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EVALUATION AND FOLLOW-UP MISSION TO THAILAND

27 May - 15 June 1986

Report by  
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Senior Interregional Adviser\*  
Department of Industrial Operations

United Nations Industrial Development Organization  
Vienna

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\* This document has been issued without formal editing.

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1. Introduction

1.1 Background of the mission:

At the Tripartite Review Meeting held on 30 September 1985, the Department of Economical and Technical Co-operation (DETC), Office of the Prime Minister, requested an in-depth evaluation of the Eastern Seaboard Technical Assistance project namely THA/83/006, THA/83/009, THA/83/013 and THA/84/009. Mr. J.A. Kopytowski, Senior Interregional Adviser, was designated to take part in the mission as the UNIDO representative.

1.2 Terms of Reference of the mission:

Detailed Terms of Reference were issued by UNDP Headquarters which are attached to the mission evaluation report.

In addition, Mr. Kopytowski was asked to undertake follow-up missions to those organizations for which draft project documents had been prepared as a result of requests identified by the Programme Mission.

2. Summary of Conclusions and Recommendations

2.1 Conclusions

- a) The in-depth evaluation of projects was carried out and a draft report was submitted to the Department of Economical and Technical Co-operation (DETC) and the UNDP for comments. The final report was prepared by UNDP (Annex III). Detailed conclusions on the evaluated project are given in the respective chapters of the report.
- b) The mission met representatives of Governmental organizations and discussed the previously prepared draft project documents.
- c) The evaluation of the four projects has brought to light main design deficiencies; therefore it is necessary to implement a more integrated form of project formulation.

- d) The absence of a SIDFA in Thailand is a handicap for UNIDO.

## 2.2 Recommendations:

- a) "Umbrella" type projects which are expected to be approved as a result of the in-depth evaluations, require new institutional structures in UNIDO. Procedures concerning co-operation at the inter-branch level should be elaborated and implemented to utilize the multidisciplinary potential of UNIDO.
- b) DPPD/AP should continue their efforts to achieve higher UNIDO participation in the next Country Programme
- c) A concept of relations between direct support/operational assistance and preparation of methodological guidelines and manuals should be discussed and implemented.
- d) The nomination of a SIDFA, even a visiting one would enhance further co-operation between UNIDO and the Government of Thailand.

## 3. Report on Mission Activities

The mission timetable was divided into evaluation and follow-up activities. A list of the persons met by the mission is given at Annex I and a detailed appointment schedule at Annex II.

An interview record was prepared after each meeting (Annex IV). As the recording of interviews is not authorized by the interlocutors, the report bears a confidential classification with limited distribution.

Project documents, requests for assistance and project concepts were handed to the respective organizations, whose top officials are aware of the procedures governing the provision of assistance, i.e., selection of the project by DETC and the joint agreement with UNDP for its inclusion in the Country Programme. However, it was made clear that other projects could also be considered for UNIDO assistance from other sources. An interview record was prepared after each meeting (Annex V).

4. Project Concepts

Project Concept No. 1

1. Title: Comparative study on sulphuric acid production from pyrite.
2. Country: Thailand
3. Duration: 8 months
4. Development objective: Utilization of national mineral resources in the industrial development process
5. Immediate Objective: To assist the office of the Eastern Seaboard (OESB) and the National Fertilizer Corporation of Thailand (NFC) in the selection of economical alternatives for the production of sulphuric acid.
6. Background information: The National Fertilizer Corporation of Thailand is considering the construction of a large-scale fertilizer factory on the Eastern Seaboard Industrial Estate. As part of a technological component of a phosphate fertilizer complex construction of 200,000 MTPY sulphuric acid plant is being considered. Basic raw material (sulphur) is not available in Thailand and it will have to be imported. The uncertainties facing the sulphur market in the forthcoming years are forcing and to investigate at the alternative resources. Pyrite mineral has been found in Thailand and the technological process for sulphuric acid production is well established in developed countries since 50 years. Therefore an alternative to sulphuric acid production from local minerals should be investigated.

7. Outputs expected: a) Technological assessment of Thailand pyrite for sulphuric acid production.  
b) Comparative study on alternative process selection.

8. Inputs required (in terms of experts, equipment, training, etc.) and approximate budget:

Bul. 11-50	Short term consultants	6 m/m	60,000
Bul. 21-00	Subcontract on mineral assessment		20,000
Bul. 51-00	Sundries		<u>2,000</u>
		Total	82,000

Project Concept No. 2

1. Title Downstream chemical industry development programme on the Eastern Seaboard Industrial Estate
2. Country: Thailand
3. Duration: 12 months
4. Development Objective: Integrated industrial development of raw regional estate.
5. Immediate Objective: To assist the office of the Eastern Seaboard and the National Fertilizer Corporation in project priority selection for downstream operations.
6. Background information: The Eastern Seaboard Industrial Estate has established a development programme for the heavy chemical industry. This complex is composed of fertilizers (NPK), with a capacity of about 1 m. T/Y and petrochemical and polymer production installations. However, the economic and financial parameters of the heavy chemical industry should be improved by the establishment of medium-scale downstream operations with a high value added which will be important for the further development of this industry. Forty to fifty alternatives should be investigated, a technical profile prepared and a methodological research study of project priority selection carried out.
7. Outputs expected:
  - a) Plan of downstream chemical industry development
  - b) Methodology manual on project priority selection.



8. Inputs required (in terms of experts, equipment training, etc.) and approximate budget:

Buli 11-50	Short term consultancy	12 m/m	120,000
Buli 21-00	Subcontract of project priority selected virtually		80,000
Buli 42-00	Non-expendable equipment (micro- computer with software)		40,000
Buli 51-00	Sundries		<u>5,000</u>
		Total	245,000

LIST OF PARTICIPANTS IN THE EVALUATION  
GOVERNMENT OF THAILAND

DEPARTMENT OF TECHNICAL AND ECONOMIC CO-OPERATION (DTEC)

Ms. Priya Osthanda	Deputy Director-General
Ms. Thongchai Choochuang	Chief, U.N. Division
Mr. Charit Tingsabadh	Evaluator - Chulalongkorn University

OFFICE OF THE EASTERN SEABOARD (OESB)

Mr. Savit Bhotiwihok	Director
Mr. Manas Sanguandikul	Policy and Planning Analyst
Ms. Kesmanee Debavalya	Policy and Planning Analyst
Mr. Pathai Metharom	Policy and Planning Analyst
Mr. Pornchai Rusiprapha	Policy and Planning Analyst
Mr. Channaronk Chandrachoti	Policy and Planning Analyst

NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT BOARD (NESDB)

Mr. Phisit Pakasem	Deputy Secretary-General
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INDUSTRIAL ESTATE AUTHORITY OF THAILAND (IEAT)

Mr. Prateeb Chuntaketta	Deputy Governor
Mr. Precha Vudhivai	Deputy Project Manager
Mr. Joroen Vattasingh	Project Manager
Mr. Pramual Hutasingh	Project Officer
Mr. Manat Chuenkerdlarp	Project Officer
Mr. Saksit Suksumake	Project Officer
Ms. Porncharas Janngamkul	Project Officer
Mr. Boonyok Tantai	Project Officer

PUBLIC WORKS DEPARTMENT (PWD)

Mr. Niyom Niyamanusorn	Chief Engineer
Mr. Thanade Dawasuwan	Civil Engineer
Mr. Chaiyut Surapatana	Civil Engineer

NATIONAL ENVIRONMENTAL BOARD (NEB)

Mr. Sirithan Pairojboriboon	Director, Environmental Quality Standard Division
Ms. Sunee Kwansirirote	Environmental Scientist
Mr. Pradheep Chandavimol	Senior Engineer

THAILAND DEVELOPMENT RESEARCH INSTITUTE (TDRI)

Mr. Virapongsa Ramangkurd	Director, Macroeconomic Policy Programme
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DEPARTMENT OF TOWN AND COUNTRY PLANNING

Ms. Charatsri Teepirach	Director, Comprehensive Planning Division
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UNITED NATIONS

UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP)

Mr. Yoon Yul Kim	Regional Representative
Mr. Niranjan Desai	Deputy Regional Representative
Ms. N. Williams	Assistant Regional Representative
Mr. K. Kimpara	Assistant Senior Industrial Development Field Adviser
Ms. Netnarumon Sirimonthon	Programme Officer
Mr. H. Latorre	Evaluator

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION (UNIDO)

Mr. R. Chakrabarty	Environmental Pollution Control Adviser (THA/84/009)
Mr. W. Kugler	Financial Planner (THA/83/009)
Mr. J. Kopytowski	Evaluator

WORLD HEALTH ORGANIZATION (WHO)

Mr. A. Gibbs	Water Supply Adviser (THA/83/013)
Mr. V. Peinvichitr	Evaluator

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT (WB)

Mr. Quell Hermans	Representative
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SCHEDULE OF APPOINTMENTS AND ACTIVITIES

27 May 1986	Travel Vienna-Bangkok
28 May 1986	Meeting with UNDP
	Meeting with DETC
29 May 1986	Meeting with UNEP
	Meeting with OESB
	Working Session with OESB
30 May 1986	Meeting with IEAT
	Meeting with PWD
02 June 1986	Meeting with NEB
	Meeting with TDRI
03 June 1986	Meeting with IBRD
	Meeting with NSEDB
04 June 1986	Draft report preparation
05 June 1986	Site visit to ESB (detailed programme attached)
06 June 1986	Meeting with NSEB
09 June 1986	Draft report preparation
10 June 1986	Mr. Pisal Khongsawran, Director General, Department of Industrial Works, Ministry of Industry, 2nd Floor, Rama 6 Road Bangkok Telf. 245-9869
11 June 1986	Dr. Outhai Suprachit, Managing Director
09:30 hrs.	Dr. Yuthana Suksamiti, Administrative Consultant, The Government Pharmaceutical Organization, 75/1 Rama 6 Road, Phaya Thai, Bangkok 10400. Telf. 246-0042, 245-7806
12 June 1986	Mr. Riksh Jyamananda, Deputy Director General
9:00	Department of Agriculture Kasikham Building Bangkok. Telf.: 5190151-9 Project concept on strenghten

12 June 1986

10:30 hrs.

Dr. Smith Kampempool, Governor, Thailand  
Institute of Scientific and Technological  
Research, 196 Phahonyothin Road, Bangkok, Bangkok  
10900 Tel. 579-3508 (direct line)

14:00

Mr. Pravitt Ruyabhorn, Secretary-General, Mr.  
Arthorn Suphapodok, Deputy Secretary-General and  
Ms. Nisakorn Kositratana, Office of the National  
Environment Board, Soi Pracha Samphan 4, Rama 6  
Road, Bangkok 10400 Telf.: 2797180 ext. 126

13 June 1986

Meeting with DETC and OESB

**Joint Evaluation Mission Report  
for the UNDP-supported Eastern  
Seaboard Projects (draft)**

**References**

**Mr. J. Kopytowski  
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Austria**

Records of Interviews at Meetings with Officials  
of the Government of Thailand and representatives  
from other bodies and organizations

UNDP.-

The main concern of the UNDP Bangkok office is two-fold:

- (i) OESB project implementation problem. Due to non-specified forces (the Ministry of Finance was mentioned as a continuous driving force in the Government) ESB project is under permanent pressure and research on economic feasibility are being carried out. One of the arguments for stopping the ESB project, is the increasing national deficit. Thailand's debt is 14.9 billion US\$ with low short-term debt repayment (13 percent) and servicing (21 percent) of annual exports. An additional fact which is influencing the delay in start-up of implementation is the forthcoming elections. However, no change in political balance is expected, but new nominations are likely and a new approach towards industrial development may result. No Government can stop the industrialization process. Schemes, scales, time-schedules may change but not the total concept. To elaborate on this problem an import/export balance on the OESB production profile should be prepared.

Conclusion of the DRR: UN assistance depends on the project implementation schedule.

- (ii) Type of UN assistance. No clear indication was given why the project DP/THA/77/009 was split. However, further assistance in its existing form (small one-consultant projects) is not acceptable to UNDP Bangkok. Several reasons for such decision were mentioned: a) dispersal of formal assistance to different counterparts and practical participation in activities of one organization (OESB); b) Support of operational activities, not institutional building process; c) Unclear role of UN assistance in the framework of overall assistance of OESB design and implementation. Other bilateral donors should obtain complete information regarding project progress as they are fielding experts at the request of the Government. UNDP should have all information on the activities of



these experts. Conclusion of DRR: A new form of UN assistance should be sought and respective counterparts defined.

DTEC

The OESB project is one of the largest in Government project planning. Pertinent documentation was mentioned in support of this statement. The project requires technical assistance (UNDP was mentioned but specific type of assistance omitted) but the main obstacle to implementation would appear to be Government reluctance to accept responsibility for credit repayments. Crucial to the project is the fertilizer complex, but solutions are expected to be found. No specific information was provided as to the type of technical assistance which would be requested or which organizations or donors would be approached. Government representatives taking part in the Evaluation Mission would be nominated to participate in Mission Activities.

UNEP

UNEP activities in Thailand and on regional scale were presented. It is holding regular workshops on environment protection and pollution control and supporting the training of national staff. Close contact with NEB was mentioned in the form of advisory services. The potential of the regional office is not big but it could be more efficiently used if proper coordination within the UN common system were set up.

UNEP has great interest in the OESB development programme. The unique possibility of action on pollution prevention in the establishment of an industrial estate the size of ESB should not be lost by inadequate attention to environmental problems. At present UNEP is dealing only with corrective measures regarding industrial environmental pollution.

UNEP was only recently informed that UNDP was assisting OESB in environmental protection. (UNEP, however has long been aware of the establishment of OESB). Therefore, UNEP is questioning whether UNDP has observed the correct

procedures in advising on environmental protection, and particulars regarding: i) what standards and criteria were applied for environmental protection, ii) how the master plan for environmental protection was elaborated, iii) how the training of counterparts is being undertaken where the trained people are located (i.e. in policy-making or operational capacities).

The financial resources of future UNEP assistance were not mentioned, neither source and size. A list of sources or size of organizations was mentioned which could assist the mission in the evaluation process but it covered already existing references with the exception of the Ministry of Science and Technology to which ONEB belongs.

OESB(morning session)

The following main topics were discussed:

- I.- Government strategic goals linked to OESB.
- II.- Organizational structure of the OESB system and OESB.
- III.- Status of the OESB project
- IV.- Assistance of UN and other resources both present and future.

Ad.1 The Eastern Seaboard Development Programme is the main infrastructural project in Thailand and represents a continuation of the policy of decentralization of the Bangkok industrial area to stop the uncontrollable growth of the metropolis. The strategic goals are spelt out in the "Overview Eastern Seaboard Development Programme" February 1986, prepared by the Office of the ESB Development Committee and an Office of the National Economic and Social Development Board. The programme is under continuous review.

Ad.2 In accordance with an Executive Order concerning the organizational structure of the Eastern Seaboard Development Programme a high level ESB Committee was established which is presided over by the Prime Minister. Also Office of the ESBC was created as secretariat of Committee with powers and functions similar to those enjoyed by the National Economic and Social Development Board (NESDB).

After the OESBC was created a Director was nominated, 16 persons delegated from NSEDB and IEAT and three foreign experts previously attached to other governmental organizations were transferred to the Office of Eastern Seaboard. The main duties were on preparation of documentation required by the Committee to support the decision to establish the ESB industrial estate. The staff performs on a continuous basis the assessment and evaluation of the ESB project elements in changing macro-economic conditions, i.e.: changes in crude oil prices; adjustments of prices dollar rate exchange vis-à-vis main currencies, especially the yen in which current loans are given; final product prices and their impact on the economic and financial feasibility of the project (relevant document was submitted and could be investigated to specify activities).

Further organizational structures of the OESB depends on the finalization of the establishment of the fertilizers complex on the ESB estate. After finalization of the financial structure of the fertilizer project, the contract for construction will be signed. This will be turning point in the activities of the ESB Estate because than total scheme will be implemented (port, other infrastructural elements and the petrochemical complex)

An organizational scheme for OESB has been prepared and will be implemented, conditional to the start of the ESB construction. Recruitment of staff will be from co-operating agencies like NSEDB and IEAT and by open recruitment. The OESB will also require assistance of expatriate experts. A list of expert specialization and sources was given.

Ad.3 The Status of the ESB project was explained;

Ad.4 A list of experts and duration of assignment was discussed. For two experts short job description were given. The work of the experts will comprise two main activities: i) long-term setting up of project implementation management and financial control, ii) short-term technical assistance to resolve immediate problems. All experts will be attached to OESB but will work for all implementing agencies as required.

OESB (afternoon session)

Information was provided on the concept of the ESB project. The project covers two locations Map Ta Phut and Lam Chabang, both priority economic development areas. Only the tactical features of the project approval moved the Map Ta Phut project to first place. Establishment of a new industrial estate in the "green fields" is a costly process involving charges prohibitive to the setting up medium-and-small-scale industries (i.e. higher than in existing industrialized areas). Therefore, the concept of a large-scale heavy industrial centre was prepared with high turnover which could afford to pay the charges and bear the infrastructure burden. The projects for heavy industry were selected according to the priorities of the Thai economy. Since expansion agriculture demands a wider application of fertilizers, the planned fertilizer complex has received priority. This is the most costly project of the complex and is meeting strong opposition, not only from Government financial circles but also from fertilizer traders who are lobbying to stop the project. The local production of fertilizers will cut largely importation and will impose certain limits on trading profits. However it was decided that even after start-up of the operation of the factory no duties merely be imposed on fertilizer imports. The import substitution of the petrochemical complex is obvious. Thailand is fully dependent on plastic material imports which are steadily growing. On the other hand, the ethane, and propane from the separation plant are the cheapest raw materials for olefin production (Experience has shown in the USA that ethylene from gases is cheaper than naphtha cracking). Integration of the national natural resources will be beneficiary to the further development of the Thai economy. The justification for the establishment of the ESB has been proved by the requests from foreign and local investors who wish to establish downstream operations in the area. Several projects were mentioned (see briefing note). Both complexes are share-holdings with Government minority. To support the project, an OECF loan was agreed (10 years period of grace, 3.5 % rate of interest and 20 years repayment scheme).

The Laem Chabang industrial Estate will be the first deep-sea port for container cargo. An export processing zone and small-and medium-scale high technology industries (electronics, computers, high precision engineering industry) will be established at the port. The urban settlement area will be provided with infrastructure and private investment housing.

Evaluation of the institutional structure of the project DP/THAI/84/009 was discussed. Primarily an expert had been attached to IEAT but after the establishment of the OESB he was transferred there. The procedures of assistance are complicated but are progressing. As a first step the NEB is issuing general guidelines for an industrial operation of the project, following which the contracted design should be executed. Individual consultants will be hired (e.i. JAICA to examine and check the technical design). Their reports are reviewed by UN consultants with the OESB staff and sent for approval to NEB. If changes are introduced the procedure is repeated. Final acceptance by NEB is given to IEAT which issue the licence for industrial operation. Pollution control is one of important issues of such a licence. This step-by-step procedure is based on the general production programme of the industrial complex as no comprehensive master plan for environmental protection and pollution control has been issued. It is expected to be prepared after finalization of all technical design (this way final pollution will be known after termination of the design of the complex) Environmental protection is controlled through an application of the following standards:

- i) Thai standards (originating from the Royal Standards Commission, but in some cases local levels of pollution allowed are higher than permitted in the original standards).
- ii) World Bank standards (also UNIDO recommended rules) they are used mostly for fertilizer complexes.
- iii) US Industrial Pollution Standards are used in cases when local ones are not available. The levels of pollution permitted are becoming accepted as rules when issued by NEB. (No clear distinction is being made between the rules and national standards. The Industrial Act is giving power to the respective institutions to establish conditions for industrial operation).

In other places which do not adhere to IEAT, the Ministry for Industry (Industrial Works Department) is playing the regulatory role (issue of licences and control activities).

In the case of project DP/THAI/83/009, the procedure is more simple. Attached to the OESB (previously the CIPO which has the same role) the expert assists directly in project preparation evaluation and improvement. Therefore, in this case, it is only one step in the hierarchical chain to the NSEDB and ESB Committee. The institutional structure of the third project was discussed at the Public Works Department on the following day.

#### IEAT

IEAT is a governmental implementing agency which develops industrial estates. The status of IEAT was revised and finally laid down in Act No. BE 2522 of 1979. IEAT has full responsibility to establish ESB. The design stage is nearly completed and the final decision is expected to start the construction. Some preliminary work has already been carried out (earth removal on fertilizer site) IEAT should also maintain and operate the estate. IEAT also wishes to operate the port but no decision has been taken in this respect.

As a well established institution, IEAT has qualified personnel to reaffirm its functions but the large scale ESB operation is overstretching its capacity. As in the past IEAT will use all possible resources of experts, engineering companies, bilateral experts with UN supervisory assistance to other experts and training-advisory assistance to national staff.

Due to the fact that the development of both (Map Ta Phut and Laem Chabang) Estates has been constantly adapting to the changing situation, only the general outlines of the project are established. A General master plan has not yet been elaborated. It is expected to be ready when all industries will subscribe to participation. This will be step-by-step process calling for foreign (UN) assistance. The request for assistance has been transmitted.

PWD

Public Works Department is an implementing agency for the Ministry of the Interior. Its responsibility covers the programming, planning and implementation of the project water supply for irrigation, urban and industrial centers regardless of ultimate responsibility of operation.

However project assistance to PWD was concerning only the pipeline to the Laem Chabang Industrial Estate, also strategical studies were carried out and a concept for the ESB complex water supply was developed. The actual status of the project was given in a note. After the establishment of OESB, an expert was transferred there from PWD but he is still advising on project implementation (i.e. pre-selection of the contractors for the submission of bids).

Assistance concept in a supervisory capacity with regard to other expatriates and advisory training capacity to national staff was considered.

NEB

Two master plan studies were prepared for ESB on environmental protection, following which complementary studies were carried out and the final report issued. The content of the report was discussed. Due to the not fully recognized production profile of the complex, the terms of references will be issued for given projects and investors.

The procedures for establishing standards and criterias were explained. The basic environmental profile is prepared in co-operation with other agencies (i.e. for fisheries, forestry and agriculture, etc.) The basic data on national resources is given as terms of reference to implementing agencies. The detailed design is sent for comments, if there are no national standard. NEB issues the criteria and requests MOI to issue the standards (through the respective Committee). Co-operation with other implementing agencies is case-by-case basis and decisions are taken at the meetings after evaluation by the consultant.

TDR1

The ESB production profile and structure were discussed and the following problems were raised by TDR1:

i) The structure of the project seems to comprise a collection of independent elements. Organization of the implementation and decision-making process for the whole complex may lead to unnecessary over-capitalization and not make use of the existing assets. This is particularly relevant to the Map Ta Phut port, which was primarily designed to handle more bulk cargo (soda ash, iron ore and steel sponge, potash). At the same time to use the Sata Hip port was not recommended, but NFC will confirm this possibility.

Catering only for phosphor rock and fertilizers at the cost of 10 US\$/ton is not going to pay even the interest on borrowed capital. The operator of the port is still to be identified and it is therefore difficult to have full economic picture of future operations.

ii) The planners (NSEDB and affiliated organizations) are the same time implementing agencies, which makes it impossible to control policy decisions. The same organization is evaluating the studies, evaluating the bids, and selecting the contractors (however another company will sign the contract). The evaluation of the complex at October 1985 has not yet been distributed and assessed. The study on Laem Chabang has not yet been issued and evaluated so comments are not available. The normal channel of project assessment through the Economic Department of NSEDB and the Executive Board of NSEDB was bypassed.

iii) Fertilizers complex. The following questions were raised and remarks made:

- a) Are there any alternative solutions to the main goals of the projects: Price security for farmers and quality guarantee? Is there any study investigating optional appropriate import policies, stocking policies, quality control measures?
- b) Traders are not losing or benefiting from the establishment of the factory. Because no plan exists for marketing and provides services to farmers from the NFC side, commercial channels and participation of



of existing traders will remain unchanged. (As long as NFC remains a private majority company).

- c) Since farmers and traders are secure , who is going to accept the burden of project failure in the case of a further decline in fertilizer prices. This will obviously be the tax payer.
- d) What is feasibility of the project if yen further appreciates?
- e) The project is fully dependent on imported raw materials with limited choice of supplier fertilizer (producers are numerous and prices are lower than production cost due to subsidies). The foreign shareholder of ESB project is also supposed supply phosphor rock and prices are fixed at world price levels. What is the guarantee of supply and profitability?
- f) The only local resource is natural gas but opportunity costs have not yet been established. EGAT wants to pay more for electricity production. This option was not considered.
- g) The composition of shareholders is unfavourable. Conditions relating the sharing of the assets of projects are linked to economically unfavourable conditions (raw material supply monopoly, operator responsibility). They may expect zero dividend of profits realized in trade and fees. Foreign equity is high and it therefore complex should not be treated as a national project and would not be supported by BOI certificate status (privileges).
- h) There are no foreign exchange savings in the project. In this situation UN assistance should be extended to clarify these problems to NSEDB.

The cancellation of the project would not pose problems from an international view. If the OEFC loan were not used the option would automatically expire after 5 years.

World Bank

The World Bank has prepared a macro economic study concerning overall public investment which will shortly be available. Some comments on the ESB projects are also included, but Bank was never involved in any detailed assessment of the project, and had no direct involvement in the project. Previously the Bank had participated in financing, drilling, gas extraction, gas separation, power stations, pipelines. However, remarks on the project structure were presented during the meeting:

i) gas reserves are not so abundant as previously reported, and the extraction scheme shrank correspondingly. Due to the prevailing geological conditions (small pockets), the price of the gas is relatively high, but still lower than the opportunity price of imports. Therefore any programme based on the gas as the raw material should consider all options. The Bank is not aware if they have been investigated.

ii) The investment of the ESB industrial estate is high in volume and relatively low rate of return. Even if the deficit of Thailand is not high the debt problem is concern to the Government and a law has been issued limiting yearly credits to 1 billion US\$. The World Bank is not happy with this assessment as a yearly pool is not used.

iii) The Bank is anticipating that implementation of the project will shift a lot of private savings from other areas of industrial activity. The budget deficit may increase, even though the ESB programme is responsible for only 5% of the planned five year investment expenditure in the country. The conditions of the OECF loan should benefit Thai economy but not specific projects whose rentability should be judged on the basis of a commercial rate of interest.

iv) The Bank feels that other opportunities for economic growth should be investigated and investment in the public sector should be fully infrastructural. Examples of possible financing are irrigation schemes, highway programme, railway development, existing river port reconstruction etc, which may give a higher rate of return to the Government thorough the tax flow generated more quickly by the expansion of economy,

once the infrastructural constraints are overcome. However no specific programme has been prepared and no institution is ready to present one with economic parametrisation.

v) An export development programme has yet to be formulated, to assure the financing of the permanent import of fertilizers and petrochemicals, should the ESB industrial estate, not be constructed.

vi) The Laem Chabang and Mat Ta Phut ports are not really necessary. Firstly the possibility of further development of the river port should be considered. Private companies are constructing small jetties for their own purpose and would not be expected to relocate. Sea going liners are attached to Singapore and Hong Kong and would not be interested in berthing at a deep-sea port in Thailand. The best solution would be to keep the liners at existing ports and reload Thai cargo on smaller ships (20,000 DTW only). Also the Sata Hip port should be made available which should find no objection with the naval authorities. The scale of those ports is not justified and is overcapitalized. The question remains as to who will carry the financial burden.

vii) The IEAT intent to establish the twin industrial estates in Laem Chabang and Map Ta Phut is not reasonable as there is no guarantee that industries will relocate to these estates. A better solution would be to allow industry to develop along the motorways (in long lines) and support them infrastructurally. This is process which is on-going and should not be stopped.

viii) The future of the fertilizer complex is doubtful. Overcapacity of fertilizer production will cause price dumping and in the absence of imported production duties that subsidies from the Government would be necessary.

ix) The petrochemical complex seems to be healthy venture and the execution of this project is not dependent on total ESB programme realization.

The institutional framework of the promoters of the project is somewhat irregular. The NSEDB, through CIPO, and now through OESB, is losing its credibility in the eyes of other investors as the objective evaluator of the projects, what may have a long term impact on the decision-making process in the country.

NSEDB

Discussion of the ESB programme which is institutional and rendered public information by the press shows, that the NSEDB and ESB Committee are open to discuss any aspect of the project. However many misunderstandings have arisen from too little knowledge and lack of information on the part of the opponents. The project was screened as necessary by NSEDB which never raised a complaint that it was by-passed in the decision-making process.

The ESB project is the first of its kind to be on schedule undertaken by a planning body serving important strategic goals of industrial development. These stated in the project evaluation, the most important of which are development of the industrial infrastructure throughout the country:

- decentralization of the Bangkok metropolitan area;
- introduction of modern large-scale industry to Thailand;
- improvement in the trade balance and supply of local raw materials to small-and medium scale processing industries.

The expenditure for agricultural development over the past 15 years was above 22 b US\$ and this sector is sufficiently developed. Thailand is the fifth exporter of food in the world, but is still very weak in the industrial sector. Agriculture today is responsible for only 25% of GNP and investment should be distributed according to contributions.

The support from political parties and the private sector is considerable. The NSEDB adopted a very conservative approach regarding the project evaluation and suspects that bigger savings and economies could have been made. The final bidding and contracting may show a further decrease in costs (due to economic depression positive results may be achieved in negotiation).

The specific problems of the ports were discussed. NSEDB is of opinion that the port is vital to the country. A deep-sea port for Thailand which is exporting over 20 billion US\$ worth of bulky materials would contribute to higher prices for farmers and industry. At present the reloading and long chain transportation costs are a burden on local producers. The transshipments

costs would pay for the port on the macro economic scale. If all these parameters were to be considered in an economic evaluation, the rate of return will be much higher than the conservatively estimated.

The decisions regarding each project depend on the realistic contributions of the public and private sectors and the parties are seeking the best solution which will prolong the finalization of the project.

UN assistance was very valuable in the project preparation, evaluation and technical design stages. Now one project is entering a new stage implementation. The number of partners in the financing and execution of the project is steadily increasing both internationally and nationally, which calls for special supervisory and impartial assistance.

Whatever UNDP decides it will be accepted, but the project is important for the country and will be implemented. In the case of limited UN assistance, bilateral donor consultants will be used (offers exceed the requirements). The only constraint is that NSEDB is looking for an independent evaluation to combat over-capitalization of the project.

With regard to the experts it was stressed that they should be attached to the implementing agency. The small projects (i.e. one expert) create no problem and are dependent on UNDP resources only. In any case in each activity the nationals are the leaders and the expatriates the advisors. The creation of a big project with a complicated structure would not serve the best interest of co-operation and implementation of the project.

**Eastern Seaboard Field Trip Program for  
UNDP Evaluation Mission  
Thursday 5 June 1986**

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8:30 a.m.	Depart from Bangkok for Gas Separation Plant, Map Ta Phut, Rayong Province.
11:00 a.m.	Arrive at Gas Plant
11:00 a.m. - 12:00	Briefing on: - Gas Separation Plant (by Petroleum Authority of Thailand)
12:00 - 1:30 p.m.	Lunch (at Haad Sai Thong)
1:30 p.m. - 2:00 p.m.	Visit Map Ta Phut Industrial Complex Site - Fertilizer & Petrochemical Site
2:00 p.m.	Depart from Rayong from Laem Chabang Port Site, Chonburi Province.
3:00 p.m. - 3.15 p.m.	Visit Laem Chabang Port Site
3:30 p.m. - 3:45 p.m.	Visit Nong Kho Reservoir
3:45 p.m.	Depart for Bangkok

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Site Visit - Natural Gas separation plant, NFC, Map Ta Phut port, Sataship port, Laem Chabang port).

Gas separation plant Owner PTT. Capacity 350 MMCFD.

Natural gas from offshore fields is transported by a 400 km underwater pipe and a 180 km overland pipe to a gas separation plant. From the plant gas is transported by pipes to four regional centres. The investment cost of the gas transportation system is about 500 million US\$ and that of one gas separation plant 350 million M US\$.

The cost/price of the gas loco consumer is 2.3 US\$ /M Btu.

Gas contains twelve percent CO<sub>2</sub> which is washed on the Benfield installation and after that distilled, and fractions as ethane, propane, C<sub>5</sub><sup>+</sup> are produced. At the moment ethane is added to methane, and the rest of C<sub>3</sub> - C<sub>4</sub>, C<sub>5</sub><sup>+</sup> fraction is sold as LPG. Small quantities of gasoline are produced.

Another unit is under consideration which would have a 400 MMCFD capacity.

In the future an ethane fraction will be cracked to ethylene and a propane fraction to propylene..

Site of future fertilizers plant Owner IEAT, temporarily rented to NFC; Land fenced, main roads asphalted, road drainage executed. No underground work has started as the ground has not been levelled. Offices of about 1,400 m<sup>2</sup> to be constructed and equipped. Expenditure for engineering services, studies and physical construction is above 400 M.Baht

The Contract with the licensors has been prepared (Topsoe-ammonia, Stamicarbon-urea, Norsk-Hydro complex fertilizers) The Contract will be executed as a turn key contract with an Italian-Thai civil works contractor. The plant will be operated 3-5 years by the licensors who are also shareholders.

Urgent assistance is required in the following areas:

- 1) preparation of the final contract, especially the contract of the plant operation.
- 2) design and preparation of the maintenance system (predictive maintenance system, mechanical workshop, spare-parts production, spare-parts supply storage system).

Ma Ta Phut port site Seashore attached to NFC complex. Several months strong winds from the sea. About 2000 m east of the site the shipwrecking yard has been established and is expected to develop its activities.

Satahip port Access through narrow corridor between navy installations. Deep sea port for ships 20,000 DTW. Shore length 1,000m with two gate cranes. One-storeyed warehouses are attached (1,500 m<sup>2</sup> each). At the entrance there is a breakwater wall. At the main water front no commercial activities are to be observed.

Laem Chabang port site Open seashore. No infrastructure. Road parallel to sea shore. Small fishing along the shore. Area of medium population density.

National Fertilizer Corporation Ltd.

Dr. Charuna Phichithul Chief of Research and Development Division.

NFC is establishing a large-scale fertilizer plan over Map Ta Phut Industrial Estate. The whole complex is showing satisfactory feasibility and the financial structure of the project and the composition of the shareholders is at a final stage. However, the production of fertilizers is not only a technical and economic activity. Due to its direct linkage to agriculture, several risks in project implementation are inherent:

- i) If the Government is placed under pressure it may decide to freeze the prices of fertilizers without the necessary subsidies
- ii) due to the fact that duties will most probably not be imposed on imported fertilizers, foreign competition may decrease future profits.



To avoid financial and economic difficulties, but still with the intention of implementing this important socio-economic project, the corporation is seeking on the one hand programme diversification which may assure a stable financial situation and profit. The programme would be linked to a fertilizers plant profile but would envisage retroactive integration of the Thai chemical industry.

NFC is expecting UNIDO assistance in the preparation of the integrated study and project priority selection.

It was agreed that within one month from receipt of the request from the Office of Eastern Seaboard, the Draft Project Document would be prepared and submitted to NFC, and OESB for further submission to DETC, for inclusion in the next Country Programme.

Note for file  
J.A.Kopytowski

Reference: Mission to Thailand, June 1986.

Matter: Submission of the project proposal.

Thursday, 12 June 1986 mission met: Mr. Pravit Puyabhorn, Secretary General, Mr. Arthorn Suphapodok, Deputy Secretary General and Mrs. Misakorn Kositratana from Office of National Environment Board. Project Proposal prepared by Mrs. Malteizou was handed over and shortly discussed. Counterpart, after evaluation of the project content, is going to submit it through the DETC to UNDP.  
Vienna, 23 June 1986.

Note for file  
J.A.Kopytowski

Reference: Mission to Thailand, June 1986.

Matter: Submission of the project proposal.

Thursday, 12 June 1986 mission met: Prof. Smith Kampemool, Governor of TISTR, Dr. Jit Sirwanawit, Director Chemical Industry Division, Mrs. Naiyana Niyomwar, Head of Chemical Fibre and Textile Laboratory, Mr. Ekachai Suntornpong, Acting Director, Building Technology Department, Mr. Suddhisakdi Samrejprasong, Acting Chief, Building Materials Laboratory, Mrs. Acharaporn Punvekvong, Mrs. Pattama Soontorn saratune, Mrs. Pongpreda Pramaj, Pharmaceutical and Natural Products Department, Mrs. Dunanta Ramavongse, Chief of Operations Planning Division, Mrs. Salaisplun Komarakul, Chief of Foreign Relations Division. Following project proposal has been handed over:

Building materials: a). Preparatory assistance to the establishment of low cost prefabricated housing industry, b). Fly ashes and other mining by-products processing options evaluation from Mae Moh Lignite Mine Power Complex.  
Pharmaceutical products: a). Assistance in the production development from Thai traditional Pharmacopea, Phase II. b). Proposal to prepare manual on extraction of the essential oils.

Project proposals were discussed shortly and TISTR is going to submit reviewed versions to DETC and UNDP.

Also future project of supplement the pulp/paper department with the modern cleaning and deinking equipment was discussed. Mission was informed that concept of short study tour is mostly welcomed before the project formulation. But on the other hand CIDA has confirmed funding of that project under condition that executing agency will be one of Canadian Consulting Companies. TISTR is now negotiating the project proposal with CIDA, therefore UNIDO assistance will be rather of supplementary character.  
Vienna, 23 June 1986

Note for file  
J.A.Kopytowski

Reference: Mission to Thailand, June 1986

Matter: Submission of the project proposal.

Wednesday, 11 June 1986 mission met: Dr. Outhai Supradit, Managing Director of Governmental Pharmaceutical Organization, Dr. Yuthana Suksamiti, Administrative Consultant, Dr. Suvit Chivalak, Chief of Chemical Development and Research Section. Project proposals: a). Assistance to Government Pharmaceutical Organization in production development b). Transfer of technology and establishment of pilot fermentation plant, were handed over and shortly discussed. Unfortunately the pilot plant project had not actual time schedule which should be elaborated by GPO. It was agreed that after reviewing projects through the Ministry of Health will be submitted to DETC and UNDP.  
Vienna 23 June 1986

Note for file  
J.A.Kopytowski

Reference: Mission to Thailand, June 1986.

Matter: Submission of the project concept.

On Thursday, 12 June 1986 mission met Dr. Riksh Syamananda Deputy Director General, Department of Agriculture and handed over project concept "Assistance to pesticide industry".

It was first time when Dr. Riksh received that proposal therefore it was shortly discussed, and it seems that it is well fitting the immediate needs of Department and its Regional Offices.

Also problem of joint World Bank-UNIDO seminar (training course) on residual analysis was discussed. At the time of mission visit short term consultant Mr. J. Jensen was fielded and was working on the seminar content with local specialists. The UNIDO participation will result from her report.

Vienna, 23 June 1986

Note for file  
J.A.Kopytowski

Reference: Mission to Thailand, June 1986.

Matter: Submission of the project proposal.

On Tuesday, 10 June 1986 mission met Dr. Pisal Khongsamarn, Director General, Department of Industrial Works and handed over the detailed formulation of assistance request "Assistance in Hazardous Chemicals Treatment". The project content was shortly discussed. The Ministry of industry will review the project content and will submit it to DETC and UNDP.

During the discussion with JPO mission learned that this project is not on the UNDP priority list.

Vienna, 23 June 1986.