Development of Thailand's deep-sea ports

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The development of Thailand’s deep-sea ports

by

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Thailand

A paper submitted to the faculty of the World Maritime University in partial satisfaction of the requirements for the award of a

• MASTER OF SCIENCE DEGREE

IN

GENERAL MARITIME ADMINISTRATION

The contents of this paper reflect my personal views and are not necessarily endorsed by the University.

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The Development

of Thailand's

Deep-sea Ports

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Objectives

It is the objective of the author to attempt to illustrate a case of a developing country that is trying to achieve its goal of becoming a newly industrialized country (NIC). As a country develops, enjoys a higher standard of living, it also produces problems of its own. More trade flow, more shipment, more traffic—these will add on to exact a heavy toll from a country's infrastructure. The importance of port administration and management of any developing country is even more pronounced than a developed one. As a country climbs higher on its own economic scale, it needs more roads, more telephones, more airports ... and the need for better ports is not the least of them.

A problem of many developing countries is greater concentration of all development in one single area whether it be a capital city or a major port. It would be impractical for any country to concentrate its development entirely in its metropolitan city.

Port, like any other infrastructure of a country, needs to be spread out evenly to avoid congestion, to avoid urbanization in one location. The need to diversify port operations often brings in a need for new ports, as in the case of Thailand.

Existing ports in a distant area also command national attention when a country looks for expansion. The future could bring a well-balanced economy, well-balanced urbanization, income-generating nation free of social and political unrest but a country needs to ponder its economic strategy carefully. Port development cannot be left out in the formulation of that strategy.
According to Asiaweek summary of Asia's economy, Thailand achieved one of the best performance among all Asian economies. The growth rate for the entire 1988 was 10.3% while Singapore's was 10.9%, Malaysia's was 6.9%, Philippines' was 6.2%, Taiwan's was 7.1%, Japan's was 4.2%. There were a number of factors contributing to such an economic upheaval. To cite some of them: export, tourism, foreign investment. All of these have gained spectacular performance over the entire year. The rationale behind was that a number of major currencies pushed up the value of Japanese yen, German deutschemark against US dollar. Even Taiwanese dollar and South Korean won also appreciated against American currency.

Even though Thailand professes herself to follow basket-type floating foreign exchange system, the fact remains that the value of Thai baht has been waltzing in tandem with US dollar. So much of this truth has made Thai goods more competitive when compared with those from Japan, Europe and the so-called Newly Industrialized countries (NICS). Tourists also like to spend their leisure going on holiday in Thailand. The increased yen, Korean won, Taiwanese dollar also made it impossible to keep producing in their respective countries. A lot of entrepreneurs in these countries had to find a new frontier. A large number headed to Thailand. As a result, foreign investment in the country has grown astronomically.

Another factor is the improvement of price of primary commodities. For example, rice 48.3%; maize 40.7%;
rubber 38.8% and sugar 50.1%.

The sharp price rise elevated the standard of living of Thais in the rural areas. These people constitute 70% of the Thai population. They are the ones who consume, purchase, exploit the local market. It is also worth remembering that an election took place in 1988. Capitals, both from the government and private sources, were spent all around the country. This helped boost consumption and spending. The economy was stimulated once more.

The third factor was the government’s expansionary monetary and fiscal policy. Thailand had a current account surplus in 1986. This helped the government ease monetary and fiscal policies in 1987 and 1988. Both interest rates and tax rates fell. A higher budget was set resulting in stimulative effect on overall economic expansion.

Oil prices also helped improve the picture. The depressing oil prices were translated into lower production costs and lower inflation. The oil price averaged $14.78 per barrel in the first eight months of 1988 as compared to $17.37 in 1987.

Industrial expansion was possible when production costs kept price low and lower inflation boosted purchasing power of residents.

Finally, the country’s economy improved since the world economy had improved. Developed countries should achieve 3.8% growth in 1988 according to the International Monetary Fund’s estimate.

SECTORAL PERFORMANCE

-Agriculture
Agriculture expanded by 8-9% in 1988. Two factors accounted for its performance, namely favorable weather conditions and high prices for almost all agricultural products.

Rice production was 17.93 million tons. The dry season crop largely exceeded expectation since farmers expanded the cultivated area. The incentive came from early rains.

The wholesale price of maize was 32.5% better than 1987. This revved up production to 4.88 million tons.

Tapioca, however, was an exception. Its price had weaken in the first three quarters of the year. The price only improved in October when the drought in the US had taken its effect in the world market.

Rubber prices performed well. The wholesale price of grade 3 smoked rubber sheets strengthened 32.9% in October, 1988. All in all, rubber production grew 7.7% to 980,000 tons in 1988.

As for soybean, its production was estimated to be 490,000 tons in the 1988/89 crop year. The increase in production resulted from strong demand for animal feed, timely and abundant rains, and better seed.

Groundnut production was 170,000 tons for 1988/89. There was no survey for groundnut production in dry season. Therefore, comparison of its productivities and improvement cannot be made between wet and dry season crops.

Sugarcane production was 29.264 million tons. The planted area expanded 2.67% while output and productivity increased 9.47% and 2.11%, respectively. The New York market price improved 54.6% over the same period in 1987.

The kenaf harvest was below expectation. The planted area shrank 12.58%. Output and productivity, however, rose 7.74% and 23.27% respectively.
Cotton plantation area was increased 22.82%. Output was up 20,000 tons while productivity was up 3.3%.

Oil palm area increased 6.5%. It yielded 822,000 tons of nuts in 1988/89. Productivity increased 1.37%.

Pineapple production was 1.66 million tons. The planted area increased 7.37% while output and productivity were up 9.6% and 0.34% respectively.

In case of livestock, swine and chicken farm production tapered off. Even frozen chicken export fell in the last three months of 1988. This led to a glut in the domestic market which dampened prices.

Dairy sector, however, performed well. Its buoyant mood was further lifted by the opening of Nestle’s powdered milk factory. This had dampened the fear of overproduction in fresh milk. Livestock sector registered a record of 4-5% growth in 1988.

Fishery sector also had a breeze this year. This is because of a large expansion of aquaculture (prawn farming) along the Gulf of Thailand. Booming fishery exports pushed up the prices of marine catches. Fishing in other countries' waters through joint-venture also had progressed smoothly. Overall fishery performance should be around 6%.

Manufacturing

This sector should expand by 11% as compared to 10.5% in 1987. There had been a shot in the arm for Thai industrial production by injection of foreign investment into export-oriented industries. Its capacity utilization was either full or near full. These industries were garments and textiles, gems and jewellery, leather products, footwear, wood products, furniture, plastic products, toys and rubber products (especially gloves).
Those industries aimed for domestic consumption were motor vehicles, electrical appliances, and finally construction materials.

Food processing and beverages. It grew by 6.7%. Sugar production was up 7.2% over the same period last year. Canned pineapple production expanded by 16%. Canned seafood export grew even more. It marked a 46.6% increase in the first eight months of 1988. Liquor output was up 0.8%. Beer production reached 82,999,000 litres in the first eight months of 1988. During the half year of 1988, soft drink output was 995 million bottles. Cigarettes and pipe tobacco production were increased by 2.3% during the first eight months of 1988 only.

Textiles. Textile exports rose 28.6% during Jan-Aug 1988. The industry was estimated to expand 7-8% for the whole year.

Construction materials. Because of construction boom, construction material output and sale rose altogether. Steel bar production by seven leading producers (who accounted for 61% of total production) was 238,721 tons for the first eight months of 1988. This was an increase of 8.4% over the same period of last year. Cement production was 7,474,000 tons, an increase of 15%. Combined growth of this industry will be 10%.

Vehicles and parts. This increased 60% with automobile and truck output of 92,330 units (Jan-Aug 1988). Motorcycle production was 291,710 units, an increase of 76.1%. Sales of both automobile and truck also rose 42% during Jan-Aug 1988. Motorcycle sale was up 61.6%. This resulted from the fact that an economic boom had augmented purchasing power of both the urban and rural populations.

Others. Other leading export-oriented industries
(which are gem and jewellery, footwear, leather goods, furniture, ...etc.) were also speeding. Tinplate production rose 26.7% due to strong demand from canneries. Between January and August of 1988, integrated circuit export increased 39.2%.

Mining. Tin ore production, however, dropped by 4.4% in the first half of 1988. After price slump for the past three years, the tin price started to increase.

Natural gas output and crude oil production were both up by 23.6% and 21.6% respectively. Domestic production, however, accounted for only 35% of consumption per day.

-Price Level

Even though the economy was running in full swing, prices remained tame. The consumer price index advanced only 4% while the producer price index jumped to 9%. The increase in prices for all of 1988 should be around 4.5%.

-Construction

This sector was expanding rather fast with a growth rate of 15%. The expansion was so brisk that it led to a shortage of steel bars. All construction material prices were up. The only exception seemed to be cement. Areas for putting up houses, factories, commercial buildings increased by 69.2%, 49.6% and 65.2% respectively. Credits for construction also soared by 37.3% (January-August 1988 only).

Perhaps the most important of all is the construction in maritime sector since it gives the so-called social overhead capital. These are large infrastructures, or large-scale projects that pave the way for finance and commerce. This capital will provide indivisible benefits
with increasing returns.

Thailand began a deep-sea port project which included a port and an industrial estate at Laem Chabang. Another related maritime project was an industrial estate at Map Ta Phut. These two were part of Eastern Seaboard Development Programme.

-Tourism

Tourism has always been foreign exchange earner for Thailand. It was really a bit hit in 1987 when the Tourism Authority of Thailand (TAT) kicked "Visit Thailand Year" in that year. The project had been carried on until 1988. There were additional factors why foreign tourists would like to frequent the place. These factors are currency realignment which render the Thai baht cheaper, a large number of attractive tourist sites, a special protection by tourist police, ...etc.

During the first seven months of the year, the number of foreign arrivals was 2.25 millions. It was estimated that arrivals for all of the year should be approximately 4.3 millions. This means 65,000 million baht to the economy (approximately 2.570 billion US dollars).

-Investment

Investment index improved from 130.2 to 163.3 in August 1988. Applications to open up factories in Thailand were increased in 1988. During the first eight months of 1988 alone, applications increased to 3,345, up 104.1%. Planned investment increased 137% to 16,060 million baht (US $635 millions).

Until October 1988, Thailand's Board of Investment (BOI) received 1,755 applications for promotional
privileges to invest in the country. These applications amounted to 408,653.6 million baht (US $ 16.16 billions) which set an all-time record. In terms of investment during the first 10 months of 1988, three countries top the list.

1 Japan 93,862.9 million baht (US $ 3.711 billions) with 256 applications.
2 U.S.A. 50,012.8 million baht (US $ 1.978 billion) with 75 projects in the country.
3 Taiwan 37,498.1 million baht (US $ 1.483 billion) with 285 projects in the country.

Industries which attracted most investors are rubber gloves, jewellery, pulp and paper, clocks and watches, television picture tubes, integrated circuits, chemical products, hotels, toys and dolls, video tapes, glutamic acid and monosodium glutamate, telephone and telephone answering machines, and lastly hot and cold rolled steel sheets.

All in all these investments mean 257,436 job opportunities for Thais!

- Foreign Trade

First nine months of 1988, Thailand saw an export worthed US 11.427 billions. It was an improvement of 35.8%. The reasons for Thailand's success were currency alignment, improved product quality, and effective public/private sector campaign to expand oversea trade outlets.

Export growth could be divided into 3 main groups:

1 Those that grew over 25% were rice, rubber, sugar,
frozen prawns, textiles, integrated circuits, leather goods, rubber products, furnitre and arts, artificial flowers, toys, ball bearings, canned seafood and footwear.

2 Those that grew around 20% were gems and jewellery and frozen seafood.

3 Those that dropped to lower than 1987 value. These are maize and tin. Maize dropped by 47.7% while Tin dropped by 8.7%

In the import sector, it was up 50%. The value of import was US$ 14.235 billions. These figures were up to September 1988 only. The reasons behind import increase were sharp increases in raw material and semiprocessed products. These imports were needed for the production of export goods. They were also for replenishment of stocks. Part of them were capital goods imports.

During January-August of 1988, raw materials and semiprocessed products imports rose 46.9%. Iron and steel brought into the country increased 82.3% to support the construction boom inside the country.

Imports and capital goods were as high as 76.6% in the first 9 months of the year. Imports of non-electrical machinery and parts were up 88.6% while electrical machinery import was up 50.8%.

-External position

During January-September of 1988 Thailand’s trade deficit was 71,000 million baht.(US$ 2.8 billions) It was expected to reach 93,000 million baht(US$ 3.677 billions) at the end of the year. The Thai government was critical but said the situation was not out of hand since many of these imports were capital goods needed for the construction of new factories inside the country. Many
were raw materials imported for export-oriented industries. However, the deficit of US$ 2.8 billions was more than twice of 1987.

The service and transfer account was in black. It was up 60.1% to US$ 1.293 billion. Tourism and Thai workers who worked abroad brought in income to the economy. Only the first five months of 1988, Thai workers abroad brought in US$ 376 millions. These workers worked in the Middle East, Japan, Singapore and the US. They made the current account in red by only US$ 1.518 billion at the end of September 1988. The balance of payments, after all, was 28,100 million baht in surplus or US$ 1.111 billion in the black. The country's international reserves were estimated to be US$ 7 billions which were roughly five months of imports.

-Banking

Up to September 1988, the liquidity in Thai banking system was receding. Credit-deposit ratio climbed up to 95.5% in September 1988. This was the result of a brisk economic activity.

Credit outstanding at the end of September 1988 was 794,204 million baht (US$ 31.404 billions) while deposit was only 831,279 million baht (US$ 32.870 billions). The prime rate was 11.5% from January to September. Then on October 1, 1988, it was increased to 12%.

On the deposit side, interest rate on savings climbed up to 7.25% from 5.5% while rate on one-year fixed deposits climbed up to 8.5% from 7.25%. Any way the maximum rate the Bank of Thailand allowed was 9.5% for longer deposit.

To reduce tight money situation, the Bank of Thailand left two options open to commercial banks:

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11
Bond holdings may be reduced to 14%.

The maximum limit of 20% on foreign funds is being considered. Commercial banks may choose to hold more than 20% of their capital funds in foreign funds.

- Public Finance

In the fiscal year 1988 (October 1987-September 1988) the government was able to collect 245,577 million baht (US$ 9.71 billions) in revenue. Government spending was 239,831.2 million baht (US$ 9.483 billions). It was the first time in 15 years that Thailand was able to balance the budget! This was because the government achieved more than it expected to collect from the public.

Planned expenditure for 1989 fiscal year was 285,500 million baht (US$ 11.289 billions). This was 18.6% of GDP.

Planned revenue is fixed at 262,500 million baht (US$ 10.38 billions) leaving a deficit of 23,000 million baht (US$ 909 millions) or 1.5% of GDP.

Thailand national expenditure can be summarized as the next page shows.
<table>
<thead>
<tr>
<th></th>
<th>Amount (in million baht)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>National security and law enforcement</td>
<td>61,196</td>
<td>21.4</td>
</tr>
<tr>
<td>Social services, education and health</td>
<td>58,110</td>
<td>20.4</td>
</tr>
<tr>
<td>Agriculture, industry, communications and transport, commerce and tourism</td>
<td>54,514</td>
<td>19.1</td>
</tr>
<tr>
<td>Administration budget</td>
<td>43,514</td>
<td>15.2</td>
</tr>
<tr>
<td>Technology and science</td>
<td>1,602</td>
<td>0.6</td>
</tr>
<tr>
<td>Others</td>
<td>66,564</td>
<td>23.3</td>
</tr>
<tr>
<td><strong>Total (in million baht)</strong></td>
<td><strong>285,500</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
As it has already been pointed out in Chapter 1, Thailand is industrializing herself in just a short period of time. Can Thailand persist without a deep-sea port? This is probably the key question for all countries that are dreaming of joining the rank of newly industrialized countries (NICS).

First of all, the Port Authority of Thailand says it can handle 700,000 TEU at Bangkok river port. The experience has been that even under 700,000 the river port has already experienced some problems.

The next problem is that how bad are the problems? Are there any further problems lying on the horizon if the country does not develop her own deep-sea port?

To answer the questions is to recall from Chapter 1 that there is a flood of foreign investments into Thailand to manufacture for export. The reason behind is that Japan, Singapore, Taiwan, Hong Kong, South Korea are all under pressure by the U.S. to limit their exports. Japan has piled up a huge trade surplus with the U.S. This fact needs no further explanation. Singapore, Hong Kong, Taiwan, South Korea have already lost their generalised system of tariffs and preferences (GSP) of exporting into the U.S. Everybody wants to exploit Thailand’s quota under GSP privileges. They all want a stamp "Made in Thailand" to circumvent US system of handing out GSP privileges.

An independent study has confirmed 81 products which are still available under Thailand’s GSP privileges. Up to the moment, many of these goods have not been
manufactured inside Thailand yet. A future guess might be that for the next two years (at least) investments from these countries are still pouring into the country.

Even some of the approved projects have not begun their operations yet, total container traffic has increased 25% in the first seven months of the year 1988 to 418,869 TEUs. Certainly, more cargo flow is sure to come after the implementation of the already approved projects. The stream is guaranteed for at least two to three years more.

The prospect for Thailand is a huge increase in Thai exports over the next few years. The question, again, is that ... can Thailand go through all the pains of infrastructure bottlenecks without a new deep-sea port?

To answer this question thoroughly, one must come up with the scrutiny of an important topic which is port development.

Actually, port development can be easily tackled by answering the following issues:

1 Whether the need for port services should be met?

It is widely recognized that for a country which aspires to be a NIC, the need must be met. It would be hardly conceivable that an industrialized country can persist without a trade and a trade should be the solution to destitution as Head of the "Food and Agriculture Organization" (FAO-United Nations System) has already pointed out that

"The Future is trade. You can double, triple or quadruple the aid; it will not do. Trade brings in 50 times more than aid."
Port services which come after trade is, therefore, indispensable.

2 How it should be met—for example, by improvement of existing institutions, operations, or facilities or construction of new facilities?

As for Thailand, Port Authority of Thailand (PAT) has already faced congestion problems and it has been threatened with congestion surcharges which PAT has resolved to confront the issue. It has solved the problems by improvement of existing operations and facilities.

PAT has come along with priority berthing right. It has entered into agreement with Regional Container Lines (RCL—a local Thai Line) that if RCL can meet the target of moving 140,000 boxes per year per berth it has priority berthing right at two of PAT berths. In return, RCL would waive all congestion surcharges. The deal worked out and Evergreen followed suit.

At the moment, PAT has six container berths and it was estimated that throughput in 1988 should be 700,000 TEUs. Therefore, there is still hope lying on the horizon that PAT would come out intact with existing facilities in 1988.

The question is the future, what would PAT do to handle all traffic congestions still to come?

The answer seems probable that construction of new facilities is needed. But before such a hasty conclusion, a look into the next issue might be worthwhile.

3 Where the need should be met—for example, in which port, and what part in that port?
At present Thailand has four ports:

1 The Bangkok Port
2 The Sattahip Commercial Port
3 The Songkhla Port
4 The Phuket Port

Actually, only one port—the Bangkok Port is the main port and carries almost the entire burden of the traffic. This is so because Thailand’s infrastructure, just like any other developing countries, is not up to 100% full services. It is a long way to transport goods to and from these ports to the capital city—Bangkok itself.

However, the present capacity of Port of Bangkok is only the followings:

-10 berths with a total length of 1660 meters, at Klong Toey West Quay (Klong Toey is the name of a district where Port of Bangkok is situated), for import of general cargo;
-2 berths with a total length of 288 meters, at Klong Toey East Quay, for lighters;
-6 berths with a total length of 1,240 meters at Klong Toey East Quay, for containers;
-2 berths with a total length of 195 meters, operated by the national shipping line—Thai Maritime Navigation Company (TMN), for imports of general cargo;
-28 midstream mooring places (anchorages, buoys, dolphins);
-53 private ship wharves, used for export and/or import of grains, steel, cement, molasses, fertilizers and chemicals, with or without specialized handling and storage facilities;
-50 or more private lighter wharves.

As a result, the Thai government has been looking for a new site for its deep-sea port since 1961. The problem is not only limited capacity but limitations regarding draft and overall length of a ship entering Bangkok river port. Access to the river facilities is through a 18-km-long bar channel. The draft of vessels permitted to enter the channel is only 8 meters and their length only 175 meters.

The NEDECO (Netherlands Engineering Consultants) was commissioned to conduct the feasibility study on developing the new port. In the final report, submitted in 1972 NEDECO recommended that the new port be constructed at Laem Chabang, Chonburi, due to suitable location and possibility of future expansion.

Therefore, the answer is certain that a new deep-sea port is needed. In fact, not only Laem Chabang port is being considered but a new location at Map Ta Phut, Rayong has also come into the limelight.

As it has already been pointed out the main problem is associated with the growth of container traffic which results from the industrialization of Thailand. This container traffic will soon outstrip the capacity of Port of Bangkok. But this is not the main reason why a new deep-sea port is needed. The conclusions seem to be based upon the following facts:

i) Bangkok port is the main port in Thailand and yet it is still a river port. This fact renders national economy vulnerable to navigation hazards in the access channel.

ii) The natural limitations both on vessel draft and overall length hinders future expansions.
iii) It is virtually impossible to construct new quays at Bangkok river port.

The above justifies the government's decision to proceed with the construction of a new port (or ports) outside of Chao Phya River.

Now comes the next question, why Laem Chabang? Why not extend Songkhla or Phuket to be a new deep-sea port and make it the main commercial port for the entire country? The following reasons seem to locate the choice:

1) It is the closest point on the coast of the Gulf of Thailand from the mouth of the Chao Phya River, where the minus 10m line is within 2 kms from the shore. (Look at the illustrations in the exhibit)

2) This is very near to Ko Sichang anchorages. Ko Sichang anchorages have vast potential for development.

3) It is possible to extend the operation and buy large flat land for port and industrial development.

4) There is already a highway passing through the area. Extension from the main railroad is only 70 kms. At the moment the extension has already been completed! (Look at the illustration in the exhibit)

5) It is only 30 kms away from Chonburi. Chonburi is already a fast growing town and a commercial center in the east of Thailand. (Refer to the map.)

Now, what about Bangkok Port? Shall the Port of Bangkok be left to rot or be put out of operations when the new deep-sea port at Laem Chabang starts its operation? The answer to these questions seems to be settled that Bangkok Port will continue to play a major role for the times to come. A number of points is worth taken notice.
1) Bangkok is still the center of main transport networks by all means ... roads, railroads, waterways, and even air traffics.

2) Bangkok has more than four million inhabitants. This means Bangkok is not only in the bull's-eye of a nation but it is the commercial, industrial, political and administrative heart of Thailand. The next largest city, Chiengmai, has less than a million inhabitants.

3) Even with vessel size limitations, Bangkok will remain a suitable port for numerous types of maritime transport, including transport to and from Europe and America. It should also specialize in handling traffic of a regional character, i.e. with other ports of South-East Asia, and particularly with the transfer ports of Hongkong and Singapore.

4) Many private companies have already constructed marine facilities to serve their own ends. Many more are still settling on the banks of the Chao Phya River. This means there will always be a steady demand for sea transport at the Port of Bangkok. It leads us to believe that corresponding cargo flows will continue to be handled at the port and this will not go away even when a new deep-sea port is opened to traffic at Laem Chabang.

It is unavoidable that the final destination of most cargoes arriving in Thailand is in Bangkok area and even if they are not bound for Bangkok they will have to be cleared through Bangkok. It is also practicable that when two ports are available for imports, the cost CIF could be the same whether the goods are discharged at Bangkok or at Laem Chabang.

The subject of future competition between Bangkok and Laem Chabang has been given serious consideration. It is
the opinion of Transport Planning Unit (TPU) of the Ministry of Communications (MOC), Thailand that Laem Chabang Port should bring down cost of transportation from Laem Chabang to Bangkok so as to offset congestion costs at the port of Bangkok. In order to achieve this objective, modes of transportation from Laem Chabang deserve to be complete (road, water, or rail.)

In the long run, however, a number of industries might come in and settle close to Laem Chabang so as to minimize their import costs. In other words, deep-sea port is not only an important link to industrialization but deep-sea port brings in industrialization herself.

The important thing in the development of Laem Chabang is that there shall be free competition by all modes of transportation and within the mode itself. This is a must since cost of transportation from Laem Chabang to Bangkok must be kept at the lowest rate possible so as to divert traffic from Bangkok and avoid congestion (which already has happened) at the Port of Bangkok. As a supplement, sufficient transport infrastructure must also be present both at the terminal and from Laem Chabang to Bangkok. This transport infrastructure also includes Ro-ro vessels from Laem Chabang to Bangkok. The vessels shall be used to transfer containers from Laem Chabang to Bangkok.

In the beginning days of Port Authority of Thailand (PAT), large vessels could not come to Bangkok. They had to be discharged and loaded in the deep water anchorage off Sichang Island, about 80 kilometers from Bangkok. Cargoes had then to be sent up to Bangkok or brought down for shipment by lighters, which caused problems of both time consuming and considerable expense.

Nowadays, Ko Sichang and Sri Racha private facilities are still in operations. They have a great potential for
development of maritime activities in the future. It is probably this fact that prompted NEDECO (Netherlands Engineering Consultants) to make the decision on Laem Chabang which is in the vicinity of Ko Sichang and Sri Racha. The investigations could be made regarding a master plan for the whole anchorage area. These investigations are the followings:

i) Investigations of the shoal in the vicinity whether the shoal can be dredged and maintained economically. In the future, vessels of 180,000 to 200,000 dwt should be given access to come to the new deep-sea port so that transport of oil and ores in very large quantities can be accommodated.

ii) Investigations of the shore potential for silos, depots, storage areas.

iii) Investigations of nautical conditions such as winds, waves, currents. This is very important since they can limit the potential of a deep-sea port in certain areas. These areas might be ship access routes, ship mooring directions, spacing between mooring ships, and spacing between future jetties.

Considerations should be given to development of Ko Sichang-Sri Racha area for heavy bulk traffic, i.e. traffic requiring vessels from 70,000-200,000 dwt such as oil, tapioca and ores. Development of Laem Chabang Port also depends upon access to the deep sea-port. Shoal area and access must be examined carefully since these determine the long-term development of Laem Chabang.

It has been a fait accompli that a deep-sea port is needed, after all. But for the sake of an argument, what would have happened to Thailand had the deep-sea port not been built at all? A peek into the present (not the
future, of course) would have revealed part of the story.

A flurry of cargo activities at the end of 1988 has prompted concerns from the foreign business sector in Thailand. A survey of 57 foreign firms by a joint Japanese Chamber of Commerce-Federation of Thai industries committee showed problems at Bangkok Port and traffic congestion was the foremost issue. Mr. N. Ishikawa, NYK representative, reported from his survey that

i) 61.6% said port congestion and road traffic were the major problems affecting their business operations.

ii) 30% said delay in the delivery of imports because of port congestion was a major obstacle to expansion.

iii) 1.4% said traffic condition needed urgent resolution.

Mr. Ishikawa also added that Bangkok Shipowners’ and Agents’ Association had conducted a survey on throughput at Port of Bangkok. The findings are that

1988: 780,000 20-foot equivalent units (TEUs) would pass through the port. (PAT’s estimate was only 700,000 TEUs)
1989: 897,000 TEUs will pass through.
1990: 1,017,198 TEUs will pass through.
1991: 1,149,434 TEUs will pass through.
1992: 1,293,113 TEUs will pass through.

At the same time, NYK managing director Hirochi Takahashi said he was convinced of the performance of Thailand export sector. The trend would continue. This will not be limited to present performance only. As more and more business representatives travel through the kingdom, they will share the same opinion that this
country is actually the "New Frontier" for them. The combined export volume en route from Bangkok through the newly industrialized countries of Asia to Japan and the US West Coast is expected to reach 70-75 million freight tons in 1988. Of this group of export, the compositions can be described as follows:

1 Top exporter is Taiwan with 20 million freight tons.
2 Trailing behind is Japan with 17 million freight tons.
3 Ranking number three is Hongkong with 10 million freight tons.
4 Last in this group is Republic of Korea with 9 million freight tons.

A continued performance of this group could not be possible without future relocation in a third country. A number of problems have plagued them. These are rising production costs, currency appreciations, high labour costs...to name but a few. Thailand seems to be a good choice for them both in terms of distance and political stability at the moment.

Now comes the last question in a series.

4) If port development strategy dictates that a new deep-sea port is to be built, when should it be built? The time schedule of port construction must be fixed.

Thailand's deep-sea port project can be easily summarized as follows:

1 Laem Chabang
  1.1 Deep Sea Port
Operations begin October 1990.

1.2 Industrial Estate
Operations begin April 1990.

2 Map Ta Phut
2.1 Deep Sea Port

2.2 Industrial Estate

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Eastern Seaboard Development Programme is very crucial to Thailand’s transformation into industrialized country. In fact, Laem Chabang and Map Ta Phut are only two projects in the entire eastern seaboard programme which comprises industrial estates and deep-sea ports altogether. It encompasses three eastern provinces. These are Chachoengsao, Chonburi and Rayong. (Refer to Map)

The Eastern Seaboard Development Committee planned to build highways direct from the northeast to eastern Thailand. These highways will serve as a direct link from northeastern part of the country to the seaports of Sattahip, Map Ta Phut and Laem Chabang. There will also be a railway line that will bypass Bangkok and connect the eastern seaboard with the northeast. In fact, hotel owners dream of the day when tourists will visit historical sites in the northeast and then come down to visit Pattaya directly without dropping by Bangkok. The eastern seaboard area is around 13,215 square kilometers. But the main areas of activities would still be

1. Laem Chabang which is 125 kilometers east of Bangkok. Laem Chabang, by the way, is part of Chonburi Province. This area is designed for light and labour intensive industries. There will be a major container deep-sea port here.

2. Map Ta Phut—part of Rayong Province. This is 180 kilometers east of Bangkok. Eastern Seaboard Development Committee planned this to be a major heavy industrial area. It will start from gas related industries in the
first stage. Map Ta Phut port is going to serve the area as an industrial port.

Aside from the two areas mentioned above, the tourist city-Pattaya is going to function as a center for trade and services in the area. Chonburi—the capital of the province, is going to be a backdrop for the activities. Truthfully, Chonburi has been a major business backbone for the entire eastern region since the end of World War II. It has sugar production, construction, fisheries, .. etc. Rayong, on the other hand, is to serve as a base for education and technological research.

Two more important pieces of infrastructure need not be dropped from the list. These are Sattahip port and U Tapao airport. Sattahip used to be a naval base for the Royal Thai Navy. Today, part of Sattahip is reserved for commercial use. Most of Sattahip port and operations will be reserved for discussion later on. U Tapao airport was used during the Vietnam war as an air base for the American airborne operations. Today, U Tapao is used partly for commercial purpose. Anyway, both U Tapao and Sattahip will serve as a prime transportation network for the entire eastern region of Thailand.

LAEM CHABANG AREA

—General Profile

Laem Chabang is 125 kms. away from Bangkok. It is between Bangkok and Pattaya. The distance between Pattaya and Laem Chabang is only 15 kms. Pattaya is an international resort city. It used to be an off-load base for American troops during a lull in Vietnam War. Today it’s still a place where U.S. warships stop on its way
through the Pacific. Laem Chabang complex can be easily divided into three parts:

1 Commercial containerized deep-sea port.
2 Industrial Estate.
3 Export processing zone.

These three entities will be supported by newly built urban community and essential infrastructure. The present Administration is trying to push through this ambitious programme. It is hoped that this project, if successful, will pull the country out of poverty and Thailand would have a better chance of becoming another newly industrialized nation. Improvements to the already substantial communication network have been done. New highways and railway network will link cargo and industrial raw material to port. As stated earlier, industries in Laem Chabang will be primarily small-scale, labour-intensive and non-polluting. Connections to the hinterland will ensure easy supply of raw materials for agro-industries.

Infrastructure of Laem Chabang

1 Commercial Port

Laem Chabang, after full completion in 1991, will be a principal transportation center for containerized cargo coming in and leaving the country. Its capacity will be up to 4 million tons per year when it’s fully operational in 1995. It can also handle third generation cellular container vessels and 120,000 dwt agri-carriers.

Development in the first stage includes:
1 two container berths
2 one multipurpose berth
3 deep water sites for agri-bulk loading facilities

Opportunities also exist for development of distribution and storage facilities, ship repair yard.... etc. by private companies.

2 Road Network

Plans are under reviewed to construct a 60 km. 4-lane toll road. This highway will bypass Chonburi and connect highway 36 east of Pattaya directly to the northeast. (Refer to the map.)

3 Railway

By 1990, there will be a new rail connection from existing Chachoengsao-Sattahip line to the port of Laem Chabang.

4 Telecommunications

In 1988 over 600 lines have already been completed. This capacity will be expanded to 1,536 in 1990 and 5,000 in 1991.

5 Water Pipeline

In early 1989, it is expected that water from Laem Chabang complex will be supplied from Nong Kho reservoir. This shall be done by construction of pipeline from the reservoir to Laem Chabang complex. As of now,
construction is under way.

-Industrial Estate of Laem Chabang

1 General industrial estate/export processing zone

Area for general industrial estate and export processing zone has been planned for. The area will not include only such agro-industries as food processing, animal feed, leather and rubber products but other export-oriented industries as well. These are electronics, toy, sport goods such as sport shoes, tennis rackets, etc. The Industrial Estate Authority of Thailand has the power to oversee the development of general industrial estate and export processing zone. Areas of up to 400 hectares (995 acres) are being offered for industrial development. This will be by a lease basis of up to 20 year period with a possible extension for another 10 years. The price is around U.S.$ 14,800 /ha./year (Baht 59,000 /rai/year-rai is local land measuring unit)

Thailand’s board of investment will supervise investment promotion scheme applicable to projects located on Eastern Seaboard Estates.

2 Categories of industrial land available

General industrial estate. This site is up to 1,888 rai (302 ha. or 755 acres). It will be fully constructed in 1990. Early users will have easy access to development in the area. Immediate factory development is possible.

Export processing zone. This site is up to 450 rai (72 ha. or 180 acres). It will be fully operational in 1990.
3. Appropriate industries for Laem Chabang area

3.1 Agro food industry
These are selecting and packaging of agricultural products for exports, rubber-related products, tropical fruit processing such as canning, packaging... etc.

3.2 Consumer goods
- Production of textile products for exports.
- Production of audio-visual equipment such as camera components, T.V. parts, videocassette recorders, ... etc.
- Manufacturing of resin/rubber soling sheet.
- Production of stationery equipment, other educational-related products, office appliances, ... etc.

3.3 Equipment and Parts
- Repair, maintenance, and renovation of containers.
- Production or assembly of mechanical equipment, special agricultural, mechanical equipment such as tractors, bulldozers, ... etc.
- Production of automobile spare parts.
- Manufacturing of medical and scientific precision instruments.
- Production of machinery spare parts, machine tools ... etc.

MAP TA PHUT AREA

- General Profile

Map Ta Phut is 180 kms away from Bangkok. It lies on the southern tip in the eastern part of Thailand. The complex is turning into a large gas-related heavy
industrial site. This is where an industrial deep-sea port is under construction. The port is next to an 870-hectare industrial estate. This estate is supplemented by full supportive infrastructure, utilities, housing and complete social services. Its advantage is in having a gas separation plant processing 350 million cubic feet per day. The gas comes from Gulf of Thailand. The plant is currently producing LPG, methane and ethane.

Infrastructure of Map Ta Phut

1 Industrial deep-sea port

At Map Ta Phut, the Industrial Estate Authority of Thailand (IEAT) is the overseer of deep-sea port construction schedule. At the moment, the port is designed for 60,000 dwt vessels. Anyway, first stage development will involve only one multipurpose berth for ships up to 20,000 dwt and two 8,000 dwt liquid berths. These two berths are designed for ships carrying industrial raw materials to the port. On the outbound trip, the ships can carry finished products from heavy industries. The needs of present petrochemical complex are being considered. Plans are also developed for future expansion regarding industrial requirements.

2 Road Network

Presently, an extensive network has served the eastern seaboard area. Plans are for the future to improve Pattaya-Sattahip highway to meet the demand of oncoming heavier traffic. (Refer to the map.)

3 Railway
Existing railway line is 140 km. long and runs down from Chachoengsao to Sattahip at the southern end of the eastern seaboard. At the moment American President Line has freight trains running up the line to Bangkok from Sattahip. An extension 24 km. long to Map Ta Phut is being considered.

4 Telecommunications

Currently, a new exchange (MTP-1) with more than 1,000 lines is serving the area. In September 1990, it is envisaged that an extension with 4,000 lines will bring in the installation of MTP-2 telephone exchange.

5 Water Pipeline

A completion of water pipeline from Dok Krai reservoir to Map Ta Phut area has been consummated in 1984. Therefore, a supply of 75 million cubic meters of water per year to gas separation plant is well-guaranteed.

-Industrial Estate of Map Ta Phut

Industrial Estate Authority of Thailand (IEAT) is concurrently developing industrial port with large industrial complex. This complex is 812 hectares in area. It is situated side by side with the port. Land, however, is offered for lease.

The industrial complex, by far, is the largest single industrial project in the country. It is divided into complex I and complex II. The official names are National Petrochemical Complex I (NPC-I) and National Petrochemical Complex II (NPC-II). NPC-I is worth roughly 20 billion
Because of the presence of so many plastic production facilities in the country, the petrochemical industry is vital to Thailand. Earlier in the decade, Thailand did not possess upstream petrochemical manufacturing facilities. Feedstocks had to be imported to feed factories manufacturing plastic end products. After Thailand had its own natural gas separation plant, basic chemicals became available for upstream petrochemical production. Since petrochemical industry was rather highly sophisticated and required large investment, the Thai government had to engage a foreign consulting firm in conducting feasibility study to see whether Thailand can have this industry in the country.

According to the study, a petrochemical complex is possible and would be beneficial to the economy as a whole. For one thing, it adds value from four to a hundred times to natural gas products. It also maximizes benefits of natural gas found in the country. Finally, it saves the country foreign exchange of approximately eight billion baht (around USD 316 millions) yearly. If Thailand cannot acquire products of petrochemical complex, that amount of money will have to be spent buying chemical raw materials anyway. Chemical raw materials resulting from petrochemical complex will have to be used to feed plastic factories. This means 30,000 jobs for the locals.

On February 23, 1984, National Petrochemical Corporation (NPC) was created. NPC is responsible for
planning and overseeing all activities regarding petrochemical complex. It started with only Baht 70 millions (USD 2.77 millions) and increased to Baht 2 billions (USD 79 millions) at the moment. This, however, is only the amount of registered capital of the project. Total investment, as stated earlier is worth USD 790 millions (20 billion baht). Of this amount, 8 billion baht will be spent on building either upstream olefin or ethylene cracking factory. The remainder shall be used for downstream manufacturing facilities. This 12 billion baht, all come from private sector, belong to both domestic and international sources. Actually four corporations, Thai Petrochemical Industry; Thai Plastic and Chemical; Thai Polyethylene; and HMC Polymers (A joint venture between Metro Group and Himont Corporation), are involved in the downstream project. One company, Thai Petrochemical Industry, has already completed construction of a plant while the other three are still in the process of building production facilities.

NPC-II

In the middle of 1987, another petrochemical project was brought into existence. This was the so-called NPC-II which was actually phase two of national petrochemical complex. NPC-II was a necessary continuation of NPC-I since local plastic and related industries expanded drastically in a short period of time. In fact, it was estimated that soon demand for polyethylene (a major feedstock for plastic industry) would exceed supply from olefin plant presently under construction. Other industries (such as synthetic fibre, detergent, etc.) also experienced a strong demand for their products.
As their basic chemical components used in production could not be obtained from NPC-I, they were forced to import a large amount of feedstocks for their own use. A current trend reveals a high demand for raw materials which are largely aromatic substances. This trend makes the Thai government realize that soon it will be necessary to manufacture its own feedstocks.

Consequently, the administration took a further step in appointing a study group charged with studying the feasibility of manufacturing aromatics. A group would also elaborate plans to develop these manufacturing facilities. NPC-II, quite a product of its own fabrication, is conceived to market its end-products abroad. At the moment, the group has completed the study and submitted the report to Eastern Seaboard Development Committee. The aromatic plant should go into construction by the end of 1990.

All in all, NPC-II should stand as a supplier base for necessary feedstocks. These raw materials will help industries already in existence. It will also have repercussions in setting up new related industries. Most important of all for a developing country like Thailand is that it will provide job opportunities and save more foreign exchange. This, however, cannot be effectively achieved by the implementation of NPC-I alone. A lot of manufacturing bottlenecks result from inadequate backward integration, these problems too, will also be solved by NPC-I and NPC-II altogether.

NATURAL GAS SEPARATION PLANT

Another major industry under implementation in Map Ta Phut area is a natural gas separation plant. Map Ta Phut,
actually, is the destination of 425 km submarine gas pipeline from Gulf of Thailand. The gas feeds Map Ta Phut's gas separation plant before being sent to eastern Thailand and central region for final consumers. The plant was built by Petroleum Authority of Thailand (PTT). It cost USD 273 millions at the time of construction. The operation started in January, 1985. The productions are the followings:

1) 289,000 cubic feet/day of methane.
2) 350,000 tons/year of methane.
3) 450,000 tons/year of LPG and propane.
4) 66,000 tons/year of natural gasoline.

The plant is connected by pipeline to LPG distribution facility at Laem Chabang. The second plant, under construction in 1988, is scheduled to produce 47,400 tons/year natural gasoline and 234,000 tons/year LPG, propane. These would add to a total capacity of 200 million cubic feet per day. A large sum by any standard.

OTHER POTENTIAL INDUSTRIES
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These are the followings:

- Petrochemical and chemical activities such as oil refinery, melamine production. Multipurpose pharmaceutical active ingredients are another possible area in this group.
- Shipyard facility.
- Steel industry (Cold roll mill, foundry and forging separations).
- Processing of agricultural products, including
processing of animal feeds, processing of marine products and wood products.

OTHER RELATED DEVELOPMENT AREAS

-Pattaya

This is the well-known tourist city which is becoming crowded. Infrastructure and services of the city of Pattaya are lagging behind.

In order to solve this problem, the Thai government gave the city special self-governing powers by law. This means the city administration can raise its own money for operation, maintenance and development of its infrastructure.

As part of the Eastern Seaboard Development Programme, Pattaya is under close supervision of Eastern Seaboard Development Committee. From time to time, Eastern Seaboard Development Committee has reviewed and proposed changes for the city's organization, administration and finance in order to transform the city from tourist city into tourist and trade center altogether.

-Sattahip

In this area, there are two important infrastructures worth mentioning. These are Sattahip deep-sea port and U-Tapao airport.

Sattahip port used to be under Royal Thai Navy's supervision. Today, Sattahip is under the administration of Port Authority of Thailand (PAT). Therefore, there are Sattahip naval base under the Navy and Sattahip port under PAT. These two are separately administered.
The commercial port has five berths and serves ships up to 180 meter long and 9.5 meter draft. As there are gas related activities in the Gulf of Thailand, Sattahip port has to provide services for offshore drilling. At the same time, as there are constructions going on in Map Ta Phut and Laem Chabang areas, Sattahip serves as a transportation link for all these shipments of construction equipments as well. It also serves as a port for shipment of Mitsubishi’s CHAMPs to Canada. (These cars, however, are assembled in Thailand). The new railway line from Chachoengsao has been completed since 1987. From Sattahip one can directly ship his goods to Bangkok without using the service of Port of Bangkok. This is actually what American President Line (APL) has been doing.

U-Tapao airport was also under the Navy command in the past. Presently, even though the airport is not relieved of Navy’s responsibilities, it is granted commercial access. The runway is 3,500 meter long and can accommodate even the heaviest aircraft. In the future, commercial utilization of U-Tapao is foreseen. As a matter of fact, the Eastern Seaboard Development Committee is visualizing both chartered and scheduled flight serving domestic and international trade. Ministry of Communications and Transport also cooperates by developing a plan for immediate commercial utilization.

At present, these two facilities are serving immediate needs for transportation and shipment of construction equipments of both Laem Chabang and Map Ta Phut. In the coming years, it would also serve new industries and infrastructure that are under way. Air cargoes are not distant possibilities when manufacturing for export is involved.

Lastly, transportation in the eastern seaboard area
would not have been complete had highway system not been mentioned. There are presently three highways serving the area (Refer to the map):

1 Highway 3 running from Bangkok to Laem Chabang to Map Ta Phut.
2 Highway 36 running a short cut between Laem Chabang and Map Ta Phut.
3 Highway 311 running directly from Sattahip to Chachoengsao. The government is currently constructing a highway from Chachoengsao to the northeast so that future cargo flow from the northeast does not have to take place via Bangkok.

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CHAPTER 4

EXISTING PORTS AND THEIR PATTERNS

The existing ports which have already been discussed are Bangkok and Sattahip. The rest—Songkhla and Phuket, are still to be discussed here. Actually the Thai Government has passed a resolution in 1968 making Songkhla and Phuket the two areas for development of deep-sea ports. The reasons why the government did not choose Sattahip over Songkhla and Phuket at that point of time were that

1. The Royal Thai Navy still had a firm control over Sattahip area.
2. Even if part of Sattahip control were to be relinquished, expansion of Sattahip area as a commercial port would not be a good choice in the long run since the Royal Thai Navy base was still located in the area. Sattahip can only serve as a substitute port during the following conditions:

2.1 Whenever there is a cargo movement overflow from Bangkok port.
2.2 During construction stage of Laem Chabang and Map Ta Phut area as already has been explained in Chapter 3.
2.3 In the future, should the two port Laem Chabang and Map Ta Phut have any difficulties handling extraordinary high volume of traffic, Sattahip can serve as a safety valve for cargo overflow from these two ports.

3. During that time, the extending railway line from
Chachoengsao to Sattahip had not been constructed yet. Therefore, there were a lot of security concerns over pilferage along the shipment route from Sattahip to Bangkok.

Another reason why the Thai Government did not plan to let the entire cargoes flow through Bangkok port only was that the presence of the union. The Thai labour union turned down a three-shift system at the port of Bangkok which rendered Bangkok port operations inefficient. In order to avoid further risk, the management of Bangkok port at the time suggested that the government diversify port operations to other regions of the country. Since Thailand has only southern region and eastern seaboard connected to the sea, diversification to eastern seaboard and southern ports seems to be the only logical choice. Even Songkhla and Phuket, it was suggested that port operations be leased to the private sector.

In October 1987, the Thai Government (through the Fiscal Policy Office) commissioned a study to be made on the project of Songkhla and Phuket ports. Asian Development Bank (ADB) cooperated by offering a US$ 70 million loan for the planning, design, construction and commissioning of the two new deepwater ports.

The two ports—Songkhla and Phuket, even after the construction has been completed are only to play a minor role in the transportation and shipment of the country’s cargoes and trade flow. The main activities, as have already been implied, would still be Laem Chabang, Map Ta Phut, Bangkok and Sattahip (in times of needs). For one thing, the distance between the two ports and Bangkok is too great to have any priority over the eastern ports. Another reason is that infrastructure in the southern part of the country whether road or rail is not efficient
enough to offer high volume capacity for transit to Bangkok.

**SONGKHLA PORT**

Songkhla has been the largest port of Southern Thailand since 1950s. It had tin export during those days. Today it has rice and rubber as its principal crops.

Southern Thailand is approximately 70,000 sq.km. out of 514,000 sq.km. of the whole Thailand. The population is around 5.4 millions out of a total of 52.6 millions (1986 estimate).

Haadyai is the largest town and manufacturing center in the area. The city itself is 30 km. from Songkhla. There are road connections to Songkhla, Bangkok from Haadyai. Aside from these, there are railroad and airlinks to Bangkok, West Malaysia, Singapore. The reason that Haadyai itself is more developed than Songkhla which is the provincial capital of the area is because Haadyai has much better transportation links to all other areas. The Thai government is trying to remedy this by privatization of southern ports in order to boost the economy of Songkhla in comparison to Haadyai. Anyway, both Songkhla and Haadyai are the most promising areas for future growth in the region. Songkhla has also been declared as an investment promotion zone in the area. At the moment, Songkhla port is being expanded and developed by the government with the assistance of Asian Development Bank.

The hinterland of Songkhla and Phuket ports basically is the Southern Region. The economy of the area is mainly agriculture with rice, coconuts and rubber being the
principal crops. The east coast, about 930 km. in length has Songkhla as a main port. The west coast, about 740 km. in length, has Phuket as a main port.

The import of the region consists of petroleum products, rice, fertilizer and general cargo (including construction materials and consumer goods). In the past, imports of general cargoes are handled through Bangkok Port and sent through road and rail traffic to all the areas in the Southern Region. This proves to be costly and inefficient. In the future, should southern ports as Songkhla and Phuket manage to be competitive then traffic can be diverted directly to Songkhla and Phuket. This can be done by means of deep water berths at Songkhla and Phuket. So that in the future, traffic in southern ports should serve the entire southern region while traffic at eastern ports serve the central region and eastern region. Bangkok, in the long run, should phase out its importance in a way London port did in Great Britain.

Other cargoes in the region are petroleum products. Petroleum depots are located on both sides of the southwestern peninsula with supplies for the east coast (of southern region) coming from Thai refineries in the eastern seaboard. (Refer to Map of Thailand) Supplies for the west coast of southern region, however, come from Singapore.

Rice production has improved in recent years but still not enough for consumption. The area is still a rice deficit area and rice has to be shipped in from other ports of the country.

The southern area produces over 90% of Thailand’s rubber export and around 85% of tin export. Rubber is exported from both coasts. Rubber export from east coast goes to Japan the US Pacific Coast while export from west coast goes to Europe and US Atlantic Coast. Tin is
exported from Phuket mainly to Europe, U.S.A. and Japan.

The port of Songkhla is situated 940 km. away from Bangkok by road or 310 nautical miles by sea. Haadyai is the Region’s main commercial and administrative center which is 30 km. away from Songkhla. Between the port of Songkhla and Haadyai, there is an all-weather bitumen road connecting the two areas (including other small towns in the hinterland).

Coastal and fishing vessels of around 300 dwt can berth at jetties widely scattered along the entrance to Songkhla Lake. Petroleum products, on the other hand, are handled through a private pier which is capable of accommodating ships up to 2,000 dwt. There are several shipping agents working on behalf of shipowners who make arrangements for receiving ships, advising customs, immigration and health officials including employment of stevedoring companies. An approach channel to the lake entrance, about 2 km. long and 5m. below chart datum (CD), is maintained by Harbour Department. Lighterage jetties are also located along the lake entrance.

In the future, even when Songkhla has her own deepwater facilities, shipping methods both at Bangkok and at eastern ports will still continue to dominate the type and availability of shipping services from Songkhla. This is particular true for its rubber exports. In any event, the best choice could turn out to be combination carriers serving both Bangkok and Songkhla. At Songkhla the ship can load rubber for export. This does not mean that conventional general cargo liners will be eliminated from service but only that combination vessels would also call Songkhla to load rubber for Japan. Feeder services between Songkhla-Singapore and between Songkhla-Hong Kong would also make use of combination carriers. The size and capacity of feeder container ships calling Bangkok is
around 200–300 TEUs (5,000–7,000 dwt). This trend has been going on for the past decade. These vessels are all self-sustainable with their own on board cranes.

PHUKET PORT (AO-KHAM)

Phuket Port, which is on the western side of the peninsula, is the largest and most important port in the western coastline of Thailand. (Refer to the Map) Phuket mainly serves the western part of Southern Thailand. The population is around 45,000 (1980 estimate). It is expected that Phuket’s population would reach 75,000 in 1990.

Phuket Port is a good area for investment since it has both tourism and minerals as main sources of income. Future development can start from these two points. Although the port is smaller than Songkhla, it has its own advantage of being closer to US Atlantic ports and European ports than any other port in the country. The nearby pier was designed and constructed to handle tin export by using lighterage services.

Phuket is in the center of transportation. It can be reached from Bangkok and Penang (Malaysia) by air. One can also travel to Phuket by road from Bangkok. This same road also links Phuket and other smaller towns along the coastal and western side of Southern Thailand. Phuket is a principal tourist attraction in the same way Pattaya is. Even though Pataya is more well-known and is heavier in tourist traffic but Phuket is catching up.

A new port at Ao-Kham which is 9 km. by road from Phuket is being developed. Asian Development Bank is the principal loan provider in this project.

Phuket, when compared to eastern seaboard ports, is
at a disadvantage in the sense of being 740 km. (by road) away from Bangkok. Laem Chabang, however, is only 125 km. away from Bangkok. But Phuket also has an edge over any other ports in the area. It is the only port in the southwest which has deepwater port facilities which allow ships to work alongside. The main existing facility is a pier which is 61 meter long. This was constructed at the same time as tin smelter in 1967. The pier was known as THAISARCO pier. It was designed only to handle tin export.

Rubber export is also handled at Phuket. It is handled by using lighters from Klong Tachin. (Klong Tachin is an area located about 3 km. east of Phuket.) Phuket is also the same as Songkhla in the area of management. There is currently no designated port organization in control of port operations. The private sector is the one who organizes and runs port operations.

In 1979, around 83 vessels ranging from 9,000 to 15,000 dwt called Phuket Port. These ships usually came to load tin for export. The average shipment was around 400 metric tons. They also called for rubber export. The average shipment for rubber was around 300 metric tons per shipment. Most ships left at or near their full draft. In 1979, the total traffic handled at Phuket Port was around 199,000 mt. (of which 122,000 mt. are petroleum products in bulk)

Phuket is in the center of shipping routes. Shipments from ports in Bay of Bengal (such as Calcutta, Chittagong, ...), Rangoon en route to Singapore still have to pass through Phuket. It is the outlet of these ports to Singapore. From Singapore their shipments can go directly to Europe through the so-called FEFC route. (Far Eastern Freight Conference route) Ships calling Phuket are conventional oceangoing cargo ships (9,000-15,000 dwt)
range), coastal vessels, oil tankers, and finally, passenger cruise vessels coming from Singapore. Those regular liners calling Phuket just come to load tin and rubber for European ports. It is hoped that with the new age of deepwater port at Phuket larger consignments in the size of 700 mt. (compared to 400 mt. at present) will be introduced to the port. Initiation should not only come in terms of larger consignments but variations of ship types as well. Combination carriers, feeder containers are among the ones Port of Phuket expects to get in the future. If this is possible, direct import through Phuket is going to follow. At the moment, as mentioned earlier, traditional import goes to Bangkok.

-Privatization and Administration of Songkhla and Phuket Ports.

The Thai Government has been toying with the idea of privatization of southern ports for quite a long time. The main factor that restrains the Thai Government not to do such is the presence of a strong and powerful labour union. Control of the two ports (Songkhla and Phuket) can be combined by means of

1 Setting maximum tariffs.
2 Giving concession agreement to a port operator.
3 Setting up a Monitoring and Supportive Committee. This is some sort of Harbour Board or Harbour Committee in the way European ports are doing in Europe.

In order to do so private management should be given a free hand in the management of both ports. In other words, government may only monitor and support operations
but may not direct operations in port activities. Port Operating Company will be given the task of upkeeping and maintaining of all port infrastructure and equipments. The exceptions may only be in terms of navigation aids, dredging, breakwater and beach. These shall be the responsibilities of Harbour Department.

In general, a proposed revenue collection may follow the following rules:

a) The government should not give any contractor an outright fixed lease over the two ports. An open bid should be allowed.

b) Fee charged should not only be either flat or variable but the two components (i.e. flat and variable) should be combined.

c) Variable component should be linked to traffic.

d) Concession agreement should encompass the whole port area including port equipments.

In recent years, containerization has also played a part in rubber export. More and more shipping companies (including customers) require rubber to be transport in containers. This has created severe strains on the part of Songkhla and Phuket ports. Both Songkhla and Phuket do not have necessary equipments to handle container traffic efficiently. The two ports survived by using floating cranes (In fact, it was only a crane mounted on barge) to handle containers between shore and barge. This inefficiency makes it necessary for containers to be transported by road and rail to either Bangkok or Penang in Malaysia. The same situations also happen to frozen sea food export. There are no refrigerated container facilities to handle reefer containers. All reefer containers, therefore, had to be transferred to Bangkok by
Precautions must be taken to the fact that even though Songkhla and Phuket are given deepwater berthing facilities, traffic does not automatically belong to these two ports. The two ports do not have empty containers of their own. Empties still have to be imported to both Songkhla and Phuket. This would lead to increased cost in handling container traffic. Another fact is that ports presently handling this traffic (either Penang or Singapore) would not easily give in. They may either resort to rebates or faster productivities to beat competition. The only way Phuket and Songkhla can offer to ward off competition is through effective marketing, competitive tariffs and efficient service. These can come by privatization of the ports.

If privatization really comes, the Thai government has to think carefully in terms of investment. At Songkhla existing facilities seem to be adequate. However, should the need arises, there shall be only minor additional investment. After Port Operating Company (POC) is chosen by the government, it should pay for its own additional or replacement equipment. But the government should hand over immediate equipments such as forklift trucks, terminal tractors, ...etc. Large equipments such as gantry cranes must be procured by POC. The situation at Phuket seems to be slightly different. There is no need for any further investment since Port of Phuket can meet the traffic requirement by herself.

The next problem the government should concerns herself with is land requirement. At Songkhla this seems to be inadequate. The port does not even have a foreshore area for stacking empty containers. It is very natural that all successful ports will require large areas for expansion in the future. Songkhla has to think of this as
well. The government should acquire suitable areas in advance. An idea of an industrial plant in the vicinity of port area should be considered. Together with this the government should encourage developers to move from Bangkok area by means of subsidization. At Phuket, things are in better shape than at Songkhla since it has adequate land for all port’s need.

The last item in the list is tariff structure. A tariff study should be made on both cost related and market related tariff. A successful port needs a tariff structure that is high enough to cover the expenses of the port and at the same time low enough to attract port users. It is for this reason that the Thai government should not interfere with the tariff structure set by POC.

In the concluding remarks on privatization of Songkhla and Phuket ports, three things need to be emphasized. Firstly, close cooperation between the government and POC is a must. Secondly, land area, infrastructure, government subsidization—these three must be given enough consideration. Import of containers to Southern Thailand can not materialize without these three. Lastly, prevention of exploitation of land area for purposes other than port development can never be more important for the future of both ports.

-Supplemental Program of Southern Ports

Southern Thailand has long been an area of separatist movements, tension and conflicts. All that need to be changed. Southern Thailand needs ports that can link the Andaman Sea traffic to Gulf of Thailand traffic. National Economic and Social Development Board (NESDB) of Thailand has envisaged an additional program for southern ports which goes beyond Songkhla and Phuket. This program lists
possible projects as

- A port at Krabi.
- An oil refinery at Khlong Sai.
- A port at Khanom.
- A combination of pipeline, road and rail links between a port on the Andaman Sea and a port in the Gulf of Thailand.
- An establishment of an international tourism zone in Southern Thailand.
- An establishment of a free trade zone in the area bordering Malaysia.

(Refer to the map for the areas mentioned.)

Logically, these are the things that deserve serious deliberation. The south can not afford to live from tin mining and plantation agriculture forever. Natural resources are going to be depleted one way or another. The aim is to establish more value added processing and preserve more of the natural resources. Aside from local industries, the government should plan for export-oriented industries so as to take advantage of raw materials coming in from both sides of the peninsula.

A large southern refinery is nothing new. The Thai government has been studying this for years. At the moment demand for fuel consumption in the south is brisk. The refinery could cut the cost of tanker trips around the tip of the Malaysian Peninsula; and of shipping fuel from Sri Racha on the eastern seaboard—the current source for the region. Even now, there are some smuggling operations coming from Singapore. A port at Krabi was chosen since this is the only possible area on the Andaman sea that has deep water for berthing. It is the same idea that has been applied to Laem Chabang—the present site of
Thailand’s deep-sea port construction that is going on.

The last idea deserves mentioning is that of a pipeline connecting natural gas site in the Gulf of Thailand to Khanom for power generation and distribution to consumers in the region. The idea works at Map Ta Phut. The world’s longest submarine gas pipeline (425 kms) carrying gas for Gas Separaion Plant before being distributed to final consumers has been in operation since January 1985.
In 1984, the World Bank had issued a report criticizing Port of Bangkok operation that it was inefficient. The average handling rate for containers was around 12 TEU per hour. (Port of Copenhagen, Denmark was 25 while Port of Aarhus, also Denmark was 30.) In 1982, the throughput of Bangkok port was only 220,000 TEUs in total. The report hinted that the throughput should be 300,000 TEUs to be satisfactory. In 1988, Containerisation International Yearbook estimate of Bangkok was 720,000. Port Authority of Thailand (PAT) own estimate in August 1988 was 700,000. The final figure comes between low estimate of 753,000 to high estimate of 787,000 TEUs. In a sense this is an accomplishment. PAT has gone so far since the early days of 1980s. But if PAT compares herself with similar ports in the area—take Manila, for example, PAT is still an underachiever. Containerisation International Yearbook estimated Manila to net 887,509 in 1988. The Philippines still have many other important ports such as Cebu, Davao... etc. Thailand, at the moment, has only one important port—Bangkok. Yet, the two countries are similar in geographical location (both are in Southeast Asia), size, population, economy, ... and so on. Bangkok should have done better than this.

The World Bank in 1984, also predicted that if the Thai economy picked up there would be congestion. This prediction was vindicated in 1988. The World Bank further suggested that had congestion occurred, traffic should be diverted to Sattahip and cargoes transferred by train to
Bangkok. All these have happened and PAT has done as suggested. At the moment private shipping lines are handling their cargoes through their own warehouses in Bangkok. These have to be done to ease congestion until the new ports-Laem Chabang and Map Ta Phut are completed. Songkhla and Phuket, however, are too far from Bangkok to help ease congestion.

So what will happen in the future after all the ports have been completed? True that now congestion is the problem, but congestion won’t stay forever. Thailand should start thinking about whether or not will there be enough traffic to feed all of the new ports?

A good planning does not always limit itself to only one alternative course of action. Here are the possible courses of action to be taken.

1 Make the most use of present traffic

At the moment, Thailand still has many commodities to export. These are rice, rubber and tapioca—the three top commodity exports. The most interesting commodity here is tapioca since EEC still have a quota for Thai tapioca. Tapioca products were the fourth biggest export item for Thailand in 1988. The volume for the first nine months of the year was 6.1 million tons. This volume won’t go away in the near future. Attempt, however, should be made to diversify tapioca export to other ports aside from Bangkok. Expectation was high for Laem Chabang since this is the nearest port to the northeast-tapioca producing region.
2 Increase Petrochemical shipments

Shipment should be increased both from Map Ta Phut to foreign ports and Map Ta Phut to other ports within the country. As implied in Chapter 4, southern ports (both Songkhla and a new one planned at Khanom) should not be left out in the shipment coming from Map Ta Phut.

Plastic product consumption in Thailand is expected to increase. An estimate of per capita consumption of plastic made in 1985 revealed that Thailand was still behind many countries. Plastic product consumption was 46 kgs in Japan, 47.2 kgs in Singapore and 26.7 in South Korea. Even Thailand’s neighbour-Malaysia had a consumption of 9.7 kgs compared to 6.1 kgs in Thailand. Certainly, Map Ta Phut can make use of this shipment.

Phase two of Thailand’s national petrochemical complex (NPC-II), as pointed out in Chapter 3, is expected to market its end-products abroad. The shipment from an aromatic plant expected to be started in 1990 should serve to buttress future throughput of Thailand’s eastern ports.

Lastly, both NPC-I and NPC-II (mentioned in Chapter 3) provide a range of products for domestic industry. These are vinylchloride monomer and polyvinylchloride (used in the manufacture of pipe fittings, artificial leather, cables, shoes ...etc.), terephathalic acid (used in the synthesis of polyester), and polyethylene (used for plastic bags, packaging materials and artificial flowers). All these should be more than enough to serve the future demand for traffic within Thailand’s eastern ports.
3 Industrial base in the central and southern parts of the country

In terms of products, investments are high on electronic goods, electrical appliances, and rubber gloves. Some manufactured products such as electronic goods are meant to be exported from the country. Port Authority of Thailand can make them part of its export base.

In terms of localities, a lot of industrial projects are located in the central area. These are Bangkok, Samut Prakarn, Rayong, Chon Buri, and Chachoengsao. (Refer to the Map) All these localities have 671 projects in hand. Certainly, these industrial projects will provide another export base to feed Laem Chabang port.

Regarding Southern ports, the prospect may not seem so bright. Only Songkhla and Surat Thani hold a number of 129 projects. As already mentioned in Chapter 4, Songkhla and Phuket are not the main theatre. They are only considered sideshow for the country's port operations. They can't even be compared with Cebu or Davao in the Philippines in terms of relative economic importance. But as a country develops, port operations must be diversified geographically. This principle is generally being recognised by port operators anywhere.

4 Make more use of Japanese investments and plants inside the country

In August 1988, Japanese Chamber of Commerce's
Economic Research Committee conducted a survey on business climate in Thailand. According to Japanese businessmen, export-oriented manufacturing industries in Thailand had an increased demand for raw materials. These are tin plate for canned goods, iron ingot, steel bar... etc.

On the export side, exports to Japan are also increasing. These are mainly textiles and electronic goods which increased 2.28 times over 1985 value—from 4,300 million baht (US $170 millions) to 9,800 million baht (US $387.5 millions). Japanese trading firms in the country also increased their export of manufactured and primary products. Export of manufactured products increased by 1.8 time over 1985 while primary product export increased 1.4 time. Export to third countries also increased by 1.6 time over 1985 value.

Recalling from Chapter 1 that the Japanese are the leading investors in Thailand, the influence of this group of investors in the country cannot be ignored. In fact, Thailand ranks third after Hongkong and Singapore as a destination of Japanese investments in Asia. This factor should serve as leverage in promoting shipment within Thailand’s ports.

Since February 1988 when Bangkok Container Industries Ltd. (BCI) started building its first container inside the country, BCI is poised to launch its enterprise in competition with South Korean and Taiwanese container manufacturers. In 1989, BCI started building its second container manufacturing plant in Bangkok. The plant should be ready for production in July 1989. BCI anticipates that its production capacities should be
16,000 TEUs for the two plants combined.

Aside from production, BCI had opened its refurbishment and repair factory in December 1988. With these manufacturing and repairing container businesses altogether, Thailand can add shipment of both empty containers and loaded containers together with its present throughput structure. Although the country still cannot take shipbuilding and shiprepairing business away from Singapore yet, container venture seems to be less capital intensive. It also acts as a troubleshooter for increasing demand for export boxes in Thailand.

6 Industrial Estate concept

According to Chapter 3, both industrial estates at Laem Chabang and Map Ta Phut will not only offer opportunities for investment but traffic to feed both ports as well. As opportunities develop or enough improvements have been made on Southern Thailand, as Chapter 4 indicated, this concept can also be applied to southern ports.

7 Seek additional traffic from Burma and Indochina

Although this concept seems to be far-flung, the idea deserves a second thought. Geographically, Thailand has been a buffer state since colonial times. It does not help Thailand to be hostile or indifferent to its neighbours. In the age of international detente when everyone is making friends and open one’s doors to international trade, the country might benefit from relations with Burma and Indochina.
Logistically, inland shipment from Burma can come directly to feed Thailand's two southern ports while shipment from Indochina can also come to feed her eastern ports. Thailand should make use of its strategic importance not only for military purposes but for commercial purposes as well.

After all the options have been presented and well chosen, it is the hope of the nation that port congestion will come in 1990s not at a single port—Bangkok, as happened in the past, but at several ports throughout the country. Should the circumstance occur as foreseen, nothing could better illustrate the importance of proper port planning and development to a developing country than the case of Thailand's ports.
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<th>Per-capita GNP (US $)</th>
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<th>Unemployment (% of labour force)</th>
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* = estimated

Rate from Siam Commercial Bank, Ltd.
January 19, 1989 US $ 1 = 25.28 Baht

Source: Thailand’s National Economic and Social Development Board (NESDB)
SOURCE: OFFICE OF THE EASTERN SEABOARD DEVELOPMENT COMMITTEE
COMMON APPROACH TO LAEM CHABANG/KO SICHANG PORT COMPLEX (suggestion for study)
scales: 1:50,000
soundings: m below MLLW
figure 2
DEVELOPMENT OF KO SICHANG BAY:

SUGGESTIONS FOR STUDY

scale: 1:25 000
soundings: m below LWS

Potential site for development of bulk loading

Possible site for berthing large oil tankers

MBK Jetty (existing)

Possible site for new jetty (to be investigated)

San Phadang MBK storage

San Laem Chabang
SOURCE: FAR EASTERN ECONOMIC REVIEW
MARCH 30, 1989