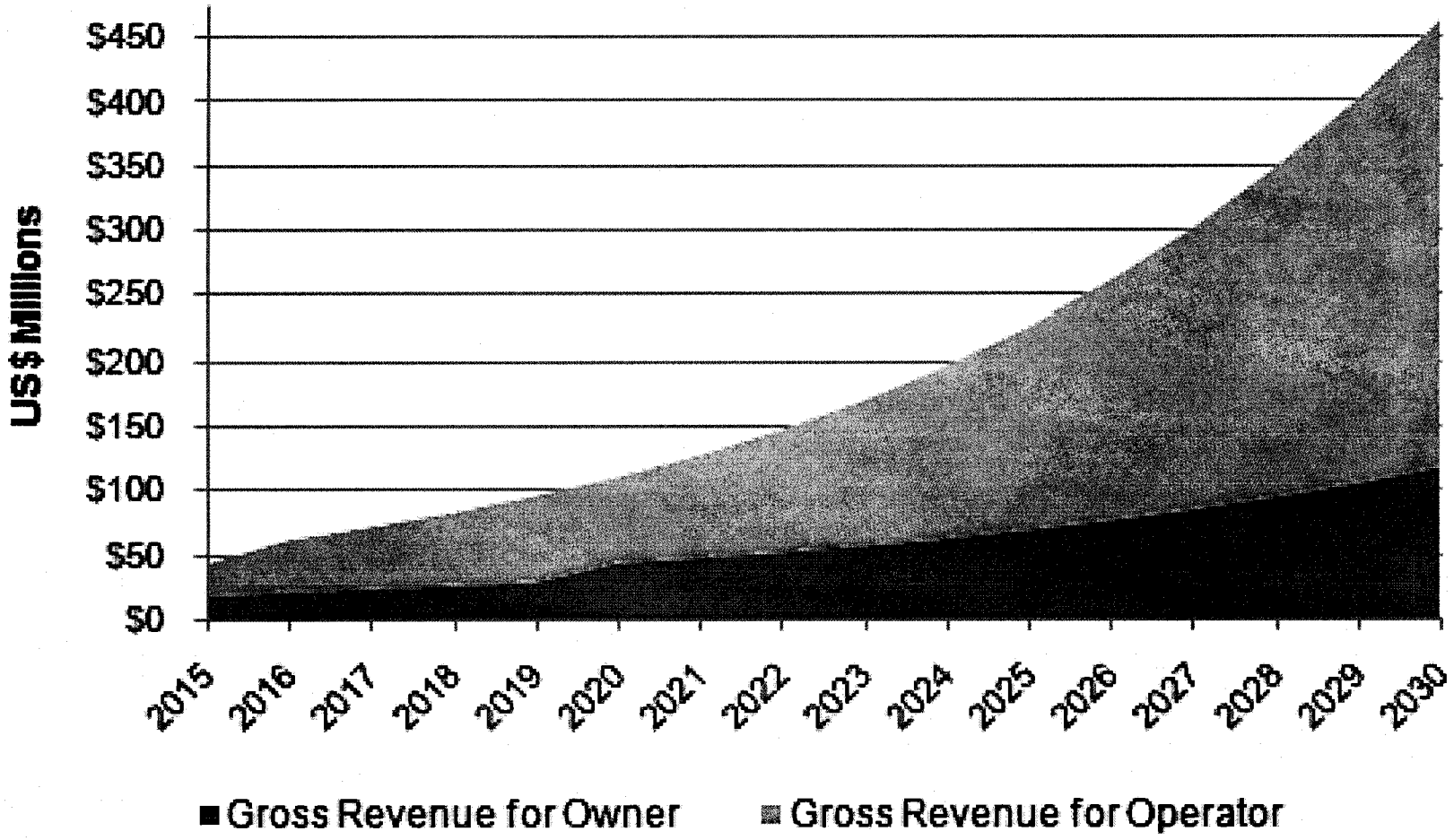
PPP Gross Revenue 2015 - 2030



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PPP – Cash Flow Pro-Forma

		2013	2014	2015	2016	2017	2018	2019	2020	2021
Revenue	Container Throughput			$44.0	$62.3	$71.9	$82.9	$95.7	$110.4	$127.3
	Ship Call Fee				$0.5	$0.7	$0.8	$0.9	$1.0	$1.3
Owner	Throughput Revenue			$8.0	$11.3	$13.1	$15.1	$17.4	$20.1	$23.1
	Rent Fee			$10.0	$10.3	$10.6	$10.9	$11.3	$23.2	$23.9
	Ship Call Fee			$0.5	$0.7	$0.8	$0.9	$1.0	$1.2	$1.3
	Total Revenue			$18.5	$22.4	$24.5	$26.9	$29.7	$44.4	$48.3
	Total Debt Service	($5.9)	($11.8)	($18.7)	($18.7)	($18.7)	($26.0)	($26.0)	($41.0)	($41.0)
	Net Cash Flow	($5.9)	($11.8)	($0.2)	$3.6	$5.8	$1.0	$3.7	$3.4	$7.4
Operator	Throughput Revenue			$36.0	$51.0	$58.8	$67.9	$78.3	$90.3	$104.2
	Rent Payment			($10.0)	($10.3)	($10.6)	($10.9)	($11.3)	($23.2)	($23.9)
	Labor & Administration			($8.6)	($9.3)	($9.6)	($12.3)	($13.1)	($13.9)	($16.6)
	Equipment Costs			($15.1)	($15.1)	($15.1)	($15.1)	($15.1)	($25.0)	($25.0)
	O&M			($11.9)	($12.3)	($12.7)	($13.0)	($13.4)	($22.8)	($23.5)
	Total Operating Costs			($35.7)	($36.8)	($37.8)	($40.4)	($41.8)	($61.7)	($65.3)
	Net Cash Flow			($9.7)	$4.0	$10.6	$16.5	$25.4	$5.4	$15.0

		2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenue	Container Throughput	$146.9	$169.4	$195.4	$225.5	$260.1	$300.1	$346.1	$399.3	$460.6
	Ship Call Fee	$1.4	$1.6	$1.8	$2.0	$2.3	$2.6	$2.9	$3.2	$3.6
Owner	Throughput Revenue	$26.7	$30.8	$35.5	$41.0	$47.3	$54.6	$62.9	$72.6	$83.8
	Rent Fee	$24.6	$25.3	$26.1	$26.9	$27.7	$28.5	$29.4	$30.3	$31.2
	Ship Call Fee	$1.4	$1.6	$1.8	$2.0	$2.3	$2.6	$2.9	$3.2	$3.6
	Total Revenue	$52.7	$57.8	$63.4	$69.9	$77.3	$85.6	$95.2	$106.1	$118.5
	Total Debt Service	($41.0)	($41.0)	($41.0)	($41.0)	($41.0)	($41.0)	($41.0)	($41.0)	($41.0)
	Net Cash Flow	$11.8	$16.8	$22.5	$28.9	$36.3	$44.7	$54.2	$65.1	$77.5
Operator	Throughput Revenue	$120.2	$138.6	$159.9	$184.5	$212.8	$245.5	$283.2	$326.7	$376.9
	Rent Payment	($24.6)	($25.3)	($26.1)	($26.9)	($27.7)	($28.5)	($29.4)	($30.3)	($31.2)
	Labor & Administration	($17.9)	($21.3)	($23.3)	($24.9)	($29.0)	($32.4)	($34.7)	($39.9)	($42.9)
	Equipment Costs	($25.0)	($25.0)	($25.0)	($25.0)	($25.0)	($25.0)	($25.0)	($25.0)	($9.9)
	O&M	($24.2)	($25.0)	($25.7)	($26.5)	($30.3)	($31.2)	($32.1)	($33.1)	($34.1)
	Total Operating Costs	($87.1)	($71.2)	($74.0)	($76.3)	($84.3)	($88.5)	($91.8)	($97.9)	($86.8)
	Net Cash Flow	$28.5	$42.1	$59.8	$81.3	$100.9	$128.4	$162.0	$198.5	$258.9

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Owner Key Performance Indicators

- The NPV of the baseline scenario (with a 10% discount rate) for the first 18 years $650.0 million
- The IRR (internal rate of return) for the baseline project is 62 percent
- Positive New Cash Flow to $4 million in Second Year of operation

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Risk Mitigation

- Appoint a qualified and experienced law firm with a strong Indonesian team with international affiliations.
- Identify a recognized and well respected joint venture partner who is well connected and has strong local connections.
- Appoint a local project development firm that could act as lobbyist and liaison with all of the relevant government ministries and agencies.
- Establish generous lead times for the project to allow for a bureaucratic approval process.
- Establish the cost benefits of a political risk insurance strategy.

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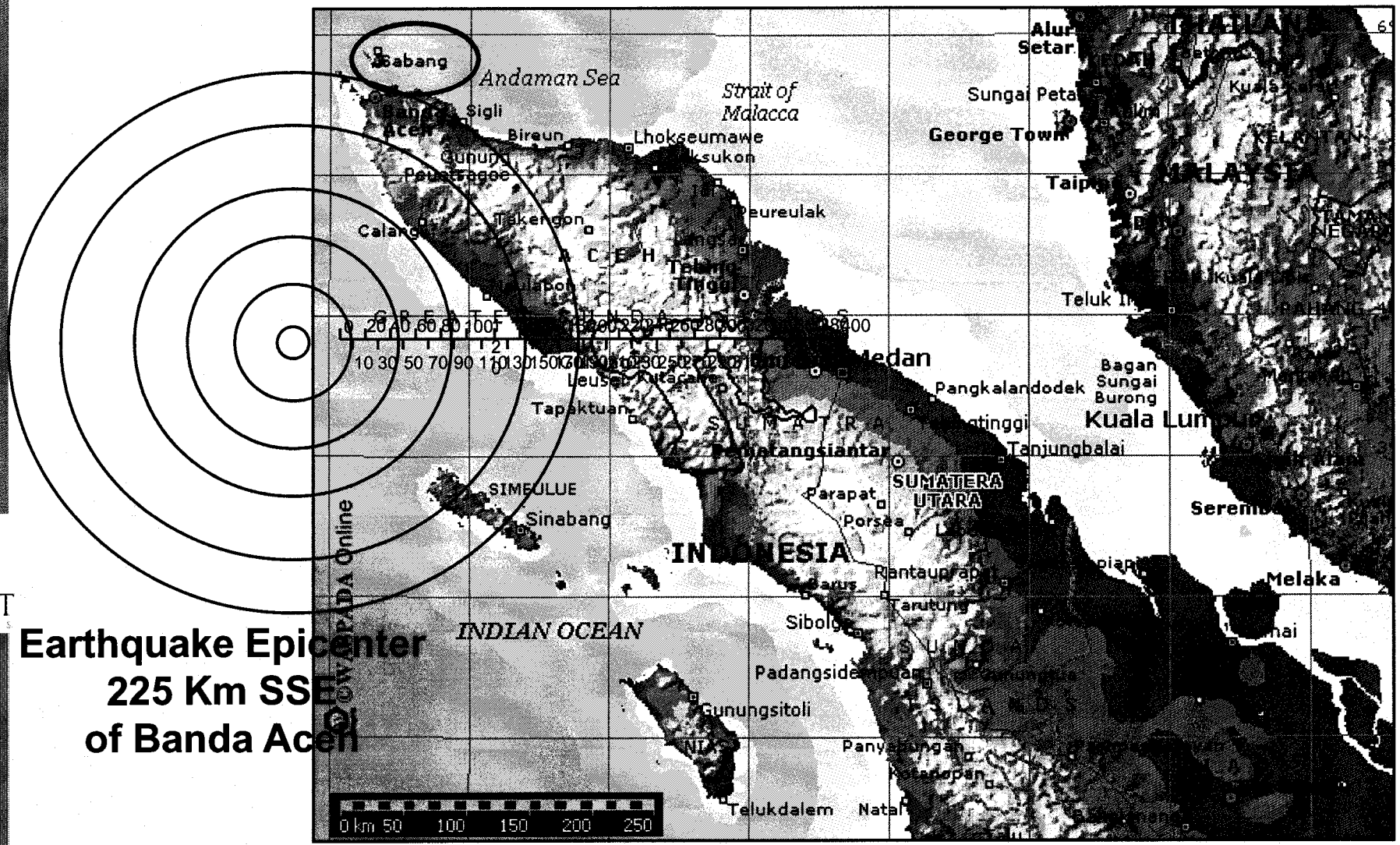
Weh Island Protected from 2005 Tsunami



Earthquake Epicenter
225 Km SSE of Banda Aceh

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