Eastern Seaboard Development Plan Railway Project

Report Date: September 1999
Field Survey: November 1998

1 Project Summary and Japan's ODA Loan

(1) Background

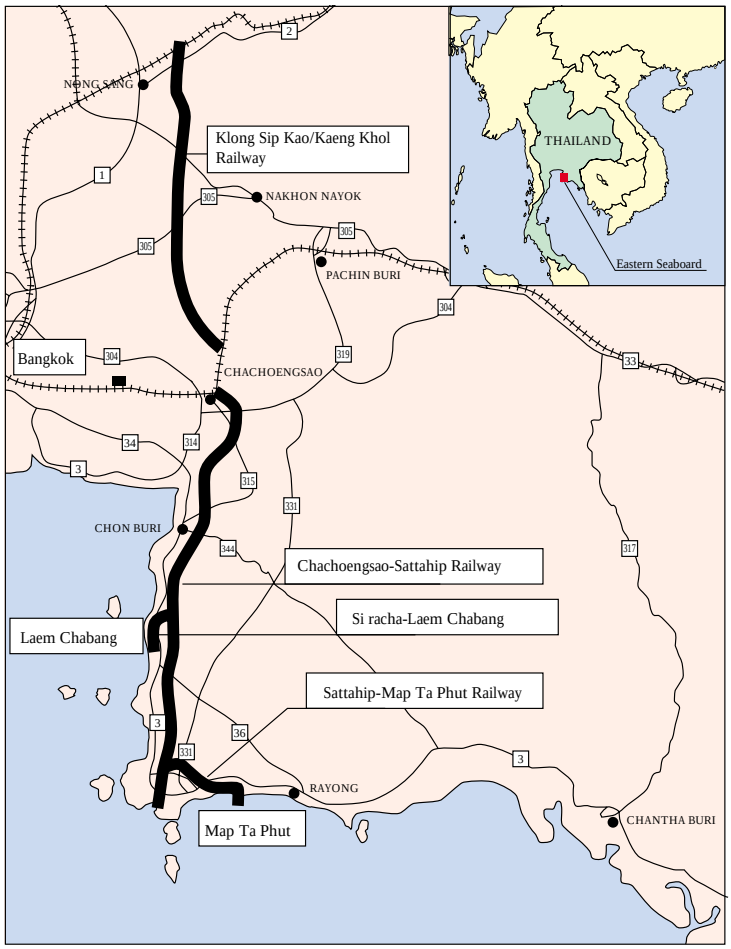
Development of new transportation network was urgently required to meet the transportation demands arising from implementation of Eastern Seaboard Development Plan, in particular the construction of an international commercial port at Laem Chabang and the industrialization of the region as a whole driven by the industrial estates. The transportation network development was planned to target both modes of road and railway transport. Of these two modes, the railway network was primarily objected to handle long distance, large volume transport of freight for the region.

(2) Objectives

To accommodate the demand for massive transport of cargoes (containers, etc.) handled in Laem Chabang Port, and for long distance, large-volume transport of resources and energy (LPG, etc.) for the development of Map Ta Phut Industrial Complex.

(3) Project Scope

The following five railway projects are involved in Eastern Seaboard Development Plan. Among these five projects, three are ODA loans. Subjects of this evaluation were two out of these three projects, for which the loan covered the full amount of foreign currency for the required cost. Since these five railways jointly work as an integral railway network, the assessment of the operation, maintenance, project effects and impacts in this report covers all the five projects.



Project Name	Application	Remarks
Chachoengsao - Sattahip Railway	Lines exclusively for freight to satisfy the transportation demand for the ports and industrial estates to be constructed in the Eastern Seaboard.	Thai government project
Siracha - Laem Chabang Railway		Post-evaluation completed
Sattahip - Map Ta Phut Railway		In the scope of this evaluation
Klong Sip Kao - Kaeng Khoi Railway	Lines exclusively for freight, bypassing Bangkok where the traffic is heavily congested, to regularly satisfy the transportation demand between the Eastern Seaboard and other regions.	In the scope of this evaluation
Lat Krabang ICD*	Inland intermediate yard for freight containers	Thai government project

Note: *ICD: Inland Container Depot

(4) Borrower/Executing Agency

Both are State Railways of Thailand (SRT) (loan guarantee by the Thai government)

(5) Outline of Loan Agreement:

	Sattahip - Map Ta Phut Railway	Klong Sip Kao - Kaeng Khoi Railway
Loan Amount	¥3,002 million	¥8,158 million
Loan Disbursed Amount	¥2,826 million	¥7,370 million[1)]
Date of Exchange of Notes	September 1988	February 1990
Date of Loan Agreement	September 1988	February 1990
Loan Conditions		
Interest Rate	2.9%	2.7%
Repayment Period(Grace Period)	30 years (10 years)	30 years (10 years)
Final Disbursement Date	January 1997	December 1999[2)]

Note:1) as of August 1999
2) Expected

2 Analysis and Evaluation

(1) Project Scope

Both for Sattahip-Map Ta Phut Railway (hereinafter referred to as S-M Railway) and Klong Sip Kao-Kaeng Khoi Railway (hereinafter referred to as K-K railway), the tracks and auxiliary facilities were constructed, according to by and large the original plan.

(2) Project Implementation Schedule

Delay of about four years occurred both in S-M and K-K railway projects. In the case of S-M railway, much time was spent for coordination with the relating agencies (Industrial Estate Authority of Thailand, etc.), and there was a delay in preparation for placing orders for construction work by SRT. In the case of K-K railway, a delay was occurred in the selection of consultant. In either case, the delay could have been shortened if SRT had taken appropriate measures such as higher performance of administrative procedures.

(3) Project Cost

Project cost for S-M railway was 1.5 times the planned amount. This is due to the rise of construction unit cost reflecting the bullish situation of the construction industry in Thailand at the time. The additional cost was covered by additional allotment of the local currency budget. For K-K railway, the work volume was increased because the more extensive soft ground was encountered than estimated in the detail design phase, resulting in increased local currency cost. As a whole, however, this railway work was completed at the total cost close to the initially planned amount.

Comparison of Original Plan and Actual

Sattahip - Map Ta Phut Railway

Item	Plan	Actual
1. Project Scope		
Civil work/track construction [1)]	24 km	24 km
Signaling system/communications equipment	1 set	1 set (including additional pieces of equipment)
Consulting Service [2)]	F 55 M/M・L 187 M/M	F 72.5 M/M・L 267.7 M/M
2. Implementation Schedule		
(commencement to completion)[3)]	September 1989 to March 1991	May 1992 to April 1995
3. Project Cost		
Foreign currency	¥3,002 million	¥2,823 million
Local currency	300 million bahts	1,085 million bahts
Total	¥4,502 million	¥6,946 million
Exchange Rate	1 baht = ¥5.0	1 baht = ¥3.8

Klong Sip Kao – Kaeng Khoi Railway

Item	Plan	Actual
1. Project Scope		
Procurement of construction/ maintenance equipment	1 set	1 set (partially deleted)
Civil work/track construction	82.55 km	82.42 km

Signaling system/communications equipment	1 set	1 set
Consulting Services		
Civil work/track construction	F 119 M/M・L 85 M/M	F 109 M/M・L 141 M/M
Signaling system/communications equipment	F 53.2 M/M・L128.5M/M	F 56.2 M/M・L 134.5 M/M
2. Implementation Schedule		
(commencement to completion)		
Civil work・Track construction	January 1991 to December 1992	April 1993 to May 1995
Signaling systemÅECommunications equipment	November 1991 to October 1993	September 1995 to October 1997
3. Project Cost		
Foreign currency	¥8,158 million	¥7,370 million [4)]
Local currency	1,269 million bahts	1,956 million bahts
Total	¥15,265 million	¥14,910 million
Exchange Rate	1 baht = ¥5.6	1 baht = ¥3.9

Note : 1) Including construction of the station buildings.
2) The letter "F" for the consulting service represents "foreign consultant", and "L" means "local consultant".
3) Not including the maintenance period.
4) as of August 1999

(4) Project Implementation Scheme

The executing agency is State Railways of Thailand (SRT) for both projects. With the railway projects in Eastern Seaboard Development Plan, some difficulties were found in coordination with the simultaneously ongoing projects of highway network and industrial estates. Nevertheless, the remarkable delay could have been limited by improved strategies such as more prompt proceeding of administrative procedures in SRT.

(5) Operations and Maintenance

SRT has been operating the railway business for 81 years, having well established guidelines and manuals for maintenance and inspection of tracks, signaling system and communications equipment. Though no significant problem is pointed out for the maintenance of the railways evaluated here, it is necessary to tackle some issues including aged equipment and facilities, and unsatisfactory maintenance because of insufficient budget.

(6) Operational Performance

The transportation record of each railway in 1998 is summarized in the table below. The Chachoengsao-Sattahip railway, as the trunk line in the Eastern Seaboard, mainly conveys freight containers and LPG. The Siracha-Laem Chabang railway (hereinafter referred to as S-L railway) achieved a traffic volume 1.5 times as large as the amount projected in the appraisal, showing an operational performance exceeding the initial estimation. Though the operation efficiency needs to be improved further by increasing the traffic frequency, and providing regular operation conforming to the timetable, it can be said that the S-L railway project attained success. In contrast, S-M railway achieved no more than 10% of the initially estimated freight transport volume, failing to fully accomplish the project objectives and providing a limited project effects. For this railway, around 50% of the initially projected transport volume (mineral resources and agricultural products) could not be achieved because of change in the preconditions, so it was unavoidable. The remaining 40% or so (energy, industrial products) was absorbed by other transportation means. Some demand for railway transportation may be created by improvement of SRT's train operation. Though the achieved transport volume of K-K railway is less than 40% of the projection, it is reasonable to say that the project objectives were attained, since some freight transportation was impossible without this railway that bypasses Bangkok. Further effects can be expected of this railway through enhancement of the operation efficiency. The Lat Krabang ICD is handling a container volume as large as the full installation capacity. This ICD has ameliorated the convenience and availability of railway transportation of containers.

Project Name	Projection at the time of appraisal	Actual Transportation Volume	Main Freight
	1998	1998	
Chachoengsao - Sattahip Railway	-	4,188	Container, crude oil, LPG
Siracha - Laem Chabang Railway	2,200	3,283	Container, crude oil
Sattahip - Map Ta Phut Railway	4,000	421	Petroleum
Klong Sip Kao - Kaeng Khoi Railway	5,017	1,760	Crude oil, LPG, petroleum
Lad Krabang ICD (1998)	437 thousand TEU (Truck 47%, Railway 53%)		Container

(7) Management Performance of SRT

Increased freight transportation in the Eastern Seaboard has raised the fare income of SRT. Nevertheless, the operating income of this company has been adverse for many years. Its business is therefore supported by Thai government's subsidy. The deficit tends to be on the rise, and cash flow tends to become tight. More effective management of SRT is essential for keeping the effects of the ODA loan projects. Furthermore, to limit the outlay of the Thai government, improvement of the financial status and management of SRT is indispensable.

(8) Project Effects and Impacts

(i)Quantitative Effects

(a) Transportation of Freight Handled in Laem Chabang Port

The railway network in the Eastern Seaboard transports approximately 21% of the containers handled in Laem Chabang Port (12,693 thousand tons in 1998). As shown by this figure, the contribution by the railways is great, as they are the nucleus of the land transportation network originating from and bound for Laem Chabang Port.

(b) Transportation of Energy Between the Eastern Seaboard and Other Regions

The energy transported by the Eastern Seaboard railways to the northern and northeastern regions accounts for about 27% of the Thai LPG production (approximately 1.80 million tons), and approximately 52% of the production of the Petroleum Authority of Thailand (PTT). As demonstrated by these figures, the railways notably contribute to long distance transportation of LPG produced in the Eastern Seaboard.

(c) Financial Internal Rate of Return (FIRR)

Since it is difficult to divide the benefit of the five railways in Eastern Seaboard Development Plan, it is desirable to consider the FIRR of these five projects as a whole. The FIRR calculated from the records is low, that is, 0.7%. As SRT has been running a deficit, however, it can be rightly said that the investment in these railways is relatively efficient.

(ii) Qualitative Effects

(a) Support to the Industrial Development of the Eastern Seaboard

The projects remarkably contributed to the industrial development of the area, through inland transportation of cargoes handled in Laem Chabang Port and massive transportation of energy.

(b) Diversifying Transportation Modes

The railway network in the Eastern Seaboard perform freight transportation in conjunction with highways and other national roads, playing a role of diversifying the massive transportation into different modes.

(c) Effect on the Traffic Congestion in Bangkok

The newly constructed K-K railway provides a direct link between the Eastern Seaboard and northern/northeastern regions of Thailand, bypassing Bangkok. This results in reduction of closing time span at grade crossings. Though it is not so significant if viewed from the total traffic volume in Bangkok, some mitigating effect has been achieved.

3 Lessons Learned

(1) When a state-owned enterprise implements the ODA loan project and performs its operation and maintenance, considerable attention should be devoted to the financial sustainability of the state-owned enterprise.

(2) For assisting the railway sector, it is important to provide supports to the improvement of financial performance and the enhancement of operational efficiency of the enterprise implementing the project.

Laem Chabang Port Station on the Siracha-Laem Chabang Railway