

APPENDIX II

PROFILES OF PROPOSED PROJECTS/PROGRAMS

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Project No. ID 1

- 1. PROJECT TITLE** Free Trade Areas (FTAs)
- 2. LOCATION** Samut Songkhram, Prachuap Khirikhan, and Chumphon
- 3. AGENCY** Ministries of Interior, Finance, Industry, Commerce, IEAT, and NESDB (mainly concerned), and autonomous management bodies to be newly established (Development Corporation)
- 4. OBJECTIVES**
- (1) To channel sizable investments into the areas before the AFTA and WTO agreements become fully effective in the early years of the 21st century through allowing "free" international and domestic trade
 - (2) To create free trading cores with independent customs domain and autonomous management body
 - (3) To trigger and spearhead the WSB regional development while accelerating decentralization in Thailand
- 5. PHASING** Phases I-III: (1997-2011)
- 6. PROJECT COMPONENTS**
- (1) **FTA/merchandising plaza** in the abandoned shrimp field in Samut Songkhram will be developed as a sub-business center supplementing the primary business center function of Bangkok, including the primary wholesaling function to the border provinces in Thailand.
 - (2) **FTA/Bang Saphan** will comprise the deep-sea port, steel complex, and industrial estate oriented to interindustrial trade.
 - (3) **FTA/technopark** around Pathiu airport in Chumphon will be oriented not only to interindustrial trade among airport/export-oriented industries, but also to agricultural product trade.
- 7. RELATION WITH OTHER PROJECTS** UD 2 (Bang Saphan industrial city)
- 8. COST (APPROX.)**
- (1) **FTA/Samut Songkhram**
US\$ 800 million (Phases I-II)
 - (2) **FTA/Bang Saphan industrial estate (IE)**
US\$ 463 million (Phases I-III)
 - (3) **FTA/Airport Technopark**
US\$ 12.5 million (Phase II)

ID 1 FREE TRADE AREAS (FTAs)

(1) Benefits/Activities Allowable within FTAs

With an independent customs domain, certain activities allowable under the existing IEAT Act for Export Processing Zones (EPZs) and MOI Decree for Free Trade Zones (FTZs) would be permitted as summarized below:

- Duty-free importation of raw materials and equipment including production facilities without ordinary customs clearance procedures, but with periodic inspection (possible in EPZs/FTZs);
- Free trade or free movement of cargo within FTAs without permission from the customs office for bonded transport, since there will be no need for bonded business within FTAs (possible in EPZs and FTZs);
- No VAT taxation on trade within FTAs (limited to export goods);
- No limitation on consumption of imported goods within FTAs (impossible in both EPZs and FTZs);
- No restriction on items of goods to be imported into FTAs (impossible in both EPZs and FTZs);
- No limitation on the term for storing imported goods in FTAs (impossible in both EPZs and FTZs);
- No limitation on the type of business activities that may be undertaken in FTAs, including ones that are monopolized at present (impossible in both EPZs and FTZs);
- Exportation of goods and services generated in FTAs (possible in both EPZs and FTZs); and
- No limitation on the importation of goods and services generated in FTAs into the domestic market of Thailand with the ordinary customs duties (limited in both EPZs and FTZs).

(2) Management Bodies of FTAs

The Free Trade Area Development Corporation (FTADC), a quasi-local government, would serve as an experimental body spearheading the drive toward decentralization in Thailand, with main features of its charter indicated below:

- The board of directors will include representatives from the concerned government agencies, including the Ministries of Interior, Finance, Industry, Commerce, local authorities, residents, and investors. It will be responsible for formulating a

development master plan, managing specific projects, and operating specific facilities.

(3) Budget System of FTAs

It is proposed that the budget of the FTAs would be generated from a transaction charge in place of other taxes including the corporation income tax. This budgetary system would attain the following objectives:

- Retention of the autonomy of the FTA, ensuring the FTAs' own budget by providing revenue from sources other than revenue generated from land development, utility services, and other services including port operations; and
- Provision of a good business environment, which will not only attract more investors to the FTAs, but also reduce tax collection costs.

Collection of the transaction charge will be supported by a computer real-time network comprising shipping and cargo information system, a Point of Sale (POS) system, and the like.

(4) Functions and Development Scale of the Three FTAs

The FTA/merchandising plaza in Samut Songkhram (FTA/MP) will be developed in the abandoned shrimp fields; its main function will be merchandising. A business center, convention halls, hotels, light processing factories or warehouses, and residences will also be developed. This FTA/MP will play the role of a sub-business center supplementing the primary business center function of Bangkok, including the primary wholesaling function for the border provinces in Thailand. Gross land development in the FTA/MP would amount to 1,000 hectares (6,250 rai) including green belt/open space, mangrove area, and reserved area for future expansion (refer to the Samut Songkhram Free Trade Area Development Initiative in Appendix IV).

The FTA/Bang Saphan IE will comprise a deep-sea port, steel complex, and industrial estate, which will be oriented toward interindustrial trade. Gross land development in the FTA/Bang Saphan IE will be 1,000 hectares (6,250 rai) in 2011, but 320 hectares (2,000 rai) will be developed during Phase I (1997-2001).

The FTA/technopark to be developed around Pathiu airport in Chumphon will be oriented not only to interindustrial trade among airport/export-oriented industries, but also to trade in

agricultural products. Gross land development in the FTA/technopark will be 100-150 hectares (625-938 rai) by 2011, with 50 hectares (312 rai) to be developed during Phase I.

(5) Project Cost

FTA/Merchandising Plaza (FTA/MP)

Phase I US\$ 800 million or 20,000 million Baht (4,900 million Baht for land development, 15,100 million Baht for facilities), excluding costs to develop relevant infrastructure such as the port, public utilities, internal roads, and access roads (refer to Samut Songkhram Free Trade Area Development Initiative in Appendix IV).

FTA/ Bang Saphan IE Total US\$ 463 million or 11,575 million Baht (refer to the Feasibility Study on the Bang Saphan Industrial Estate by IEAT/JICA)

Phase I 3,860 million Baht
Phase II 3,235 million Baht
Phase III 4,480 million Baht

FTA/ Technopark Total 618 million Baht (938 rai base)

Phase I 217 million Baht
(312 rai * 0.8 million Baht * economic factor of 0.87)
Phase II 401 million Baht
(626 rai * 0.8 million Baht * economic factor of 0.80)

(6) Recommendation

Organizing concerned government agencies, private enterprises, and local people are essential to further discuss and study the proposed FTA development before the new enactment/modification of relevant laws. It is recommended that NESDB coordinate them toward commencement of the FTA projects. Low land prices, port development and preservation of mangrove are particularly crucial factors for successful development of the FTA/merchandising plaza in Samut Songkhram, and therefore it is recommended that a comprehensive feasibility study on the development be conducted as early as possible.

Project No. ID 2

1. PROJECT TITLE Strategic Industrial Estate Development
2. LOCATION Ratchaburi and Chumphon
3. AGENCY IEAT/Ministry of Industry, Land Transport
Department, Customs Department, State Railway of
Thailand, and NESDB (mainly concerned on BPIDC
below)
Local authorities (for SMEs/IE below)
4. OBJECTIVES (1) To promote industrial decentralization and
clustering
(2) To integrate industrialization and urbanization
(3) To enhance industrial competitiveness and
sustainability conducive to the WSB's further
development
5. PHASING Phase II: (2002-2006)
6. PROJECT COMPONENTS
- (1) **Ban Pong Industrial/Distribution Center (BPIDC: Ratchaburi)** will be a core project in the Upper WSB and constitute a component of the Industrial Logistics Center (ILC) to fully establish the area's gateway functions. BPIDC will integrate in a compound area the following five components: an industrial estate, a distribution center, a truck terminal, an inland clearance depot, and a regional R&D and testing center.
- (2) **Small and Medium Enterprises Industrial Estate (SMEs/IE)** will accommodate small and medium enterprises mostly located in urbanized areas with standard factories and rental factories at low charges and a reduced initial cost, and some common service facilities to reduce operating costs (SMEs/IE: Ban Pong, Ratchaburi, Chumphon)
7. RELATION WITH OTHER PROJECTS ID 5 (Specified industry modernization)
UD 1 (Upper WSB urban planning)
8. COST (APPROX.) (1) BPIDC
US\$ 268 million (Phase II)
(2) SMEs/IE
US\$ 16 million (Phase II)

ID2 Strategic Industrial Estate Development

(1) Ban Pong Industrial/Distribution Center (BPIDC)

Project Concept

The BPIDC will be a core project in the Upper WSB and constitute a component of the Industrial Logistics Center (ILC) to fully establish the area's gateway functions including linkage with Myanmar.

Ban Pong is located at the crossroads of north-south and east-west arteries, and is also located in proximity to the BMA and Myanmar. In addition, its crossroads location makes it easily accessible to other regions in terms of time distance by bypassing the BMA, especially after the proposed outer-outer orbital road is developed. The network of the State Railway of Thailand is also available in Ban Pong, encompassing north-south (to the Northern and Southern region in Thailand, and on to Malaysia and Singapore) and east-west (to the BMA and Kanchanaburi) connections. Ban Pong is a bimodal transport center, where the proposed industrial/distribution core/center is to be strategically developed.

Development scale, and project schedule/cost

The BPIDC, with an area of 170 ha (1,063 rai) in net or 320 ha (2,000 rai) in gross, will integrate the following five components: an industrial estate, a distribution center, a truck terminal, an inland clearance depot, and a regional R&D and testing center. Apart from development of these facilities, land for the BPIDC may be developed by the Industrial Estate Authority of Thailand (IEAT) or a private/public joint venture with IEAT (refer to Ban Pong Industrial/Distribution Development Initiative).

The Development of the BPIDC will cost around US\$268 million or 6,700 million Baht (in 1996 constant prices) and will be carried out during Phase II (2002-2006), since the planned motorway and outer-outer orbital road will be available after 2000, and it will take at least several years to develop a deep-sea port and an industrial estate in Tavoy-Myanmar and relevant infrastructure including a Kanchanaburi-Tavoy highway.

Recommended action

It is necessary to organize the concerned government agencies and the private sector in order to discuss and realize the BPIDC development concept, and to conduct a feasibility study in parallel with such an institutional arrangement, including development plans of its surrounding areas (refer to BPIDC Development Initiative in Appendix III).

(2) Small and Medium Enterprises (SMEs) Industrial Estate (IE)

Project concept

Promotion of small and medium enterprises (SMEs) is important not only to provide a firm foundation of the industrial structure, but also to modernize the “non-modern sector” absorbing more than 60 per cent of manufacturing employment in the WSB in 1994. Some industrial estates for the SMEs will be promoted mostly in urbanized areas; they will provide not only standard and rental factories at low charges, but also some common service facilities at reduced costs.

Specific groups of manufacturers may collectively locate in the SMEs/IE, utilizing the industrial modernization program (refer to Project ID 4). Local authorities will develop and manage these SMEs/IE, assuming that they could have their own budget and power via decentralization/devolution.

Development scale and project schedule/cost

SMEs/IE will be developed in urbanized areas where sizable SMEs are engaged in manufacturing, and therefore it could be developed around Ban Pong, Ratchaburi, and Chumphon during Phase II (2002-2006), considering the progress of urbanization in the WSB, growth of SMEs, and decentralization. The development scale for an SMEs/IE is estimated to be around 100 rai; assuming 50 rai for 50 SMEs with an average factory site of 1 rai (1,600 m²), and 50 rai for common services and other facilities. The development cost will amount to around US\$16 million or 400 million Baht for the three IEs.

Recommended action

Local authorities are expected to take initiative in promoting this project in cooperation with local SMEs. For the time being, candidate sites will be identified in accordance with “City/Town Planning.” For implementation of this project, it is recommended that some funds be raised by both local authorities and SMEs interested in this project.

Project No. ID 3

1. PROJECT TITLE Rural-industrial Community Model (RICM)/Community-based Development
2. LOCATION The WSB six provinces
3. AGENCY Department of Industrial Promotion (DIP)-Ministry of Industry
4. OBJECTIVES
- (1) To develop agro-industry and other industries
 - (2) To promote community-based rural industrial development, utilizing local resources
 - (3) To enhance self-reliance of rural people and social integration or industrial clustering through increased job opportunities and income from industrialization
5. PHASING Phase I: (1997-2001)
6. PROJECT COMPONENTS
- This project will be promoted in some districts (amphoes) with active participation of villagers and support from the **Rural Industrial Development Project** of the Ministry of Industry. Villagers will find indigenous resources suitable for manufacturing and develop markets in cooperation with traders, concerned government agencies, and NGOs. They will be guided to establish cooperatives or villagers' corporations, with shares to be held by the villagers themselves. The development of a **one-product one-village** concept will be carried out through market and product segmentation among villages. "**Barn factory**" will generate second job opportunities by utilizing barn space, while contributing to the formation of industrial linkages with new industries to be located in the WSB region.
7. RELATION WITH OTHER PROJECTS RD 1 (Rural development model)
ID 4 (Local specialty product development)
AG 6 (Agro-processing promotion)
AF 4 (Fish processing industrial complex)
8. COST(APPROX.) Phase I US\$ 3.6 million
Phase II US\$ 3.6 million

**ID3 Rural-Industrial Community Model/
Community-based Development**

(1) Project Concept

An rural-industrial community model (RICM) project will be promoted in some districts (amphoes), with active participation of villagers and supported by the Rural Industrial Development Project of the Department of Industrial Promotion (DIP).

DIP has already budgeted for the rural industrialization project to be carried out from 1997 to 2001, amounting to 1.43 billion Baht for 480 individual projects. This project is well designed to promote rural industrial development with four types of projects as summarized in Table A2.1.

Table A2.1 Four Types of the Rural Industrial Development Project (DIP)

	Type 1	Type 2	Type 3	Type 4
1. Place of implementation	• Regional industrial promotion center (RIPC)	Place of PDOs /NGOs	Place of (moo-ban) community	Shelter of rural people
2. Main objective	• Support for incubation & start-up of business	• Intermmediation of subcontracting	• Cooperative development	• Livelihood development
3. Functional sharing and linkages between concerned organizations				
(01) Provision of place/space	RIPC	PDOs/NGOs	farmer/co-op.	Rural people
(02) Provision of necessary facilities	RIPC			
(03) Training/instruction	RIPC	RIPC	RIPC	RIPC
(04) Other support activities		RIPC	RIPC	RIPC
(05) Beneficiary of rental space	PC/PBG/RP	PC/PBG/RP		RIPC
(06) Provision of machinery and equipment		PC		
(07) Investment in machinery and equipment	PC/PBG			PC, etc.
(08) Investment in production unit				
(09) Loan/loan arrangement			farmer/co-op /PC	PC, etc. RIPC
(10) Operation of joint training	PC/PBG	PC	PC	PC
(11) Provision of raw materials		PC	PC	PC
(12) Provision of work		PC	PC	
(13) Study on prospective business area	PDOs/NGOs	PDOs/NGOs	PDOs/NGOs	
(14) Organizing rural people and business group into prospective area	PDOs/NGOs	PDOs/NGOs	PDOs/NGOs	
(15) Policy recommendation	PDOs/NGOs	PDOs/NGOs	PDOs/NGOs	
(16) Project management	PDOs/NGOs	PDOs/NGOs	PDOs/NGOs	

Note: PC = Private company, PBG = Private business group, PDOs = Private development organizations

NGOs = Non government organizations, Co-op. = Cooperatives

Source: Department of Industrial Promotion, Ministry of Industry

Type 1 activities focus on supporting incubation and business start-up, Type 2 promotes subcontracting, and Types 3 and 4 concentrate on cooperative and livelihood development, respectively.

Supported by activities of Types 3 and 4, villagers will find indigenous resources suitable for manufacturing and develop markets in cooperation with DIP, private company, and NGOs including private development organizations. Handicrafts, food processing, and herbal medicine may be among the possibilities to be considered. Villagers will be guided to establish cooperatives or villagers' corporations, with shares held by the villagers themselves. Thus, community-based/rural industrialization will be initiated and developed further.

The one-product one-village project will be promoted by village, utilizing Type 3 activities, and will be carried out through market and product segmentation among villages/cooperatives. Many products of unique specialties will be produced. Villagers will receive opportunities for second incomes.

"Barn factory" can be promoted by activities of Types 2 and 4. Industries to be located in industrial estates (IEs) will need some subcontractors. In response to such requirements, some villagers will utilize their barns, installing machinery to produce small items/parts/components for consignors. Such barn factory owners will not be required to commute to factories located in IEs; they will be able to handle their own agro-business while producing for industries as subcontractors. Some consignors will lend machinery without charging, under the condition that the barn factory owner would purchase the machinery after production profits begin to accrue. Consignors will guide barn factory owners by transferring technology.

(2) Project Schedule and Cost

Based on 480 individual projects of the rural industrial development project with a budget of US\$57.2 million (1.43 billion Baht) from 1997 to 2001 (Phase I) at the national level, a target will be set for the WSB, i.e., one project per province per year during Phase I. Consequently, US\$ 3.6 million will be required for 30 projects with a total project cost of 90 million Baht during Phase I, and it will be followed in the same way during Phase II.

(3) Recommended Action

To date, the rural industrial development project has not been implemented in the WSB region. DIP-MOI's Regional Industrial Promotion Center in Suphan Buri, which is one of 11 centers in Thailand, is expected to promote wide implementation of the project and encourage local people or small and medium enterprises (SMEs) so that they can participate.

It is recommended that standardized production and products be followed in implementation of the rural-industrial community model (RICM) project. Otherwise, rural manufacturers supported by the project will not be able to continue to market their products. Manufacturers have to produce goods that are sure to be sold, keeping standards and the quality of products at the same level. In this context, it is recommended that the Thai Industrial Standards Institute (TISI) be involved in the RICM or the rural industrial development project.

The rural industrial development project includes the Type 2 effort to promote subcontracting, which would generally be based on the division of work. In this context, it is recommended that subcontractors be made aware of essential factors for the efficient division of work among producers specialized in specific areas, e.g., to produce at reasonable cost, to keep contracted production lot and precision level of product, and to deliver just in right time.

Type 3 activities of the rural industrial development project promote cooperative development. Decision-making is important in business management, and therefore it is recommended that a sole person or a few persons be finally responsible for business decision-making in order to ensure and keep the confidence of clients.

Meanwhile, the Internet will expand business opportunities through real-time and electronic trading. It is recommended that the rural industrial development project be active in utilizing the Internet so as to market products all over the world. In this context, the above mentioned decision-making and responsibility are expected to be well organized and ensured.

Project No. ID 4

1. PROJECT TITLE	<u>Quality/Productivity Enhancement</u>
2. LOCATION (main)	The WSB six provinces
3. AGENCY	Ministry of Industry/Department of Industrial Promotion, Tourism Authority of Thailand, Ministry of Education, Board of Investment (BOI), and Labor Development
4. OBJECTIVES	<ol style="list-style-type: none">(1) To promote industrial modernization and intersectoral linkages with tourism(2) To effectively develop manpower(3) To strengthen the WSB manufacturer's competitiveness/productivity in response to the globalizing economy
5. PHASING	Phase I: (1997-2001)
6. PROJECT COMPONENTS	<ol style="list-style-type: none">(1) Specific industry modernization program (SIMP) will consolidate the foundation of regional industries through modernization of grouped manufacturers or cooperatives, with support by a concessional loan and compensation for the disposal of obsolete facilities.(2) Local specialty product development program (LSPDP) will develop local resource-based products in line with tourism development.(3) Factory park program (FPP) will educate students through the opening of factory facilities to visitors, as a program for development of the region's excursion center.(4) Productive manpower development program (PMPD) will strengthen the subsectors' specific skills training, systematize skills/manpower development through linkages between the public institutes and manufacturers, and promote "on-the-job training".
7. RELATION WITH OTHER PROJECTS	ID 3 (Agro-industrial Community Model) AG 6 (Agro-processing promotion) AF 4 (Fish processing industrial complex)
8. COST(APPROX.)	<ol style="list-style-type: none">(1) SIMP (depending on specific industry's modernization plan)(2) LSPDP US\$ 0.72 million (Phase I)(3) FPP US\$ 2.5 million (Phase I)(4) PMPD US\$ 3.2 million (Phase I)

ID 4 Quality/Productivity Enhancement

(1) Specific industry Modernization Program (SIMP)

Project concept

This program will develop and consolidate the foundation of industries through a modernization plan of grouped manufacturers or cooperatives, which will be supported by a concessional loan and compensation for disposal of old facilities. The manufacturers' group may establish common service facilities for R&D, shipment, storage, transport, bulk-buying of raw materials, and worker's welfare.

Candidate programs in the WSB region are found in the canned/processed fruit and vegetables industry, wood products, furniture, bus body assembly, and ship building and repair industries.

Project schedule and cost

This program will be implemented during Phase I (1997-2001) due mainly to the urgent need for modernization. Apart from new investments for modernization, the cost of this program comprises costs for the concessional loan and compensation for disposal of old facilities. To date, practical demand for the modernization has not been identified, and therefore cost estimation is not possible. However, criteria for such support is considered, i.e., a concessional loan up to 80 per cent of new investments for the modernization, and compensation corresponding to the book value of fixed assets not depreciated.

Recommendation

In line with this program, clustering of specific industries in a compound area is recommendable, since it will have the following benefits:

- Easy exchange of technical information and technology transfer, which will lead to technological upgrading, generation of new technology, and new product development;
- Expansion of complementary transactions among locators;
- Utilization of common service facilities, including R&D facilities to be developed jointly by locators; and
- Strengthening a bargaining power to clients/ consignors.

There are a number of manufacturing subsectors in the WSB critically requiring modernization or transformation:

- Mechanization in response to the shortage of unskilled labor, and establishment of food preserving/bacteria control technology for canned/processed fruit and vegetable industry;
- Collective modernization and systematization of production to foster competitiveness for the wood products and furniture industry, including preparation of common service facilities; and
- New business area development accompanied by mechanization for bus body building and the ship building-repair industry, since the former will face a narrowing market due mainly to operation of original bus assembling factory in Thailand, while the latter will have to switch its product from wooden to steel ships in accordance with forthcoming government regulations.

As such, the first step should be taken to organize manufacturers of these industries to prepare a "modernization plan", and thereby cost for the modernization can be easily estimated. The Federation of Thai Industries (FTI) and the Ministry of Industry are expected to lead and coordinate this modernization plan.

In addition, it is recommend that BOI be actively involved in industrial modernization in such a way that it places priority not only on category of industry, but also on the modernization of existing industries that are crucial in provincial areas. In this context, it is desirable that the present BOI zonal incentive system be reviewed.

(2) Local Specialty Product Development Program Integrated with Tourism (LSPDP)

Project concept

This program will involve a survey of the tourist market and needs, development of local resource-based products, and development of a marketing system. Organized producers and shopkeepers, including first-class hotels, will implement this program in cooperation with concerned government agencies, colleges, and universities in the WSB region. As a component of this program, demonstration sales (e.g., of handicrafts) may contribute to preparatory vocational education.

Project schedule and cost

This program will be suitable for provinces with tourism development potential, such as Kanchanaburi, Petchaburi, and Prachuap Khirkhan province. In line with tourism development in such areas, this program will be initiated during Phase I (1997-2001).

This program could be implemented as a component of the Rural Industrial Development Project (refer to Project No. ID3). Consequently, the average cost is around 3 million Baht for an individual project. In conclusion, the project cost for this program will be US\$0.72 million (18 million Baht), assuming two projects in the three provinces of Kanchanaburi, Petchaburi, and Prachuap Khirikhan.

Recommendation

This program aims at developing new products integrated with tourism development so as to increase tourism-related consumption in the WSB region. Accordingly, close coordination between the Department of Industrial Promotion (DIP) and the Tourism Authority of Thailand (TAT) is required; DIP will promote the rural industrial development projects, while TAT will organize the tourism sector. It is recommended that segmentation or differentiation of products based on indigenous resources be well recognized and materialized, since souvenirs sold in Thailand are not locality-specific.

(3) Factory Park Program (FPP)

Project concept

The Upper and Central WSB will be a center for excursions where many students will visit. Vocational orientation is important to educate students who may become industrialists, engineers, and technicians in the third generation. In addition, industrial development should be harmonized with local society and the natural environment. The factory park program will contribute to such harmonization through opening of factory facilities to visitors and educating them through factory tours.

Project schedule and cost

This program will be initiated during Phase I (1997-2001), in line with promotion of a center for excursion in the Upper and Central WSB.

The cost of this program, estimated on the basis of number of excursionists/visitors, will amount to US\$2.5 million (62.5 million Baht), assuming that ten factories in the Upper and Central WSB will accommodate 25,000 visitors respectively, at a cost of 50 Baht over the five years from 1997 to 2001.

Recommendation

It is desirable that factories of private companies be open to visitors without subsidies. However, incentives may encourage companies to add the beauty of their factory, thereby providing benefits such as educating students. Accordingly, it is recommended that the

Ministry of Education be active in promoting this program, considering that a factory park is a sort of "technology museum."

(4) Productive Manpower Development Program (PMDP)

Project concept

This program aims at efficiently integrating skill development through the following measures:

- 1) Strengthening of the subsector's specific skills training through efficient coordination among the existing and proposed public institutes in the WSB region;
- 2) Systemization of skills/manpower development through linkages between the public institutes and manufacturers (e.g., training of core/leader persons who transfer the skills to workers in factory); and
- 3) Promotion of "on-the-job training" through incentives for in-house training to efficiently upgrade the skills of workers, which not only will reduce government expenses, but also meet the needs of manufacturers.

Project schedule and cost

This program is to improve existing manpower development programs in the WSB region, and will continuously be carried out during Phase I (1997-2001).

An exception is promotion of "on-the-job training" program with incentives. The cost for such an on-the-job training program would be US\$3.2 million (80 million Baht) from 1997 to 2011, assuming that 50 per cent of "new workers" will be trained by utilizing this program as follows:

A: Average number of incremental workers per year in manufacturing industry in the WSB region from 1995 to 2001 (refer to Chapter 5 of this Report),

$$372,211 - 234,794 = 134,417$$

$$134,417 \div 7 = 19,361$$

B: Number of trainees to be supported by this program

$$A * 0.5 = 19,361 * 0.5 = 10,000$$

C: Subsidy per trainee 80 Baht per day (around 70 per cent of the minimum wage)

D: Duration of training 20 days (about one month)

E: Total cost B * C * D * 5 years

$$10,000 * 80 * 20 * 5 = 80 \text{ million Baht (US\$ 3.2 million)}$$

Recommendation

The Labor Department is expected to initiate the subsidized on-the-job-training program, recognizing that such a subsidy will be effective not only for upgrading skills, but also for attracting investors in provincial areas such as the WSB.

With regard to manpower development, the difference between skills or techniques and technology should be recognized by the WSB manufacturers and workers. Skills are personal but technology is social. In other words, skill is never productive before socially organized, and therefore the proposed manpower development is expected to be well organized; attained skills should be socially extensive and transferred by leaders of workers and manufacturers.

Project No. ID 5

1. PROJECT TITLE Industrial R&D Promotion
2. LOCATION (main) Ratchaburi and the Central WSB (Petchaburi, and Prachuap Khirikhan)
3. AGENCY Ministry of Industry/Local Authorities, Rajabhat Institute-Petchaburi, and Local R&D Institutes
4. OBJECTIVES
- (1) To promote and support R&D activities by manufacturers in the WSB region
 - (2) To facilitate regional R&D cores formation through organizing concerned entities
 - (3) To strengthen the WSB manufacturer's competitiveness/productivity in response to the globalizing economy
5. PHASING Phase II: (2002-2006) - Phase III: (2007-2011)
6. PROJECT COMPONENT
- (1) **Regional R&D and testing center (RRD/TC)** will be one of the R&D cores of the WSB region, with the R&D functions relating to the fields of agriculture, manufacturing, construction, and information, responding to the progress of borderless modern technologies and creating new technologies through interdisciplinary R&D.
- (2) **Integrated incubation system (IIS)** will foster the entrepreneurial qualities of the third generation of Thai industrialists. A **WSB techno-consortium (WTC)** will guide technology development in the WSB region by organizing local manufacturers, as well as R&D staff in colleges, universities, and public institutes.
- (3) **Techno-consortium (ARC)** will guide technology development in the WSB region by organizing local manufacturers, as well as R&D staff in colleges, universities, and public institutes.
7. RELATION WITH OTHER PROJECTS ID 2 (Ban Pong Industrial/Distribution Center)
UD 3 (Petchaburi Science City)
8. COST(APPROX.)
- (1) RRD/TC US\$ 21.9 million (Phase II)
 - (2) IIS and WTC (minimal)
 - (3) ARC US\$ 10 million (Phase II)

ID 5 Industrial R&D Promotion

(1) Regional R&D and Testing Center (RRD/TC)

Project concept

This center will be positioned as one of the R&D cores of the WSB region, with the R&D functions relating to the fields of agriculture, manufacturing, construction, and information, which will respond to the progress of borderless modern technologies and create new technologies through interdisciplinary R&D. Public services will include testing, consultancy, an open laboratory, information services, technology transfer or transactions, and training and retraining of technicians and engineers. This center is expected to be developed in Ban Pong in Ratchaburi province as intellectual infrastructure for sustainable growth.

Project schedule and cost

This center will be implemented in Phase II (2002-2006), which will be the term for “core formation” in the industrial development of the WSB. The center will be developed in the Bang Pong Industrial/Distribution Center (BPIDC) so as to accommodate existing manufacturers in the WSB and to attract much more investors in the BPIDC.

It would cost US\$21.9 million (547 million Baht) to develop the regional R&D and testing center, including around 500 million Baht for the building and equipment and 47 million Baht for the land. The gross land size and land prices for the center are estimated to be 31.25 rai (5 hectares), and 1.5 million per rai, respectively. (Refer to the Ban Pong Industrial/Distribution Initiative in Appendix III).

Recommendation

There are at least 68 manufacturers carrying out research and development (R&D) activities at present in the WSB region, according to the Industrial Questionnaire Survey conducted by the Study Team (IQS/ST). However, there is no public R&D and testing institute to support their activities. On the other hand, the lack of staff for research and development is a critical problem for the WSB manufacturers, according to IQS/ST.

R&D activity is sometimes costly and risky for manufacturers. However, direct subsidies and incentives for export promotion will be phased out in accordance with the WTO rules. Under such circumstances, it is recommended that public assistance for R&D activities be

effectively incorporated into industrial development planning of the WSB, as an alternative means of export promotion.

The Thai Industrial Standards Institute (TISI) has put forward accreditation of the ISO 9000 series, while promoting or carrying on industrial standardization, testing and training. TISI has its regional centers in Bang Poo and Bang Yikhan. Under the limited government budget, TISI has promoted private companies by accrediting their laboratories to carry out testing in accordance with the TISI standards. This implies that emphasis is placed on private testing business and laboratories attached to private manufacturers' headquarters or factories. However, small-scale and cottage enterprises (SCEs) may be less capable of having their laboratories for testing. Accordingly, regional testing centers are a prerequisite and one of the crucial public services to promote and develop SCEs. In conclusion, it is recommended that a regional R&D and testing center be established in the WSB.

(2) Integrated Incubation System and WSB Techno-Consortium (IIS/WTC)

Project concept

An integrated incubation system (IIS) in the WSB region would foster the entrepreneurial qualities of the third generation of Thai industrialists, with functions such as (i) provision of an open laboratory with R&D facilities, (ii) assistance in production of prototype products, (iii) assistance in market development, and (iv) assistance in the establishment of enterprises producing new products by organizing investors, including bankers, manufacturers, traders, and colleges or universities.

A WSB techno-consortium (WTC) is designed to guide technology development in the WSB through organizing local manufacturers, as well as R&D staff in colleges, universities, and public institutes. Through discussion, technologies to be developed locally will be first identified, and then a task force/project team will be organized for implementation.

Project schedule and cost

The IIS and WTC will be established during Phase II (2002-2006), corresponding to the stage of industrial development, i.e., degree of industrial agglomeration in the WSB. Cost for the operation of both IIS and WTC will be minimal, since they concentrate on "integration or organizing R&D activities," and could utilize facilities developed apart from them.

Recommendation

In order to promote both the IIS and WTC program, it is recommended that local resources including Rajabhat Institute-Petchaburi (RIP) and the Chumphon campus of the King Mongkut's Institute of Technology be fully mobilized. The RIP is expected to lead the programs through provision of open facilities to potential third-generation industrialists including graduates from RIP, and to actively organize concerned entities toward specific R&D projects. In this context, RIP is expected to strengthen its staff, facilities, and functions.

Regarding R&D activities, it is recommended that partnerships among industry, universities and other public institutes be recognized as imperative for effective R&D activities. Science and technology have a close relationship through functional sharing, i.e., science for research, and technology for product and production process development. Application of the fruits of scientific and basic research to production technology formerly took a long lead time. However, the lead time has been recently shortened since technology has come to work in the field of molecules and atoms, which is the world of the micron and nanometer. Nowadays, fields of science and technology partially overlap, and joint activity or partnership among industry, universities and other public institutes is imperative for new technology and new product development. The 8th National Plan sets out a target of R&D expense up to 0.75 per cent of GDP, which will have a favorable impact on R&D promotion in the WSB region.

In addition, it is recommended that exchange of information or its common possession be strengthened for efficient technology development. Information is not depleted even if it is transferred. In this regard, setting up of places to exchange information on research and development is essential, and it should be incorporated into R&D promotion in the WSB region.

(3) Applied Research Core (AIC)

This core will be developed as a component of the Science City in Petchaburi as a core for the networking of all concerned manufacturers, R&D laboratories, public institutes for regional R&D, testing centers, Rajabhat Institute, universities (including Chumphon campus of the King Mongkut's Institute of Technology), and other agencies.

This core will be a center where any service may be made available. The exchange of information on science and technology will generate the seeds of new technology and

original Thai products through R&D activities in such areas as biotechnology, electronics, computer and information technology, and new materials.

Project schedule and cost

The applied research core will be established during Phase III (2007-2011) in line with the progress of the Science City in Petchaburi. The cost of operating the core will be minimal since it could utilize facilities of the Science City. Otherwise, it would cost around US\$10 million (250 million Baht), almost half as much as the estimated cost of the regional R&D and testing center (refer to Project No. ID 4).

Recommendation

It is recommended that the applied research core be established as a foundation supported by all concerned people and organizations in the WSB region, as common property of the WSB. In addition, it is recommended that foreign researchers be invited for productive and creative research, which will be conducive to the further development of the WSB as a leading R&D region in Thailand.

Project No. ID 6

1. PROJECT TITLE	<u>New Investment Promotion</u>
2. LOCATION	The WSB provinces
3. AGENCY	BOI/MOI/EGAT/FTI
4. OBJECTIVES	<ol style="list-style-type: none">(1) To promote industrial investment in the WSB while harmonizing industrial development with the natural environment(2) To expand subregional linkages with Myanmar, and utilize local resources(3) To strengthen the WSB's gateway functions and contribute to industrial decentralization in Thailand
5. PHASING	Phase I: (1997-2001)
6. PROJECT COMPONENTS	<p>(1) Tavoy development consortium will be incorporated for development of Tavoy deep-sea port and associated infrastructure including an industrial estate. The Kanchanaburi branch of the Federation of Thai Industries (FTI) is expected to play a leading role in incorporating the consortium with support from the Thai government.</p> <p>(2) Special reduction of power tariffs in the provinces of the WSB wherein power plants are located will promote investment in manufacturing industries, particularly power-intensive industries, in compensation for the local burden of serving as a national power supply center in Thailand.</p> <p>(3) New investment promotion measures will provide specific incentives in the WSB region to promote resource recycling industries and to generate funds to create a high-quality environment.</p>
7. RELATION WITH OTHER PROJECTS	ID 3 (Agro-industrial community model) AG 6 (Agro-processing promotion) AF 4 (Fish processing industrial complex)
8. COST(APPROX.)	<ol style="list-style-type: none">(1) Tavoy Development Consortium US\$ 0.4-0.8 million per year (operation cost)(2) Special deduction of electricity tariffs in the national power supply center 10 per cent of ordinary power tariffs(3) New investment promotion Not fixed

ID6 New Investment Promotion

(1) Tavoy Development Consortium

Concept

Tavoy (Dawei) in Myanmar, situated about 250 km from Bangkok, has potential for deep-sea port development. If a deep-sea port and relevant infrastructure are developed, and if Tavoy is efficiently connected to Bangkok and other major cities/markets in continental South East Asia, Tavoy and the Upper WSB region will be a "Global Gateway" coupled with a transshipment hub and processing trade functions in subregional linkages. In other words, Tavoy and the Upper WSB would provide an alternative to the Malacca route, although relevant international arrangements will be required for realization of this vision.

A Tavoy development consortium (TDC) aims at expanding subregional linkages with Myanmar through putting all the concerned entities into one organization, and thereby promote investment in the development of Tavoy deep-sea port and associated infrastructure including an industrial estate. Activities of the TDC will include the following:

- To collect and disseminate information on the Tavoy development to attract potential investors;
- To conduct studies on the Tavoy development with the objective of helping decision-making on the Myanmar side,
- To intermediate and coordinate between the Thai and Myanmar sides to promote successful development;
- To organize and coordinate Thai and foreign investors to invest in the Tavoy development projects; and
- To raise funds from members of TDC and receive foreign assistance related to the Tavoy development to carry out the activities described above.

Schedule and cost

TDC is expected to be organized as early as possible during Phase I (1997-2001). The operation cost of TDC is estimated to be US\$ 0.4-0.8 million (10-20 million Baht) per year, considering the activities described above.

Recommendation

The Tavoy development will strengthen the Upper WSB's gateway functions, which will contribute particularly to the development of Kanchanaburi province. In this context, it is

recommended that the Kanchanaburi branch of the Federation of Thai Industries (FTI) play a leading role in establishing the consortium.

(2) Special Reduction of Power Tariffs in the National Power Supply Center

Concept

This measure aims at accelerating industrial location in the WSB region, including spillover from the BMA, in such a way that electric power at discount tariffs could function as a (sensible) investment promotion policy.

As a national power supply center which will supply more than 20 per cent of the nation's electricity, the region may face environmental problems concomitant with such large-scale power plant development. It is expected that social costs will be shared among the BMA, other regions, and the Government. Another consideration is that users located close to power plants will be free from transmission losses.

If enterprises in the WSB are allowed to purchase electricity at lower tariffs, electricity-intensive industries including ice, insulated wire and cable, incense, basic industrial chemicals, textile printing, metal smelting, and processing industries will tend to locate in the provinces of the WSB.

Schedule and cost

This measure is expected to start during Phase I (1996-2001) so as to attract investors in the WSB as early as possible, particularly in the Upper WSB provinces (Kanchanaburi and Ratchaburi) where power plants will be located.

Cost for this measure may logically correspond to the power tariffs to be discounted. Accordingly, the cost will correspond to about 10 per cent of ordinary power tariffs, based on that transmission losses of electricity in Thailand.

Recommendation

This measure will be put into effect as early as possible with coordination of the concerned agencies including BOI, MOI, and EGAT.

Prioritization of the national power supply center of the WSB by the proposed special reduction of power tariffs may be controversial, probably because it will waste electricity. In this context, it is recommended to impose conditions on the beneficiaries of discounted

tariffs requiring them to use the 10 per cent discount for energy conservation or environmental protection.

(3) New Investment Promotion

Concept

The new investment promotion measure aims at promoting environment-friendly industrial development in the WSB region through the following measures:

- 1) Special incentives for the resource recycling or industries utilizing waste as raw materials not only to address environmental problems, but also to create new types of industries; and
- 2) A new fund reserved by developers in such a way that a portion of the profit derived from industrial land development should be allocated for investment in creation of a high-quality environment or conservation of the natural environment.

Schedule and cost

These measures will be established during Phase I (1997-2001), due mainly to their emergency and necessity.

The cost for promotion of resource recycling depends on type of incentives. If BOI grants incentives, the cost will correspond to the exempted corporation income tax and customs duties on imported equipment. Resource recycling industries will concentrate on agro-processing or resource-based industries, most of which are already granted with BOI incentives, and therefore a new subsidy is more effective to further promote resource recycling industries. This subsidy could be set out based on difference between the cost of using ordinary raw materials and the cost of utilizing waste including the cost of collection. The contribution to the new fund depends on the extent of investment in creation of a high-quality environment or conservation of natural environment. However, in view of practical application of this measure, it is better to add a certain charge to land sale prices, e.g., 3-5 per cent of the price. In this case, the new fund will be a sort of development tax.

Recommendation

Resource recycling has been undertaken in the WSB region, e.g., bagasse is used not only for fuel in refineries but also for paper production. Waste from fruit processing is used for animal feed.

Collection and maintaining a stable supply of waste is costly and has to be systematized so that commercial production is viable. In this context, specific incentives to promote resource

recycling are desired, and it is recommended to conduct a study to identify the volume and distribution of wastes and to develop an optimum collection system.

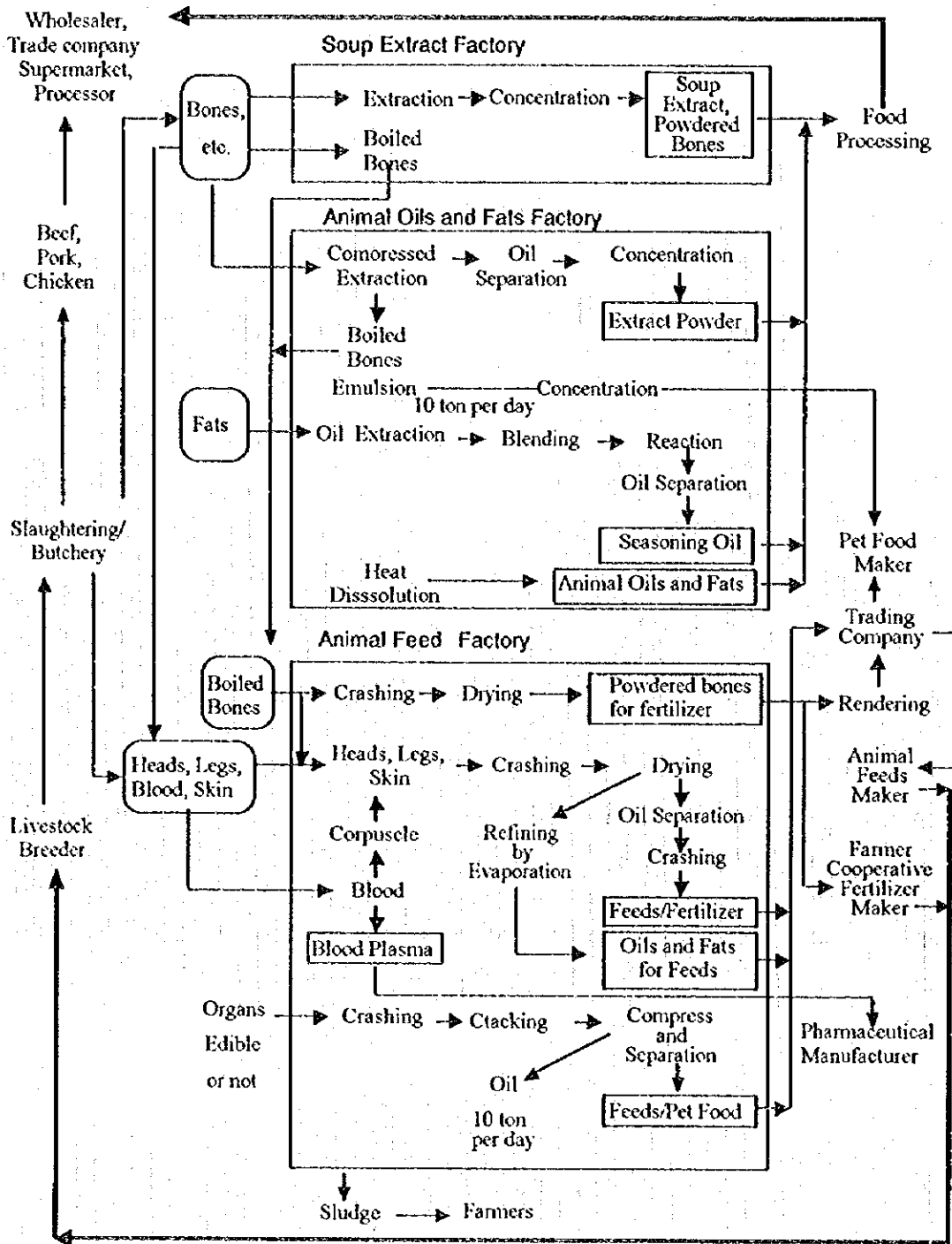
In addition, an industrial complex may be viable with forward and backward linkages, since resource recycling is a sort of cascaded use of resources. For reference, a kind of meat processing complex in Japan as shown in Figure A2.1 may be introduced to the WSB region, particularly in Ratchaburi province. In this complex, livestock is fully utilized not only to provide meat, but also to produce soup extract, powdered bones, seasoning oil, and animal oils and fats for food processing, powdered bones for feeds/fertilizer, blood plasma for pharmaceutical manufacturing, and organs for pet food.

Similarly, Figure A2.2 shows an example of a fish processing complex. Fish ingredients are fully utilized to produce fertilizer, fuel, mixed feeds, and so on. Such a complex will be possible in the WSB region, particularly in Chumphon.

Apart from these complexes, there is a variety of recycling. Dust from skin polishing could be used to make mosquito repellent. The use of rice husk is viable for chemical fertilizer, and rice bran from milling and oil extraction could be a component of animal feed. Silk worms eat the leaves of mulberry, the bark of which is available for paper making as well as rice straw.

Meanwhile, it is recommended that BOI's zonal incentive system be modified to promote resource recycling, if the subsidy described above is not viable; incentives for resource recycling without any zonal condition, or a new independent category of resource recycling for the incentives. Investment in resource recycling would be further promoted if the proposed two modifications are implemented together.

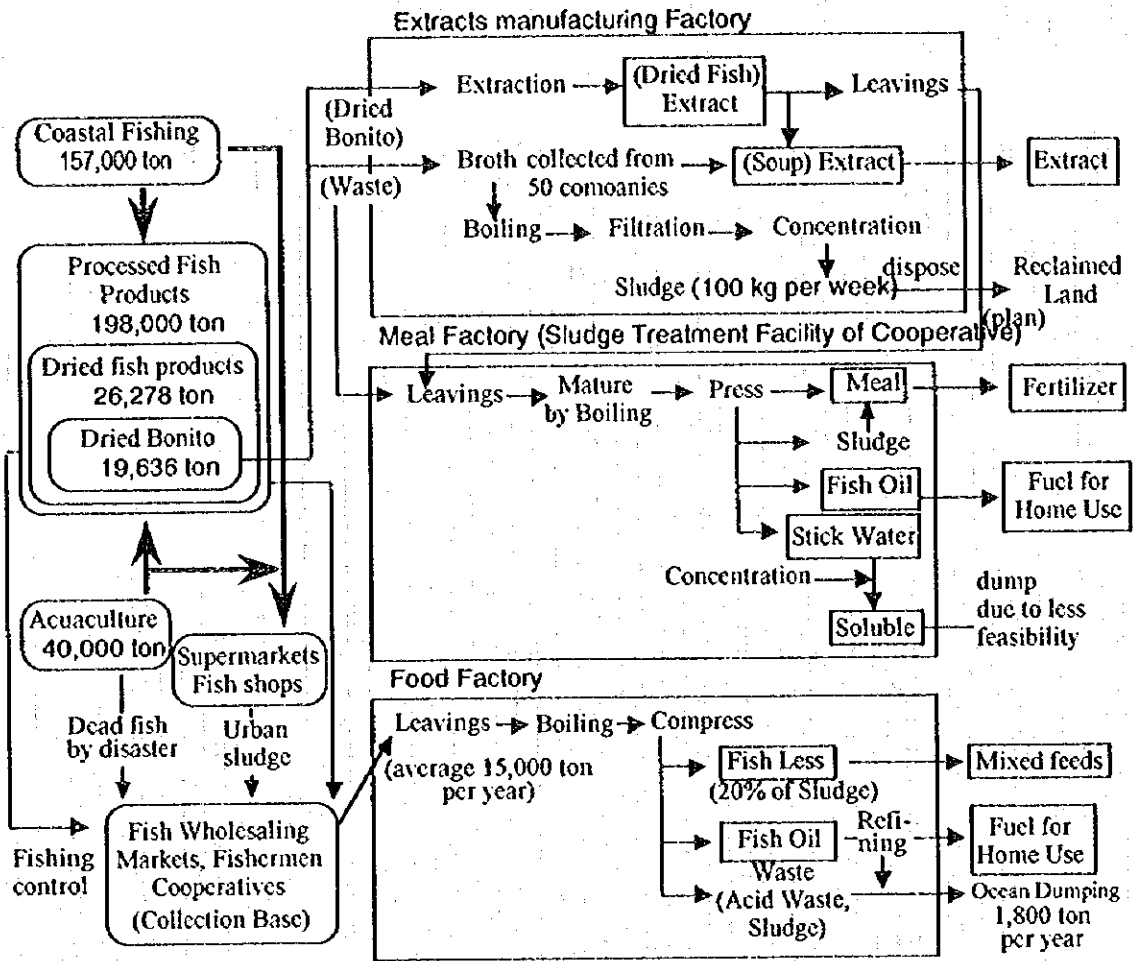
Figure A2.1 Resource Recycling Meat Processing Complex in Japan



Source: Japan Industrial Location Center

Figure A2.2

Resource Recycling Fish Processing Complex in Japan



Source: Japan Industrial Location Center

APPENDIX III

**BAN PONG INDUSTRIAL/DISTRIBUTION
DEVELOPMENT INITIATIVE**

Ban Pong Industrial/Distribution Development Initiative

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Ban Pong Industrial/Distribution Development Initiative

1. BACKGROUND

1.1 Necessity of Industrial Logistics

Industrial logistics are defined as such infrastructure, both software and hardware, that would ensure the right product under the right conditions to be delivered at the right place, at the right cost and at the right time. The need for industrial logistics increases with increased demand for high-quality services, transport innovation, evolution of information technology, and diversification of distribution channels. Industrial logistics constitute an essential factor in establishing overall competitiveness within the globalizing economy.

1.2 Ratchaburi-Samut Songkhram Area (Industrial Logistics Center)

Industrial logistics may be improved most effectively if all the relevant functions and facilities are located in the same area strategically selected with good transportation links and/or gateway functions. The Upper WSB, comprising the provinces of Kanchanaburi, Ratchaburi, and Samut Songkhram, as well as Khao Yoi in Petchaburi province, may be characterized within the changing spatial and economic structure of Thailand as an Industrial Junction Zone with a Global Gateway. Such structural changes emerging around the BMA include the following:

- Diversification of commodity flow patterns after opening of new seaports at Laem Chabang, Map Ta Phut, and the deepest seaport in the country, Prachuap port at Bang Saphan in Prachuap Khinkhan province in the Lower WSB;
- Substantial expansion of subregional linkages between Thailand and other countries in continental Southeast Asia, particularly with Myanmar wherein a combined deep-seaport and industrial estate development in Tavoy is foreseen that may prove a viable alternative to the Strait of Malacca route; and
- Transformation of Thailand's regional structure, from a unipolar structure centered on Bangkok to a multipolar structure with regional centers, consistent with the diversification of commodity flows and substantial expansion of subregional linkages, and reflecting emphasis on decentralization.

The Ratchaburi-Samut Songkhram area is situated in the central part of the Upper WSB or the Industrial Junction Zone with a Global Gateway Hub, and the two areas will be regional centers in the emerging multipolar structure of Thailand, equipped with an Industrial Logistics Center(ILC) linked with the gateway functions.

1.3 Ban Pong: Industrial/Distribution Core of ILC

Ban Pong in Ratchaburi province is suitable for development of industrial/distribution functions forming the core of the ILC due mainly to its location. Ban Pong is located at the crossroads of north-south and east-west arteries, and also in proximity to the lower part of Myanmar and the BMA as illustrated in Figure A3.1. In addition, its crossroads location will be easily accessible to other regions in terms of time distance by bypassing the BMA, especially after the proposed outer-outer orbital road is developed. The network of the State Railway of Thailand is also available in Ban Pong, encompassing north-south and east-west connections. Ban Pong is a bimodal transport center, where the proposed industrial/distribution core/center is to be strategically developed.

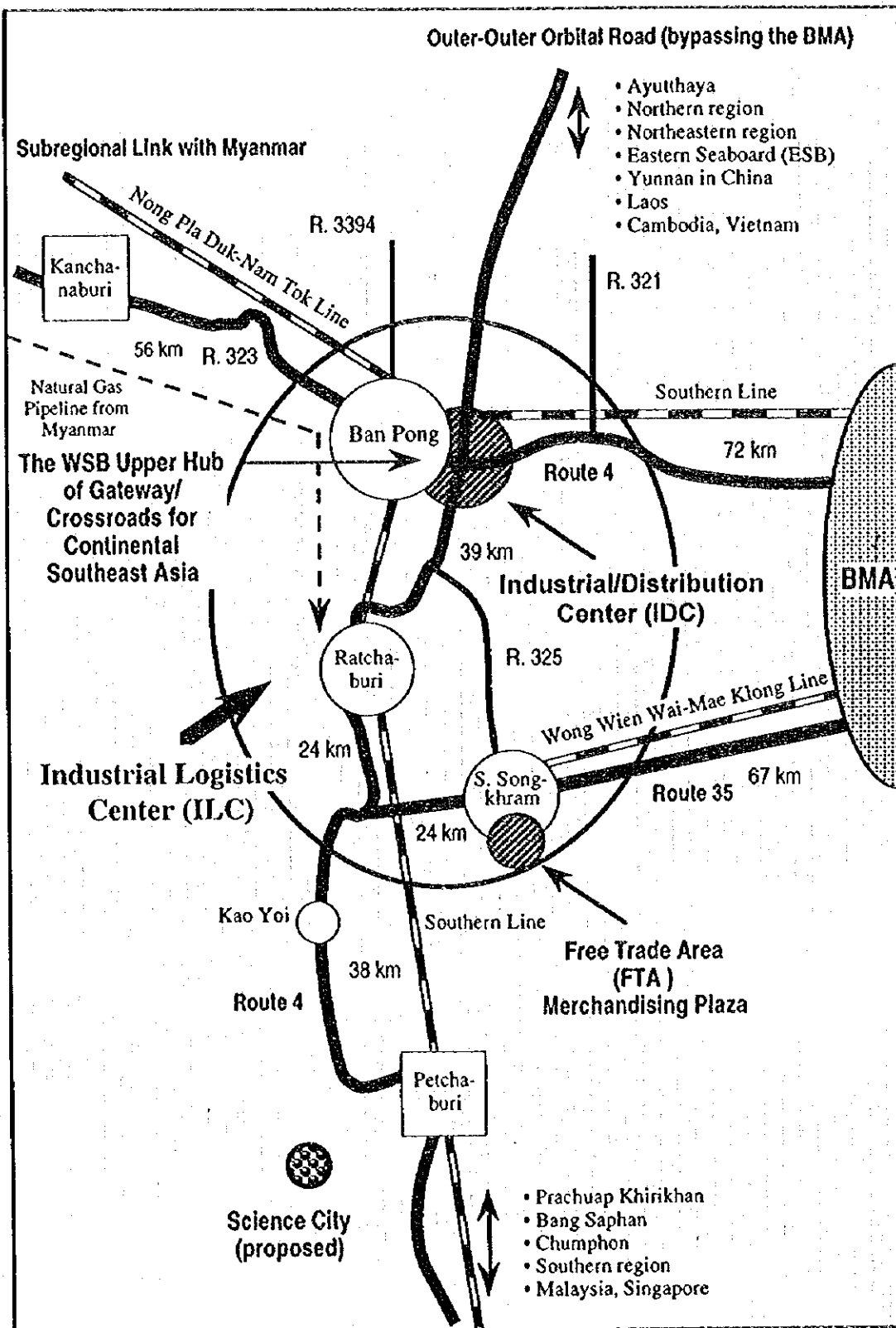
2. PROJECT CONCEPT

2.1 Objectives of Ban Pong Industrial/Distribution Center (BPIDC) Development

The BPIDC could be designed to be one component of the proposed Industrial Logistics Center (ILC) in the Ratchaburi-Samut Songkhram area development scheme. The objectives of the BPIDC are summarized below:

- (i) Contributing to the formation of multipolar structure in terms of regional and subregional linkages in Thailand through creation of a regional development core/center in the WSB region, linked with Myanmar and the BMA;
- (ii) Responding to future changes in overall marketing patterns of goods so as to provide better business opportunities by integrating functions of production and physical distribution; and
- (iii) Reducing cost and increasing value added through the planned integrated development of relevant functions in a compound area.

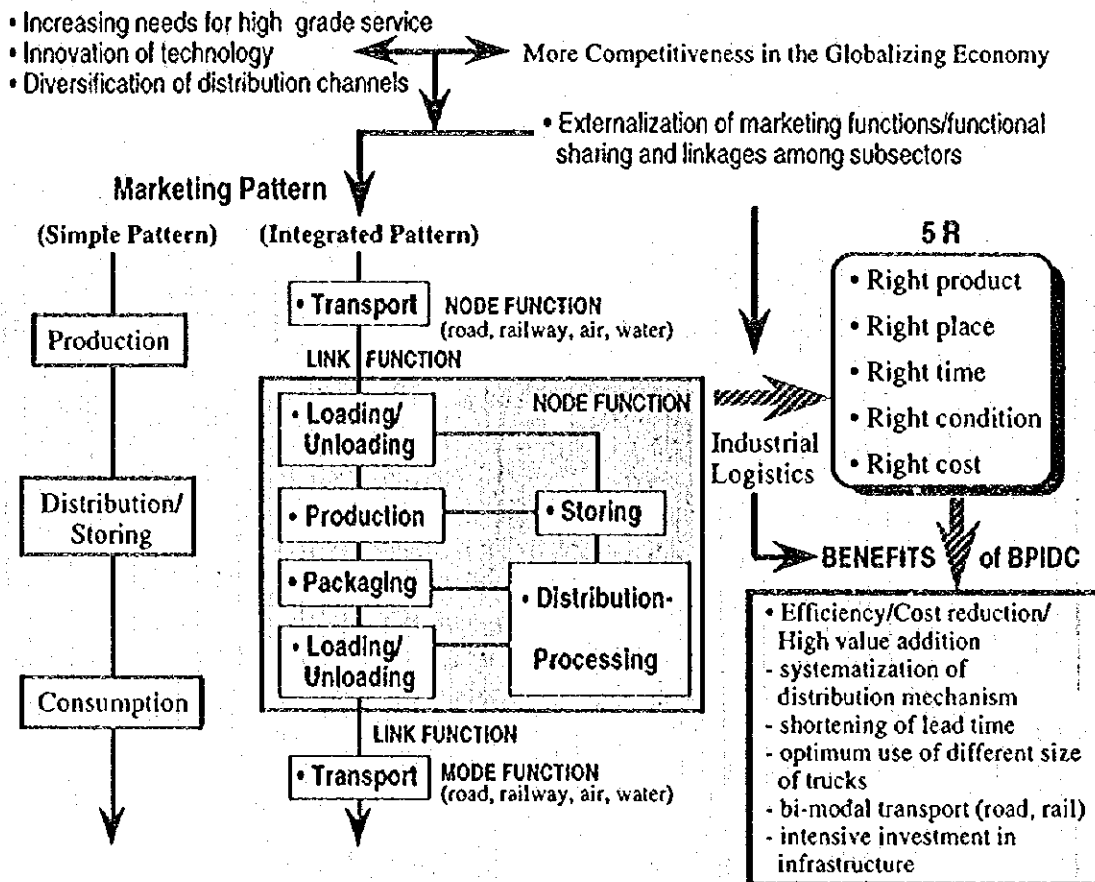
Figure A3.1 Spatial Perspective of the Industrial Logistics Center (ILC)



2.2 Functions of BPIDC

The Ban Pong Industrial/Distribution Center (BPIDC) will fulfill overall marketing functions in a broader sense, and with efficiency, providing economic benefits as depicted in Figure A3.2.

Figure A3.2 Benefits of the Ban Pong Industrial/Distribution Center (BPIDC)

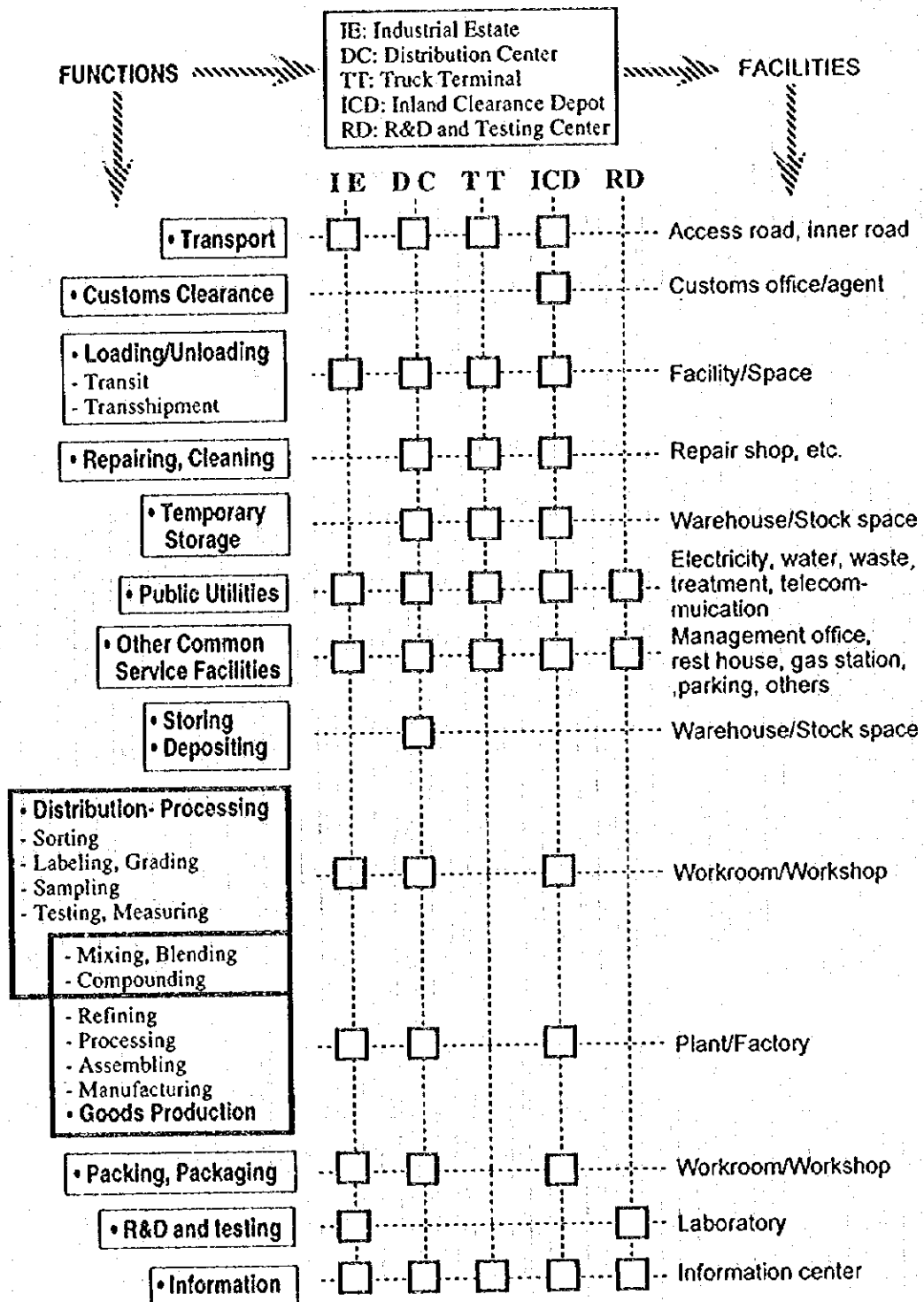


The functions of the BPIDC will be carried out efficiently by five components: an industrial estate, distribution center, truck terminal, inland clearance depot, and regional R&D and testing center as shown in Figure A3.3.

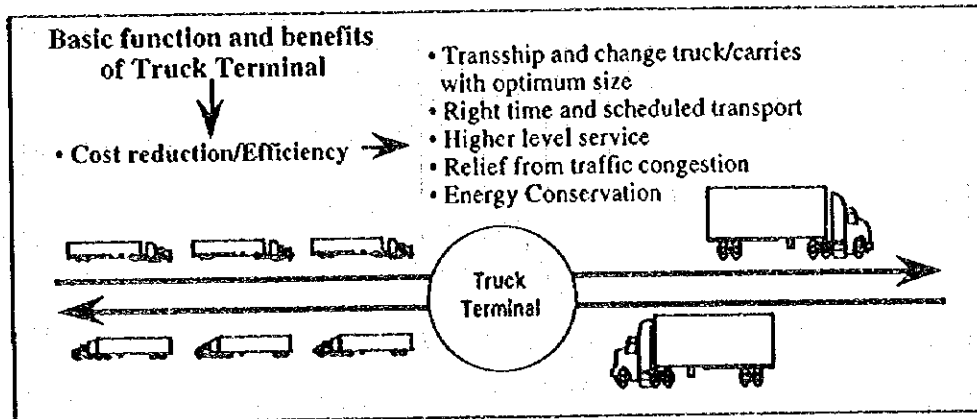
The industrial estate (IE) and distribution center (DC) are the main components of the BPIDC; the former will focus on factory/plant goods production, while the latter will be oriented to marketing and distribution of goods, and distribution-processing of them.

Figure A3.3

Main Functions and Facilities of BPIDC



The truck terminal (TT) will be a transshipment point with benefits as shown graphically in figure below. The TT will modernize the trucking industry through not only centralization of transport demand and supply information for quick response to customer needs, but also improvement of management and working conditions.



The inland clearance depot (ICD) and regional R&D and testing center (RD) will be strategically developed so as to attract new investment in the industrial estate (IE) in the BPIDC.

The ICD will function as a port in an inland area. It will involve warehousing, customs clearance, and other related functions including those to be directly authorized by the International Air Transport Association (IATA), which would permit imported foreign air cargo to be transported directly to the ICD without any intermediate check or customs clearance. Exporters will complete all formalities and procedures within the ICD. Accordingly, the ICD - as well as a linked airport - will benefit both importers and exporters and promote the location of new airport-oriented industry around it.

The regional R&D and testing center (RD) will be positioned as one of the R&D cores of the WSB region, with R&D functions relating to the fields of agriculture, manufacturing, construction, and information, which will respond to the progress of modern borderless technologies and create new technologies through interdisciplinary R&D. Public services are also important and will include testing, consultancy, an open laboratory, an information service, technology transfer/transactions, and training and retraining of technicians/engineers. Attracted by these functions, investors will locate their factories in the BPIDC industrial estate.

3. PROJECT DESCRIPTION

3.1 Development Scale

The five main components of the BPIDC will require a total 170 hectares of site area, and generate or handle cargo amounting to around 1.34 million tons per year as shown in Table A3.1. This development scale was set out corresponding to the industrial development framework for Ban Pong established by this Study and estimated in consideration of other development frameworks/targets or existing advanced examples as described in the Note of Table A3.1.

Table A3.1 Basic Development Scale of BPIDC (2011)

Components of BPIDC	Site Area (ha)	Employment (persons)	Cargo Freight (per year)	Note-1
Industrial Estate (IE) * 1	120	12,200	135,000 tons	*1: refer to Industrial Sector Report (Chapter 5/5.4) • 18,000 TEUs/month
Distribution Center (DC)	25	500	250,000 tons	
Truck Terminal (TT)	5	100	650,000 tons	
Inland Clearance Depot (ICD)	15	150	300,000 tons	
R&D and Testing Center (RD)	5	150		
TOTAL	170	13,100	1,335,000 tons	

Note-2: (1) Cargo freight is based on amount of outflow.

(2) Cargo freight of IE is based on gross provincial manufacturing product (GPMP) by subsector and corresponding parameters derived from foreign trade statistics (Customs Department in 1994).

(3) Cargo freight of DC is based on the parameter of freight per year/hectare, i.e. 50 per cent of 20,000 tons per year/hectare in consideration of the cargo storing term.

(4) Development scale of TT is based on existing studies.

(5) Cargo freight of ICD is based on the following considerations:

a) 80,000 tons derived from air cargo freight corresponding to 1.25 per cent of 6,400,000 tons/year, which is the forecast freight of the Second Bangkok International Airport (SBIA), after the second phase.

b) The 1.25 per cent is broken down as follows: outflow freight of the SBIA will be 50 per cent of the total, 3,200,000 tons. The WSB's share of the Thailand total, 5 percent based on the WSB contribution to the Thai economy in future; freight ratio passing through ICD, 50 per cent.

3.2 Land Use Plan (Conceptual Plan)

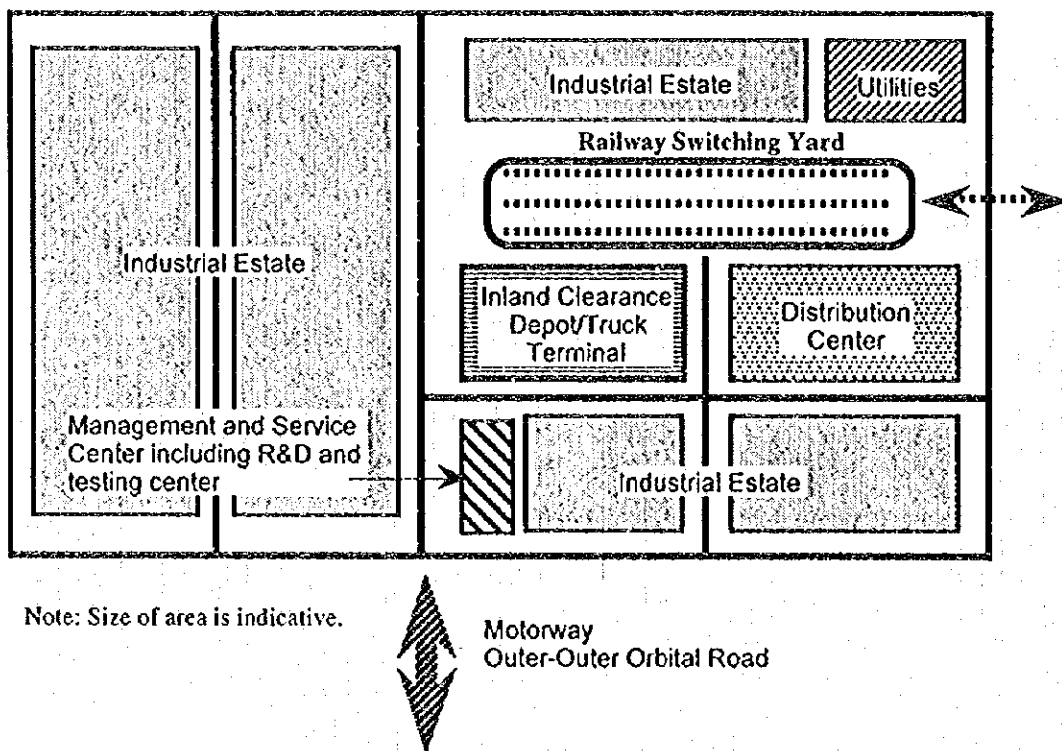
A conceptual land use plan for the BPIDC is depicted taking the following factors into consideration:

- Site area of each components including railway switching yard,
- Access or convenience to the railway switching yard and access to highways and motorway;

- Frequency of trucking/loading and unloading (truck terminal has the highest such frequency, followed by the inland clearance depot.); and
- Others factors including the BPIDC management and service center, which would be best to be located around entrance/gate of the BPIDC.

The land use concept derived from these considerations is illustrated in Figure A3.4, with the gross land area to be developed for the BPIDC to total 320 hectares (2,000 rai) including the areas for the railway switching yard, a management and service center, internal roads, green belts, and other facilities.

Figure A3.4 BPIDC Land Use Concept Plan



3.3 Relevant Infrastructure Development

The BPIDC will need development of relevant infrastructure such as access roads to the planned motorway and outer-outer orbital road, a siding from the Southern Line of the State Railway of Thailand (SRT), housing development, and water supply. Water consumption of the BPIDC is forecast to be around 10,000 m³/day, mainly used by factories in the industrial estate.

3.4 Implementation Body

Implementation of the five components of the BPIDC will be the responsibility of the organizations listed in Table A3.2. However, land development as a whole may be carried out by IEAT or in a joint venture with IEAT, while the railway switching yard will be implemented by SRT. A management body with overall responsibility for the BPIDC will be required to be established by IEAT or by a private corporation established by the various organizations responsible for implementation of the BPIDC components.

Table A3.2 Candidate Implementation Organizations for the BPIDC

Components of BPIDC	Candidate Implementation Bodies
Industrial Estate (IE)	Industrial Estate Authority of Thailand (IEAT) or Joint venture with IEAT
Distribution Center (DC)	Private company
Truck Terminal (TT)	Public TT (Department of Land Transport) or private company
Inland Clearance Depot (ICD)	Private company
R&D and Testing Center (RD)	Public center (Ministry of Industry or provincial authority)

3.5 Estimated Development Cost

The cost of developing the BPIDC has been estimated to be around 6.7 billion Baht (US\$ 268 million) as shown in Table A3.3.

Table A3.3 Estimated Costs of BPIDC

Components of BPIDC	Estimated Costs (million Baht [US\$: million])
(1) Land development/IE	4,500 [180] = {3,000 (rai)* 1 (million Baht/rai)} * 1.5
(2) Distribution Center (DC)	1,000 [40] (warehouse, distribution-processing space, etc.)
(3) Truck Terminal (TT)	200 [8] (around 35 berth)
(4) Inland Clearance Depot (ICD)	150 [6] (all facilities)
(5) R&D and Testing Center (RD)	500 [20] (building and equipment for testing and others)
(6) Railway Switchyard	340 [14] = {(2) + (3) + (4)} * around 0.25
TOTAL	6,700 [268] (million Baht in 1996 prices)

4. PROJECT ASSESSMENT

4.1 Future Trends in Regional and Subregional Linkages

Regional and subregional linkages will bear importantly on the feasibility of the BPIDC. Such linkages will support the BPIDC operation, and the BPIDC will also serve as a base linked to economic activities outside the Center.

In particular, there are four dimensions of regional and subregional linkages: within the Upper WSB, with the Central and Lower WSB, with other regions in Thailand, and subregional linkages with Myanmar and other countries. Such linkages are summarized in Figure A3.5. The crucial linkages are described below:

Linkages with the Central and Lower WSB:

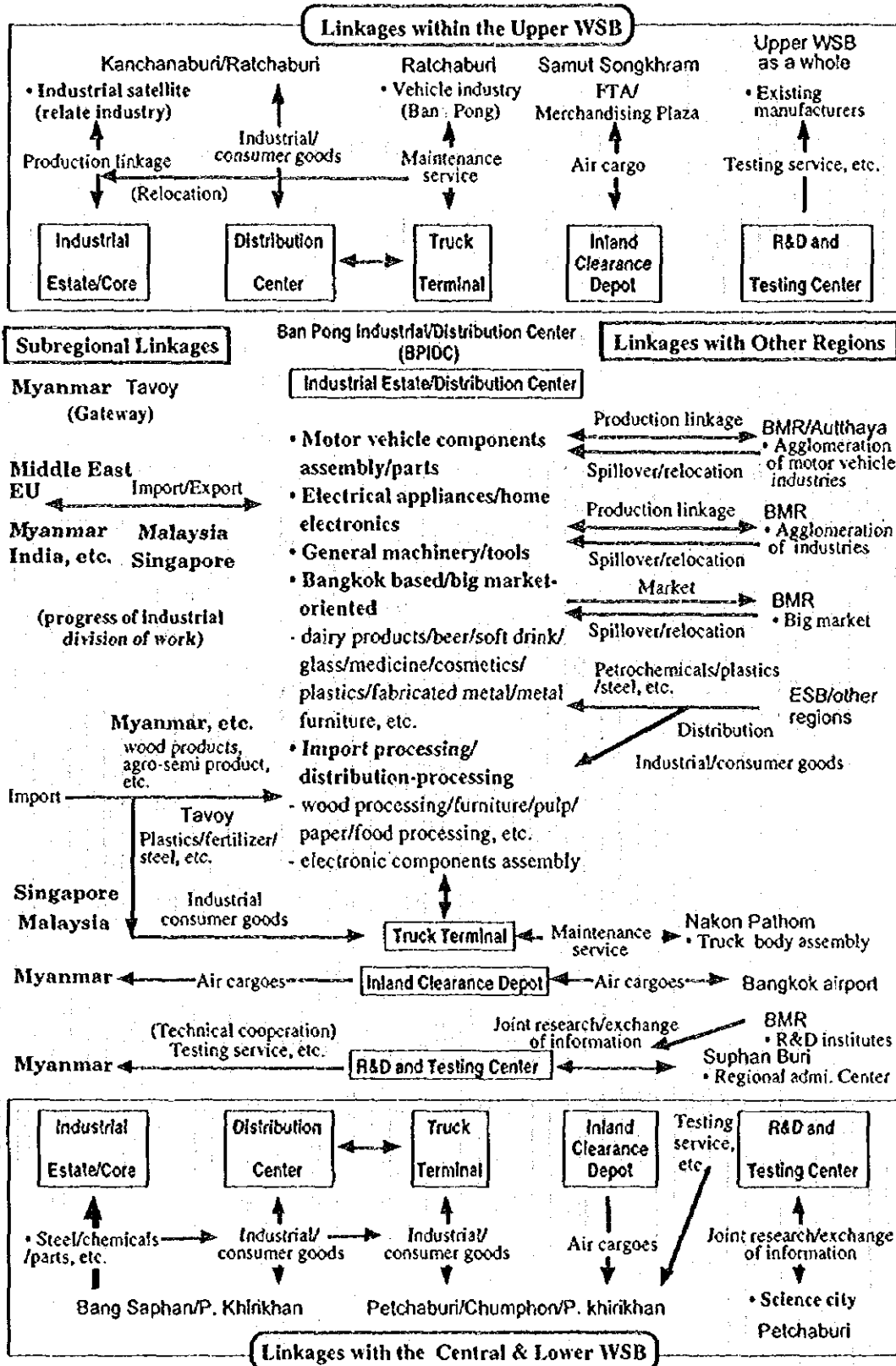
Bang Saphan will have a close relationship with the BPIDC. The steel mill complex and industries to be located in the industrial estate (IE) will provide steel, chemicals, and mechanical parts to industries in the BPIDC. Bang Saphan industries will use the BPIDC distribution center (DC) and truck terminal (TT) to market their products to the BMA and other regions. The R&D and testing center in the BPIDC will conduct joint research and exchange information with institutes in the Science City to be developed in Petchaburi province.

Linkages with the other regions in Thailand :

Linkages with other parts of Thailand will consist of a number of elements, including industrial spillover or relocation from the BMA, which will be one of the most important factors in the development of the IE of BPIDC. Also important will be the linkage with Ayutthaya, where a new passenger car assembly plant has already started operation. These two factors will promote the location of motor vehicle components assembly/parts industries in the Ban Pong IE. Supporting industries, which mainly comprise molding and dyeing, stamping, machining, heat treatment, casting, and forging, will relocate from the BMA. Industrial goods such as textiles and dyeing are also expected to relocate to the IE, attracted by cheaper land prices, water supply, waste water and solid waste treatment, and electricity facilities in the BPIDC.

Figure A3.5

Main Regional and Subregional Linkages of BPIDC

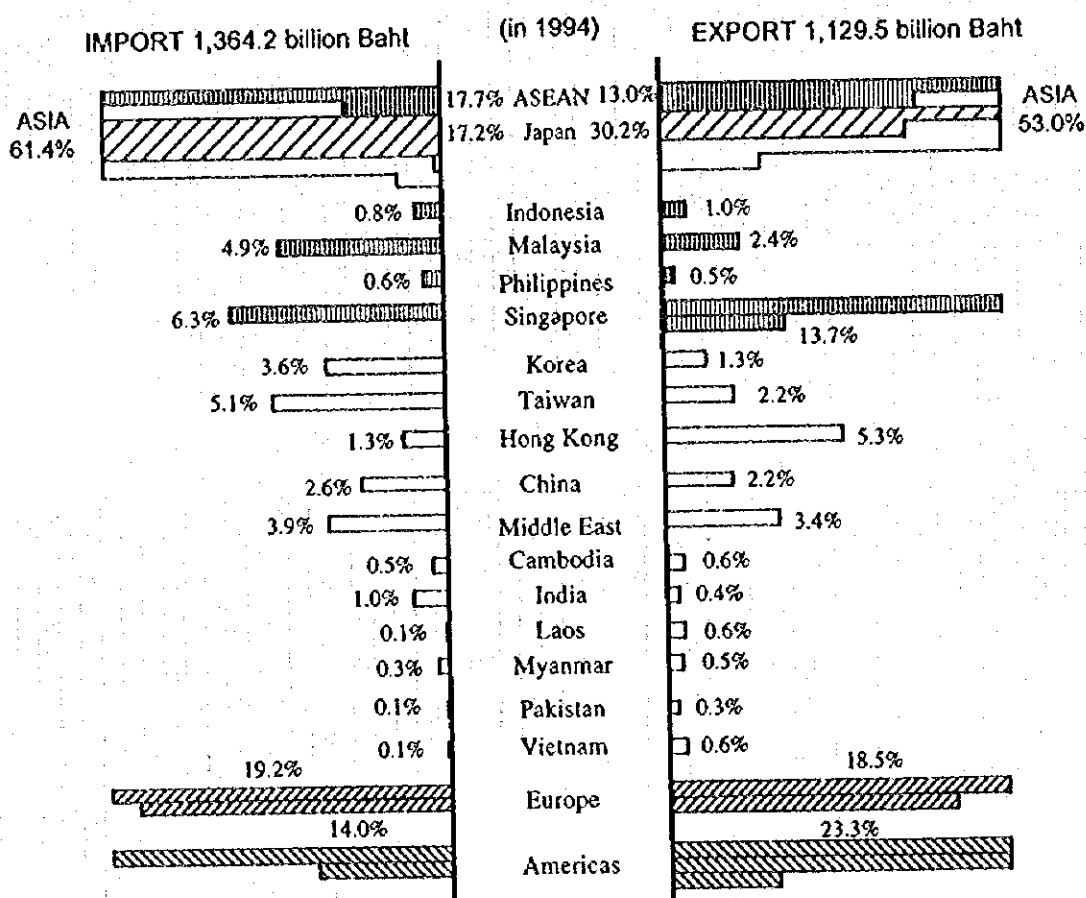


In addition, the huge market of the BMA will be conducive to the location of industries such as dairy products, beer, soft drink, glass, medicine, cosmetics, plastics, fabricated metal, and metal furniture, among others. Electrical appliances, home electronics, and general machinery/tools will also locate their factories in the IE, which will be oriented not only to the BMA market, but aim also at usage of Tavoy port in Myanmar for export.

Subregional linkages with Myanmar and other countries

Linkages with Myanmar and other subregional linkages will promote not only foreign trade, but also industrial location in line with the Upper WSB's gateway hub functions. Foreign trade contributes to the economic growth of countries through the optimum allocation of resources, i.e., cost reduction through complementary interdependence among countries. The main trade partners of Thailand have been Japan, ASEAN countries, the EU, and the United States, as shown in Figure A3.6.

Figure A3.6 Foreign Trade of Thailand by Country and by Region (1994)



Source: Pocket Thailand Import/Export Focus 1995

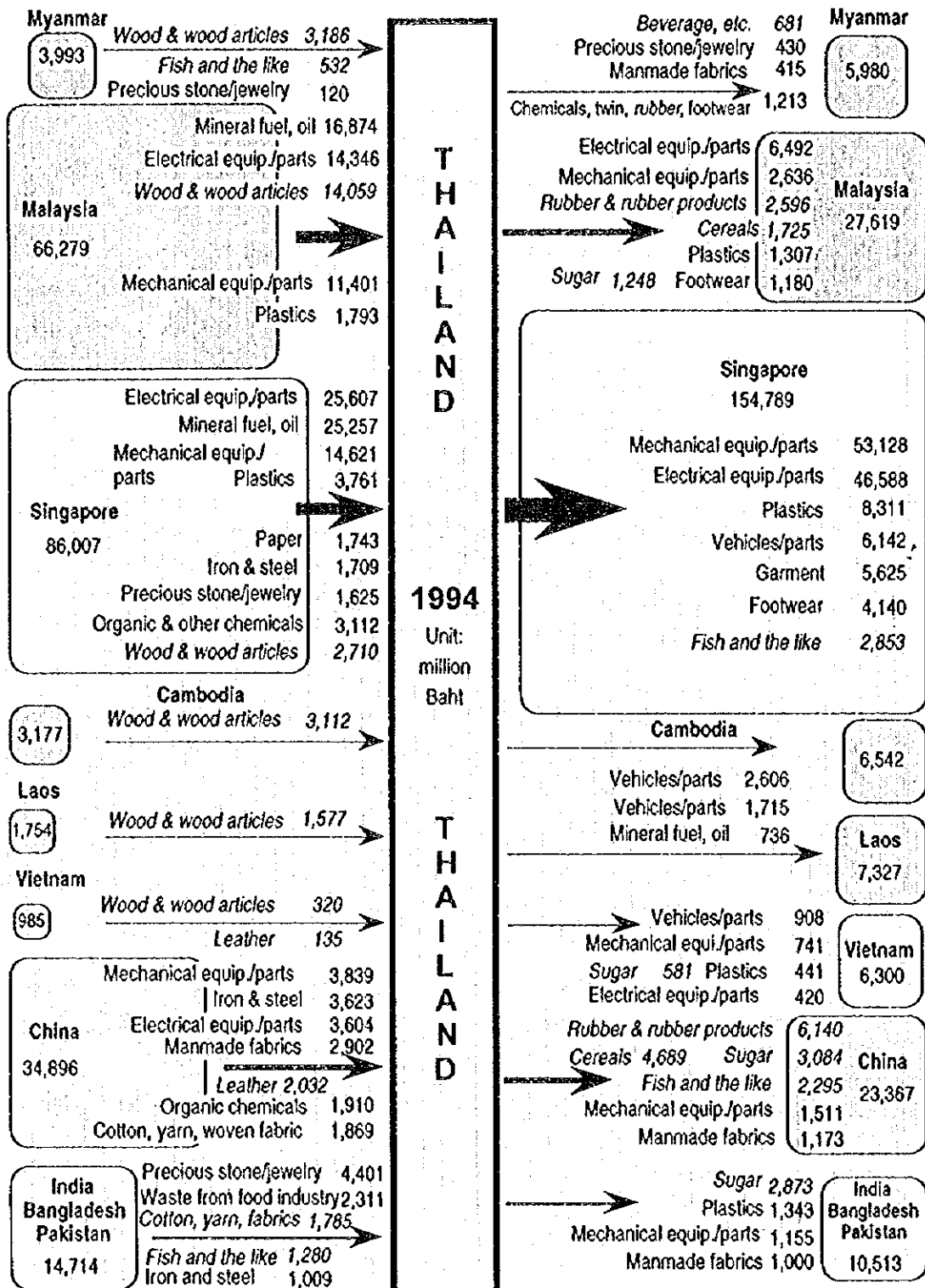
However, trade with the neighboring countries such as Myanmar, Lao PDR, and Cambodia will increase according to their progress in moving toward market-oriented economies and adopting open-door policies. In any event, a number of recent studies have concluded that the volume of Thailand's trade with these countries has been considerably larger than that suggested in the official statistics.

The trend of Thailand's trade with the neighboring/surrounding countries varies by country. Trade with Malaysia and Singapore has centered on non-traditional/industrial goods representing a horizontal relation through industrial division of work, as shown in Figure A3.7. On the other hand, traditional goods such as wood and wood articles were dominant in imports from less developed countries such as Myanmar, Lao PDR, Cambodia, and Vietnam.

Apart from natural gas, imports from Myanmar are likely to increase continuously centering on wood and wood products to be processed or distributed in the BPIDC. Since a deep-sea port and industrial estate are to be developed at Tavoy in Myanmar, plastics and fertilizer will be imported and distributed through the BPIDC distribution center (DC). Goods of labor-intensive industries, including consumer goods to be produced in Myanmar and India, will also be distributed, since the foreign direct investment (FDI) including Thai capital can be expected to switch from more advanced economies such as Malaysia to less developed countries such as Myanmar. Other goods such as machinery will be imported to Thailand from the EU through the Tavoy port.

In terms of transport mode of Thailand's foreign trade (Figure A3.8), land transport accounted for 2.9 per cent (40.0 billion Baht) and 2.8 per cent (1.81 million tons) of the total import value and weight, respectively, while 2.9 per cent (32.9 billion Baht) and 5.1 per cent (1.98 million tons) of the total export value and weight was transported by land, respectively. While the contribution of land transport to Thailand's foreign trade was not large, it is the main mode of transport between Thailand and its neighboring countries. The import of wood and wood products amounted to 981,000 tons or 5.79 billion in 1994, which ranked first and third, respectively, as shown in Table A3.4. These rankings almost coincide with those shown in Figure A3.8, where wood and wood articles ranked first in import value from Myanmar, Cambodia, and Lao PDR.

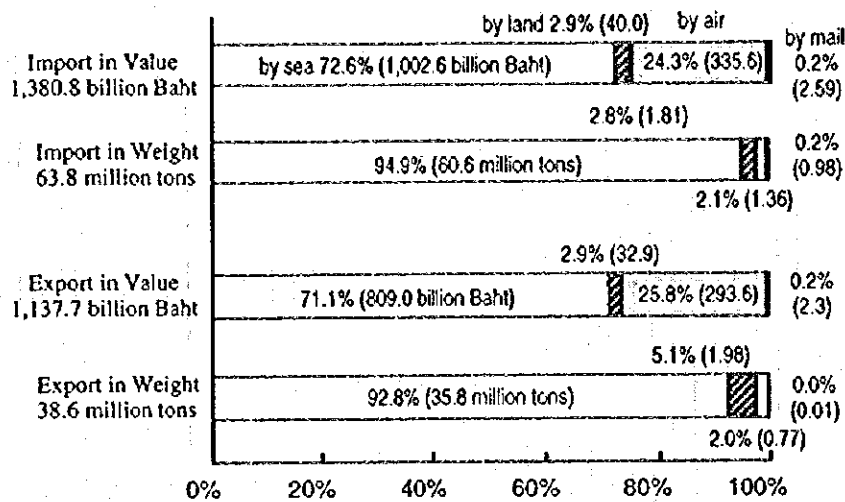
Figure A3.7 Foreign Trade between Thailand and Surrounding Countries (1994)



Note: "Italic" signifies "agro-products (AP) or products including AP. Neighboring countries of Thailand.

Source: Pocket Thailand Import/Export Focus

Figure A3.8 Foreign Trade of Thailand by Transport Mode (1994)



Source: Department of Customs

Machinery/equipment ranked relatively high in both import and export value. General machinery ranked first in import value and sixth in export value, while electrical and electronic machinery ranked second in import value and third in export value. Thus, sizable amounts of trade between Thailand and Malaysia were transported by land. In addition to road transport, freight train service between Bangsue Rail Terminal in Bangkok and Malaysia carries cargo via the Southern Line, which passes through the WSB region. The BPIDC will utilize this rail transport service by developing a switching yard connected to the Southern Line.

Table A3.4 Top 20 Commodity in Foreign Trade of Thailand by Land (1994)

Rank	Import Total ('000 tons/year)	1,813.7	Import Total (million Baht/year)	40,032
1	44 Wood & Wood Products	981.0	84 General Machinery	8,236
2	25 Salt, Sulfur and Stone (plastering, lime)	135.2	85 Electrical & Electronic Machinery	6,281
3	03 Fish, Crustacean and Mollusks	81.7	44 Wood & Wood Products	5,788
4	72 Iron & Steel	54.1	39 Plastics & Plastic Products	2,519
5	55 Man-Made Staple Fibers	48.9	87 Motor Vehicles, etc.	1,905
6	84 General Machinery	42.7	52 Cotton	1,158
7	39 Plastics & Plastic Products	39.3	29 Organic Chemicals	977
8	89 Ship, Boat and Floating Structure	36.9	38 Other Chemical Products	966
9	31 Fertilizers	35.4	99 Special Transaction	929
10	29 Organic Chemicals	33.6	73 Iron & Steel Products	909
11	27 Mineral Fuels, Oils, Wax, etc.	23.8	03 Fish, Crustacean and Molluscs	883
12	85 Electrical & Electronic Machinery	23.8	48 Paper, Paperboard, etc.	650
13	48 Paper, Paperboard, etc.	22.4	90 Precision Instruments	617
14	07 Edible vegetables, roots and tubers	22.0	72 Iron & Steel	554
15	23 Residues & Waste from Food Industry	21.6	33 Essential Oils, Perfumery, Cosmetics, etc.	484
16	52 Cotton	21.6	89 Ship, Boat and Floating Structure	437
17	99 Special Transaction	20.4	25 Salt, Sulfur and Stone (plastering, lime)	416
18	47 Wood Pulp & Other Fibrous Products	19.4	32 Tanning, Dyeing Extract, Paint, Ink, etc.	375
19	73 Iron & Steel Products	15.2	76 Aluminum and Aluminum Products	351
20	28 Inorganic Chemicals	13.4	34 Soap, Wash Prep., Polishing, Candles, etc.	335
Rank	Export Total ('000 tons/year)	1,984.0	Export Total (million Baht/year)	32,873
1	25 Salt, Sulfur and Stone (plastering, lime)	771.6	40 Rubber & Rubber Products	12,939
2	40 Rubber & Rubber Products	540.1	03 Fish, Crustacean and Molluscs	4,517
3	03 Fish, Crustacean and Mollusks	146.7	85 Electrical & Electronic Machinery	1,557
4	27 Mineral Fuels, Oils, Wax, etc.	84.3	16 Preparation of Meat, Fish, etc.	1,223
5	68 Stone Prds., Cement and Plaster Prds.	40.6	39 Plastics & Plastic Products	1,151
6	10 Cereals	32.0	84 General Machinery	1,001
7	07 Edible vegetables, roots and tubers	29.8	87 Motor Vehicles, etc.	820
8	39 Plastics & Plastic Products	25.9	27 Mineral Fuels, Oils, Wax, etc.	508
9	44 Wood & Wood Products	25.7	55 Man-Made Staple Fibers	498
10	08 Edible Fruit & Nuts	23.6	73 Iron & Steel Products	473
11	11 Milling Products (malt, starches, etc.)	23.1	25 Salt, Sulfur and Stone (plastering, lime)	443
12	48 Paper, Paperboard, etc.	17.8	71 Precious Stones & Metals	415
13	73 Iron & Steel Products	17.4	84 Footwear & the like	367
14	16 Preparation of Meat, Fish, etc.	16.5	08 Edible Fruit & Nuts	338
15	70 Glass & Glassware	12.4	62 Other Textiles	321
16	23 Residues & Waste from Food Industry	11.2	02 Meat & Edible Meat Offal	303
17	72 Iron & Steel	11.2	29 Organic Chemicals	296
18	19 Prep. of Cereals, Flour and Starch/Milk	10.5	48 Paper, Paperboard, etc.	287
19	69 Ceramic Products	9.5	56 Wadding, Felt, etc. (carpet, rope, etc.)	269
20	20 Prep. of Vegetable, Fruit, Nuts, etc.	7.6	54 Man-Made Filament	240

Source: Department of Customs

4.2 Other Factors

As mentioned previously, the BPIDC will be feasible in terms of regional and subregional linkages. In addition, there are issues to be addressed or considered in order to materialize the BPIDC as described below:

1) Implementation Schedule

The BPIDC will be developed during Phase II (2001-2006) of the planning horizon of this Study, in view of the following considerations:

- The planned motorway and outer-outer orbital road will be available only after 2000.
- It will take at least several years to develop a deep-sea port and an industrial estate in Tavoy (Myanmar) along with other required infrastructure (e.g. a road corridor).

2) Goods distribution mechanism/system

The distribution of goods in Thailand could become more rationalized and efficient with the development of public distribution centers. In particular, economies could be achieved by developing a specialization between wholesaling and retailing, separation between goods distribution and trading, and a trucking pattern featuring mixed cargo loading. At present, there are only a few large companies that have their own distribution centers, and there is no public distribution center with a view toward industrial logistics, with the factors set out above. Many retailers in rural areas come to Bangkok to procure goods traveling in their own cars early in the morning and late at night. Retailing is sometimes the simple movement of goods from here to there. Many wholesalers do business at their own house with a small shop forming a wholesaler base. This finding implies that candidates for location in the BPIDC distribution center in the short term may be large companies with their own distribution centers.

3) Air cargo in inland clearance depot (ICD)

Thai Customs permit ICDs particularly with the aim of mitigating traffic congestion at Klong Toey; at present, there is no ICD able to handle air cargo. If an ICD in the BPIDC were permitted to handle air cargo, some deregulation would be necessary in terms of customs clearance.

4.3 Initial Environmental Examination (IEE)

The proposed area of the BPIDC is located in flat terrain and is adjacent to Ban Pong municipality, a traffic hub of major highways (i.e., Routes 4 and 323) and railway lines. There are no significant ecological resources, agricultural or commercial activities, or important aesthetic, archeological or historical resources in the area.

The implementation of the BPIDC might cause some adverse impact on human resettlement, traffic congestion on the neighboring major highways (i.e., Routes 4 and 323), an increased level of noise and air pollution, and waste discharged from industrial establishments.

It can be concluded that the BPIDC will not result in any significant environmental impacts. However, some adverse impacts are anticipated as mentioned above, requiring appropriate preventing measures. Consequently, a full-scale EIA is not considered necessary for the Project. It is desirable, however, that a study concerning probable human resettlement, traffic congestion, and the industrial waste problems be conducted in the next stage of the study. A summary IEE table and IEE checklist are herein attached.

5. RECOMMENDED ACTIONS

It is recommended that the proposed BPIDC concept be studied in further detail and that follow-up actions be taken as listed below.

- Organizing concerned government agencies and the private sector, including participation by local people in the Upper WSB region, in order to discuss the idea proposed by this Study and coordinate efforts;
- Formulating a master plan specific to the BPIDC, including development plans for areas surrounding the BPIDC, and conducting a feasibility study;
- Identifying alternative sites for the BPIDC, focusing not only on the crossroads point, but also on to the Greater Ban Pong Area (GBPA), considering the balanced development of the GBPA as a whole, but keeping in mind the BPIDC development concept proposed by this Study;
- Examining the possibility of using the Ratchaburi airfield in view of its potential for regional development;
- Strengthening cooperation and linkages with Myanmar side to accelerate the commencement of BPIDC development;

- **Seeking leadership by the Industrial Estate Authority of Thailand (IEAT) for land development for the BPIDC; and**
- **Accelerating of administrative decentralization or devolution to advance the development of the BPIDC as a regional industrial and urban development project.**

Initial Environmental Examination (IEE) for Ban Pong Development Initiative

<p><u>A. Description of Environment</u></p> <p>1. Physical Resources</p> <p>2. Ecological Resources</p> <p>3. Human Use Values</p> <p>4. Quality of Life Values</p>	<p>1. The Project area is located in flat terrain and is adjacent to Ban Pong municipality, a traffic hub of major highways (i.e., Routes 4 and 323) and railway line.</p> <p>2. There are no significant ecological resources in the Project area.</p> <p>3. There are no significant agricultural or commercial activities in the Project area.</p> <p>4. There are no important aesthetic, archeological or historical resources.</p>
<p><u>B. Screening of Potential Environmental Impacts</u></p> <p>1. Environmental Impacts Caused by Project Location</p> <p>2. Environmental Impacts Associated with Construction Stage</p> <p>3. Environmental Impacts Resulting from Project Operations</p>	<p>1. There are some households in the planned project area. Increased traffic volumes induced by the development will cause potential traffic congestion on the neighboring major highways (i.e., Routes 4 and 323).</p> <p>2. Infrastructure and facility development would result in an increased level of noise and air pollution in and near the Project area.</p> <p>3. Increased traffic volumes induced by inflow of facility users would interact with the existing transport systems. Untreated waste water and/or solid waste discharged from industrial establishments would cause sanitary problems.</p>
<p><u>C. Environmental Mitigation Measures</u></p>	<p>Careful selection of facility sites to avoid residential areas, setting up machinery maintenance areas and construction camps away from the water bodies, installation of industrial waste treatment systems in the planned industrial estate area, and proper traffic control measures preventing potential traffic congestion on Routes 4 and 323 would be efficient means to prevent potential environmental quality degradation.</p>
<p><u>D. Conclusion</u></p>	<p>The Project will not result in any significant environmental impacts.</p>

Checklist of Initial Environmental Examination (Ban Pong Development Initiative)

Environmental Parameters Affected by the Project Implementation	Impacts on the Environment	Recommended Feasible Mitigation Measures	Magnitude of Impacts		
			No Significant Effect	Small	Moderate Major
1. Air and Noise Pollution	1. Nuisances and health hazards to neighbors and wildlife.	1. Usage of low emissions and noise construction equipment; selection of proper times for land clearing and facility construction.		x	
2. Terrestrial Ecology	2. Alteration of wildlife habitats and loss of biodiversity from tree cutting.	2. Minimization of the amount of tree cutting; replanting precious vegetation.	x		
3. Water Quality and Sanitary Condition	3. Water pollution caused by facility construction works, and untreated waste water and/or solid waste discharged from industrial establishments.	3. Setting up of machinery maintenance areas and construction camps away from the water bodies, and industrial waste water and solid waste treatment systems in the planned industrial estate areas.		x	
4. Historical/Cultural Properties	4. Loss of historical/cultural properties.	4. Investigation of these properties and provision of appropriate preservation measures.	x		
5. Human Resettlement	5. Relocation of residents.	5. Consideration of alternative site selection and adequate compensation for affected residents.			x
6. Transport Network	6. Increase in traffic volumes attracted by facility users	6. Careful design of access roads and appropriate traffic control measures.		x	

APPENDIX IV

SAMUT SONGKHRAM FREE TRADE AREA DEVELOPMENT INITIATIVE

SAMUT SONGKHIRAM FREE TRADE AREA DEVELOPMENT INITIATIVE

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Samut Songkhram Free Trade Area Development Initiative

1. BACKGROUND

1.1 Free Trade Regime

In the early years of the 21st century, the ASEAN Free Trade Area (AFTA) and World Trade Organization (WTO) agreements will become fully effective with minimal barriers to foreign trade and investment (including minimum customs duties), thereby creating an environment in which the distribution of resources will become "optimal" based on fundamental economics, i.e., minimum costs and maximum profits. Labor-intensive industries will move to countries/regions capable of supplying relatively cheap labor, while such industries in Thailand increasingly relocate to less developed countries. Technology-oriented industries, on the other hand, will locate their factories and laboratories in countries/regions with supporting facilities/functions for their R&D activities. Investment in the service sector will focus on subregional financial and business centers that can provide attractive business opportunities.

As such, the prospective free trade regime will provide a highly competitive environment. To thrive in this setting, the industrial structure in Thailand will need to become more high technology/information oriented to sustain rapid economic growth, while Bangkok will need to be transformed into a "Functional Capital" or economic center for continental Southeast Asia, which may be integrated economically with the international division of work.

1.2 Decentralization Policy

There are two dimensions to decentralization in Thailand. One involves administrative decentralization from central government to local authorities, while the other entails industrial decentralization from the Bangkok Metropolitan Area (BMA) to provincial areas.

The spatial structure of Thailand has been unipolar, with everything coming from and/or going to the BMA as the sole center of the country. This unipolar structure, however, is likely to change as a result of infrastructure development and the concomitant industrial investment in provincial areas, and expansion of subregional linkages with areas in neighboring countries. This process of transformation has already become apparent in the commodity flow pattern since Laem Chabang port opened, followed by Map Ta Phut port,

both in the Eastern Seaboard (ESB) region. The commodity flow pattern will be further diversified as a result of the opening and expansion of Prachuap port in Bang Saphan as a commercial port, and the general progress of the country's market economy, which has been increasingly globalizing as part of the borderless international economy.

Decentralization is one of the focal points of the 8th National Plan. The many planned development projects to improve infrastructure in provincial areas will support diversification of the commodity flow, as well as decentralization of factory location, capital/investment, human settlement, information, and the like. All of these changes will help generate a multipolar structure with regional centers and regional and subregional linkages in Thailand. In this context, the BMA will emerge as the Functional Capital for continental Southeast Asia with higher-order quality service functions, while factories and industry- and trade-related functions relocate not only to provincial areas but to other countries.

1.3 Samut Songkhram as a Supplement to the BMA Functions

For the BMA to effectively serve as the Functional Capital for continental Southeast Asia, the preparation of land for additional or upgraded functions may be required. The overly centralized pattern of development, however, should be avoided since it has caused serious traffic congestion and air pollution, largely paralyzing business activities in the BMA. Accordingly, the planned new urban functions should be located outside the BMA.

The Upper WSB region, which consists of the provinces of Kanchanaburi, Ratchaburi, and Samut Songkhram, along with Khao Yoi district in Petchaburi province, is situated within a day trip of the BMA. It is expected that the Upper WSB will become an industrial core as important linkages develop with other regions and subregions. As a consequence of its gateway function as a "Global Hub" in Thailand, the WSB region will receive industrial spillover from the BMA and serve as an import processing area linked with Myanmar when the Kanchanaburi-Tavoy corridor is developed together with an industrial zone and a deep-sea port in Tavoy. In this context, the Industrial Junction concept may attract many new industries that are oriented toward global gateway functions, which will form an industrial complex in the Industrial Logistics Center (ILC) to be developed in Ban Pong in Ratchaburi province and Samut Songkhram province.

The ILC is a new concept of development activity integrating the functions of production, goods distribution, and consumption in a compound area on a single site. Ban Pong is a logical place to develop an industrial core and distribution function, and Samut Songkhram is

strategically located only 67 km from the center of Bangkok, enabling it to supplement Bangkok's Functional Capital functions. In addition to this locational advantage, Samut Songkhram has a vast area of abandoned shrimp fields (80,000 rai or 12,800 hectares) that could relatively easily be converted for industrial and urban use, along with relatively low land prices. These advantages make Samut Songkhram an excellent site for the planned Free Trade Area, the concept of which is sketched out below.

2. PROJECT CONCEPT

2.1 Objectives of Samut Songkhram Free Trade Area (FTA)

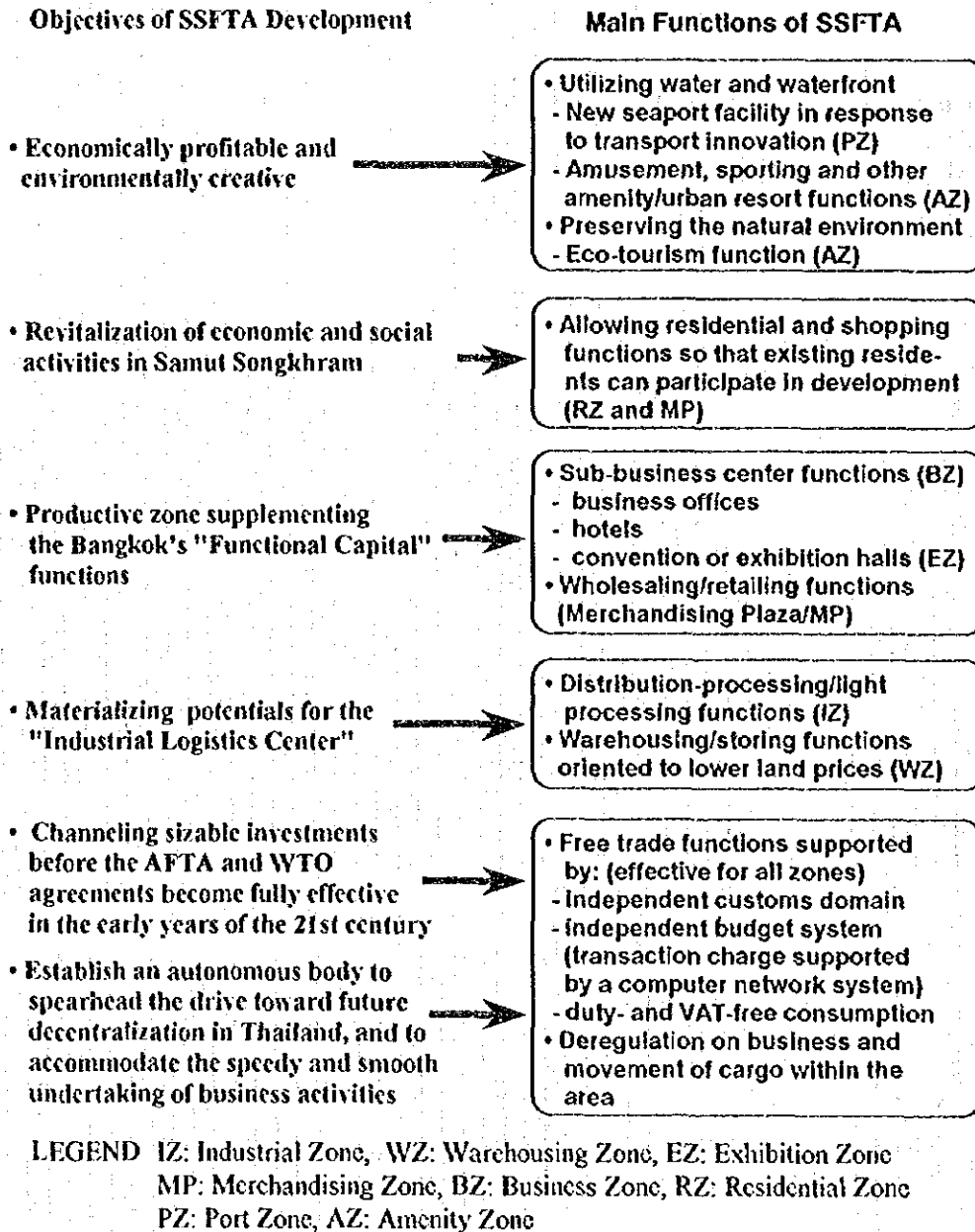
The objectives of the planned redevelopment of the former shrimp fields in Samut Songkram as an FTA are summarized below:

- To utilize the abandoned shrimp fields not only in an economically profitable but also environmentally creative manner, capitalizing on an excellent water environment with mangrove;
- To re-establish the livelihood of local people in Samut Songkhram, where the shrimp farm industry has rapidly declined as a result of the degradation of the shrimp fields;
- To supplement Bangkok's "Functional Capital" functions, while developing Samut Songkhram's potential as part of the "Industrial Logistics Center";
- To invite sizable investment into the FTA by allowing "free" international and domestic trade before the AFTA and WTO agreements become fully effective in the early years of the 21st century; and
- To establish an autonomous body with independent authorities for management so that the Samut Songkhram FTA can serve not only as an experimental area spearheading the drive toward future decentralization in Thailand, but also as an affordable area with the capacity to accommodate the speedy and smooth undertaking of business activities.

2.2 Functions of Samut Songkhram FTA

Figure A4.1 shows the main functions and zoning of the Samut Songkhram FTA (SSFTA) in line with its development objectives.

Figure A4.1 Main Functions and Zoning of the SSFTA



Utilization of water and the waterfront is a crucial condition for development of the SSFTA. In this context, seaport development may offer a viable option, particularly in view of transport innovations such as palletization; also, amusement/sporting facilities could utilize

its waterfront. At the same time, eco-tourism oriented to a water environment with mangrove may be viable, especially since it would contribute to preservation of the natural environment.

Re-establishing the livelihood of existing residents of the area should be a high priority, and accordingly it is important to allow them to continue to live within the SSFTA area and to provide them with opportunities to participate in the SSFTA.

Supplementing Bangkok's Functional Capital functions will be the core objective of the SSFTA development. In this context, a business center including hotels and convention/exhibition functions would be attractive. Also, wholesaling and retailing functions forming a Merchandising Plaza would supplement the Bangkok's functions. In line with the "Industrial Logistics Center" of the Upper WSB, distribution-processing and light processing functions would be bestowed along with warehousing and storing functions.

Free trade functions are essential for the SSFTA supported by an independent customs domain and a new tax system with an autonomous management body to be established. Deregulation of business operation and the movement of cargoes within the SSFTA is also crucial for the planned "Free Trade Area" to function properly.

3. PROJECT DESCRIPTION

3.1 Development Scale

The gross land area to be developed for the SSFTA will amount to 1,000 hectares (6,250 rai) at the pilot stage as shown in Table A4.1. This land demand is forecast based on the following considerations:

- Mobilization of the comparative advantages of Samut Songkhran's shrimp field area, i.e., lower land prices and the availability of a vast land area;
- Development of the largest exhibition hall in Thailand based on the above advantages;
- Consideration of the economies of scale or minimum development unit for facilities to be developed; and
- Consistency with the development framework for the manufacturing industry of the WSB region.

Table A4.1 Basic Development Scale/Gross Land Area of SSFTA (2001)

Zones of SSFTA	Gross Area (ha)	Note (factors for estimation)
Industrial Zone	100	• based on the factory site demand allocated to S. Songkhram
Warehousing Zone	30	• 150,000 ton capacity basis (including long-term storage)
Merchandising Plaza	30	• duty-free shop, electronic/motor parts, shopping center, etc.
Exhibition/Convention Zone	20	• including 100,000 m ² class exhibition hall
Business Zone	30	• office building, hotels
Amusement Zone	120	• 18-hole golf course, leisure land, etc.
Residential Zone	50	• including high class residence
Administrative Zone	5	• Management Authority, etc.
Public Utility Zone	40	
Green Belt/Open Space	330	• including mangrove area
Port Zone	15	• water depth - 6.0 m (5,000 DWT class)
Reserved Zone	250	
TOTAL	1,000	

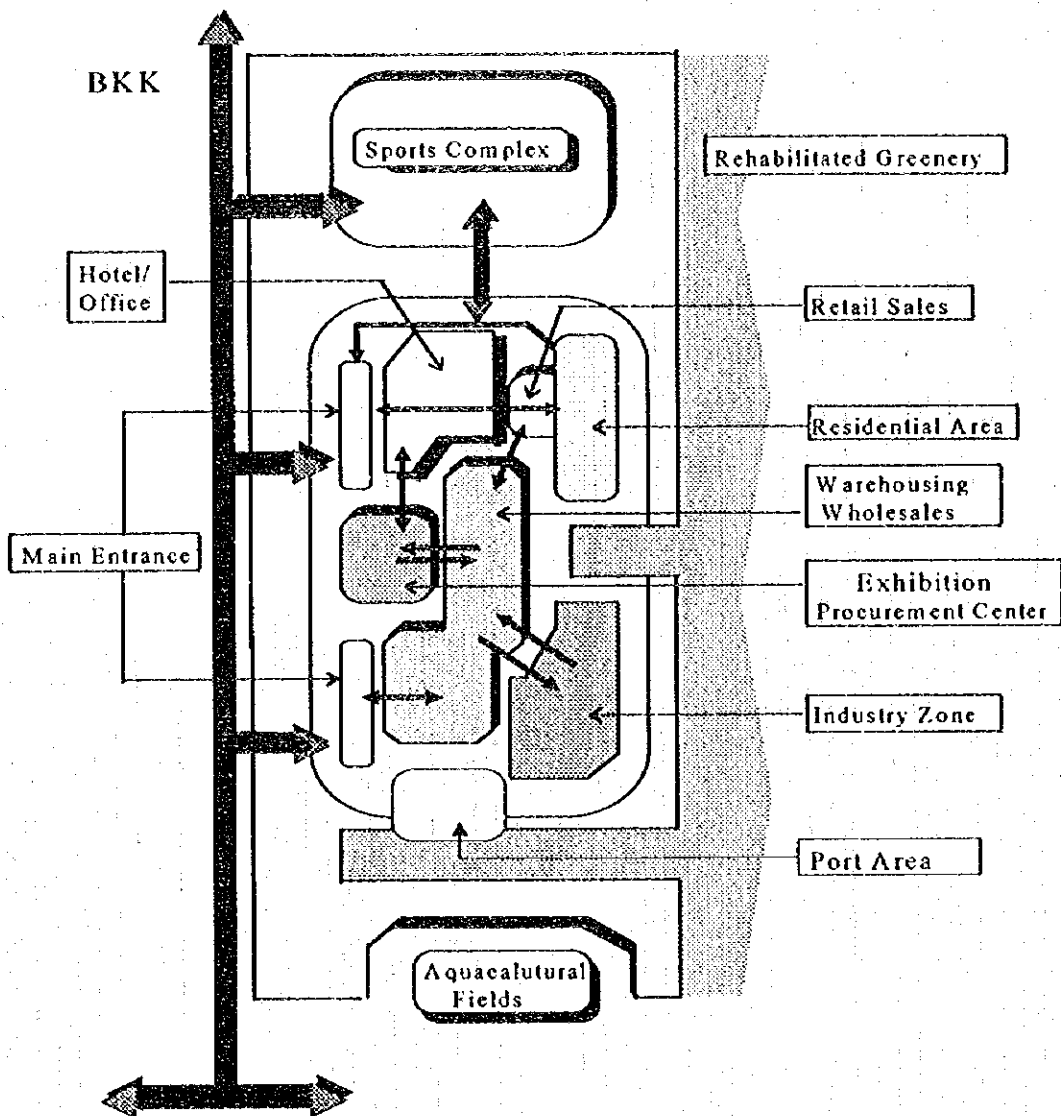
Source: The Study Team

3.2 Land Use Plan (Conceptual Plan)

The land use plan for the SSFTA will be formulated under the following principles (Figure A4.2):

- The area of the SSFTA is to be framed with water to clearly demarcate the independent customs domain from the outside.
- The amusement and sporting facilities will be developed along an improved trunk road connecting the SSFTA with the BMA and Ratchaburi so that the facilities can create attractive landscapes.
- The industrial zone will be developed behind the aquacultural fields separated by wide canals with the aim to ensure a good environment for production.
- The Merchandising Plaza, exhibition/convention zone, business zone, and administrative zone will be developed in a compound area or a center zone so as to offer convenience for businessmen and residents of the SSFTA.
- The warehousing zone will be developed behind the port zone to facilitate the carrying and storage of waterborne cargo.
- The residential zone will be developed on the other side of the center zone to provide a good living environment and quality of life.

Figure A4.2 Concept of Land Use in the SSFTA



3.3 Relevant Infrastructure Development

The SSFTA will require the development of relevant infrastructure such as access roads connecting with Route 35 or the planned north-south motorway and outer-orbit road. In addition, water supply and waste water treatment facilities should be developed. Water consumption in the SSFTA is forecast to total around 24,000 m³/day, assuming a daytime population of 60,000 people. Substations for electricity distribution and telecommunications (including an "information highway") will also need to be developed.

3.4 Institutional Setting

An autonomous body or the SSFTA Development Corporation (SSFTA/DC) is proposed as the management/administrative body of the SSFTA, and it may develop the land for the SSFTA as a whole. An industrial estate, however, will be developed by IEAT or a joint venture between a private company and IEAT as shown in Table A4.2; apart from this joint-venture development, the land in other zones will be developed by SSFTA/DC. Exhibition/convention facilities may be developed by a joint partnership between the Chambers of Commerce of Thailand and the Federation of Thai Industries.

Table A4.2 Institutional Setting of the SSFTA

Zones of SSFTA	Candidate Implementation Bodies
Industrial Zone	• Industrial Estate Authority of Thailand (IEAT)/JV with IEAT
Warehousing Zone	• # Private companies
Merchandising Plaza	• # Private companies supported by the Ministry of Commerce
Exhibition/Convention Zone	• # The Chambers of Commerce, The Federation of Thai Industries
Business Zone	• # Private companies
Amusement Zone	• # Private companies
Residential Zone	• # Private companies including one established by existing residents
Administrative Zone	• # SSFTA Development Corporation (SSFTA/DC)
Public Utility Zone	• # SSFTA/DC
Green Belt/Open space	• # SSFTA/DC
Port Zone	• # SSFTA/DC or JV with SSFTA/DC
Reserved Zone	• SSFTA/DC
Land Development (Main)	• SSFTA/DC

Source: The Study Team

3.5 Estimated Development Cost

As mentioned previously, land prices in the SSFTA should be kept minimum and should be below 1 million Baht per rai. The estimated total cost of developing the SSFTA is US\$800 million or 20 billion Baht, excluding development costs for port facilities, public utilities, internal roads, and access roads. Details are set out below:

Table A4.3 Estimated Development Costs of the SSFTA (2011)

Land/Facilities	Costs (million US\$)	Estimated Costs
Land Development	196	• around 1 million Baht per rai * 0.87 (economic cost factor)
Warehousing Facility	24	• 150,000 tons basis (including long term storing)
Merchandising Plaza	60	• duty-free shop, electronic/motor parts, shopping center, etc.
Exhibition/Convention Halls	80	• including 100,000 m ² class exhibition hall
Business Office Building	120	• office buildings, hotels
Amusement Facilities	120	• golf course, leisure park, etc.
Residential Facilities	180	• including high class residence
Administrative Building	20	• Management office, etc.
Public Utility	-	
Green Belt/Open space	-	• including mangrove area
Port Zone	-	• Water depth -6.0m (5,000 DWT class)
TOTAL	800	

Source: The Study Team

4. PROJECT ASSESSMENT

4.1 Economic Aspects

Low land prices

Provision of land for the SSFTA at low prices is a crucial condition for its successful development along with institutional arrangements for a free trade area. It is reported that the land acquisition cost of the abandoned shrimp fields is around 200,000-250,000 Baht per rai. A relatively large reclamation cost is required to convert the fields for industrial and urban uses, due mainly to the soft and wet foundation.

Required construction works involving reclamation and dredging imply land prices in the SSFTA above current levels. One approach to reducing land development costs is to use dredged mud for the reclamation. The technical and financial feasibility of the land reclamation and preparation should be assessed.

Port facility

A port facility in the SSFTA is a desirable function to strengthen the SSFTA's gateway function. The sea around the fields, however, is relatively shallow and generally unsuitable for the development of a large port to handle general/container cargoes. In addition, the sea

around the mouth of the Mae Klong river is piled up with silt, and therefore periodical dredging will be required for maintenance work to keep navigable water depth at minus 6.0 m, necessary for navigation of 5,000 dwt cargo vessels.

This Study proposes port development in response to recent transport innovations. The "Techno-Superliner 93" under development in Japan is designed to operate at 93 km an hour with a freight of 1,000 tons and will enter into service in the early years of the 21st century. With the superliner, the loading and unloading of cargoes would have to be undertaken in a shorter time and therefore palletization of sizable cargoes in units has been studied. Apart from the superliner, further progress in palletization in the future will require larger land areas to handle and store waterborne cargoes. In this context, the low land prices of the SSFTA will be attractive for such port area development. It is proposed that further study be undertaken to identify the specific type and size of port, and estimate development costs with consideration to the superliner and palletization developments in recent years.

Industrial zone

The annual average growth rate of the WSB manufacturing sector is forecast to be 13.9 per cent up to 2011, the target year of this Study. Based on this growth rate and Samut Songkhram's locational conditions, sizable investments are expected to be channeled into the SSFTA industrial zone, also attracted by institutional incentives with respect to free trade. Prospective industrial subsectors include the following;

- (i) Import-processing industries including those producing re-exporting products
 - food processing industries such as fish processing
 - textile industries such as weaving and dyeing industries based on imported high quality fiber, including relocation of their existing factories in other regions while utilizing the SSFTA's abundant water supply and water treatment facilities
 - leather goods industries
 - jewelry processing industries
- (ii) Gateway-oriented industries including spillover activities from the BMA
 - industries such as those producing electronic parts/components, motor vehicle parts/interior decorations, and sporting goods
 - metal processing industries including spillover from the BMA

Some studies pointed out that electronic industries had tended to avoid seaside areas as their factory sites sensitive to the saline air. Such indication is in general reasonable but based on a fixed concept. For example, a Taiwanese electronic company has recently extended its production of computer motor board at the Subic Bay in the Philippines. This could suggest

that a factory with air-conditioning or air-cleaning facilities is not seriously affected by the saline air, and therefore factory location of electronic industry will not be impossible within the SSFTA.

- (iii) Distribution-processing industries such as packaging and labeling, closely related to the SSFTA's gateway functions including "distribution-processing".

Warehousing

Warehousing in the SSFTA would better focus on long-term storage rather than goods distribution because of the locational factors of the area, i.e., relatively low land prices and proximity to the BMA. Such long-term storage is land-intensive, requiring large land areas due to the low frequency of shipment. Candidate goods for such long-term storage include petroleum oil, steel, fertilizer, food products including fish, and wood, all of which were imported to Thailand in an amount of more than one million tons in 1994. The prices of these goods change frequently in the international market, and therefore buying and storing them at lower prices may be an effective business strategy, as well as providing national security benefits by assuring a secured supply. As such, warehousing will be viable in the SSFTA if it can provide land at prices low enough to attract such long-term storage.

Merchandising Plaza

The Merchandising Plaza (MP) will be a complex comprising wholesaling and retailing, the former supplementing the Functional Capital functions of Bangkok, and the latter providing shopping centers including duty-free shopping not only for foreigners but for Thais.

The luxury goods market is one of the targets of the MP in the SSFTA since the size of the market for these goods will become larger not only due to the growth of the Thai economy, particularly in border provinces, but also as a result of progress in industrialization and open market policies in neighboring countries. If the MP supplies luxury goods through bulk importation, many people including wholesalers will visit the SSFTA, which will have a positive effect in terms of reducing traffic congestion in Bangkok.

On the other hand, motorization will progress rapidly in Thailand and the country will also increasingly become an information-oriented society. Many people will modify ready-made goods or make goods by themselves in accordance with the expansion of the middle class and youth market; it is anticipated that the merchandising center for auto parts and electronic equipment parts will be viable to serve such market needs.

Exhibition/convention halls

Development of the largest exhibition hall in Thailand in the SSFTA is proposed as the area offers proximity to the BMA and can effectively supplement the functions of Bangkok, while offering land prices that are and will be much lower than those in Bangkok. At present, all existing exhibition halls including those attached to hotels in Bangkok are located in inland areas. In the case of international trade fairs, these locations are not convenient for the importation of large exhibits from the port areas in Bangkok; this problem may be resolved by a port along with a large exhibition/convention hall in the SSFTA.

Business zone

Many business activities expected to be carried out within the SSFTA, such as, manufacturing, distribution-processing, goods distribution, wholesaling, retailing, banking, business services including convention, travel, and transport services will make office buildings and hotels feasible as the main facilities in the business zone of the SSFTA. Some office works will be undertaken within other facilities, but the demand for space exclusively for office works will not be insignificant. Participants in exhibitions or conventions to be held in the SSFTA would be prospective users of hotels; in this respect, a combined development of an exhibition hall, convention hall, and hotel is essential to intensively develop a new business center. Along with this unit development, amusement facilities will attract many more people, adding to the synergistic effects of the development. The SSFTA will be the main attractor, and the associated business center will be made viable by such business- and amusement-related facilities.

Amusement zone

Amusement facilities comprising a golf course and leisure facilities are also planned based on the low land prices in the SSFTA, as such developments offer the added advantage of preserving the natural environment including mangrove forests. In other words, the SSFTA could function not only as a business/trading area, but also as an urban resort. Such a unique complex of services with scarcity value, provided in the SSFTA, will attract many people and thereby enhance the economic viability of the SSFTA.

Residential zone

The residential zone of the SSFTA will accommodate housing for both the original residents around the abandoned shrimp fields and newcomers. This housing project will be positioned to provide the original residents with business and employment opportunities so that they may participate in the SSFTA development and thereby re-establish their livelihoods; thus, the original residents will not need to find jobs in Bangkok and other locations, enabling them to continue to reside within the SSFTA. As noted, they may also invest in new

business opportunities available in the SSFTA. The housing project is therefore deemed essential, and its feasibility should be enhanced by the provision of a good living environment with shopping centers, amusement facilities, and a fine natural environment.

4.2 Institutional Aspects

Institutional aspects may be another crucial factor, since the SSFTA will be an autonomous area independent from the ordinary customs domain.

Creation of an independent customs domain and free trade

The Free Trade Area (FTA) can be developed by modifying/combining the Export Processing Zones (EPZs) and Free Trade Zones (FTZs) concepts which are currently defined by the IEAT Act and MOI Decree as follows :

<u>New EPZ by IEAT</u>	<u>FTZ by MOI and Customs Department</u>
- Target industries: Export-oriented industries, centering on manufacturing (A minimum 40 per cent of the total production must be exported.)	- Target industries: Export related industries, including manufacturing (Three categories) and trade
- Allowable activities: manufacturing, storage, and exhibition	- Allowable activities: manufacturing, storage, packing, labeling, maintenance, exhibition, and R&D
- Incentives: by IEAT (BOI incentives are automatically granted.)	- Incentive: no incentives (BOI incentives are granted by a respective application.)
- Duty free importation: available	- Duty free importation: available
- Developer: IEAT or a joint venture with IEAT	- Developer: Private sector

As compared with allowable activities with existing EPZs under IEAT Act and FTZs under MOI Decree, the SSFTA would feature the following in the longer term :

- Duty-free importation of raw materials and equipment including production facilities without ordinary customs clearance procedures, but with periodic inspection (possible in EPZs/FTZs);
- Free trade or free movement of cargo within the SSFTA without permission from the customs office for bonded transport, since there will be no need for bonded business within the SSFTA (possible in EPZs and FTZs);
- No VAT taxation on trade within the SSFTA (limited to export goods);
- No limitation on consumption of imported goods within the SSFTA (impossible in both EPZs and FTZs);

- In principle, no restriction on items of goods to be imported into the SSFTA (impossible in both EPZs and FTZs);
- No limitation on the term for storing imported goods in the SSFTA (impossible in both EPZs and FTZs);
- No limitation on the type of business activities that may be undertaken in the SSFTA, including ones that are monopolized at present (impossible in both EPZs and FTZs);
- Exportation of goods and services generated in the SSFTA (possible in both EPZs and FTZs); and
- No limitation on the importation of goods and services generated in the SSFTA into the domestic market of Thailand with the ordinary customs duties (limited in both EPZs and FTZs).

From a practical point of view, a stage-wise approach is considered; firstly, the SSFTA could be developed by the SSFTA by following the existing legal/institutional arrangements relating to EPZs and FTZs as summarized above. In this case, the SSFTA would incorporate both the EPZ and FTZ concepts, by applying to IEAT for an EPZ, and MOI and the Customs Department for an FTZ. At a later stage, a new arrangement could expand and convert these EPZ and FTZ designations into that of the proposed SSFTA.

Establishment of the Samut Songkhram FTA Development Corporation (SSFTA/DC)

The SSFTA/DC will be a quasi-local government entity to be established as an experimental body spearheading the drive toward decentralization in Thailand. By its charter board of directors will include representatives from concerned government agencies, such as the Ministries of Interior, Finance, Industry, and Commerce, local authorities, residents, and investors. It will be responsible for formulating the development master plan, managing specific projects, and operating specific facilities.

Budget of SSFTA/DC

It is proposed that the budget of the SSFTA/DC be generated from a transaction charge in place of other taxes including the corporate income tax. This budget system would attain the following objectives:

- To retain the autonomy of the SSFTA, ensuring SSFTA/DC has its own budget by providing revenue from sources other than revenue generated from land development, utility services, and other services including port operation; and
- To provide a good business environment, which will not only attract more investors to the SSFTA, but also reduce tax collection costs.

Collection of the transaction charge will be supported by a computer real-time network comprising shipping and cargo information system, a Point of Sale (POS) system, and the like. In this context, it is noted that the United Nations has been developing Electronic Data Interchange (EDI) as a global standard of documentation for international trade and transactions; an Asian EDIFACT Board has already been organized, with members including Japan, Singapore, the Republic of Korea, the People's Republic of China, and Malaysia, with Taiwan as a quasi-member. Thailand is similarly moving in this direction in order to provide a more attractive business environment, with the application of EDI expected soon.

4.3 Implementation Schedule

The SSFTA will be developed during Phase I (1997-2001) since it should start operation before the AFTA and WTO agreements become fully effective in the early years of the 21st century. The SSFTA can be started with the combined functions of an EPZ under IEAT Act and an FTZ under MOI Decree.

4.4 Initial Environmental Examination

The SSFTA area is located in relatively flat terrain along Route 35. Most of area was used for shrimp farming and at present is abandoned. There are no significant ecological resources or important aesthetic, archeological, or historical resources in the Project area, though there are some commercial activities along Route 35. Mangrove replanting has been ongoing near the SSFTA area.

Implementation of the SSFTA might cause some adverse impacts on traffic flow on the existing Route 35 induced by an inflow of facility users, solid waste discharged from facilities, and an increased level of noise and air pollution.

It can be concluded that the SSFTA will not result in any significant environmental impacts. However, some adverse impacts are anticipated as mentioned above, requiring appropriate preventive measures. Consequently, a full-scale EIA is not considered necessary for the SSFTA. It is desirable, however, that a study concerning traffic congestion, solid waste discharged from facilities, and increased level of noise and air pollution problems be conducted in the next stage of the study. A summary IEE table and IEE checklist are herein attached.

5. RECOMMENDED ACTIONS

The proposed SSFTA is not the sole option for development of the area. One alternative would involve development of abandoned shrimp fields in Samut Songkhram, without designation of a Free Trade Area, but with development of an access road to Route 35 and internal roads. However, in view of the analysis presented in this report, designating the area of the abandoned shrimp fields as a Free Trade Area appears to be viable. Accordingly, appropriate actions are recommended as follows:

- Organizing concerned government agencies and the private sector, including local people in Samut Songkhram, in order to discuss the SSFTA proposed by this Study;
- Conducting a full-fledged study of the feasibility of the SSFTA including identification of candidate sites;
- Leadership by NESDB and IEAT for the SSFTA development and relevant coordination;
- Enactment of a new Free Trade Area Act or modification of the existing Export Processing Zones by IEAT Act, and Free Trade Zones (FTZs) by MoI Decree, and modification of the Customs Law; and
- Acceleration of administrative decentralization to advance the SSFTA development as a regional industrial and urban development project.

Related to these actions, it is suggested that speculative activities be prevented since provision of low land prices is an essential factor to develop the SSFTA.

Initial Environmental Examination (IEE) for Samut Songkhram FTZ Initiative

<p><u>A. Description of Environment</u></p> <p>1. Physical Resources</p> <p>2. Ecological Resources</p> <p>3. Human Use Values</p> <p>4. Quality of Life Values</p>	<p>1. The Project area is located in relatively flat terrain along Route 35. Most of area was used for shrimp farming and is at present abandoned.</p> <p>2. There are no significant ecological resources in the Project area. Mangrove replanting has been ongoing near the Project area.</p> <p>3. There are some commercial activities along Route 35.</p> <p>4. There are no important aesthetic, archeological or historical resources in the planned Project area.</p>
<p><u>B. Screening of Potential Environmental Impacts</u></p> <p>1. Environmental Impacts Caused by Project Location</p> <p>2. Environmental Impacts Associated with Construction Stage</p> <p>3. Environmental Impacts Resulting from Project Operations</p>	<p>1. Traffic flow on the existing Route 35 is heavy and will be disturbed by earth and facility construction works vehicles.</p> <p>2. Infrastructure and facility development would result in an increased level of noise and air pollution in the Project area.</p> <p>3. Increased traffic volumes induced by inflow of facility users would interact with the existing transport systems. Untreated waste water and/or solid waste discharged from facilities would cause sanitary problems.</p>
<p><u>C. Environmental Mitigation Measures</u></p>	<p>Proper traffic control measures for alleviating adverse impacts on the traffic flow on Route 35, and setting up waste water and solid waste treatment systems would be efficient means to prevent potential environmental quality degradation.</p>
<p><u>D. Conclusion</u></p>	<p>The Project will not result in any significant environmental impacts.</p>

Checklist of Initial Environmental Examination (Samut Songkhram FTA Initiative)

Environmental Parameters Affected by the Project Implementation	Impacts on the Environment	Recommended Feasible Mitigation Measures	Magnitude of Impacts		
			No Significant Effect	Significant Effect	
				Small	Moderate
1. Air and Noise Pollution	1. Nuisances and health hazards to neighbors and wildlife.	1. Usage of low emissions and noise construction equipment; selection of proper times for land clearing and facility construction.		x	
2. Terrestrial Ecology	2. Alteration of wildlife habitats and loss of biodiversity from tree cutting.	2. Minimization of the amount of tree cutting; replanting precious vegetation.	x		
3. Water Quality and Sanitary Condition	3. Water pollution caused by facility construction works, and untreated waste water and/or solid wastes discharged from facilities to be established in FTA.	3. Setting up of machinery maintenance areas and construction camps away from the water bodies, and proper measures to treat waste water and solid wastes generated from the facilities.		x	
4. Historical/Cultural Properties	4. Loss of historical/cultural properties.	4. Investigation of these properties and provision of appropriate preservation measures.	x		
5. Human Resettlement	5. Relocation of residents.	5. Consideration of alternative site selection and adequate compensation for affected residents.		x	
6. Transport Network	6. Increase in traffic volumes attracted by facility users.	6. Careful design of access roads and appropriate traffic control measures.		x	

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