

Eastern Seaboard Development Plan

Map Ta Phut Port Project (1) – (3)

Map Ta Phut Industrial/Urban Complex Project

Report Date: September 1999
Field Survey: November 1998

1 Project Summary and Japan's ODA Loan

(1) Background

Conventionally, Thai industry had focused on light industrial fields, but the government of Thailand attempted to promote the first large scale petro-chemical industrial project in Thailand as a part of Eastern Seaboard Development Plan. Specifically, Map Ta Phut area in Rayong Province, where the natural gas pipeline from the Gulf of Thailand landed, was to be developed as a heavy-chemical industrial district. Thus, construction was being pursued of an industrial complex to support location of heavy-chemical industry and an industrial port for filling shipping demands of the industrial complex.

(2) Objectives

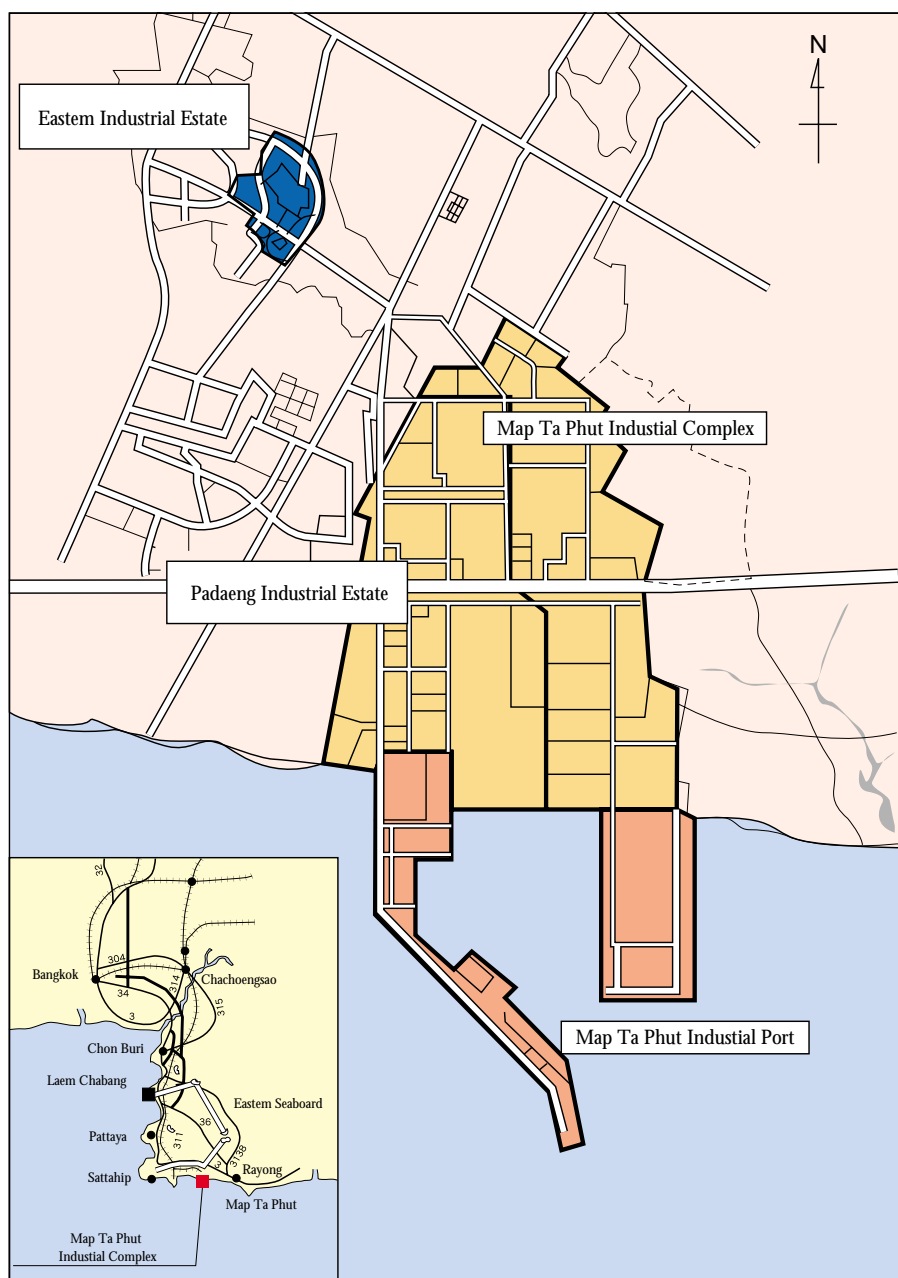
Promoting location of heavy-chemical industry in Map Ta Phut area and accommodating the growing transport demand of the industry

(3) Project Scope

Construction of Map Ta Phut Port (one multipurpose berth and two berths dedicated for liquid cargo) and Map Ta Phut Industrial/Urban Complex (380.8 ha). The ODA loan covered the full amount of foreign currency for construction. For both projects, IEAT has expanded the facilities sequentially after completion of the work portion covered by the ODA loan.

(4) Borrower/Executing Agency

Both are Industrial Estate Authority of Thailand (IEAT) (Loan guarantee by the Government of Thailand)



(5) Outline of Loan Agreement

	Port Project			Industrial/Urban Complex Project
	Phase (1)	Phase (2)	Phase (3)	
Loan Amount	¥5,611 million	¥16,045 million	¥3,395 million	¥3,207 million
Loan Disbursed Amount	¥3,112 million	¥3,017 million	¥2,267 million	¥1,415 million
Date of Exchange of Notes	July 1984	September 1985	September 1991	September 1985
Date of Loan Agreement	September 1984	October 1985	September 1991	October 1985
Loan Conditions				
Interest Rate	3.5%	3.5%	3.0%	3.5%
Repayment Period (Grace Period)	30 years(10 years)	30 years(10 years)	25 years(7 years)	30 years(10 years)
Final Disbursement Date	March 1995	September 1993	February 1997	October 1991

Note: Three loan agreements were concluded corresponding to the scope of project (dredging and landfill, other construction work, and equipment procurement) for the Port Project.

2 Analysis and Evaluation

(1) Project Scope

Map Ta Phut Port Project was halted for two years and three months in line with temporary suspension of Eastern Seaboard Development Plan because of review of the Government of Thailand on the foreign loan borrowing plan. At the time of restart, the scope of project was modified by stopping construction of the fertilizer berth, by adding construction of the liquid berth, etc. on the basis of change of situation during the suspension. These changes are considered reasonable because they were closely geared to changes in development of industries to be located in this complex. Concerning Map Ta Phut Industrial/Urban Complex, slight adjustment was made to the scale of each facility after examination in the detailed design. To meet the increase in the number of enterprises coming into the complex, IEAT is expanding the complex facilities (424 ha) even after the completion of the work portion covered by the ODA loan (380.8 ha).

(2) Implementation Schedule

The construction of Map Ta Phut Port was delayed about three years from the original plan due to temporary suspension of Eastern Seaboard Development Plan and subsequent reconsideration of the project scope. The time required for the construction becomes rather shortened, however. Concerning equipment (port cargo handling equipment, etc.), procurement was delayed from more one year to two years depending on items due to delay in the selection of contractors, but the time required for procurement and installation were approximately as planned. About two-year delay observed in Map Ta Phut Industrial/Urban Complex is also attributed to temporary suspension of Eastern Seaboard Development Plan.

(3) Project Cost

Construction costs (in bahts) for both Map Ta Phut Port and Complex were actually about 50 - 60% of those of the original plan due to heated competition for contract award. The equipment procurement costs (in bahts) for the port were actually more than 60% of that of the original plan as a result of bidding.

Comparison of Original Plan and Actual

Item	Plan	Actual
1. Project Scope		
Port Project		
West breakwater/Shore Protection	1,550 m/7,550 m	1,560 m/5,033 m
Dredging, landfill	12.8 million m ³	6.9 million m ³
Berths	Dedicated for fertilizer (2) / multipurpose (1) /anchoring place for small vessels (1) road,	Dedicated to liquid cargoes (2) / multipurpose (1) /anchoring place for small vessels (1)
On-Land Facilities	pavement, buildings, etc.	road, pavement, buildings, etc.
Navigation Aids	1 set	1 set
Equipment Procurement (vessels/gantry crane)	7 vessels/2 cranes	7 vessels/2 cranes
Consulting Services	677 M/M	687 M/M
Industrial/Urban Complex Project		
Ground Leveling (industrial complex/urban area)	380.8 ha/40 ha	380.8 ha/40 ha

Water Facilities		
Purification Plant	10,000 m ³ per day	5,100 m ³ per day
Wastewater Treatment Facilities (for industry/for city)	4,000 m ³ per day / 2,400 m ³ per day	4,000 m ³ per day / 2,400 m ³ per day
Other Facilities	Road, drainage ditches, etc.	Road, drainage ditches, etc.
Consulting Services	175 M/M	124 M/M
2. Implementation Schedule		
Port Project		
Construction Works (commencement to completion)	May 1986 to December 1988	November 1989 to February 1992
Equipment Procurement	May 1992 to May 1993	June 1993 to December 1994
Consulting Services (Construction Works/Equipment Procurement)	May 1985 to December 1988 / May 1992 to May 1993	November 1989 to December 1994 / (Continuation of the same consultant)
Industrial/Urban Complex Project		
Construction Works (commencement to completion)	April 1986 to March 1988	December 1987 to May 1990
Consulting Services	June 1985 to March 1988	December 1987 to May 1990
3. Project Cost		
Port Project		
Construction Works		
Foreign currency	¥21,656 million	¥6,129 million
Local currency	1,155 million bahts	764 million bahts
Total	3,535 million bahts (¥32,167 million)	1,989 million bahts (¥9,949 million)
Exchange Rate	1 baht = ¥9.1	1 baht = ¥5.0
Equipment Procurement		
Foreign currency	¥3,395 million	¥2,267 million
Local currency	286 million bahts	54 million bahts
Total	927 million bahts (¥4,912 million)	607 million bahts (¥2,488 million)
Exchange Rate	1 baht = ¥5.3	1 baht = ¥4.1
Industrial/Urban Complex Project		
Foreign currency	¥3,207 million	¥1,415 million
Local currency	638 million bahts	269 million bahts
Total	991 million bahts (¥9,015 million)	517 million bahts (¥2,948 million)
Exchange Rate	1 baht = ¥9.1	1 baht = ¥5.7

(4) Project Implementation Scheme

The executing agency is Industrial Estate Authority of Thailand (IEAT) for both projects. Though it did not have prior experience of constructing ports, IEAT completed construction works without substantial delay other than the effects of suspension of Eastern Seaboard Development Plan; its performance can be appreciated.

(5) Operations and Maintenance

In this industrial port, operation of the berths and anchorage place of small vessels are commissioned to three private enterprises selected from competitive bidding. As regards the industrial complex, operations and maintenance of the water supply facility, wastewater treatment facility, and drainage ditches are commissioned to a private enterprise. Other facilities including roads are under control of IEAT. In addition, careful measures are taken by IEAT by holding a regular monthly meeting participated by representatives of enterprises in the complex to discuss problems in terms of operations and maintenance.

(6) Operational Performance

The multipurpose berth of Map Ta Phut Port is handling general cargoes for export and import by enterprises in the complex while the liquid berth handles petro-chemical related cargoes of these enterprises. In addition, there are berths operated independently by these enterprises, apart from above public berths. The berth utilization is shown below.

Year	1992	1993	1994	1995	1996	1997	1998 ¹⁾
Multi-purpose berth (Berth occupancy ratio: %) ²⁾	103	254	553	1,116	1,501	1,840	1,555
	15%	20%	60%	80%	80%	80%	70%

Liquid berth	28	104	190	731	1,232	2,314	1,900
(Berth occupancy ratio of Berth I: %)	0%	2%	2%	6%	25%	35%	38%
(that of Berth II: %)	3%	10%	15%	35%	42%	45%	44%

Sources: Documents of IEAT, TTT, TPT

Note: 1) Estimated by multiplying the achievement up to May 1998 by 12/5.

2) The occupancy of multipurpose berth is the approximation based on oral reports from TPT due to limited data.

The number of enterprises and employees of the Map Ta Phut Industrial/Urban Complex grew steadily as shown in the table below. Facilities of this industrial complex were expanded by IEAT to meet the growing demand and to provide these enterprises with adequate public services. The wastewater treatment facility for the urban area is not used because the number of occupants in this area is less than planned.

Year	1991	1992	1993	1994	1995	1996	1997	1998
Number of Enterprises (operating)	14	17	24	27	31	34	46	48
Number of Employees*	3,248	3,731	4,435	5,172	6,725	8,891	12,814	13,464

Sources: IEAT

Note: Excluding construction workers.

(7) Management Performance of IEAT

IEAT, compared to its business scale, has earned sizable profits every year (ratio of recurring profit to sales in 1995 - 1997: 30% - 34%), and its management performance can be said to be favorable. As the income has increased greatly from the land lease and various services to enterprises along with increase in the number of enterprises in this industrial complex, the operation revenue grew by 1.5 times from 1,158 million bahts in 1995 to 1,811 million bahts in 1997.

(8) Projects Effects and Impacts

(i) Quantitative Effects

(a) Cargo Handling Amount of Map Ta Phut Port

Demand generated was approximately equivalent to the estimation in the appraisal for general cargoes while exceeding substantially that estimated for liquid cargoes. This port can be said to well manage these demands and to support development of the heavy chemical industry in this complex.

(b) Number of Enterprises in Map Ta Phut Industrial/Urban Complex

As of 1998, the number of enterprises in this complex amounted to 48 and all of land available for industrial usage (5,030 rai or about 800 ha) was contracted. Petro-chemical and related enterprises account for the largest share in the occupants.

(c) Creation of Employment in Map Ta Phut Industrial Complex

There are at present 13,464 employees, so that the employment creation effect was far above the level projected at the time of appraisal (9,800).

(d) Financial Internal Rate of Return (FIRR)

FIRR of Map Ta Phut Port and Complex is 4.5% and 13.1% respectively.

(ii) Qualitative Effects

(a) Development of the Heavy Chemical Industry, Mainly the Petro-Chemical Industry

The construction of Map Ta Phut Industry/Urban Complex was intended to develop the heavy-chemical industry using natural gas from the Gulf of Thailand. This complex achieved substantial development mostly in the petro-chemical industry. It may be said that this project contributed greatly to the development of the petro-chemical industry of Thailand.

(b) Industrialization of the Eastern Seaboard

From 1991 to 1996, the real GDP per capita of Thailand achieved an annual average growth rate of 6.6%. The same index of Eastern Seaboard and Rayong Province where this project is located exceeded the national average substantially, achieving annual average growth rates of 11.7% and 15.4% respectively.

3 Lessons Learned

(1) Flexible changes of the plan to meet variation of economic situations and demands must be accepted positively as long as such changes are necessary to achieve the project objective and ensure its effects and impacts. In particular, the projects related to industry promotion tend to be governed by changes in economic situation and trends of individual industries. It is advisable that the borrower country, the executing agency, and JBIC perform continuous monitoring of these projects in the implementation stage and determine whether a change of situation is so significant that the original plan needs modification.

(2) It is suggested that the support to the central secondary treatment facilities of domestic wastewater be implemented corresponding to the priorities based on the understanding of overall condition of this sector of the country concerned (for

example, the support must be started where people are already concentrated and the flow of sewage is assured, such as a metropolitan area or existing local cities).



Map Ta Phut Industrial Port



Map Ta Phut Industrial Complex



Gas Separation Plant in Map Ta Phut Industrial Complex