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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

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ASSISTANCE TO THE OFFICE OF EASTERN SEABOARD (FINANCIAL PLANNING)

DP/THA/87/008

THAILAND

Terminal report*

Prepared for the Government of Thailand
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of W.R. Kugler, financial planner

Backstopping officer: A. Upadhya,
Industrial Planning Branch

United Nations Industrial Development Organization
Vienna

1/91

* This document has not been edited.

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CONTENTS

ABBREVIATIONS

BoB	Bureau of the Budget, Office of Prime Minister
CAD	Central Accounts Division, Ministry of Finance
DOH	Department of Highways
EPZ	Export Processing Zone
ESB	Eastern Seaboard
ESDC	Eastern Seaboard Development Committee
EPMOS	Effective Ports Management and Operations Study
GIE	General Industrial Estate
GTZ	Gezellshaft fur Techniche Zusamenarbeite (FRG Technical Assist.)
HDPE	High Density Polyethylene
IE	Industrial Estaste
IEAT	Industrial Estate Authority of Thailand
JICA	Japan International Cooperation Agency
LCB	Laem Chabang
LDPE	Low Density Polyethylene
LLDPE	Linear Low Density Polyethylene
MTP	Map Ta Phut
NEC	National Education Council
NESDB	National Economic and Social Development Board, Office of P.M.
NFC	National Fertilizer Corporation
NHA	National Housing Authority of Thailand
NK	Nong Kho (Pipeline)
NPC	National Petrochemical Corporation
OECF	Overseas Economic Cooperation Fund of Japan
OESB	Office of the Eastern Seaboard Development Committee
OUD	Office of Urban Development, Ministry of Interior
PAT	Port Authority of Thailand
PFI	Port of Felixstowe International
PP	Polypropylene
PWD	Public Works Department
PWWA	Public Waterworks Authority
SRT	State Railway of Thailand
UA	Urban Area

I. OBJECTIVES AND LOGIC OF THE PROJECT

A. Development Objective

The objective of the Eastern Seaboard Development Programme is primarily to decentralize industrial development and population growth from the Bangkok Metropolitan Area and, secondly, to make a substantial contribution to industrial growth, diversification of exports, foreign exchange earnings/savings and generation of employment. The Eastern Seaboard Programme is one of the RTG's highest priority programmes which was emphasized in the 5th Five Year Development Plan (1982-1986) and continues to be emphasized in the 6th Five Year Plan (1987-1991) as well as the UNDP Fourth Country Programme (1987-1991).

B. ESB Programme Background

The Eastern Seaboard Programme is an integrated industrial development designed to decentralize industrial and population growth from Bangkok by creating attractive alternative locations with internationally competitive industrial infrastructures, services and incentives for private industry and to develop basic and linkage industries which better utilize Thailand's natural resources. The two highest-priority growth poles are in Laem Chabang (the site of the new containerized cargo port and Export Processing Zone/General Industrial Estate for labour-intensive, export-oriented and light industries) and in Map Ta Phut (the site of the industrial estate with back-to-back industrial port facilities for heavy industries and natural gas/petrochemical industries). The Programme involves total public/private investment of approximately US $6,000 million between 1987 and 1997 including major investments in upstream and downstream petrochemical plants, a chemical fertilizer plant and around US $600 million in government-supported infrastructures. Infrastructure investments include a deep-sea containerized cargo port, a deep-sea industrial port, two industrial estates, water pipelines, railroads, roads, utilities, urban areas, low income housing and all necessary social services to attract and support the industrial development.

All components of the Programme are being physically implemented by various government agencies, state enterprises, newly-formed private corporations with minority government equity participation and totally private companies. The Programme is managed at the policy level by the Eastern Seaboard Development Committee (ESDC), chaired by the Prime Minister, with representation by all concerned Ministries. The Center of Integrated Planning Operations, a technical division of NESDB, was assigned as the secretariat to the ESDC during the planning stage to coordinate all components of the Programme. As the Programme moved toward implementation, the Office of the Eastern Seaboard (OESB) was created as a unit of NESDB to coordinate, control and monitor the implementation phase of the programme.

A comprehensive masterplan study of the Eastern Seaboard was comleted in 1982, followed by detailed feasibility studies in 1983 and 1984 for the Map Ta Phut and Laem Chabang development areas. Based on these feasibility

studies and various other industrial feasibility studies, an initial development phase for each sub-project was defined and detailed engineering designs of the majority of the infrastructure projects were completed in 1984-1986. Financing of the detailed designs and construction of most of the major infrastructures is supported by loans from the Overseas Economic Cooperation Fund (OECF) of the Japanese Government and most funds have already been secured in the 10th-13th Yen Loans or agreed in principle for the 14th-15th Yen Loans. Local component costs are to be provided by the RTG budget, state enterprise capital funds and government guaranteed bonds issued by the state enterprises. The LCB Port, MTP Industrial Estate and Nong Kho-LCB Pipeline and the first stage petrochemicals plants (1 upstream and 3 downstream) are now under construction and the Government has approved the immediate construction of the LCB Export Processing Zone/General Industrial Estate and the MTP Industrial Port. The second stage petrochemicals masterplan has been approved by the ESDC and 14 private downstream plants are expected to be given Board of Investment priveleges and proceed to physical implementation in the near future. With the majority of the MTP and LCB developments now moving firmly to implementation, the Government must now concentrate on programme coordination, control and monitoring and preparations for the operations stage to ensure that the full potential of the ESB Programme is realized.

C. Immediate Objective

The immediate objective is to assist the Office of the Eastern Seaboard (OESB) in establishing appropriate operational systems for analysis and reporting of financial/operational results of implementing agencies and government supported infrastructures and in formulating infrastructure operations and pricing policies.

D. Project Background

This project is a follow-on project to DP/THA/83/009, Financial Planning Services to Eastern Seaboard, under which long-range financial planning and analysis systems were designed and implemented and counterpart staff trained at CIPO/OESB and some executing agencies for the planning stage of the ESB Programme. The earlier project was instrumental in establishing the financial planning system as the primary tool for overall Programme planning and for all financial-related recommendations to ESDC and made a major contribution in reducing the programme initial investment by US$ 350 million by staging of infrastructure development and in gaining Government approvals to proceed with the most promising portions of the Programme.

This follow-on project was primarily designed to further train OESB staff in the financial planning systems through on-the-job application to current issues (especially in the area of formulating infrastructure operations and pricing policies) and to design and implement reporting systems for financial and operational results of the infrastructures with initial investment costs of around US$ 600 million. UNDP inputs of 21 manmonths were requested by OESB for the Financial Planning and Mangement portion of the project in order to fully accomplish the project objectives. But the project input was reduced to 9 months in the project document finalized in the field by the SIDFA, although the overall scope of outputs/activities was

unrealistically kept the same despite objections from OESB and the experts concerned. OESB was forced to prioritize the activities to be undertaken within the alloted 9 manmonths and the expert submitted a Workplan (see next page) to UNDP/UNIDO in December, 1987 (when the project document had finally been approved) which showed which outputs/activities could realistically be accomplished and which could not be fully attained. OESB submitted a request to DTEC for an extension of the project by a further 7 months (to year-end 1988) in order to meet minimum requirements for implementation of the reporting system and to assist in major financial policy issues outstanding in LOB and MTP Port pricing and operations. This request was rejected with the result that there are three major areas outstanding for which OESB will, no doubt, require further financial technical assistance:

(1) full implementation of the financial reporting system to monitor and control the construction/operation of US $600 million of government-supported infrastructures.

(2) privatization and pricing of operations of the Laem Chabang Containerized Cargo Port which is now under construction (US $200 million).

(3) economically and financially optimal design revisions, operating systems and pricing for the MTP Industrial Port which is now being redesigned and is approved for immediate construction (US $100 million).

SECTION 1

ESB PROJECT IMPLEMENTATION SCHEDULE

	JUN 87	JUL 87	AUG 87	SEP 87	OCT 87	NOV 87	DEC 87	JAN 88	FEB 88	MAR 88	APR 88	MAY 88	JUN 88	JUL 88	AUG 88	SEP 88	OCT 88	NOV 88	DEC 88	JAN 89	FEB 89	MAR 89	APR 89	MAY 89
1. Laem Chabang Port																								
• Bid Eval/Negotiate/Contract Prep	. .	X	XXXXXX	XXXXXX	X																			
• Sign Contract	. .	. .	. .	. .	. .	X																		
• Construction (Nov 87-Oct 91)	. .	. .	. .	. .	. .	. .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
• Initial Operations (Nov 90)	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
• Effective Port Mgmt/Admin Study	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX																		
• Port Privatization Study	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX															
• Inland CFS Study										XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX			
• Port Pricing/Operating Systems Prep	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
2. Laem Chabang General Industrial Estate/EPZ																								
• Detailed Design (Apr 86-Dec 87)	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX																	
• Contractor Pre-qualification	. .	. .	. .	. .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX															
• Contractor Bid Preparation	. .	. .	. .	. .	. .	. .	. .	. .	XXXXXX	XXXXXX														
• Bid Eval/Negotiate/Contract Prep	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	XXXXXX	XXXXXX	XXXXXX											
• Construction (Jul 88-Jun 90)	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
• EPZ Operations and Promotion Study										XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX				
• Pricing/Operating Systems Prep	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
3. Nong Khr- Laem Chabang Water Pipeline																								
• Bid Eval/Negotiate/Contract Prep	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXX																			
• Construction								XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX				
• Water Pricing/Operating Systems Prep.	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX				
4. Sri Racha - Laem Chabang Rail Spur																								
• Bid Eval/Negotiate/Contract Prep	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	XXXXXX	XXXXXX	XXXXXX									
• Construction (Sep 88-Nov 89)	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
5. Map Ta Phut Industrial Complex/Urban Area																								
• Bid Eval/Negotiate/Contract Prep	XXXXX	XXXXXX	XXXXXX	XXXXXX	XXXX																			
• Sign Construction Contract	. .	. .	. .	. .	. .	X																		
• Construction (Dec 87-Nov 89)							XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
• Pricing/Operating Systems Prep	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
6. Sattahip-Bayeng Railway																								
• Bid Eval/Negotiate/Contract Prep	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	XXXXXX	XXXXXX	XXXXXX
• Construction (Jun 88-Jan 90)	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
7. Map Ta Phut Port																								
• Review Feasibility Study	. .	. .	. .	XXXXXX	XXXXXX	XXXXXX	XXXXXX																	
• ESDC/OECF Approval To Proceed	. .	. .	. .	. .	. .	. .	. .	XXXXXX	XXXXXX															
• Review Design Docs/Tender	. .	. .	. .	. .	. .	. .	. .	. .	. .	XXXXXX	XXXXXX	XXXXXX	XXXXXX											
• Bid Eval/Negotiate/Contract Prep	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	XXXXXX	XXXXXX	XXXXXX								
• Construction (40 months)	. .	. .	. .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
• Pricing/Operating Systems Prep													XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
8. Petrochemicals Industry																								
• HPC-1 Construction (Jan 87-Nov 89)	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
• Stage 2 General Policy Formulation	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX																	
• HPC-2/Downstream Feasibility Study	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX							
9. LCB Urban Infrastructures/Services																								
• DTCP Specific Plan	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX																		
• Prelim Budget Plan/Evaluation	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX														
• Infrastructures/Housing (Stage 1)																								
-Design											XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX								
-Construction																	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
• Financing/Admin Prep													XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
9. NTP Urban Services																								
• Prelim Budget Plan/Evaluation	XXXXXX	XXXXXX																						
• Housing (Stage 1)																								
-Design											XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX								
-Construction																	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
• Financing/Admin Prep													XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX

FINANCIAL PLANNING AND MANAGEMENT

(----------THA/87/008 Project Period----------)

JUN 87 JUL 87 AUG 87 SEP 87 OCT 87 NOV 87 DEC 87 JAN 88 FEB 88 MAR 88 APR 88 MAY 88 JUN 88 JUL 88 AUG 88 SEP 88 OCT 88 NOV 88 DEC 88 JAN 89 FEB 89 MAR 89 APR 89 MAY 89

SECTION 2

FINANCIAL PLANNING AND MANAGEMENT
OUTPUT / ACTIVITY WORKPLAN

THA/87/008 Project Period

	JUN 87	JUL 87	AUG 87	SEP 87	OCT 87	NOV 87	DEC 87	JAN 88	FEB 88	MAR 88	APR 88	MAY 88	JUN 88	JUL 88	AUG 88	SEP 88	OCT 88	NOV 88	DEC 88	JAN 89	FEB 89	MAR 89	APR 89	MAY 89
1. Improved capability to generate long-range financial/economic plans for all ESB sub-projects, NTP and LCB areas and ESB Total. Based on Financial Model now in-place, Financial Advisor will train 5 counterparts to do:																								
• continuous updates of NTP micro-level plans and NTP area plan	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
• complete LCB micro-level plan format to incorporate final detailed design	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAXXX																	
• continuous updates of LCB micro-level plans and LCB area plan	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	AAAXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
2. Improved capability to set appropriate infrastructure pricing policies and select appropriate operating and business systems to enchance financial viability of government infrastructures. The Financial Advisor will train 5 counterparts to develop pricing proposals and operating plans for:																								
• LCB GIE/EPZ - pricing	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAA																	
• NTP IE/BA - pricing	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAA																	
• LCB Water (Raw/Treated) - pricing	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAA																	
• NTP Water (Raw/Treated) - pricing	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAA																	
• LCB Port - lease/svc pricing	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	AAAAAA	AAAXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX					
• NTP Port - pricing	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX					
3. Improved capability to analyse, critique and make recommendations on financial aspects of investment proposals, infrastructure designs, construction bids, privatization and operations proposals. The Financial Advisor will assist and train 5 counterparts in financial aspects of:																								
• analysis of investment proposals for ESB	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
• detailed design for LCB GIE/EPZ	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAXXX																	
• analysis of construction and supervision bids - NTP IE/BA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAA																			
- LCB GIE/EPZ	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX										
- LCB PORT	AAAAAA	AAAAAA	AAAAAA	AAAAAA	A																			
- NE-LCB PIPELINE	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAA																			
- NTP PORT	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX								
- SRI RACHA-LCB RR	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	XXXXXX	XXXXXX	XXXXXX									
- SATTAHIP-NTP RR	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	XXXXXX	XXXXXX	XXXXXX
• Revise NTP Port Feasibility Study	. . . . .	. . . . .	. . . . .	AAAAAA	AAAAAA	AAAAAA	AAAXXX	XXXXXX	XXXXXX															
• Petrochemical Industry Policy Reccos.			AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX				
• LCB Port Privatization Study	AAAAAA	. . . . .	. . . . .	AAAAAA	. . . . .	AAAAAA	AAAXXX	XXXXXX	XXXXXX	XXXXXX														
• Inland CFS Study	. . . . .	. . . . .	. . . . .	AAAAAA	. . . . .	. . . . .	AAAXXX	. . . . .	. . . . .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX		
• EPZ Operations/Promotion Study	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX		
• Pattaya Greater City Development Plan	. . . . .	. . . . .	. . . . .	AAAAAA	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX		
• Telecoms Privatization Proposal	. . . . .	. . . . .	. . . . .	. . .	AAAAAA	AAAAAA	AAAXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX								
• OECF loan discussions	AAAAAA	(13th)	AAAAAA	. . .	. . .	. . .	. . .	. . .	XXXXXX	(14th)	XXXXXX	XXXXXX												
• LCB Urban Area Service/Financing Plan	AAAAAA	AAAAAA	. . .	. . .	AAAAAA	AAAAAA	AAAXXX	. . .	. . .	. . .	. . .	. . .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
• NTP Urban Area Service/Financing Plan	AAAAAA	AAAAAA	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
4. Financial/operational performance reporting and analysis capability at OESB which can be used to monitor and control ESB Programs implementation. The Financial Advisor will assist 5 counterparts in the following:																								
• survey existing financial/acctg./ operational reporting systems of all executing agencies	. . . . .	. . . . .	. . . . .	. . .	AAAAAA	AAAAAA	. . .	XXXXXX																
• design minimum data requirements and report formats (pro forma)	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	XXXXXX	XXXXXX															
• initially perform simplified manual reporting of performance	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX							
• design and implement computerised system with adequate financial detail and linkages to operating plans	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX							
• prepare operations manuals	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	XXXXXX	. . . . .	. . . . .	XXXXXX	XXXXXX	XXXXXX	XXXXXX						
• Reporting and system improvements	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX

AAAAAA = ACTUAL ACTIVITIES TO-DATE
XXXXXX = PLANNED ACTIVITIES

II. ACTIVITIES AND OUTPUTS OF THE PROJECT

The major activities and outputs of the project may be reported under the following headings as shown in the Workplan:

A. Financial Plans
B. Infrastructure Pricing
C. Critiques/Recommendations/Studies/Proposals
D. Financial Reporting

As the Terminal Report for the previous project (DP/THA/83/009) listed activities/outputs only through 27 May 87, the activities/outputs listed here are for the period 28 May 87 - 27 May 88 in order to give a comprehensive listing even though this project officially started 26 August 87.

A. Financial Plans

At the conclusion of the previous project (DP/THA/83/009), the Financial Planning System was well established as the primary tool for project planning and analysis and the basis of all recommendations related to financial/economic issues of the Programme. This Project was intended to further consolidate the benefits of system implementation through extensive on-the-job training by application of the system to the refinement and updating of the MTP and LCB Financial Plans and to analysis of current critical financial issues; especially in the area of infrastructure pricing. These updates and the analyses were performed in close cooperation in every detail with the counterparts. Primary counterparts at the detailed level were Messrs Pitak, Sinchai, Pornchai and Dr. Channaronk and at the management/policy level Messrs. Manas, Patnai and Dr. Savit.

1) Laem Chabang Financial Plan Update - Issued 13 Dec 87
This update of the Plan incorporates the LCB GIE/EPZ detailed design results and pricing decisions of ESDC, the LCB Port construction contract pricing and preliminary recommendations on operating and pricing policies, LCB preliminary social services and other infrastructure plans. (See Annex 1 for Executive Summary).

2) Map Ta Phut Financial Plan Update Issued 30 Mar 88
This update of the Plan incorporates the revised-scope MTP Port, the MTP IE/UA construction contract pricing and pricing policy decisions of the ESDC, second stage petrochemicals industry development, MTP preliminary social services and other infrastructure plans. (See Annex 2 for Executive Summary).

B. Infrastructure Pricing

With the majority of the infrastructure projects now proceeding to construction, determination of the government's policy for infrastructure operations and pricing is of utmost importance to Programme implementation. This is to allow private industries to proceed immediately and to ensure

recovery of government investment cost and appropriate capture of benefits.

The pricing policy of the LCB and MTP Industrial Estates was the highest priority because of the stage of construction and the interest of private investors to immediately locate their plants in the IE's. Following a long process of meetings and negotiations with NESBD, Ministry of Finance, IEAT and the ESB Sub-Committee, the ESDC accepted the recommended lease-only policy and established lease rates, terms and conditions. LCB and MTP water rates (raw and treated) were previously provisionally approved by the ESDC. Revised OESB calculations were prepared to confirm the validity of these recommended rates based on updated construction cost and water demand information. Preliminary estimates of LCB Port container terminal leasing rates (based on cost-of-service principle) were prepared as the basis for operations policy analysis and revised in conjunction with the PFI Port Privatization Study. Preliminary pricing analysis for the MTP Port liquids cargo rates was performed to confirm the feasibility of the reduced-scope MTP Port. Extensive additional work is required for preparation of recommendations to ESDC on operations and pricing policies for both LCB and MTP Ports. The formal outpust listed below were prepared at the detailed level with Messrs. Chamnarong, Pornchai, Pitak, Sinchai, Saksit and Chintanaa and at the management/policy level with Messrs Manas and Pathai and Dr. Savit.

1) LCB Industrial Estate Pricing	
- Cost Basis Calculation	28 May 87
- Pricing Proposal to Minister of Finance	5 Jun 87
- Pricing Proposal Revision	10 Jun 87
- Pricing Proposal Update	3 Jul 87
- Final recommendation to Sub-Committee	14 Jul 87
- Recommendation to ESDC	27 Jul 87
2) MTP Industrial Estate Pricing	
- Cost Basis Calculation	28 May 87
- Pricing Proposal	18 Jun 87
- Pricing Proposal Update	25 Jun 87
- Final Recommendation to Sub-Committee	14 Jul 87
- Recommendation to ESDC	27 Jul 87
3) MTP Urban Area Pricing Policy	
- Pricing Proposal	18 Jun 87
- Alternative Pricing for Private Investors	11 Sep 87
4) LCB Water Pricing (Raw/Treated) (See LCB Financial Plan update)	13 Dec 87
5) MTP Water Pricing (Raw/Treated) (See MTP Financial Plan update)	30 Mar 88
6) LCB Port Terminal Lease Pricing	
- Preliminary Estimates (before PFI)	13 Dec 87
7) MTP Port Pricing	
- Liquid cargo pricing sensitivity (see MTP Port Feasibility Review)	19 Jan 88

C. Critiques/Recommendations/Studies/Proposals

1) LCB Industrial Estate Detailed Design: The advisor and counterparts (Messrs. Manas, Kriangkrai and Dr. Channaronk) continuously assisted IEAT in the guidance of the design consultant and prepared the following formal comments for changes of / incorporation in the detailed design:

- OESB Comments on Inception Report	5 Jun 87
- OESB Comments on Preliminary Design	11 Sep 87
- OESB Comments on Draft Final Design	18 Dec 87

2) Construction/Supervision Tender Evaluation: The advisor and counterparts advised and assisted the executing agencies (IEAT/PAT/PWD) in various aspects of the processes of prequalification, tender evaluation, contracting and approvals from RTG and OECF which resulted in accomplishment of the milestones listed below during the project period:

MTP Industrial Estate Construction - Tender Eval

- Construction bid opening	10 Jun 87
- Sign Construction supervision contract	20 Aug 87
- Sign construction contract	20 Oct 87

LCB GIE/EPZ

- Contractor Prequalification	Feb 88
- Construction bid opening	9 May 88
- Tender Evaluation	now in progress

LCB Port Construction - Tender Eval

- Open Bids - F/C,L/C analysis	26 Jun 87
- 1st Clarifications from Contractors	23 Jul 87
- 2nd Clarifications from Contractors	14 Aug 87
- Sign contract	2 Oct 87
- ITDC Financial Capacity Comments to OECF	30 Oct 87
- Notice to Proceed	24 Dec 87

Nong-Kho /LCB Pipeline

- Sign contract	9 Oct 87

MTP Port

- Revise Detailed Design TOR	24 Mar 87
- Tender Eval	delayed to Oct 88

3) MTP Port Feasibility Study: The advisor had primary responsibility for the MTP Port Feasibility Review preparation as it entailed the coordination of the MTP industrial development plan (especially Petrochemicals Stage 2), materials balance plan, port physical options and investment costs, port cargo/productivity/berth requirements planning and port operations and pricing policy analysis. Major formal outputs of the advisor and counterparts (Messrs. Manas, Pitak, Pornchai, Chintanaa and Dr. Channaronk) which led to the ESDC approval to proceed with the construction of a reduced-scope initial port were as follows:

- Options Proposal
  - Draft for Dr. Snoh/NESDB 17 Jul 87
  - Revised for Sub-Com. 20 Jul 87
- MTP Port Cargo/Productivity Berth Requirements Model
  - First Iteration 8 Sep 87
  - Updates Continuous
- Feasibility Review
  - Prelim. Observations 7 Oct 87
  - Presentation to Sub-Comm. 30 Oct 87
  - Presentation to ESDC 19 Jan 88
  - Implementation Recco to Sub-Com 1 Mar 88
  - Revise Recco for Sub-Comm 8 Mar 88
- OECF Approvals
  - Draft to OECF Rep 5 Feb 88
    1 Mar 88
  - Final to OECF Rep 24 Mar 88
- Answers to OECF Questionaire 1
  - Draft 1 Mar 88
  - Final 24 Mar 88
- Answers to OECF Questionaire 2 12 May 88
- Detailed Design TOR
  - Draft 19 Jan 87
  - Final 24 Mar 87

4) Petrochemicals Stage 2 Strategy Recommendations: Masterplan was prepared by a Study Group appointed by the ESDC and chaired by the Dep. Min. of Industry with participation by OESB, PTT and NPC-1. The advisor's counterpart, Dr. Channaronk, was OESB's principle contributor (as representative of Dr. Savit) and was advised/assisted by the Financial Planning Advisor who was simultaneously involved in material balance/cargo generation aspects of Petrochem Stage II for MTP Port planning.
   - Petrochem Seminar 14 Sep 87
   - OESB Material Balance plans for MTP Port Continuous
   - Masterplan approved by ESDC 19 Jan 88

5) LCB Port Privatization Study: OESB is responsible for preparing recommendations to ESDC for the operation and pricing policy for LCB Port. With the port now under construction, this task is very urgent because of the long lead time required to get private operators contracted and in-place before the construction is completed. OESB has commissioned Port of Felixstowe Int'l to conduct a Port Privatization Study in order to better understand the private sector perspective and the most effective method of privatization. The advisor and counterparts (Messrs. Pathai, Kriangkrai and Dr. Savit) participated in all aspects of the study management. Extensive additional work is required, especially in the area of operations policy and terminal pricing, before recommendations can be submitted to ESDC by the November, 1988 deadline. Formal outputs include:
   - Comments on Inception Report 22 Sep 87
   - Container Terminal Pricing Recco - Prelim 13 Dec 87
   - Revision of Container terminal Pricing with PFI
     - o Invest./Opns Cost analysis 1 Apr 88

- Comments on Draft Final Report — 19 Apr 88
- Policy/Planning Summary for NESDB (Dr. Shoh/ Dr. Phisit) — 22 Apr 88

6) Inland CFS Study - Advisor and counterparts assisted in orientation and initial workplan development of study team in Mar 88. Full study started in late April 88. Inception report due for review late May. Successful ICFS development is crucial to LCB Port operations.

7) EPZ Operations/Promotion Study - Advisor and counterparts assisted in orientation and in development of initial work plan of study team. First Preliminary Report due May 88.

8) Pattaya Greater City Development Plan - start-up delayed

9) Telecommunications Privatization Proposal - Initial submission of British Telecomms was reviewed for commercial feasibility but documents, as submitted, were rejected as not in sufficient detail for analysis. On- hold pending further policy direction by MOC.

10) OECF Loan Discussions - Currently preparing documentation to support requests for project funding under OECF 14th Yen Loan and extensive documentation for project scope changes on 11th-13th Yen Loan projects.

11) MTP Social Service/Finance Plans: Preliminary plan prepared by NEC with input/screening assistance from OESB. ESDC appointed NESDB Social Division to review overall plan and coordinate with OESB for recommendation to ESDC as soon as possible as social services are seriously lagging behind industrial developments. Dr. Kumropluk and Khun Thaneerat were the primary counterparts.
    - Resolution by ESDC for Social Sub-Comm. — 19 Jan 88
    - Preliminary plan in MTP Financial Plan — 30 Mar 88

12) LCB Social Services/Fiance Plans: Preliminary plan developed in conjunction with Min of Interior. Also to be screened and reviewed with NESDB Social Division and recommendation to ESDC as soon as possible.
    - Screening Review by OESB (MoI, PWD, OESB) — 29 Sep 87
    - Preliminary plan in LCB Financial Plan — 13 Dec 87
    - Resolution by ESDC for Social Sub-Comm — 19 Jan 88

13) Other Major Activities/Outputs:

IEAT Financing Requiremets Analysis — 18 Jun 87
(LCB IE, MTP IE/UA/Port)

MTP Industrial Planning Model -
(Industries/Material Flow/Transport Reqmt's/Port Traffic)
- First Iteration — 8 Sep 87
- Updates — Continuous

Effective Ports Management and Operations System:	
- OESB Comments on Progress Report II -	27 May 87
- Comments on Draft Final	22 Nov 87
LCB New Town Planning Model	
- Update system for IE Lease/Employment/ Population/Water/Housing	11 Sep 87 Continuous
PAT - LCB Port Financing Requirements Analysis	
- Initial Proposal	22 Jun 87
- Revised Proposal for MoF/NESDB	2 Jul 87
LCB Port Loan Status for 14th Yen Loan Request	2 Jul 87
Update	2 Oct 87
Sri Racha/LCB Railroad Spur	
- Preparations for OECF 14th Yen. Loan	Jan 88
Sattahip/ MTP Railroad	
- Preparations for OECF 14th Yen Loan	Jan 88
- Cargo Demand Projections/Market Potential Survey	26 Apr 88

D. Financial / Operational Reporting Systems

The expert and counterparts surveyed the existing internal finanical/accounting/operational reporting systems of the state enterprise and government executing agencies and the existing/proposed legal reporting requirements established by the Central Accounts Division, Comptroller General, Ministry of Finance. OESB then prepared standardized reporting formats for both financial and operational reporting which meet the minimum requirements for Programme monitoring and control.

As the Executive Order specifies that the financial reporting will be done through the CAD (and not directly to OESB), it was necessary to work closely with CAD staff to finalize mutually acceptable reporting formats. The Permanent Secretary (Finance) has now submitted his official recommendation for methodology of account-splitting for consideration/approval by ESDC and OESB has officially submitted the reporting formats to CAD for inclusion in the system. Both the account-splitting proposal and reporting format proposal must now be approved by the ESDC Sub-Committee for Implementation before actual reporting can be implemented. This legal requirement has caused a delay in the planned implementation of the manual reporting system.

In addition to the financial/accounting system and formats, OESB has developed the initial operational reporting formats for completion by the executing agencies on a monthly basis. Both of these formats are to be presented to representatives of the executing agencies in a workshop to be held as soon as possible to kick-off the actual reporting. A detailed reporting framework/operations manual for the system has also been prepared.

This listing includes only the major outputs/activities and is not exhaustive. It gives an indication of the scope and breadth of the activities and outputs of the expert and his counterparts and the involvement of financial planning with all aspects of planning/operations of the ESB Programme.

All outputs listed above are available for review at OESB.

E.Counterpart Training Summary

With the exception of a limited number of seminars and presentations, the majority of the training effort has been direct on-the-job transfer of knowledge to counterparts through applications of financial planning and analysis to real world operational requirements. This transfer has been at both the management and detailed levels.

The most important contribution of training at the management level has been to train senior managers to effectively apply the techniques and concepts of financial planning (with which some were familiar) to practical management of problems and resolution of policy issues of the ESB Programme. In a complex multi-dimensional programme such as the ESB, it is imperative to have coordinated and interdependent physical planning and financial planning. Prior to this project and its predecessor, CIPO had concentrated almost exclusively on the physical planning aspects. However, through participation in the implementation of financial planning systems and through demonstration of the value of the systems, the managers now realize that finance is one of the most convenient focal points for the overall management of the Programme besides being an absolute necessity for arranging needed budgets and loans and addressing other "financial" issues like financial feasibility analysis, pricing, progress monitoring, etc. Of course, the managers are not involved in the detailed calculations or data base management but all now have a more substantial understanding of the basic financial concepts, understand the format of the financial planning system (including its capabilities and limitations) and have a very solid understanding of the financial issues of all of the sub-projects in the ESB Programme and the overall macro-economic impact of the programme on the Thai economic situation.

This project has concentrated on consolidating the benefits of system implementation at OESB through very detailed and exhaustive involvement of counterparts at all stages of the financial planning and analysis work. The following schedule lists the counterparts by function and level of training/technical transfer:

ASSISTANCE TO OFFICE OF EASTERN SEABOARD
(DP/THA/87/08)
COUNTERPARTS BY FUNCTION

COUNTERPART	FINANCIAL PLANNING	INFRASTRUCTURE PRICING/ OPERATING SYSTEMS	STUDIES/ PROPOSALS/ RECOMMENDATIONS. ANALYSIS	FINANCIAL/ OPERATIONS REPORTING
Dr. Savit Bhotiwihok, OESB Director	MMM(P)	MMM(P)	MMM(P)	MMM(P)
Mr. Manas Sangsandikul, OESB Coordinator, Industry/ Industrial Infrastructures	MMM(P)	MMM(P)	MMM(P)	-
Mr. Pathai Metharom, OESB Coordinator, LCB Port	MMM(P)	MMM(P)	MMM(P)	-
Dr. Kumroplek Surasawadii, Professor Kasetsart Univ. and OESB Urban/Social Coordinator	MMM	-	DDD(P)	-
Mr. Pratheeb Chantaketta, IEAT Deputy Governor, ESB Projects	MMM	MMM	MMM	-
Mr. Charoen Yarrasingh, IEAT Technical Director	MMM	MMM	MMM	-
Mr. Pornchai Ruchirapa, Policy & Planning Analyst, Chief, Office of OESB Director	DDD(P)	DDD(P)	DDD(P)	DDD(P)
Dr. Channaronk Chandrachote, Policy & Planning Analyst, Financial/Industrial	DDD(P)	DDD(P)	DDD(P)	-
Mr. Pitak Chitchak, Policy & Planning Analyst, Financial/Computer Systems	DDD(P)	DDD(P)	DDD(P)	DDD(P)
Mr. Sinchai Mungkolsun Economist/Statistical Analyst, Financial Planning	DDD(P)	DDD(P)	DDD	DDD(P)
Ms. Chintanaa Sukulpraham Policy & Planning Analyst, Industrial/Energy	-	DDD(P)	DDD(P)	-
Mr. Kriangkrai Boonyayothin Policy & Planning Analyst, Infrastructure Planning/Mgmt	-	-	DDD(P)	-
Mr. Thaneerat Siriprachana Policy & Planning Analyst, Urban/Social Planning	-	-	DDD(P)	-
Mr. Satsit Suksumake IEAT Project Engineer, ESB	DDD	DDD(P)	DDD	-

MMM = Management level counterpart
DDD = Detailed level Counterpart
(P) = Primary

Despite the successful technical transfer so far, OESB requested and needed a further 7 months of financial technical assistance in the three areas previously mentioned:

(1) full implementation of the financial reporting system to monitor and control the construction/operation of US $600 million of government-supported infrastructures.

(2) privatization and pricing of operations of the Laem Chabang Containerized Cargo Port which is now under construction (US $200 million)

(3) economically and financially optimal design revisions, operating systems and pricing for the MTP Industrial Port which is now being redesigned and is approved for immediate construction (US $100 million).

These areas require a very high degree of original work, substantial depth of experience in the field and an extensive background in all aspects of the ESB Programme planning and implementation.

III. ACHIEVEMENT OF IMMEDIATE OBJECTIVE

As the manmonth input of the Project was cut from the requested 21 manmonths to only 9 manmonths while keeping the activities/outputs the same, it was obvious to all concerned that OESB had to prioritize the activities to be undertaken. The expert submitted an OESB-approved workplan to UNDP/UNIDO which clearly showed which activities were achievable within the 9 manmonths. Versus this workplan, the achievement is as follows:

A. Financial Plans

The financial planning systems, detailed plans for Map Ta Phut and Laem Chabang (as currently defined) and reasonably well-trained staff at both the detailed and management level currently exist at OESB as a result of this and the previous project. At this stage, this should be a self-sustainable planning operation except in projects requiring specialized experience.

B. Infrastructure Pricing

Pricing policies and levels of pricing were established for the majority of the infrastructures (industrial estates, services, utilities, etc) and staff are adequately trained at the detailed and management level for iteration of the systems and methodologies applied. However, for the currently on-going unique analyses of the most appropriate operations systems and pricing systems for the LCB and MTP Ports, further assistance is definitely needed (see Recommendations for detail) as this requires a high degree of experience and original work and involves investments of

around US $ 300 million as well as having a substantial impact to the potential for Thailand's industrial development.

C. Critiques/Recommendations/Studies/Proposals

A broad spectrum of proposals and studies have been prepared (see Activities/Outputs Section II.C.) in close cooperation with a large group of counterparts at both the detailed and management level. Based on these analyses, the OESB has had remarkable success in the physical implementation of a many infrasturcture projects and formulation of important Government policies necessary for successful industrial development. Given this technical transfer, the OESB staff should now be independently capable of performing these analyses with the exception of the two important areas of LCB and MTP Port operation/privatization/pricing which are currently under study and where further technical assistance is required.

D. Financial/Operational Reporting

The system design and preparations have been completed but actual implementation in the field has been delayed due to (1) unanticipated legal requirements for Ministry of Finance/ESDC Sub-Committee approvals of account-splitting methodologies and reporting format requirements and (2) the extremely high priority assigned to current problem areas; especially in the MTP Port Feasibility Review and Redesign and approvals of ESDC and OECF to proceed. The necessary MoF/ESDC approvals are expected to be secured in the next ESDC meeting and OESB is meanwhile planning workshops for training at OESB and the executing agencies for immediate implementation of the system.

IV. UTILIZATION OF PROJECT RESULTS

A. Financial Plans

The Financial Planning Model/Database is THE PRIMARY TOOL for all financial planning, budgeting, financial/economic feasibility analysis, all data base manipulation, "what-if" sensitivity analysis and financial policy impact appraisal for the ESB Programme. It will continue to be the primary financial planning and analysis tool at OESB for the forseeable future; especially now that sufficient institution-building/technical transfer has been provided at the detailed level to ensure the system is self-sustaining. This system was instrumental in the feasibility analysis of the sub-projects and development of a rational, intergated overall programme that is economically and financially justifiable within the constraints of the current economic conditions in Thailand, within the debt ceilings and priorities imposed by the Government and within the financial capacity of local and foreign private sector investors and sources of loan funds. The financial planning outputs/plans assisted to "sell" the justifiable programme components (as continuously amended) at both the

highest policy-level (ESDC) and at the level of the executing agencies whose full cooperation and participation is crucial.

The MTP and LCB Financial Plans are the only comprehensive planning document linking the physical and financial/economic dimensions on a Programme as well as sub-project basis and are crucial to the Programme implementation.

B. Infrastructure Pricing

Recommendations for pricing of the industrial estates, water (raw/treated) and other services in LCB and MTP have been approved by ESDC and are now being used in dealings with private sector investors. The rational pricing systems adopted will contribute to the overall success of the programme and recovery of the government's initial investment costs. Preliminary pricing proposals for LCB and MTP Ports are being used as the basis for further analysis of the feasibility and most appropriate method of operating the ports. Further extensive analysis on LCB and MTP Port operations/pricing is currently in progress.

C. Critiques/Recomendations/Studies/Proposals

1) LCB GIE/EPZ Detailed Design: Currently being used for tendering of construction of the GIE/EPZ to start by July 88.

2) Construction / Supervision Tender Evaluations: Necessary for contracting of infrastructure construction.

3) MTP Port Feasibility Study: Based on the findings of the F/S, the ESDC on 19 Jan 88 approved the immediate construction of the reduced-scope port which was recommended (B 1,700 million). The options analysis is the basis of detailed design changes and the F/S has also been used to get OECF approval for the change of scope of the project to coincide with realistic industrial demands. The scope reduction has saved around B 2,000 million of initial investment costs versus the previously planned port facilities.

4) Petrochemcials Stage 2 Masterplan: Although the project's contribution to this plan was indirect, the Masterplan is of considerable importance to the development of the Thai economy. The Masterplan established the strategy for immediate implementation of NPC-2 downstreams to be followed by plans for NPC-2 upstream development (investment cost around B 60,000 million). The Masterplan is the basis for current BOI analysis for allocation of incentives to 14 of 63 applicants. The project has been instrumental in ensuring that the infrastructures (especially the MTP Port) will be adequate to support the Petrochemicals Masterplan.

5) LCB Port Privatization Study: The advisor has participated in all aspects of the Study and has prepared all of the financial base data (especially pricing and IRR data) for the Study. This Study

will be the basis for recommendations to ESDC for the system of port operations to be submitted by Nov 88. This is a crucial decision with long-range implications to efficiency of the national transport system and the future of privatization in Thailand with a substantial impact to Thailand's potential for economic development.

6) Inland CFS Study: When completed, this stuoy will recommend the best system for inland distribution of goods to/from the LCB Port with recommendations for its design, location and operations. The rational development of ICFS is absolutely necessary for the success of the LCB Port and the study is expected to help avoid substantial inappropriate investments in sub-optimal locations.

7) EPZ Operations/Promotion Study: When completed, this study being managed by OESB and executed by JICA will provide guidelines for operation of the LCB EPZ (of which there is very little practical experience in Thailand) and for appropriate marketing and industrial promotion strategies and organization. This project contributed to the study design, TOR writing and initial implementation /direction of the study. The trained counterparts should be able to manage the financial aspects of the study; especially regarding EPZ pricing, utilities pricing and recommendations for incentives.

10) OECF Loan Documentation: To date, over US$ 350 million of concessionary loans for infrastructure construction have been agreed upon. Outputs and advice of the expert have been instrumental in all phases of loan pre-planning, project preparation, request preparation, negotiations, revisions of project scope and application of loan balances.

11) MTP Social Services/Finance Plans: Preliminary plans submitted to NESDB Social Division for screening, revision, approval and ultimate inclusion in RTG/State Enterprise Budgets. The trained counterparts should be able to support NESDB in finalizing the Plans.

12) LCB Social Services/Finance Plans: (same as MTP plans)

D. Financial / Operational Reporting Systems

System layout, formats and manuals will be immediately applied to reporting of actual performance to ESDC.

V. CONCLUSIONS

The ESB Programme, as originally conceived, was an extremely ambitious programme that has since been pared down to a more rational and justifiable investment programme which is within the existing economic/financial constraints and which is generally supported at the political, business and

government bureaucracy levels. In general, the really promising sub-projects are proceeding to immediate implementation while the more-difficult-to-justify sub-projects are having some well-deserved difficulties and are being delayed until the timing or other conditions of their implementation are more favorable. OESB has made and is making a substantial contribution to the rational implemetation of the Programme and to ensuring that the potential economic benefits are realized.

With regard to Financial Systems, a self-sustaining long-range financial planning and project analysis system with fully trained staff exists at OESB as a result of this and the previous projects. The projects have made a substantial contribution to the successful implementation of the ESB Programme and its several sub-projects through providing much-needed competent and "unbiased" recommendations for meeting the NATIONAL OBJECTIVES of the Programme. Due to the unrealistic reductions of the UNDP inputs from those requested, the system of reporting and analysis of actual financial/operational performance of the US$ 600 million of infrastructures has been designed but not fully implemented and an extension of 7 months was required to implement the system to acceptable standards. Operations/pricing issues of great importance are still to be resolved, especially in the LCB and MTP Ports and OESB will, no doubt, require further financial technical assistance for their resolution.

VI. RECOMMENDATIONS

The major technical recommendations of this project are already well documented in the outputs listed above. Of greater relevance to the Programme are the following major financial/technical issues and actions still outstanding at the end of this project which must be resolved to ensure successful implementation:

A. Map Ta Phut Infrastructures

1. MTP IE/UA
   - -Recommend to ESDC a 5% per year increase in the base price of new leases after 1988
   - -Immediate conclusion of IE leases to NPC-1 and downstreams
   - -Formulate recommendations to ESDC for pricing and lease/sale policy for Urban Area development by private investors.
   - -Following BOI decision on NPC-2 downstream investors, finalize policy for lot allocations and deposit requirements to reserve IE land. Conclude leases.
2. MTP Port
   - -Modification of tender documents to be contracted immediately
   - -OECF approval required for change of scope of port and adjustments to line items of 11th and 12th Yen Loan Agreements to include revised facilities.
   - -Agreement should be made with OECF for financing of additional facilities ("Options") which may be included in the construction contract at a later stage depending upon industrial demands.
   - -Operations/management study is required to recommend best system of management, especially of the liquids cargo berths which will require specialized experience.

-Recommendation to ESDC on cost recovery systems (subsidy, pricing policy and levels for common-user and private facilities)

3. MTP Housing
   -NHA plans are obsolete. NESDB to finalize RTG policy with respect to mix of high-medium-low income housing to be developed by NHA and the appropriate level of subsidy, if any. OESB to follow-up/coordinate at technical level. MoF/NHA must identify financing source.
4. Sattahip-MTP Railway
   -Revised project cost estimates by SRT for inclusion in the 14th Yen Loan request appear extremely high versus previous estimates and actual costs / km in the 1983/84 construction of Chachangsao/Sattahip line. Review before including in 14th Yen Loan request
   -Thorough updated review of realistic potential cargoes must be undertaken before decision to proceed with construction. Current marketing study at SRT should provide useful information for decision-making.
   -If railway proceeds, SRT to perform analysis of additional rolling stock requirements which may also require financing.

B. Laem Chaba: Infrastructures

1. LCB Port
   -RTG policy for privatization of port management/operations must be finalized by late-1988 in order to operate port at completion of construction. Pricing policy is crucial.
   -OECF must approve use of 12th Yen Loan balances for procurement of gantry cranes and floating equipment which were previously accepted by OECF for inclusion for funding in the 13th Yen Loan. If there are to be 3 container berths with 7 quay gantries, as suggested by PFI, additional financing is required. Also, provisional arrangements for financing of yard-gantries/handling eqpt is recommended in case private operators proposals are unacceptable.
   -No provision has been made yet for ICFS financing. The major expense will be for land acquisition, not normally financed by OECF or other concessionary loans.
2. LCB GIE/EPZ
   -Lease pricing must be reviewed in view of the higher than expected construction bid prices. Otherwise, IEAT may have a substantial financial exposure.
   -Recommend to ESDC a 5% per year increase in price of new leases after 1988.
   -Customers seeking advance location in LCB GIE/EPZ are requesting refunds of costs incurred for temporary infrastructures. This poses significant financial exposures to IEAT as these costs were not included in developing minimum pricing levels. A consistently applied policy must be adopted.
   -Bid prices (received 9 May) must be inserted in planning model to estimate impact to long-term financial requirements / profitability of GIE/EPZ.

3. Nong Kho/LCB Pipeline and LCB Water Filtration Plant
   - -Possible assignment of water filtration plant operations/maintenance responsibility to PWWA, PWD rather than to IEAT
   - -Further RID allocation of Nong Kho water resources must be restricted.
   - -Location of appropriate industries and guidelines for water usage within the GIE/EPZ must be rigidly applied due to limited resources. Private pipelines (Siam CRT) must be controlled, perhaps with appropriate pricing policy.
   - -OESB must take a more active role in the regional water resource planning and especially the forward planning of the inter-basin water transfer scheme, especially now that the GIE/EPZ is moving to construction and Pattaya is experiencing shortages.
4. Sri Racha/LCB Rail Spur
   - -Must be included in the 14th Yen Loan if it is to be operational in-phase with the initial operations of LCB Port
   - -Marketing studies indicate private operators will not use rail if they have to use a rail-only ICFS in Bang Sue. ICFS study to propose acceptable solution.
   - -SRT to perform analysis of rolling-stock requirements to support LCB Port traffic. Financing must be arranged.

5. LCB NHA Housing/Social Services
   - -NHA Plan is obsolete and must be totally revised based on ultimate decisions with respect to location, coordination of macro-block infrastructures to the NHA site and principles of cost allocation/subsidy adopted by RTG.
   - -Social services plan (especially the macro-block infrastructures plans must be coordinated with decisions on NHA

C. Financial Planning System
1. Continued coordination of the executing agency annual operating plans with the OESB long-range financial plans is crucial for Programme control and realization of full economic potentials.
2. Continuous update of the physical/financial planning system and data base is crucial to the ability to coordinate the Programme and to be able to immediately respond to current issues.
3. Social services financial plan must be added to model/data base as details become available
4. NPC-2/downstream and other new industry data must also be input to model as available.

D. Financial/Operational Reporting

1. Full installation of the system is an absolute necessity for the control and monitoring of the US $ 600 million of infrastructures currently being built in the ESB.

E. Further Technical Assistance Requirements

1. To complete the work originally planned by OESB for THA/87/008:

   (a) To fully implement the financial/operational reporting system, further assistance is required. While the requested 7-month extension of this project would have been the most efficient manner to complete this work because the expert was already intimately familiar with the project details, OESB must now explore other options which will, no doubt, be less efficient than the extension because of the inescapable and lengthy learning period required.

   (b) Port privatization, pricing and selection of operations systems recommendations must be made by the end of 1988 if the LCB Port is to begin operations as soon as construction is comleted. Due to the very high investment costs and probability of strong bias of recommendations from bi-lateral sources, OESB should try to obtain future assistance from a competent multi-lateral institution on these important issues.

2. As suggested in the Joint Evaluation Mission, it is important that OESB broaden its scope to consider the Regional issues of the ESB Development. With the MTP and LCB growth-pole developments proceeding firmly to implementation, OESB should focus on the important longer-range regional problem areas like Water Resource Planning, Regional Transport Systems, hinterland integration, social services planning, etc. Inter-regional issues and opportunities should also be explored, especially with regard to encouraging linkages with the Northeast.

3. To systematically manage and coordinate the above regional issues, OESB must develop more sophisticated computerized regional planning systems; especially for major infrastructures to support industrial developments.

F. Future Project Preparation and Communications:

1. Contact and communications between the SIDFA and OESB were virtually non-existent; his contact with the project personnel was few and far in-between with hardly any constructive dialogue. In order to enable the SIDFA to have better acquaintance with and appreciations of the thinking, trends and requirements of the national project counterpart and of the project itself, such consultations between the SIDFA and the national project counterpart and the project personnel must be improved.

2. Due to the long delay in preparing and approving the Project Document. The expert worked without contract or with short interim extensions of his contract until the project was finally approved. This uncertainty made work planning, scheduling and prioritization extremely difficult for the expert and OESB. While the short extensions permitted continuity of services to OESB

(and were very much appreciated under the circumstances), timely Project Document preparation and approval would have contributed to more effective Project execution.

3. More frequent in-country participation of UNIDO back-stopping staff would contribute to more professional and effective project development, management and review.

ANNEX 1

Eastern Seaboard Development Program

LAEM CHABANG INFRASTRUCTURES

FINANCIAL PLAN

UPDATE : DECEMBER, 1987

Office of the ESB Development Committee

NESDB

OVERVIEW : EASTERN SEABOARD DEVELOPMENT PROGRAM

The Eastern Seaboard Programme is an integrated industrial development programme designed to capitalize on Thailand's natural resource opportunities and market potentials in order to provide significant returns in development of new industries, foreign exchange, employment and decentralization of development from Bangkok.

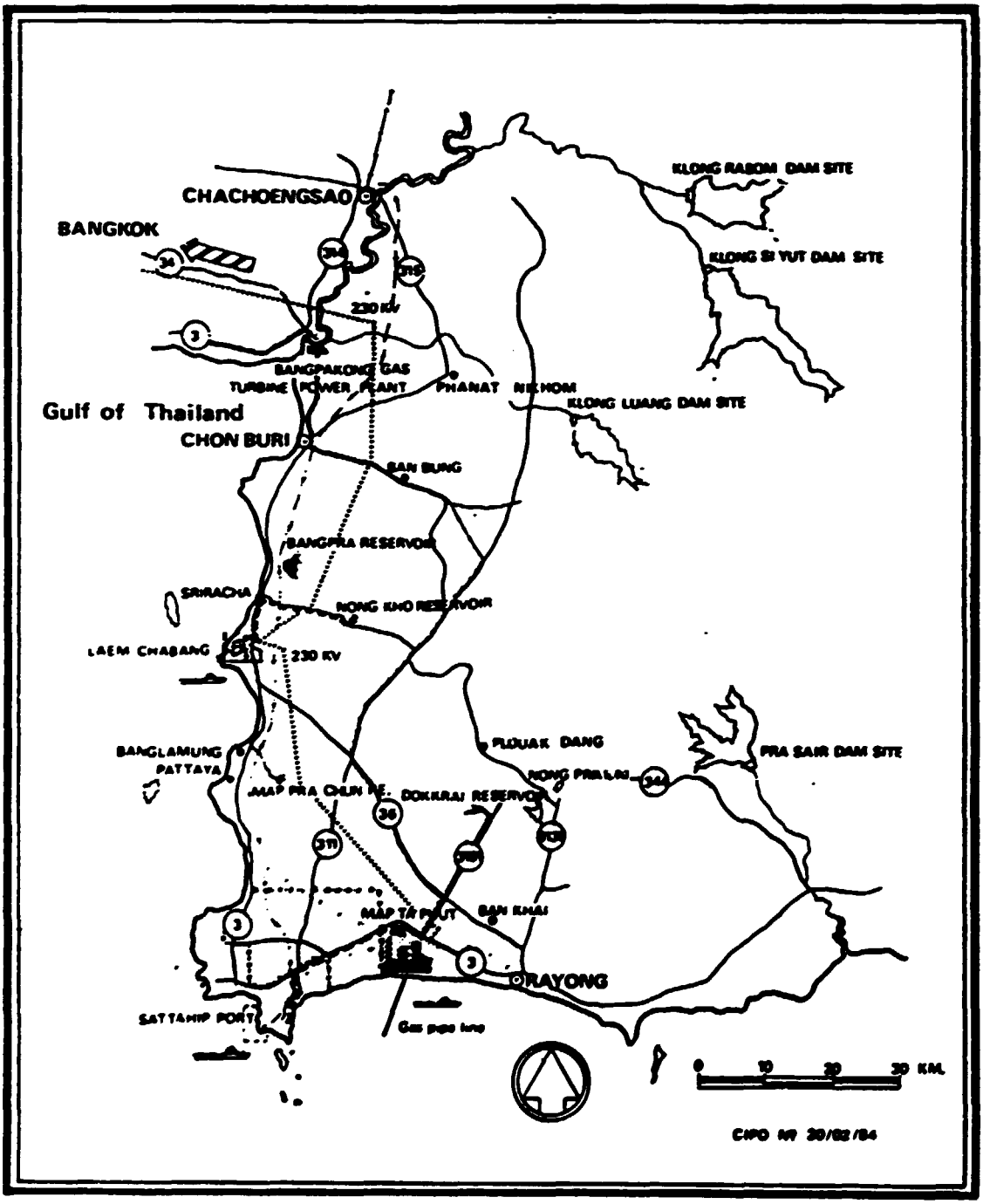
Initial emphasis is placed on the two major target areas of Laem Chabang and Map Ta Phut and their infrastructure linkages to Bangkok and the ESB hinterland.

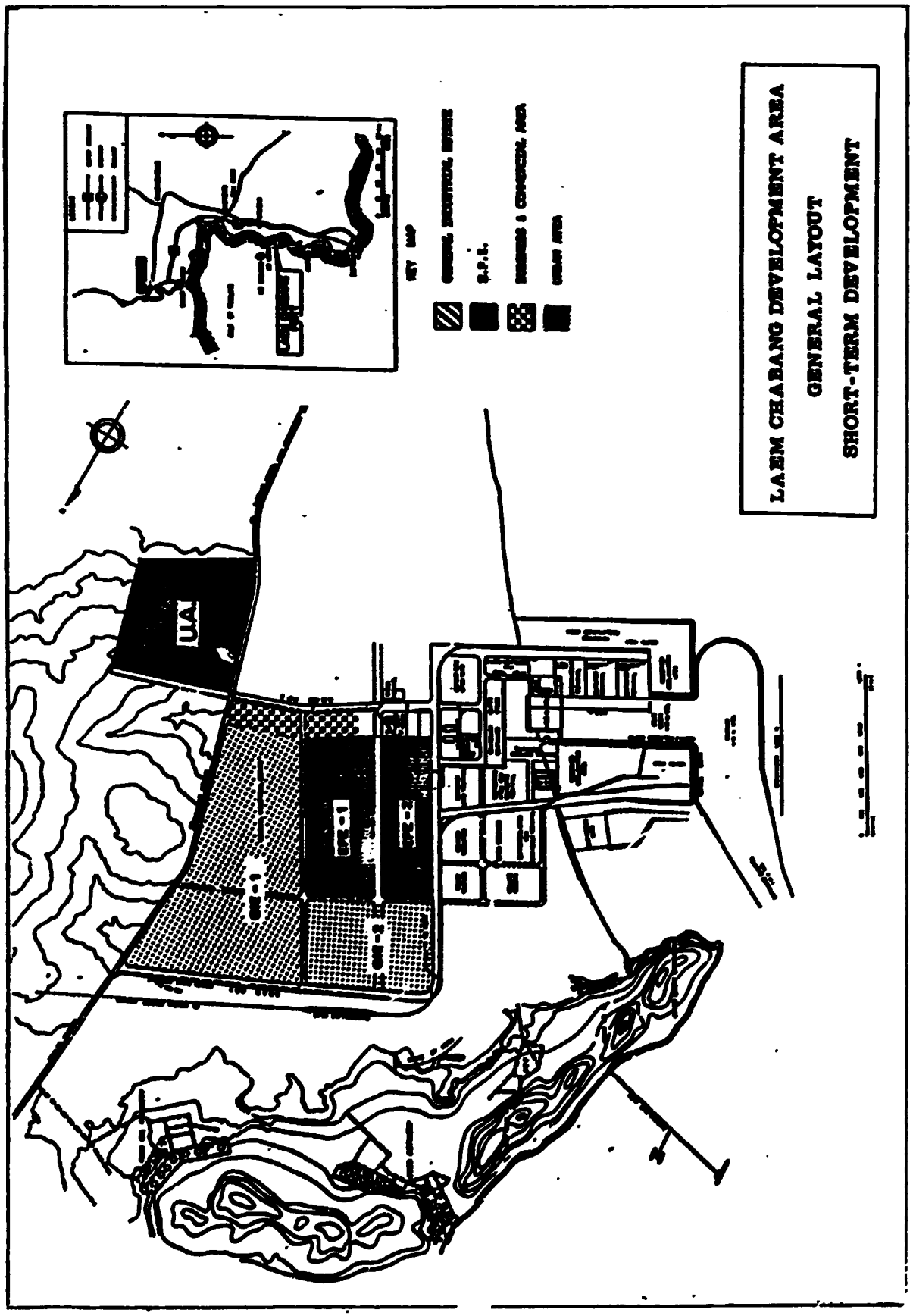
- Map Ta Phut will be the center of natural gas-based and heavy industries. The fertilizer and petrochemicals complexes will locate here using raw material inputs from the gas separation plant, which is now operational. Other downstream petrochemicals, plastics, chemicals, agro-processing and other basic heavy industries are to locate in Map Ta Phut taking advantage of the industrial estate, situated back-to-back with the industrial port and fully serviced with both industrial and social infrastructures.

- Laem Chabang is the site of the deepsea containerized cargo port needed to efficiently meet Thailand's growing cargo transport requirements and reduce transport inefficiencies that would otherwise limit Thailand's export opportunities and industrial development potential. The general industrial estate (GIE) and export processing zone (EPZ), located back-to-back with the port, will be the centre of small- to medium-scale, labour intensive, non-polluting and export oriented industries in-line with the national development objectives of employment generation, export promotion and mitigation of congestion in the Bangkok area. The Laem Chabang development includes all required industrial and social infrastructures to make it a competitive industrial location versus Bangkok and other industrial locations in SE Asia.

The government's role in this development includes selection and promotion of the major industries needed to initiate the development, planning and provision of the industrial and social infrastructures to support the development (i.e. ports, roads, railways, utilities, communications, urban areas) and the planning of investment capital required from government budget allocations, loans from overseas and other sources of funds.

EASTERN SEABOARD DEVELOPMENT PROGRAM




LAEM CHABANG DEVELOPMENT AREA
GENERAL LAYOUT
SHORT-TERM DEVELOPMENT
KEY MAP
UIA

EASTERN SEABOARD DEVELOPMENT PROGRAMME

LAEM CHABANG INFRASTRUCTURES FINANCIAL PLAN

EXECUTIVE SUMMARY

I. Introduction

This update of the LCB Financial Plan is based on the most recently available project cost data incorporating the construction contract costs for LCB Port and Nong Kho - LCB Water Pipeline, the Preliminary Design cost estimates for the LCB GIE/EPZ and Final Design cost estimates for the LCB-Sri Racha railspur. The update also incorporates cost estimates for social services and urban area facilities which have been compiled by the Ministry of Interior (with inputs from all executing agencies) and are currently being screened by OESB. Recent decisions with respect to GIE/EPZ leasing price policy are also reflected in this update. There still remain numerous issues outstanding with respect to operating systems and pricing which must be resolved (especially in the LCB Port and allociated services). Therefore, the reliability of this data is not high. However, the Plan does provide a base data and a rational framework for decision-making which comprehends the interlinkages of all LCB sub-projects and provides estimates of the investment costs, magnitude and timing of required financing, minimum acceptable infrastructure pricing structures, internal rates of return (IRR), foreign exchange impact and RTG/State Enterprise budget impact by sub-project and for the consolidated LCB Development Programme.

II. LCB Project Status

The Eastern Seaboard Development Committee (ESDC) resolved in their meeting of 15 Oct 86 to proceed with the immediate implementation of the LCB infrastructures as planned. A Sub-committee of the ESDC, chaired by Deputy Prime Minister Chatichai, was created to oversee the implementation of all projects in the LCB area and resolved in their meeting of 19 Dec 86 to accelerate the implementation in order to contract construction of the Port by October 1987. This objective was acheived in the 2 Oct 87 signing of the construction contract. Detailed design of the LCB GIE/EPZ was also contracted on-schedule and will be completed in December, 1987 with the construction contract expected to be signed in July, 1988. Planning and implementation of the Urban Area/social services has lagged seriously behind the Port/GIE/EPZ development but is now receiving priority attention. The detailed status of each sub-project is as shown on the following page:

II. Project Status (cont'd)

LAEM CHABANG INFRASTRUCTURES

CURRENT STATUS

Project	Executing Agency	Physical Status	Financial Status
(1) LCB Port	PAT with privatization	Construction contract signed 2 Oct 87. Breakbulk berth operational by Nov 90 (37 months), container/agri-bulk terminals operational by Aug 91. Equipment procurement, selection of management/operations system and contracting of O/M now highest priority activities. Inland container freight station must be incorporated in plans; ICFS Study to commence March, 1988.	F/C (70% of total) included in 11th/12th Yen Loans. OECF to agree to include Options 3,4,5 and material handling cept line items under 11th/12th Yen Loan ceiling.
(2) LCB GIE/EPZ	IEAT with various private participation.	Detailed design to be completed December, 1987. P.Q. of contractors now in progress. Sign construction contract by July, 1988.	F/C (45% of total) included in 12th/13th Yen Loans. Portion of L/C also included in 13th Yen Loan.
(3) LCB Water Filtration Plant	IEAT, but may be changed for operations phase.	Included with (2)	Included with (2)
(4) Nong Kho - LCB Water Pipeline	PWA	Construction contract signed 22 Oct 87. 14 months construction period.	100% of F/C included in 12th Yen Loan. L/C from RTG Budget.
(5) Sri Racha - LCB Rail Spur	SRT	Detailed design completed with Port. Construction to be delayed to be in-phase with Port.	F/C to be included in 14th Yen Loan.
(6) LCB Telephone System	TOT	TOT 5th Plan revised to include Ao Udom and LCB Junction/lines installation. ESB telecoms privatization study now in-progress.	Included in TOT 5th Plan.
(7) LCB - Klang	NHA	NHA planning accelerated but affordable land procurement is difficult.	MOF yet to designate source of funding. Probably ADB/IBRD/MITI.
(8) Other Urban Area Infrastructures	Ministry of Interior coordinating DTCP, PWD, PWA, PEA, etc.	MOI has submitted comprehensive plan to OESB. Screening by OESB now in-progress for recommendation to FSDC.	Priority to be included in RTG Budget.

III. Summary Assumptions/Results/Issues

General Assumption - Construction cost estimates were primarily done in Yen and Baht, and converted to Baht at the prevailing rate. Yen appreciation will substantially affect the construction costs denominated in Baht because all contracts will be by Open International Tender.

- Inflation at only 2% per year.

(1) LCB Port:

Assumptions - Includes initial Stage 1 (1991) plus two expansions to full Short Term Development (2002)

- Construction/Supervision costs based on contacts plus 15% physical contingency.

- Equipment procurement costs based on revised estimates by PCI consultants.

- Cargo volume from Detailed Design (1992 = 1.9 million TPA, 2002 = 6.9 million TPA). Considering current cargo growth trend, these volumes are very conservative.

- Revenue based on PAT tariffs without considering substantial "unofficial" charges.

- Model splits PAT and Private Operations in order to calculate "acceptable" price for PAT to lease container terminals to private sector. Operations assumptions:
  - PAT to invest in Port const/supv, floating equipment and gantry cranes.
  - PAT to manage overall port functions, operate Break-bulk/Coastal berth and lease container terminals & agri-bulk facilities to Private sector.
  - Private to invest in additional equipment for container terminals (transtainer systems, chassis, forklifts) and agri-bulk terminals (conveyors, loaders, warehouses)

- PAT facilities financed 67% by OECF, 33% by PAT capital fund/PAT bonds (RTG Guaranteed).

Results - The IRR's (FIRR to Equity = 13.4%, Economic IRR = 13.4%) are very promising for a strategic infrastructure development; especially with very conservative assumptions (low cargo volume, current PAT official tariffs only, 2% escalation)

- In order to enhance attractiveness of LCB Port to private operators, PAT could lease the container terminals at B120 million/year/terminal and still make a reasonable return on PAT equity (FIRR to PAT Equity = 10.8%).

Issues

- RTG policy for privatization of Port management/operations must be finalized in early-1988 in order to operate port at completion of construction. PFI study now in progress; recommendations to ESDC in early 1988.

- OECF to approve use of 12th Yen Loan balance for procurement of gantry cranes and floating equipment which were previously accepted by OECF, in principle, for funding in 13th Yen Loan.

- No provision has yet been made for ICFS financing. The major cost will be for land acquisition, not normally financed by OECF loans. Other financing sources may be required.

- Pricing of agri-bulk terminal and container terminals if leased.

(2) LCB GIE/EPZ:

Assumptions

- Includes Stage I development only (GIE = 1263 net rai, EPZ = 526 net rai, Business/Commercial = 138 rai)

- Capital cost based on Preliminary Detail Design include both macro-block and micro-block land development costs including sewage treatment but excluding water filtration plant and standard factories which will be recovered seperately.

- F/C construction costs (50% of total) and 30% of L/C costs to be financed by OECF 12th and 13th Yen Loans. Balance by IEAT Bonds (RTG Guaranteed).

- Land to be leased ONLY.

- Base prices have been set by ESDC as follows:
  - EPZ/GIE lease price = B 59,000/rai/year
  - one year deposit
  - maximum 10% lease price increase every 10 years
  - treated water price (B 10/m3
  - sewage treatment charge (B 10/m3
  - IEAT Service/Admin charge (B 800/rai/month

Results

- A 5% increase per year in the Base price (B 59,000) should be applied to all new leases after 1988 in order to earn a reasonable IRR; (Project FIRR = 11.8%, FIRR = 14.2 %). For example, new leases in 1989 would be at B 62,000/rai/yr.

Issues
- Customers seeking advance location in LCB GIE/EPZ are requesting refunds of costs incurred for temporary infrastructures. This poses significant financial exposures to IEAT as these costs were not included in developing minimum pricing levels.
- Preliminary cost estimates by consultant are not reliable. Final cost estimates must be prepared using actual bid prices for NTP IE/BA Construction.

(3) LCB Water Filtration Plant:

Assumptions
- Investment to be recovered through charges for treated water (Plant costs not included in GIE/EPZ model, cost of distribution pipes is included in GIE/EPZ).
- Assumes all water from Nong Kho reservoir which has not already been allocated to other users (10.8 MCM) will be treated and used by LCB Port/GIE/EPZ/BA.
- Construction costs based on Preliminary Design cost estimates.
- Financing 53% by OECF, 47% by RTG.

Results
- Assuming a flat-rate of B 9/m3 (current PWA charge), the IRR's are very high (Project FIRR = 14.9%, EIRR = 14.7%)

Issues
- Possible assignment of responsibility for water treatment plant to PWA, PWD, etc. rather than to IEAT.
- Further allocation of Nong Kho water resources must be restricted.
- Location of appropriate industries and guidelines for water usage within the GIE/EPZ must be rigidly applied due to limited resources. Independent "temporary" pipeline (e.g. Siam Cement/CRT) must be controlled, perhaps by appropriate pricing policies.

(4) Nong Kho - LCB Water Pipeline:

Assumptions
- Investment to be recovered through charges for raw water delivered to Ao Udon.
- Assumes all water from Nong Kho Reservoir not already allocated from the reservoir (13.6 MCM) will be piped to Ao Udon.
- Construction/Supervision costs based on signed contracts.
- RID charges B 0.5/m3 for raw water from Nong Kho reservoir.
- Financing 70% by OECF, 30% by RTG.

Results - In order to achieve an acceptable IRR (Project FIRR = 12.4% Economic IRR = 11.7%), the charge for raw water at Ao Udon should be ฿ 2.0/m3 (flat rate).

Issues - Further allocation of Nong Kho reservoir water must be restricted and long-range water resource planning initiated to avoid limitations to development potential of LCB area.

(5) Sri Racha - LCB Rail Spur:

Assumptions - Construction bids @ 100% of engineering estimates (SRT Report of 3/86)

- 22.5% (1991) to 30.0% (2001) of LCB Port container traffic of use rail to Bangkok

- ฿ 20/ton of LCB-BIE charge is allocated to SR-LCB railspur revenue

Results - Rather low Project FIRR of 5.9% is typical of this type of infrastructure which must be implemented in order to support the LCB Port.

Issues - Must be included in 14th Yen Loan if it is to be operational in-phase with initial operations of LCB Port.

- Marketing studies indicate private operators will not use rail if they have to use a rail-only ICFS at Bang Sue. ICFS study to propose acceptable solution to encourage use of rail transport (a major objective of the 6th Five-Year Plan).

(6) LCB Telephone

Assumptions - This data is only included for assessing overall investment funds requirements in the LCB development area.

- Investment costs are based TOT 5th Plan for LCB only.

- TOT will undertake to finance and operate their own investment programme in coordination with requirements identified by OESB/IEAT/PAT.

Issues - Coordination with TOT's investment programmes (which have slipped substantially) is particularly crucial to ensure provision of adequate communications services to LCB Port/GIE/EPZ.

- Proposals for privatization of telecommunications services in the entire ESB Region are currently being studied and policy recommendations are being formulated.

(7) LCB Housing

Assumptions
- Sufficient housing (5,133 units) will be developed in 3 stages to meet the projected 1993 demand of a New Town population of 24,000 people.
- NHA to develop both Low income housing (4008 units) and Mid/Hi income housing (1085 units)
- NHA has requested RTG-funding of land acquisition for public facilities and for construction costs of low-income on-site infrastructures. Balance of funding by concessionary foreign loans and NHA funds.
- Mortgage/hire-purchase Payments based on NHA "affordability" interia.

Results
- IRR's appear relatively high (Project EIRR = 18.7%, FIRR = 12.6%), however, land acquisition price assumption (B 267,000/rai) may not be realistic. If land cost is higher and affordable payments stay constant, the IRR will deteriorate.

Issues
- Land price
- RTG subsidy requirement must be further studied based on actual land cost and re-design of housing type (to change to high rise development).
- Coordination of NHA area with planned macro-block (off site) infrastructures (main roads, water pipeline, etc.)

(8) Other Urban Area Infrastructures

Assumptions
- DTCP is preparing the specific land-use plan for the LCB UA.
- There will be no land acquisition amount for the land need for public utilities and services.
- Provision of required services (water, sewage, electricity, etc.) will be done by the concerned public executing agency (PWA, PWD, PEA, etc.) using RTG budget.
- Capital costs are from the (unscreened) summary plan submitted by Ministry of Interior to NESB.

Issues
- Infrastructures must be coordinated with the area ultimately purchased by NHA.
- Rigorous screening of proposed infrastructures is required before submitting to ESDC for approval.

IV. Financial Summary

A. Internal Rates of Return

Projects Included in Model	Investment [a] Cost to 1992 (Million $)	Internal Rate of Return: Project Financial IRR	Internal Rate of Return: Financial IRR to Equity Investment	Internal Rate of Return: Economic Valuation IRR
- LCB Port - PAT	$ 4,418			
- Private	822			
	$ 5,240	8.9%	13.4%	13.4%
- LCB GIE/EPZ	1,881	11.8%	NA	14.2%
- LCB Water Filtration	178	14.9%	21.8%	14.7%
- Nong Kho-LCB Water Pipeline	157	12.4%	20.8%	11.7%
- LCB Housing	1,811	10.7%	12.6%	12.6%
- LCB Telephone	113	14.9%	17.8%	12.8%
- Sri Racha-LCB Rail Spur	223	5.9%	8.3%	3.9%
Subtotal	$ 8,003	9.3%	14.1%	13.1%
Projects not in Model				
- Other LCB HA Infrastructures	$ 643	NA	NA	NA
Total LCB Infrastructures	$ 8,646	NA	NA	NA

[a] Includes design, construction, supervision and land acq. For initial stage plus interest during const.

The overall Economic Valuation IRR of the infrastructures alone is conservatively calculated at 13.1% without assigning a value to the benefits of decentralization, employment generation and export orientation which are the major strategic policy objectives of the programme. The economic valuation includes only the easily quantifyable and measurable outputs of the infrastructures and excludes the favorable impact of the prospective industries to locate in LCB.

Given a successful implementation, all of the infrastructures can potentially provide a commercially acceptable Financial IRR with the exception of the Rail spur and probably the PAT-operated facilities in the LCB Port which will have fairly low financial returns typical of strategic transport infrastructures.

IV. Financial Summary (cont'd)

8. Financing Requirements

Project	Investment Cost to 1992 (Million $)	Source of Financing (Million Baht)				
		RTG Budget	State Enterprise Equity/RTG Guaranteed Bonds/ Interpal Cash Gen.	OECF Loans	Other Loans	Private Equity/ Private
- LCB Port - PAT	4,418	0	1,707	2,711	-	-
- Private	822	0	-	-	-	822
	5,240	0	1,707	2,711	-	822
- LCB EIE/EPZ	1,081	0	476	505	100	-
- LCB Water Filtration	178	0	86	92	0	0
- Nong Kho-LCB Pipeline	157	55	0	102	0	0
- LCB Housing	1,011	148	485	-	378	-
- LCB Telephone	113	-	26	-	87	-
- Sri Racha-LCB Rail Spur	223	72	0	151	0	0
- Other LCB HA & Infrastructures (Not yet screened)	643	643	0		0	0
TOTAL	$ 8,646	918	2,780	3,561	565	822

& These items have not yet been sufficiently screened. Financing sources may be identified but, at present, they are assumed to be funded by RTG Budget, if approved.

IV. Financial Summary (cont'd)

C. Foreign Exchange Impact

The foreign exchange impact of the infrastructures ALONE is, obviously, negative. The negative Balance of Payment impact in the early years is insignificant because the foreign components of construction costs are financed by foreign loans (OECF) at concessionary rates with a 10-year grace period. The negative Balance of Payments impact increases to B 527 million (current prices) by the year 2000 but this is dwarfed by the positive foreign exchange impact of transport cost savings and the net export earnings of the EPZ estimated by JICA to exceed B 5,300 million (1981 prices) per year by 2000.

Net For/Ex Impact of Infrastructure (ONLY)
(Million Baht - Current Prices)

	1988	1989	1990	1995	2000
Infrastructure For/Ex Impact Favorable/(Unfavorable)	(20)	(40)	(440)	(324)	(527)

(See detail provided on next page)

EASTERN SEABOARD DEVELOPMENT PROGRAMME
LAEM CHABANG INFRASTRUCTURES
FOREIGN EXCHANGE IMPACT

FAVORABLE (+) / UNFAVORABLE (-)

(million baht-current prices)

SOURCES AND USES OF FOREIGN FUNDS	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	TOTAL 1986-2000
SOURCES: FAVORABLE (+)																
Foreign Equity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Foreign Loans	19?	13?	896	890?	1292	878	0	278	396	0	278	309?	0	0	0	5319?
Import Substitution Effect	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
USES: UNFAVORABLE (-)																
Foreign Capital Costs	-16	-9	-868?	-834	-1576	-1208?	0	-412	-680?	0	-409?	-606?	0	0	0	-6696?
Foreign Op Exp/Raw Material	0	-1?	-1?	-2	-4	-7	-46	-52	-58?	-72	-82?	-87?	-93?	-104?	-110?	-717?
Foreign Interest	0	-1?	-10?	-51	-93	-140	-158	-161	-170	-173?	-175?	-183?	-185?	[illegible]	[illegible]	[illegible]
Repayment of Foreign Loans	0	0	0	0	0	0	-20	-31	-44	-57	-62?	-48?	-90?	[illegible]	-161?	-672?
EGAT Fuel Oil Equiv. Adj.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thai Investor WPI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thai Labour WPI	-1	-3	-38?	-43	-59?	-42	-27	-38	-47	-42	-55	-64	-55	-61	-64	-638?
Dividends to Foreign Equity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET FOREIGN EXCHANGE IMPACT	2	0	-20	-40	-440	-519	-251	-416	-603	-324	-492	-679	-422	-473	-527	-5704

FOREIGN EXCHANGE IMPACT BY PROJECT	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	TOTAL 1986-2000
Industry																
Located in GIE (Not included)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Located in EPZ (Not included)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Infrastructure																
LCB Port	2	0	-109	-99	-511	-512	-154	-300	-403	-210	-373	-550	-290?	-326	-373	-4300?
LCB GIE/EPZ	0	0	-25?	51?	10?	-23	-22	-22	-23	-26	-27	-32?	[illegible]	[illegible]	[illegible]	[illegible]
LCB Water Filtration Plant	0	0	-3	-4	-3	-6	-7	-7	-8	-9	-11	-15	[illegible]	[illegible]	[illegible]	[illegible]
Nong Kho - LCB Water Pipeline	0	0	-3	-4	-5	-5	-3	-6	-8	-7	-9	-8	[illegible]	[illegible]	[illegible]	[illegible]
Sri Racha - LCB Rail Spur	0	0	0	-4	-5	-7	-7	-8	-8	-8	-9	-8	[illegible]	[illegible]	[illegible]	[illegible]
LCB Housing	0	0	64?	28?	72?	48?	-66	-55	-65	-54	-54	-55	-55	[illegible]	[illegible]	[illegible]
LCB Telephone	0	0	0	0	-3	-6	-10	-10	-10	-10	-10	-10	-10	0	0	-79?
Subtotal Infrastructure	2	0	-20	-40	-440	-519	-251	-416	-603	-324	-492	-679	-422	-473	-527	-5204
TOTAL FOREIGN EXCHANGE IMPACT	2	0	-20	-40	-440	-519	-251	-416	-603	-324	-492	-679	-422	-473	-527	-5204

Eastern Seaboard Development Program

MAP TA PHUT
FINANCIAL PLAN

UPDATE : MARCH, 1988

Office of the ESB Development Committee

NESDB

EASTERN SEABOARD DEVELOPMENT PROGRAMME

MAP TA PHUT FINANCIAL PLAN

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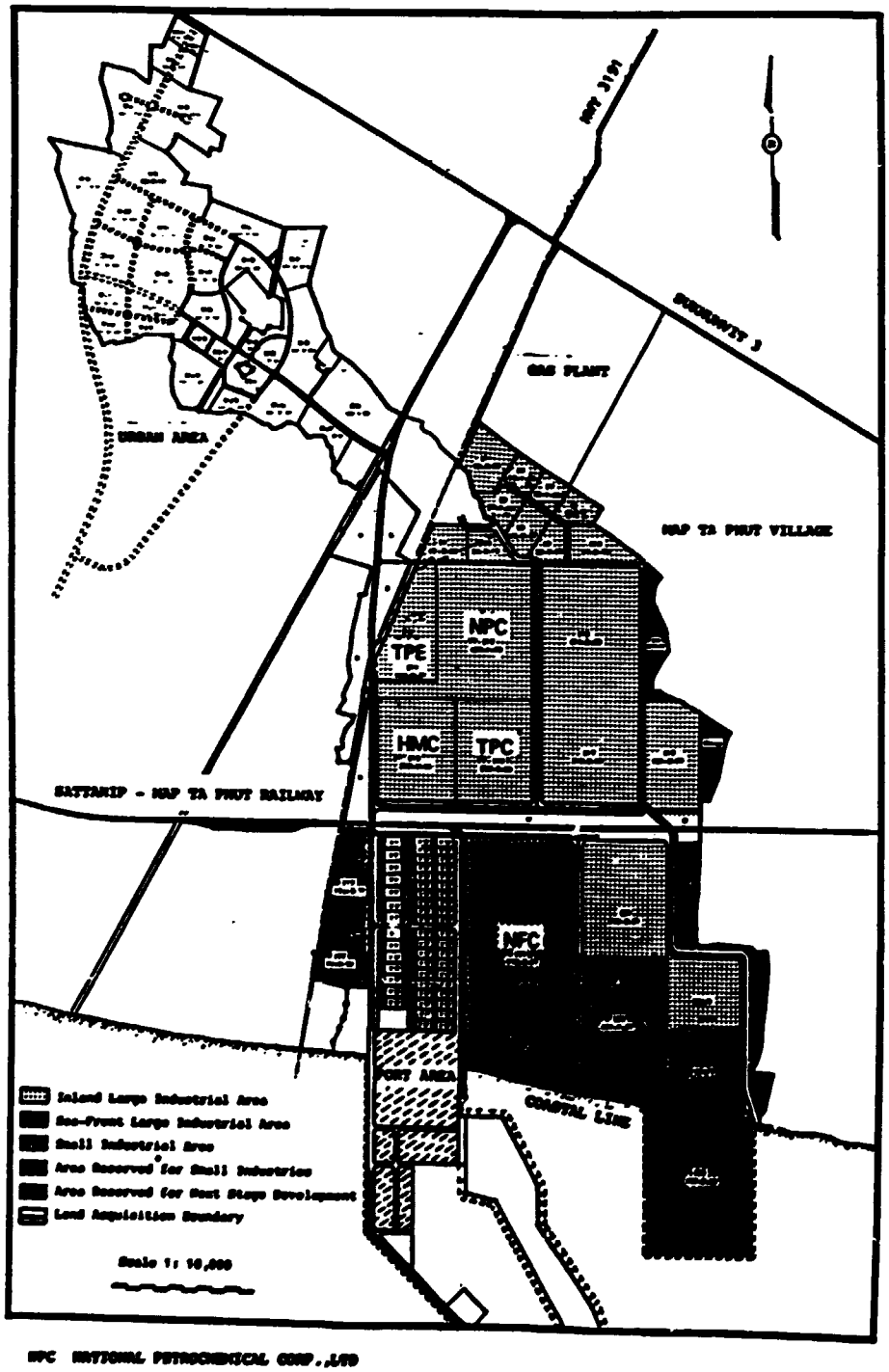
MAP TA PHUT COMPLEX



NPC NATIONAL PETROCHEMICAL CORP.,LTD
TPE THAI POLYETHYLENE CO.,LTD
TPC THAI PLASTIC & CHEMICAL CO.,LTD
HMC HIMONT CORPORATION

EASTERN SEABOARD DEVELOPMENT PROGRAMME

MAP TA PHUT FINANCIAL PLAN

EXECUTIVE SUMMARY

I. Introduction

The integrated industrial development of Map Ta Phut (MTP) under the Eastern Seaboard Programme is a leading edge of the Government's plans for development of new industries which exploit Thailand's natural resource opportunities (primarily natural gas) and market potential and for decentralization of viable industrial development - primary objectives of both the 5th and 6th Five Year Development Plans. By providing internationally competitive industrial infrastructures, services and incentives to industry, the programme is attracting foreign investors and new industries to Thailand.

The current status of the Map Ta Phut development area is as follows:

- Stage 1 Petrochemicals industries are proceeding on-plan with NPC's olefins plants and 3 downstreams (HMC, TPE, TPC) now constructing with start-up in October, 1989 and TPI's plant expansion already on-stream.

- Stage 2 Petrochemicals Master Plan was approved by ESDC on 19 Jan, 88. BOI is to approve applications for about 14 NPC - 2 downstream industries in March, 88 (from 60 applications received) for immediate implementation. Strategy for upstream aromatics/olefins plant being developed under PTT direction.

- National Fertilizer Project still on hold.

- TTIC Tantalum Plant to locate in MTP but further delayed in finalizing technology agreement.

- MTP Industrial Estate/Urban Area now being constructed by IEAT with completion by Dec 89. Assignment of industrial estates to potential industries currently under review to support NPC-2 requirements. Sub-Committee has authorized IEAT/OESB to prepare for acquisition of 10,000 rai (in addition to the 8,070 rai already acquired) to support future requirements.

- MTP Port was approved on 19 Jan 88 by ESDC for immediate construction of a reduced scope port (2 liquids berths, 1 multi-purpose berth). This configuration supports the immediate requirements of NPC-2 and facilities can be expanded as other industrial needs become firm. Addenda to the tender documents to be prepared immediately for continuation of the tender which had been suspended in Nov 85.

- ESDC has adopted a pricing policy for the industrial estate which allows leasing only (30 yrs with additional 20 year option) at prices which recover only the interest "carrying-cost" of actual investment costs.

The following update of the financial plan is based on the most currently available data by project and the most recent policy direction by ESDC (in their meeting of 19 Jan 88, as further elaborated by subsequent Sub-Committee meeting up to 8 March 88). The plan comprehends detailed data on the infrastructure projects and MPC-1/downstreams (MFC has been omitted) and indicative data for MPC-2 industries and MTP Social Services which are currently under study/review.

II. Summary Assumptions

INFRASTRUCTURES

a) MTP Industrial Estate:

- Includes Stage 1 and Stage 2 development of 6,042 gross rai. Does not consider next aquisition of 10,000 rai.
- Construction costs based on contract for Stage 1 and engineering estimates for Stage 2.
- Land to be leased only. 1988 prices as follows:
  - Inland large industrial sites (w/o sewage treatment) = B 34,300/rai/year
  - Waterfront large industrial sites = B 27,600/rai/year
  - Small industrial sites (with sewage treatment) = B 34,300/rai/year
- OECF to finance F/C (54% of total) and 30% of L/C (14% of total) as agreed in 12th and 13th Yen Loans. Balance by RTG guaranteed bonds and internally generated cash.

b) MTP Urban Area :

- Includes Stage 1 and 2 development which exploits only a small portion of the 2,028 rai acquired. New Town population is 5,400 in Stage 1, increasing to 9,000 in Stage 2.
- IEAT to develop micro-block infrastructure and sell the land to NHA and private developers for micro-block development.

- UA land price is cross-subsidized with IE land. Land to be given free to RTG agencies (Police, Dept of Education) and sold at cost to state enterprises (NHA, TOT, CAT). Pricing and method of lease/sale to private developers not finalized yet.

c) MTP Port

- Configuration as approved by ESDC (2 liquids, 1 multi-purpose berth) to be built in initial stage (Basic Package)

- Other options, including all probable future expansions, are analyzed.

- Construction costs estimated based on bids for LCB, Phukett and Songkhla ports (60-65% of engineering estimates).

- Liquids volumes based on Stage 2 Petrochemicals Master Plan material balance assuming NPC will build a jetty for NPC-1/downstream volumes.

- Liquids cargo tariffs impact analyzed at PAT current tariff level, NPC equivalent level and at charges in other regional ports. Base Case assumes B 146/ton.

- OECF to finance F/C (70% of total costs) as agreed in OECF 11th and 12th Yen Loans.

d) MTP Housing:

- Assumes NHA to develop all housing in MTP New Town, MTP Old Town, Ban Chang and Rayong associated with employment generated by MTP.

- Housing to be sold at "affordable" prices using NHA guidelines.

- IEAT will sell UA land to NHA at a subsidized price of B 261,000/rai at which no further RTG subsidy is required.

e) MTP Telephone:

- To be developed by TOT

- 1,024 numbers to be permanently installed in 1988, an additional 4,000 numbers in 1990.

- Costs are estimated using LCB estimates as basis as TOT has not completed MTP estimates.

f) Dok Krai - MTP Pipeline:

- Pipeline has been turned over to IEAT for operations and maintenance. Although MOF is paying the interest and debt repayment, these costs are included in the model to calculate FIRR/EIRR.

- Raw Water price set by ESB Committee at B 5/m3.

- Conservative water sales maximum of 40.1 MCM verses pipeline capacity of 83 MCM.

g) Sattahip - MTP Railroad:

- Construction costs based on 12th Yen Loan minutes as SRT estimates (3/88) for 14th Yen Loan preparations not finalized.

- Revenues based on SRT tariffs plus escalation and an assumed minimum cargo of 1,500 kTPA/year. Without reasonable lev-'s of probable cargo, construction may be further delayed.

- Operating costs based on ESS and JICA factors and 1985 SRT historical costs.

- FIRR/EIRR are calculated on an "incremented cost" basis.

h) MTP Social Services:

- National Education Council (NEC) has completed a massive list of social services projects (B 1.5 billion) associated with the ESB Programme. This list has not been properly screened. On 8 March 88 the Subcommittee assigned NESDB, Social Division to review and revise the social services plan as soon as possible.

- The cost of these social services are not included in the caculations of FIRR/EIRR but are included to scope the financing requirements; especially from the RTG Budget.

INDUSTRY

a) Petrochemicals - Stage 1 :
- MPC-1 (Olefins) Plant construction costs based on construction contracts plus contingencies. Downstream plant costs from MPC estimates based on Lurgi-Trichem study.

- MPC to sell ethylene/propylene to downstreams at price which provides 15% FIRR on MPC equity.

- Product prices based on Lurgi-Trichem low price scenario logic. (US Gulf spot prices plus 40% uplift for transport and duty protection.

b) Petrochemicals - Stage 2 :
- Volumes based on Petrochemicals Masterplan Study and strategy approved by ESDC on 19 Jan 88.
- BOI to award incentives to 14 MPC-2 downstream industries for immediate implementation.
- MPC-2 Aromatics/olefins plant feasibility study and conceptual design to proceed as soon as possibble.

- Detail by project not yet available for input to model.

c) Fertilizer:
   - Govt of Japan rejected the request for $85 million grant for NFC. As early implementation is doubtful, NFC data has been excluded from the model.

GENERAL

1) Economic Valuation:

   - All natural gas usage is priced at the 100% fuel oil equivalent (Arabian light crude @ US$ 22.30/bbl)

   - Foreign labour and material costs are assumed to be at border prices.

   - Local labour costs are discounted 0-20% to reflect legal minimum wages paid to unskilled labour which are higher than in alternative employment of agricultural labour.

   - Local material costs discounted 0-10% to reflect effects of protective tariffs and inefficiencies in the production of non-tradeables.

   - Land costs discounted to reflect only the economic cost of taking the land out of agricultural production.

   - After the Nov 84 devaluation, there is assumed to be no premium for foreign exchange over the prevailing exchange rate.

   - Does not include substantial but difficult-to-quantify benefits of:

     - decentralization of industrial development from Bangkok
     - additional development potential of the infrastructures (especially the MTP Port)
     - value of employment generation

MAP TA PHUT FINANCIAL PLAN

UPDATE - 3/88

SUMMARY RESULTS

a) Internal Rates of Return

Included in Model	Construction/Start-up Capital Inv. to 1992 (million Baht)	Internal Rates of Return: Project FIRR	FIRR to Equity	Economic Valuation EIRR
Infrastructures:				
MTP Industrial Estate/MA (Stage 1+2)	1,522	11.9%	NA	16.1%
MTP Port (Base Case)	1,778	7.0%	15.3%	8.5%
Bok Krai-MTP Pipeline	953	6.5%	12.1%	10.4%
MTP Housing	548	12.1%	16.0%	16.1%
MTP Telephone	122	14.5%	16.5%	15.4%
Sattahip-MTP Railway (incremental basis)	549	4.1%	6.0%	8.1%
MTP Engineering	170	NA	NA	NA
Subtotal	5,634	8.0%	14.0%	10.6%
Petrochemicals - Stage 1 :				
NPC	7,387	9.9%	12.6%	
TPI	2,563	25.0%	42.4%	
TPC	3,291	23.3%	39.4%	
TPE	2,492	30.0%	52.2%	
HMC	2,357	34.3%	62.0%	
Subtotal	18,090	22.3%	37.5%	14.6%
Total in Model	23,724	18.7%	32.7%	13.6%
Not Included in Model				
Fertilizer (@ US$ = Y150)	15,141	7.9%	9.2%	6.7%
Petrochemicals - Stage 2	46,380	NA	NA	NA
Other Industries	27,700	NA	NA	NA
MTP Social Services (not screened)	1,439	NA	NA	NA
Total not in Model	90,660			
TOTAL MTP SHORT TERM DEVELOPMENT	114,384			

NOTES:

(1) Financial FIRR's of the MTP area will increase with the inclusion of prospective industries in the calculation. The above FIRR's are extremely conservative but demonstrate the financial/economic viability of the MTP area given the basic industrial demands that are "in hand".

(2) Economic Valuation EIRR is conservatively calculated on DIRECT AND MEASURABLE returns of the project and does NOT INCLUDE:
- benefits of decentralization from Bangkok
- enhanced potential fro development of other industries
- additional utilization potential of infrastructures
- value of employment generation
- measure of additional benefits from Foreign Direct Investment and concessionary foreign loans.

III. SUMMARY RESULTS

b) Financial Requirements

Included in Model	Construction/Start-up Capital Inv. Up 1992 (million Baht)	Government			Private Equity		Private Debt			
		RTG Budget	State Enterprise & RTG Guar. Bonds	Govt-to-Govt Loans	For	Dom	Long-term For	Long-term Dom	Short-term Dom	Internally Generated Cash
Infrastructures:										
NTP Industrial Estate/UA (Stage 1+2)	1,332	0	636	676	0	0	0	0	0	210
NTP Port (Base Case)	1,778	558	0	1,200	0	0	0	0	0	20
Bok Krai-NTP Pipeline	953	283	0	754	0	0	0	0	0	(84)
NTP Housing	348	0	88	174	0	0	0	174	0	104
NTP Telephone	225	0	27	0	0	0	54	27	0	117
Saithip-NTP Railway (incremental basis)	1,549	224	0	346	0	0	0	0	0	(21)
NTP Engineering	170	53	0	125	0	0	0	0	0	18
Subtotal	5,634	1,118	751	3,275	0	0	53	201	0	236
Petrochemicals - Stage 1 :										
[illegible]	2,387	0	980	0	0	1,011	5,269	0	119	0
[illegible]	3,[illegible]	0	0	0	323	323	1,937	0	0	0
[illegible]	3,[illegible]	0	0	0	431	431	2,469	0	0	0
[illegible]	3,[illegible]	0	0	0	431	431	2,469	0	0	0
[illegible]	2,337	0	0	0	292	292	1,753	0	0	0
Subtotal	18,090	0	980	0	1,345	2,349	13,297	0	119	0
Total in Model	23,724	1,118	1,731	3,275	1,345	2,349	13,350	201	119	236
Not Included in Model										
Fertilizer (@ US$: Y150)	15,141	177	523	3,570	824	676	8,478	0	119	724
Petrochemicals - Stage 2	44,[illegible]	0	1,700	0	3,708	3,708	33,394	0	3,710	0
Other Industries	27,[illegible]	0	0	0	2,770	2,770	19,944	0	2,216	0
NTP Social Services (not screened)	1,439	1,189	44	0	0	18	0	0	188	0
Total not in Model	90,660	1,366	2,317	3,570	7,302	7,252	61,816	0	6,233	724
TOTAL NTP SHORT TERM DEVELOPMENT	114,384	2,484	4,048	6,845	8,727	9,601	75,166	201	6,352	960

b) Financing Requirements (continued)

The total government funds (including RTG budget, state enterprise equity, RTG guaranteed bonds and government-to-government loans) is less than 25% of the total investment in MTP in the initial stage and decreases to only 12% of the total investment by Stage 2. This is quite low considering the "strategic" nature of this programme to decentralize industry by providing total infrastructure and supporting lead industries. The relatively high debt leverage is justified by the commercial viability of the petrochemicals industries and the favorable terms of the govvt-to-govt loans which are financing about 58% of the total infrastructure investment.

c) Foreign Exchange Impact:

As the foreign components of infrastructure costs are financed by govt-to-govt loans and the foreign components of industrial construction costs are financed by foreign equity, suppliers' credits, govt-to-govt loans and foreign commercial loans, the overall effect on the Balance of Payments during the construction phase is minimal. With the start-up of the Stage 1 petrochemical industries in 1990, import substitution (net of 100% oil equivalent to replace natural gas consumed and all other foreign expenses, interest and repayments) generates substantial net foreign exchange savings. Examples are shown below:

MTP Annual Net Foreign Exchange Impact
(million Baht - current prices)

	1987	1988	1989	1990	1995	2000
Net For Ex Impact favorable/(unfaborable)	(98)	(63)	(449)	1,093	2,515	4,111

EASTERN SEABOARD DEVELOPMENT PROGRAMME
MAP TA PHUT SUMMARY
FOREIGN EXCHANGE IMPACT

FAVORABLE (+) / UNFAVORABLE (-)
(million baht-current prices)

SOURCES AND USES OF FOREIGN FUNDS	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
SOURCES: FAVORABLE (+)															
Foreign Equity	167	330	354	331	0	0	0	0	0	0	0	0	0	0	0
Foreign Loans	1011	3801	4525	4265	765	290	37	34	0	0	0	0	0	0	0
Import Substitution Effect	0	1526	1729	1729	10537	11925	12856	13699	13660	13621	13581	13542	13652	13611	13400
USES: UNFAVORABLE (-)															
Foreign Capital Costs	-1018	-3916	-4324	-4110	-630	-259	-11	-11	0	-14	0	0	0	-25	0
Foreign Op Exp/Raw Material	0	-1089	-1243	-1244	-4906	-5376	-5555	-5698	-5656	-5616	-5576	-5535	-5645	-5602	-5390
Foreign Interest	-156	-342	-644	-950	-1047	-942	-822	-698	-571	-455	-345	-237	-163	-125	-99
Repayment of Foreign Loans	0	-242	-242	-242	-1530	-1530	-1535	-1535	-1575	-1350	-1350	-1350	-609	-647	-160
1982 Fuel Oil Equiv. Adj.	0	0	0	0	-1553	-1751	-1970	-2255	-2255	-2255	-2255	-2255	-2255	-2255	-2255
Thai Investor MPI	0	-12	-20	-22	-143	-232	-298	-345	-357	-356	-366	-376	-323	-325	-371
Thai Labour MPI	-3	-117	-136	-138	-63	-56	-54	-61	-55	-58	-56	-56	-57	-60	-57
Dividends to Foreign Equity	0	-37	-62	-68	-360	-637	-843	-989	-1029	-1024	-1056	-1087	-930	-938	-977
NET FOREIGN EXCHANGE IMPACT	-28	-98	-63	-449	1093	1431	1807	2162	2182	2515	2598	2666	3690	3657	4111

FOREIGN EXCHANGE IMPACT BY PROJECT	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Petrochemicals - Stage 1	-1	-68	-7	-415	1089	1556	1950	2321	2399	2764	2828	2894	3935	3964	4425
Infrastructure															
MTP Ind. Estate/Urban Area	-1	-1	-14	-9	-2	-8	-22	-22	-22	-25	-25	-25	-33	-41	-52
MTP Port	0	0	-41	-9	-83	-69	-55	-55	-55	-55	-55	-55	-67	-90	-105
Bok Krai-MTP Pipeline	-23	-24	-24	-25	-27	-28	-30	-31	-33	-84	-67	-67	-65	-92	-64
MTP NHA Housing	0	0	0	25	26	13	7	0	0	-30	-29	-28	-27	-26	-25
MTP Telecoms	0	0	0	12	-4	-6	-9	-10	-10	-9	-9	-8	-8	-7	-7
Saltahip-MTP Railway	0	0	0	5	98	-24	-30	-36	-36	-36	-36	-36	-36	-42	-53
MTP Detailed Designs	-3	-5	-5	-3	-4	-3	-4	-5	-5	-10	-9	-9	-9	-9	-9
Subtotal Infrastructure	-27	-30	-56	-34	4	-125	-143	-159	-217	-249	-230	-228	-245	-307	-314
TOTAL FOREIGN EXCHANGE IMPACT	-28	-98	-63	-449	1093	1431	1807	2162	2182	2515	2598	2666	3690	3657	4111

IV. Financial Actions Required

o MTP IE/UA
- Recommend to ESDC a 5% per year increase in the base price of new leases after 1988.
- Immediate conclusion of IE leases to NPC-1 and downstreams.
- Formulate recommendations to ESDC for pricing and lease/sale policy for Urban Area development by private investors.
- Following BOI decision on NPC-2 downstream investors, finalize policy for lot allocations and deposit requirements to reserve IE land. Conclude leases.

o MTP Port
- Modifications of tender documents to be contracted immediately.
- OECF approval required for change of scope of port and adjustments to line items of 11th and 12th Yen Loan Agreements to include revised facilities (i.e. 2 liquids berths)
- Agreement should be made with OECF for financing of additional facilities ("Options") which may be included in the construction contract at a later stage depending upon industrial demands.
- Operations/management study is required to recommend best system of management, especially of the liquids cargo berths which will require specialized experience.
- Tariff structure must be developed, especially for liquids cargoes.

MTP Housing
- NHA Plans are obsolete. NESDB to finalize RTG policy with respect to mix of high-medium-low income housing to be developed by NHA and the appropriate level of subsidy, if any. OESB to follow-up/coordinate at technical level. MoF/NHA must identify financing sources.

MTP Telephone
- Follow-up on telecommunications privatization proposals for Eastern Seaboard.

Sattahip-MTP Railway
- Revised project cost estimates by SRT for inclusion in the 14th Yen Loan request appear extremely high versus previous estimates and actual costs/km in the 1983/1984 construction of Chachangsao-Sattahip line. Review before including in 14th Yen Loan.
- Thorough, updated review of realistic potential cargoes must be undertaken before decision to proceed with construction. Current marketing study at SRT should be provide useful information for decision-making.

REPORTING OF FINANCIAL/OPERATIONAL RESULTS
- Following completion of reporting formats and general data collection system (now in progress) and approval by Min of Finance, recomend system for ESDC approval.
- Implement system.