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

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INTIB Energy and Environment Information System: *Thailand*

April 1993

Environmental Resources Limited
106 Gloucester Place, London W1H 3DB
Telephone 071-465 7200
Telex 296359 ERL G
Facsimile 071-935 8355

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EXECUTIVE SUMMARY

The survey of selected small and medium-sized industries highlights industry's clear interest in information and its keen awareness of the value of such information for the modern business company.

However, economic and market information is generally perceived as being the most essential. It is the type of information they are already using, and is also rated by the majority of them as more important than energy conservation and environmental information in the future.

Most companies currently receive information from professional and trade associations, governmental bodies, trading partners and occasionally academic bodies. Most of this information is provided in a "repackaged" format. In only a few instances do companies seek information directly from the source. Moreover, none of the companies have a unit or a person specifically in charge of handling information needs. Few companies therefore access themselves. Rather, they seek evaluated, packaged information, in response to specific problems encountered in the running of their business. They are also willing to pay for such information provided that it is up-to-date and appropriate to their requirements.

The proposed EEIS service should therefore be geared to providing small and medium-sized industry with "ready-to-use" information. A typical product for instance could be a short state-of-the-art review on a particular subject with some bibliographic references. In implementing the service, it is therefore essential that the host institution is able to make available suitable qualified technical staff capable of identifying, evaluating and processing information for users. Moreover, given the highly technical nature of the information available under EEIS, these tasks would normally have to be carried out by an information specialist with technical expertise in the subject area(s), probably on a full-time basis.

To conclude, in deciding to set up a pilot project on EEIS for small and medium-sized industries in Thailand, there are two important considerations:

- *To supply the type of information the target clientele are interested in and willing to pay for.*

- *To provide the technical staff capable of providing this service satisfactorily.*

Both the second-level contact institutions and the persons interviewed in the SMIs were of the general opinion that AIT would be the most appropriate institution to host the EEIS. However, given the present staffing level at AIT, it is improbable that an AIT staff member could be assigned full-time to the service. Moreover none of the second-level institutions themselves would have the necessary expertise and infrastructure to provide such the necessary expertise and infrastructure, with the possible exception of the Industrial Environmental Management Programme of the Federation of Thai Industries.

1 DEMAND FOR ENERGY AND ENVIRONMENT INFORMATION IN THAILAND

1.1 THE POTENTIAL CUSTOMER BASE - THE SMALL AND MEDIUM (SMI) SECTOR

1.1.1 *Definition of SMI*

There is no single official definition of small or medium-sized industry in Thailand. However, the classification adopted by the Ministry of Industry, amongst others, is primarily in terms of (a) number of employees and (b) fixed assets.

A generally accepted definition in Thailand of a small industry is one which employs less than 50 employees and has fixed assets (excluding land costs) of less than Baht 10m [1]. A medium-sized industry is one employing less than 250 employees.

1.1.2 *Structure of the Thai SMI Sector*

On the basis of this definition, the breakdown of Thai industrial firms is as follows [2]:

- Small scale industries 93.5%
- Medium scale industries 5.3%
- Large scale industries 1.5%

In absolute terms, there are some 80,000 registered small companies (including 40,000 rice mills). In addition to these small companies, there are many more manufacturing enterprises exempted from registration since they employ less than 7 persons and operate on a power input of less than 5 hp equivalent.

Most industries are concentrated in greater Bangkok and in the Central region.

The main sectors of activity are :

- Food processing
- Chemicals
- Metal products
- Textiles, garments
- Leather goods and footwear
- Furniture and wood products
- Machining of metals and non-metals mineral processing

[1] US $ 1 = Baht 25

[2] 1989 statistics

Government policy over the past two national social and economic development plans has prioritised the development of small-scale industries especially in the regions. However, current fiscal incentives, tax benefits and investment promotion schemes, procedures and regulations still tend to benefit the larger industries.

According to a study by ESCAP, almost all technology in Thailand is of foreign origin:

> *"The growth rate of technology transfer has been phenomenal in the past two decades [1970s and 1980s]. For instance, import of machinery has increased about twelve-fold. The payment of patent royalties and technical assistance fees has expanded fifteen times. Direct investment by foreign countries has also increased threefold. Profits and dividends remitted abroad due to collaboration has increased seven times".* [1]

1.2 POTENTIAL DEMAND FOR ENERGY AND ENVIRONMENT INFORMATION AMONG SMIs AND OTHER INDUSTRIES IN THAILAND

1.2.1 *Introduction*

No up-to-date study is available on the use of technological information by small and medium-sized industrial companies. In order to gain an idea of how these companies obtain and use technological information, it was decided to undertake a survey of selected small and medium-sized enterprises in order to assess both their current and future demand for technological information, particularly with regard to environmental issues and energy conservation.

1.2.2 *Survey*

A sample of companies was obtained from Management Information Services, a local vendor of economic information, which has a large database containing the following information on all companies registered in Thailand :

- Name and address of company and of factory
- Sector of activity (according to the UN standard industrial classification [2])
- Annual turnover
- Type of company
- Main products
- Main raw materials

An initial search of their company database was made using the following criteria:

[1] ESCAP. Regional study on transfer of technology for small and medium industries. Bangkok, 1989.

[2] United Nations. International Standard Industrial Classification of all Economic Activities.

Sector of activity

The food processing, finishing of textiles and tanning of leather, paper and pulp manufacture, manufacture of plastics and non-ferrous metal industries were selected because of their contribution to the Thai economy and because, by the very nature of their production, they would be most concerned with environmental-related and energy conservation information.

Production

Companies which are involved in the production process (i.e. companies which have a production plant in Thailand).

Nature of company

As far as possible, joint ventures were not included in the sample, the assumption being that these companies probably obtain information through their parent company.

Size of company

Less than 250-300 employees

For the sake of convenience and to reduce costs, it was also decided to select companies with their head office in the Bangkok area. Given the heavy concentration of industry in the Bangkok area, it was felt that this would not greatly bias the survey.

On the basis of the above criteria, MIS provided a computer listing of company profiles for some 200 companies. From this list some 50 companies were selected for the survey. The list of firms interviewed is attached in the Annex C.

The breakdown of companies by structure of activity and size is as shown in *Table 1.2(a)*.

1.2.3 *Questionnaire*

A questionnaire was prepared for use in the interviews. In reality, the questionnaire was used more as a guide to structure the interview than as a series of questions posed in a formal and rigid manner. The questionnaire aimed to assess not only demand for energy conservation and environmental information, but also how companies currently meet their information needs regardless of the subject area. This questionnaire is attached in Annex D.

Table 1.2(a)
Breakdown of Companies Surveyed According to Sector

Code		Total	No. of Employees	
			<50	50-300
151	Processing of fish and fish products; processing and preserving of fruit and vegetables	9	4	5
152	Manufacture of dairy products	2		2
153	Manufacture of grin mill products and ar·imal feeds	6	1	5
154	Manufacture of other food products (including sugar)	5		5
171	Finishing of textiles	6	1	5
1911	Tanning of leather	1		1
2101	Manufacture of pulp, paper and paperboard	3	3	
2413	Manufacture of plastics in primary form	3	1	2
252	Manufacture of plastic products	7	1	6
2732	Casting of non-ferrous metals	7	1	6

1.2.4 *Respondents*

After initial contact by telephone, an appointment was made to visit the company to conduct the interview. In the majority of cases, the person interviewed was the Managing Director or a commercial and/or financial executive. Only in a few cases was the respondent directly involved in the production or R&D side of the business. Although, the interview focused on the company's overall information strategy, it is clear that responses are affected by the personal attitudes and professional interests of respondents, and that there is therefore a certain bias in the responses which can partly explain the overwhelming interest for economic and financial information.

Five companies did not accept to be interviewed. since they considered that they had "no use for information" or because they were satisfied with the information they were receiving.

It is significant that none of the sugar mill companies were willing to be interviewed, although waste treatment is an important problem of the industry and had in fact provoked a severe environmental accident several months earlier [1]. However, it should be pointed out that sugar mill producers in Thailand do belong to a Trade Association which provides information to their members [2].

[1] ENFO News. A Quarterly Newsletter of ENSIC. AIT, Bangkok, 06/1992.

[2] Sugar Mill Producers' Association

1.2.5 *Company Profiles*

The majority of the companies interviewed were export-oriented. This was particularly true in the case of the food processing companies and the non-ferrous metal companies, some of whom were exporting 100% of their production.

Production Process

Most companies were either semi-automated or labour-intensive. For instance, the non-ferrous metal industries were producing bronze ware using traditional methods. They consequently require highly skilled craftsmen. Two managers indicated that the demand for their products from overseas was very high but they could not expand because of lack of skilled manpower. In other sectors (processing of fish products, and plastic products), managers had decided not to automate more as the benefit from greater automation were felt to be outweighed by lower quality (eg in sorting and grading foods, and in packaging). The textile companies were semi-automated but relied on skilled labour for printing.

Office Automation

Most companies were automated to some degree (usually for accounting and correspondence). They usually had stand-alone micro-computers although about 20% had already installed or were about to install LANs. All companies had either a fax or a telex but few had a modem. Were there was a modem link, this was mostly used to provide a direct link between the head office and the factory. In one case, there was direct electronic data exchange with the parent company abroad, but this had been abandoned temporarily pending improved international telecommunication links.

Many of the companies are planning to upgrade their office automation equipment with the installation of LANs and the establishment of a factory-head office data communication link.

1.2.6 *Current Information Strategies*

None of the enterprises in the survey had a unit dealing specifically with information.

All companies without exception use economic and trade information. Such information is obtained from a variety of sources, for instance from professional and trade associations. The most frequently quoted sources are:

- Department of Export Promotion
- Federation of Thai Industries (and its different industry clubs)
- Foreign Chambers of Commerce (e.g. Thai-German Chamber of Commerce, Thai-Japan Association, Korean-Thai Chamber of Commerce, Thai American Chamber of Commerce...).

The information provided concerns mainly market trends, prices and other economic indicators. Information on trade fairs, conferences, etc. is obtained through the foreign Chambers of Commerce and the Department of Export Promotion which also assists companies in identifying export outlets and promoting products.

Information on new product design and development of new product ranges is obtained through these sources.

Membership in foreign trade associations is usually by subscription. Several respondents felt that the membership fees were quite expensive but that membership is essential to keep informed about economic trends and events such as congresses, exhibitions, trade fairs, etc.

Several industries have strong trade associations such as the following:

- Federation of Thai Textile Industries
- Thai Silk Association
- Association of Frozen Food Producers/Manufacturers
- Rice Export Association (the membership fee is in proportion to tonnage of rice which is exported)
- Food Industry Club (part of the Federation of Thai Industries)

These associations have an important lobbying function but through their bulletins and newsletters, they also provide information to their members. In some cases, they also have a statistical information service, providing economic indicators (eg rice export association which has up-to-date information on tariffs).

Export-oriented companies are also often subscribed to foreign journals in order to keep up to date with trends and designs and for assessment of market tendencies.

Those industries which are heavily export-oriented, in particular the food processing and non-ferrous metal industries, tend to go to their trading partners for information. Such information may concern for instance fashion trends and information for developing new lines (for instance in bronze tableware). Many of these companies have sole distributors in the countries to which they are exporting.

Manufacturers also depend on their distributors overseas for up-to-date information on standards, specifications and other regulations concerning their products. For instance, responsibility for testing the level of cadmium, zinc and other metals in the bronze tableware manufactured in Thailand is borne by the distributor in Germany who has the products passed as being in compliance with EEC regulations. This aspect was also emphasized by a food processing company exporting to the US. Information on standards and regulations is provided by the US importer who also ensures that the products are certified in conformity with US standards.

Several companies have a budget for obtaining information on potential markets through market research carried out by private consultant firms. For instance, one food processing company whose production is distributed in Thailand has a budget of approx. 200,000 bahts per campaign (about 2-3 campaigns per year). However, some smaller export firms used exclusive distributors in different countries. Their problem was one of meeting the demand for their products.

Very few companies (less than 20%) state that they actively seek technological information; this figure may underestimate the real need for such information since many of the persons interviewed were commercial or financial managers rather than engineers or scientists. When the respondent was directly involved in R&D or in production, there was a much greater use of technological information, which was essentially obtained from informal sources.

Such sources included exchange of information at conferences and exhibitions and informal contacts with former professors, classmates and researchers working in the same field. One person mentioned this as her principal means of obtaining information (fish farming research). University libraries were also used to obtain hard copy of articles cited in on-line database or CD-ROM searches (see below). Two respondents mentioned that they also used university laboratories for testing equipment.

Apart from the universities, technical information was obtained through a number of sources:

- Ministry of Science, Technology and the Environment
- Department of Fisheries
- Department of Agriculture
- NSTDA (National Scientific and Technological Development Agency)

These sources might be considered as potential second level contact points for the INTIB/EEIS.

Despite attempts to exclude such companies, several companies in the survey were either joint ventures or companies with foreign capital. In all such cases, requirements for technical information were serviced by the parent company. Such services included SDI, abstracting and on-line database searches.

Few companies subscribe to technical journals such as the INTIB publications, although most received specialized journals pertaining to their industry (eg textile finishing, brass ware, plastic products, food processing). These journals often contain articles on environmental issues or energy conservation from the specific viewpoint of the industry. The journals are also a source of information on new technologies and processes.

On-Line Database Searches

Only two companies were subscribing in Thailand to on-line commercial databases. In one case (an AIT graduate engineer, now managing director of a frozen food company), subscriptions to international on-line information services totalled about US$ 2,000 per year. These were FAO Information Service on Fisheries, Japanese Shrimp Report and the US Shrimp Market Report. The information purchased which was essentially market-oriented, although occasionally technological in scope, was felt to be good value because it was always up-to-date.

However, there is considerable interest in on-line databases together with a willingness to try out any new services proposed. Some of the Thai databases mentioned by respondents were as follows:

- Thai Farmers' Bank (financial information)
- NSTDA (biotechnology and new materials)
- King Mongkut's Institute of Technology (food technology database)
- TISTR (Thai Institute of Scientific and Technological Research)

Although several people had experimented with these on-line services, the majority had not continued, not because of the cost but because of the quality of the information provided and the lack of support (training, assistance...).

Where there were plans to upgrade office computer facilities, the managers were also aware of and interested in on-line information facilities currently proposed in Thailand.

Practically no enterprises are currently using environmental/energy conservation information. Most respondents stated that their companies had proper plants for waste treatment and all affirmed that they were in compliance with government regulations in this respect. Three indicated that what was needed were more fiscal and financial incentives by the government to encourage industry to improve waste treatment and energy conservation. Another person indicated that heavy import taxes in importing technology was a disincentive to companies to invest in this area. He cited the example of a biodrum for producing energy from waste which cost twice as much in Thailand as in the United States. However, several food processing companies had installed biogas digesters for treating residues, and there are tariff incentives for the import of certain types of environmental technology.

1.2.7 *Potential Demand for Environmental and Energy Conservation Information*

From an analysis of the question concerning future demand for information services on

- Environmental related issues
- Energy conservation in industry
- Economic/business indicators,

it is clear that companies will continue to give priority to economic information of all types. As most of the companies in the survey are exporting manufacturers, there is a constant need to keep up-to-date with market tendencies, and to seek new outlets and diversification of products in response to changing demand. Practically all companies rated this topic as the most important or at least on an equal standing with environmental and energy conservation information.

Two reasons may explain this:

- Biased response, since few of the respondents were working on the production side, which would normally generate most demand for energy/environmental information.

- Most companies are already using this kind of information and are fully aware of its value. They are eager to identify services which could provide more up-to-date and more reliable data than what is already available.

However, it is encouraging to note that about 1/3 of the sample rated energy and environmental information equally with economic information. Several managers mentioned that they personally were interested in environmental issues and tried to keep abreast of developments, even though this subject did not really concern them professionally. The survey reflects the growing consciousness in Thai society in general of environmental threats and the need to take preventive action. There is also a consensus that industrial growth needs to be environmentally sustainable.

The presentation of the UNIDO set of databases prompted keen interest on behalf of almost all respondents. Several respondents spontaneously raised specific problem areas where they needed information (eg finding a new untarnishable alloy for (bronze) tableware, waste water treatment from a canning factory, stone wash treatment of silk). This would suggest that one of the reasons for a lower rating for environmental/energy conservation information is that many respondents had never accessed this type of database before and are unaware of the type of information available.

Regarding the type of information service, reference services were rated highly by most respondents (regardless of the subject area), particularly abstracts, bibliographic information and references (projects, institutions). Numerical and statistical data was not rated highly. Information on patents, specifications, standards and regulations was given priority rating by only few respondents. Those who did rate them highly also indicated that they would be willing to pay for such information.

The same was also true for four other types of information services which several respondents felt were needed though not necessarily on a regular basis:

- Technical consultancies
- Testing equipment
- Training
- Technical inquiry service.

The first two of these services can be obtained through universities and private companies, and companies using these services are already accustomed to paying for such information.

The following services were rated as low priority:

- Selective dissemination of information
- Full text news releases
- Clipping service
- Translations
- Photocopying

For instance, translation was rated as low priority even by persons with a poor grasp of English.

1.2.8 Payment of Services

All persons interviewed considered normal that there should be payment for information services provided. The general feeling is summed up the response of one manager: *"If our company needs information to improve its operations, we will pay whatever has to be paid, provided we are getting the right information"*.

Respondents emphasized that information has to be up-to-date and reliable. Most managers stated that, if these two criteria are met, they would be interested to buy such information.

About half of the persons responding to this question said that they were willing to pay more on condition that the information provided was delivered, evaluated and packaged. In other words, they had neither the staff nor the time to retrieve information on their own, but preferred to ask a qualified professional to identify the information they required, even if this were more expensive.

1.2.9 *Conclusions*

In conclusion, the following points are highlighted:

(1) All companies included in the survey are using economic information which they obtain from a variety of sources; newsletters and bulletins are the most common sources of information, with only very few using on-line databases and CD-ROMs.

(2) Only a few persons are using technological information and very few are currently accessing environmental and energy conservation information.

(3) As expected, joint ventures and subsidiaries of foreign companies rely on their parent company for information provision.

(4) There is a general openness to and interest in new information services. However, the success of such a service will depend on the quality, reliability and pertinence of the information provided. Most managers want to be served with "ready to use" information. They also expect that a fee has to be paid for information.

(5) Concern about environmental issues is becoming a central issue. Several respondents pointed to the timeliness of such a service.

(6) There was a general lack of knowledge about information already available in Thailand and how to access it.

In consequence, in launching a new information service in Thailand, much effort would have to be devoted to promoting it and to educating the target clientele on how to use it.

The success of the INTIB/EEIS will hinge on choosing the most appropriate primary contact point (PCP) for the system. The choice of this focal institution needs to be made on the basis of an assessment by means of key criteria. These are as follows:

- Acceptability to second level contact points (and endusers).
- Existing expandable network of relevant customers, or capability to build a comprehensive network.
- Existing information handling capabilities.
- Existing information technology infrastructure.
- Experience with UNIDO-type information items (technical information).
- Commitment to environmental issues.
- Commercial interest in information system and financial constraints.
- Existing marketing mechanisms.

Secondly, the INTIB/EEIS needs to build an effective network of intermediaries or second-level contact points who will need to meet the following criteria:

- Large customer base
- Commitment to disseminating information to their customer base.
- Translation and consultancy capabilities.
- Existing marketing tools and willingness to promote EEIS through these tools.
- Commitment to commercial provision of information services (directly or indirectly).
- Willingness to cooperate with the chosen primary level contact point.

3 RECOMMENDATIONS FOR NETWORK MEMBERSHIP

3.1 CANDIDATES FOR PRIMARY CONTACT POINT

The primary contact point (PCP) is required to hold up to 80% of the UNIDO database locally, and to answer queries against a fee. Ideally it should be an institution with existing data handling, information dissemination and networking capabilities.

Only one organisation is being considered for this role: the Library and Regional Documentation Centre (LRDC) of the Asian Institute of Technology (AIT).

In terms of expertise in providing environmental information on a commercial basis, LRDC is clearly the most competent organisation that is based in Thailand. For this reason, no other candidate organisations were considered. We understand that there has been political pressure to award the PCP function to a national Thai rather than regional organisation such as AIT. However, we do recommend to nominate LRDC as PCP in order to warrant the effective dissemination and functioning of the INTIB/EEIS.

Table 3.1(a) evaluates LRDC's suitability for the PCP role by means of the criteria put forward in *Section 2* above. *Table 3.1(b)* summarises key advantages and disadvantages of using LRDC in this role.

Table 3.1(b)
First Level Contact Point (AIT): Evaluation Criteria

Acceptability	High: recognised level of technical competence and existing links with most potential SCPs. However, political acceptability to Royal Thai Government might be a problem.
Existing/Expandable Network of Organisations	Regional environmental information networks with Thai subscribers (ENSIC, RERIC); existing informal links with most potential Thai SCPs.
Commercial Interest/ Financial Constraints	Only fully commercial provider of environmental information in Thailand.
Information Handling Capabilities	High. Use of external commercial and non-commercial databases (CD-ROM, on-line); extensive library on technical issues. There are currently 12 databases available over the LRDC LAN, of which 5 on CD-ROM.
Information Technology Infrastructure	Sophisticated. LRDC LAN has one file server (80386-33, 8 MB RAM, 350 MB hard disk) and 10 work stations. It is an Ethernet LAN with Netware v. 311 - 100 user operation system. One of the work stations is dedicated to remote access, and is also connected to 3 CD-ROM drives daisy chained together. Remote callers use ATERM software to call in and a password to log-on. In May 1992, there were 40 remote users, of which 21 from outside AIT. LRDC is in the process of expanding its LAN to the five specialised information centres (RDC) and technical services sections of the library. All CD-ROM will be connected to the file server using SCSI Express so that all work stations can get access to the CD-ROM drives. The LAN will soon be connected to AIT campus LAN. It is up 24 hours a day.
Technical Information Experience	High in areas covered by existing information systems.
Environmental Commitment	High: existing energy and environmental sanitation information networks.
Marketing Resources	Limited.
Network Coordination Capabilities	Proven but no recent customer/usage analysis of their existing systems.

Table 3.1(c)
First Level Contact Point (AIT): Summary of Key Advantages/Disadvantages

Advantages	Disadvantages
• Politically independent.	• Possibly not as acceptable to Royal Thai Government as a national Thai organisation.
• Proven information handling capabilities.	• Lack of funds to subsidise initial operation of INTIB/EEIS.
• Adequate technical infrastructure.	• Limited marketing resources.
• Effective networking capabilities.	• No established method to analyse customers/usage of their existing systems.
• Experience in dissemination environmental and technical information.	
• Commercial outlook.	

3.2 *SECOND LEVEL CONTACT POINTS*

ERL, AIT and other persons involved in S & T information in Thailand drew up a list of possible second-level contact points (SCPs) in Thailand and visited the following institutions as they seemed the most appropriate ones to serve as SCPs:

- Federation of Thai Industries, Industrial Environmental Management Programme
- Ministry of Industry
  - Department of Industrial Promotion, Industrial Services Division
  - Department of Industrial Works
  - Industrial Estates Authority of Thailand
- National Energy Information Centre
- ASEAN Sub-Committee for Non-Conventional Energy Resources
- Thai Development Research Institute
- Thai Institute of Scientific and Technical Research (TISTR)
- Technical Information Access Centre (TIAC)
- Technology Promotion Association (Thai-Japan)
- Technology Transfer Centre, Ministry of Science, Technology and Environment

These potential second level contact points are briefly characterised in *Table 3.2(a)*. *Table 3.2(b)* summarises their resources of relevance to the proposed INTIB/EEIS, by means of the criteria set out in *Section 2* above. *Annex A* presents meeting notes prepared by ERL (February/March 1992) and AIT (November 1992).

All the institutions visited expressed keen interest in participating in the INTIB/EEIS. They are all involved to a greater or lesser degree in promoting or providing technological information services, and it is felt that they would perform competently as communication/dissemination channels to end-users from Thai industry. However, if this implies any investment on their part, they would have to be previously aware of the corresponding commitments.

While most institutions recognised the need to charge for information, only a few institutions do currently charge for their services, and very often such a charge is nominal and does not reflect real cost (eg TIAC whose service is subsidised by external funding). *Annex B* provides samples of selected services and corresponding costs (TNDC, TIAC, AIT-ENSIC).

The institutions interviews see their main role in the proposed INTIB/EEIS as that of proactively promoting the service to their clientele either through bulletins, newsletters, by special announcements or through seminars and training sessions. It was generally felt that in Thailand, most users would go directly to the PCP for information. For instance, AIT is already a recognised academic institution that collaborates with industry. Consequently, the SCPs would not have a role to play in collecting and forwarding requests to the host institution. It is worth mentioning that most of these potential SCPs already have some sort of contact with the AIT information services.

While recognising the importance of such an EEIS service for Thai industry in general, there was a general consensus that the success of such a service would depend ultimately on the quality and relevance of the information provided.

Table 3.2(a)
Potential Second Level Contact Points

Organisation	Type	Branches	Objectives	Services
Federation of Thai Industries (Industrial Environmental Management Programme) (FTI-IEMP)	Industry association	24 industry clubs and 13 provincial clubs. For organisation chart, see *Annex E.*	• Representation of medium and large industries at national and international level • Provision of information and other support services to member companies and organisations • FTI/USAID Industrial Enviromental Management Programme	• Study, research, analzsis, test, experiment, training, dissemination of information on technology and technical know-how related to manufacturing • Newsletters in Thai and English • Environmental awareness activities • IEMP cooperative technical assistance • Industrial environmental database
Ministry of Industry (MOI): Department of Industrial Promotion, Industrial Development Division, Industrial Information Services Centre (IDD-IISC)	Government agency	5 regional IDD-IISC centres (of which three fully operational). For MOI organisation chart, see *Annex E.*	• Assistance to existing manufacturing businesses • Promotion of establishment of new businesses • Provison of technical information, extension and advisory services • Industrial technology training courses • Technology research and development, product testing and certification	• Rural Industry Information Service; focus on agro-processing, wood & furniture, construction materials, metal-working & machinerz, ceramics, rubber products, silk production
Industrial Estates Authority of Thailand (IEAT)	Government agency	7 fully operational industrial estates, 11 under construction	• Implementation of Government industrial development policy by establishing industrial estates	• Provision of basic infrastructre and amenities on industrial estates • Permitting • Advice to companies regarding solid waste and wastewater treatment

Table 3.2(a)
Potential Second Level Contact Points

Organisation	Type	Branches	Objectives	Services
National Energy Information Centre (NEIC)	Goverment agency	Network function for NATIS energy information network (16 public institutions) and for INNERTAP; three provincial focal points	• Provison of energy information	• Databases, eg re. standards/regulations and energy conservation
ASEAN Sub-Committee for Non-Conventional Energy Resources (ASCNCER) • **Technical Information Service (TIS)** • **Food Technology and Agro-Industry Technical Information Service (FTIS)**	Multilateral agency	None	• Administrative and coordinating centre for cooperative energy research projects in ASEAN	• Bibliographic databases, SDI
Thai Institute of Scientific and Technical Research (TISTR)	Government agency	None	• Scientific and technological research and dissemination of research results	• Thai National Documentation Centre, providing scientific and technological information to endusers • Industrial Cooperation and Promotion Centre, promoting the transfer to technology to industry
Technial Information Access Centre (TIAC)	Semi-governmental agency	Resource-sharing network of 15 institutions	• Provision of information to scientific, technological and industrial communities in Thailand • Creation of a resource-sharing network of institutions	• Technical query service for network • Gateway to international and national databases

Table 3.2(a)
Potential Second Level Contact Points

Organisation	Type	Branches	Objectives	Services
Technology Promotion Association (Thai-Japan) (TPA)	Private sector agency	None	• Dissemination of technology information • Promotion of Thai-Japanese business links	• Information services (videotapes, translation and reference services)
Ministry of Science, Technology and Environment: Technology Transfer Centre (MOSTE-TTC)	Government agency	None	• Dissemination of technology information to SMIs • Offers of technologies and cooperation ventures	• Database • Newsletter

Table 3.2(b)
Network Members: Capabilities

	Customer Base	Marketing Channels	Information Service	Technical Expertise	Consultancy	Commercial Interest
FTI-IEMP	• 3000 members • Organised in 24 industry and 13 provincial clubs • Open to large, medium and small enterprises and to industry assocations	• Regular newsletter • 'Thailand Update' newsletter in English • Technical bulletins • Workshops	• Industrial environmental database (IEMP) • Statistical database on industrial waste • IEMP Environmental reference library with 1000 books • FTI services include dissemination of technical information	• Environmental technical expertise accessible through IEMP	• IEMP provides env'l technical assistance to members • FTI services include study and research	• IEMP services are currently provided free of charge to members
IDD-IISC (MOI)	• IISC has 5 regional centres • 1000 queries answered in 1990	• 2 journals in Thai (Current Awareness Service, Industrial Information Newsletter with 600 clients)	• Industrial technical query service • Current Awareness Service (subscription) • Four in-house databases • Clearing-house function	• Technical expertise in-house or by reference to other institutions or agencies	• Translation capabilities	• Most services provided free of charge, esp to rural SMIs
IEAT	• 7 fully operational and 11 partly operational industrial estates	• Bi-monthly newsletter distributed to 3000 subscribers • IEAT representatives on each estate	• Database on factories located on estates • Solid waste and wastewater advisory services	• Not a centre of technical excellence but deal with technical issues on the estates	• Through IEAT rep's on estates and Env'l and Safety Control Division	• Information and advisory services provided free of charge

Table 3.2(b)
Network Members: Capabilities

	Customer Base	Marketing Channels	Information Service	Technical Expertise	Consultancy	Commercial Interest
NEIC	• 3 provincial centres • NATIS energy information network with 16 focal points • INNERTAP network	• Mailing list (100 names) • Database-based information services	• Factual/numerical energy database of 210,000 records • Bibliographic energy database (10,000 monographs in English or Thai) • Database of energy projects in Thailand	• High level of technical (energy) expertise	• Translation capabilities	• Cannot charge for their services as a government institution
ASCNCER •TIS •FTIS	• 4000 subscribers to TIS • 4000 subscribers to FTIS newsletter (worldwide)	• TIS journal • FTIS newsletter • List of TIS/FTIS subscribers	• TIS: 3 bibliographic databases with 1,600 references • TIS: abstracts journal and SDI • FTIS: food (codex) standards and bibliographic databases • TIS: SDI	• Technical expertise on energy and food technology issues	• Limited consultancy capabilities	• Both TIS and FTIS attempt to charge for their services (SDI, Abstracts Journal) but with little success

Table 3.2(b)
Network Members: Capabilities

	Customer Base	Marketing Channels	Information Service	Technical Expertise	Consultancy	Commercial Interest
TISTR	• TNDC is national node for scientific and technical information in National Information System • TNDC is Thai focal point of several regional networks • On-line links with 7 institutions within MOSTE	• Computerised mailing lists (of institutions linked with TNDC and of companies using ICPC services)	TNDC • Literature searches • Compilation of bibliographies • Current awareness service and SDI • Document delivery • STI computerised databases • Publishing activities ICPC • Dissemination of TISTR research results and provision of TISTR operational support facilities to the private sector	• High technical expertise (research institute)	• Translation service	• TNDC charge for information services provided
TIAC	• Network of 15 Thai scientific, technological and business institutions • Mailing list of 5000 names	• Mailing list • Newsletter (planned)	• Information search of international databases • Host of four Thai databases • Subscription to 16 CD-ROMs (see *Annex B*) • Document delivery service	• Limited (information service)	• Access to technical expertise through network	• All services are paying (but 80% subsidised) • Sample price list see *Annex B*

Table 3.2(b)
Network Members: Capabilities

	Customer Base	Marketing Channels	Information Service	Technical Expertise	Consultancy	Commercial Interest
TPA	• 800 member companies • 5000 individual members	n/a	• Videotapes • Reference service • Query service	• High	• Translation service	• Planned introduction of charges for query and data search services
MOSTE-TTC	• 1000 subscribers to newsletter	• Newsletter	• Overseas technology offers • Database • UNDP/METI focal point	• Medium	• None	• No commercial interest

Annex A

Interview Notes

Interview Notes
Thailand, February/March 1992

The following summarises key points that emerged in meetings with potential intermediaries identified during an ERL mission to Thailand in February/March 1992. Where possible, the following gives contact names, phone/fax numbers and addresses, their customer base and information services currently provided.

Technological Promotion Association (Thai-Japan) (TPA)
Mr Prayoon Shiowattana, General Manager (meeting 04/03)
5-7 Sukhumvit Road Soi 29
Prakanong
Bangkok 10110
Tel: 2580320, 2599160. Fax: 2586440

They are very interested in acting as a second level contact point, and have no problems in co-operating with AIT as the National Focal Point. *Anything that's good for the country...*

TPA have 800 member companies and 5000 individual members (industrial engineers and managers, very few academics), mainly from Thai companies or joint ventures.

Information services include videotapes, translation and reference services for which TPA charge small amounts. They are currently computerising their information centre using ISIS. TPA do not yet charge for query and data search services but plan to introduce charges.

Thai Institute of Scientific and Technical Research (TISTR)
Ms Sachee Piyapongse, Ms Suparn Chamswasdi (meeting 04/03)
196 Phahonyothin Road
Bang Khen
Bangkok 10900
Tel: 5791121-30 x 1221

TISTR would be prepared to co-operate with AIT which they perceive as better suited than themselves (because technically superior) to serve as National Focal Point. Within TISTR, Information Services would be the division to contact.

TISTR have had 300 industrial colaborative research partners over the past 15 years, of which 70% are SMIs, the rest large (international) companies.

TISTR have a cost recovery policy for the provision of information services, which includes an SDI. Pricing is by number of pages copied, and by number of records provided. They use CD-ROM but have no on-line facilities. The Thai National Documentation Centre is a TISTR division.

ASEAN Sub-Committee for Non-Conventional Energy Resources
Mr Terry Commins (meeting 05/03)
King Mongkut Institute of Technology (KMIT)
Bangmod, Thonburi
Bangkok 10140
Tel: 4275208, 4270242, 4283538. Fax: 4278077.

SCNCER are very sympathetic to the UNIDO EEIS project. They are happy to advertise the EEIS, and to give their private sector mailing list to AIT. They might be suitable as a second level contact point.

SCNCER current information/SMI resources include the following:-

- TIS-SDI with 16,000 records in three databases, using 4 MBytes. Records are indexed by title, subject interest, source, date and number of pages (no abstracts). They produce monthly lists of titles based on users interest and provide 5 articles free of charge, additional articles at $.36/page.

- KMIT has a SMI technical assistance division. They do not actively promote their service but wait for industrialists to come to them.

New information initiatives include the following:-

- Abstracts journals in topics such as solar energy, biogas, combustion and cogeneration (priced at $50 pa but at a decreasing scale per journal for subscription to more than one journal), which are planned to subsidise the SDI by packaging the two together.

- Pay-as-you-use information service for food processing industries as part of the 'King's Project' within KMIT. They are setting up a separate database.

- Environmental TIS-SDI.

Of 4,000 subscribers to the newsletter (including 400 from RERIC), 750 use the TIS-SDI and only 5 pay, including EGAT and the Thai petroleum authority. However, these are trying to establish in-house databases. SCNCER monitor usage of the TIS by country and user group (14 types of users, including business and consultancy). They currently have 695 subscribers from Thailand, of which 168 'businesses' and 26 'consultancies'.

Technology Transfer Centre, Ministry of Science, Technology and Energy
Mr Narong Rattana, Director (meeting 05/03)
Technology Transfer Centre
Ministry of Science, Technology and Energy
Rama VI Road
Phayathai
Bangkok 10400
Tel: 2459032. Fax: 2468106.

TTC volunteered to serve as focal point for the EEIS. They are already the national UNDP/METI focal point. For a number of reasons discussed last week, I think that they are unsuited to carry out this function.

TTC provides information to SMIs, in the shape of overseas technology offers (any technologies). They have a database and a newsletter for 1,000 subscribers. Their service is free. Input is provided from international organisations, eg APCTT.

Their services are promoted only through the newsletter which they distribute to subscribers. They would be suitable to act as a contact point for their existing customers but might be unwilling to act in such an 'auxiliary' role.

Other potential intermediaries

- ***Federation of Thai Industries***, representing medium and large industries. They have 3000 members which are organised in 18 industry clubs. Their membership is wider and more representative than that of the chamber of commerce. Everyone, including MOSTE, thought that they must be included in the EEIS, although TPA said they have too few full-time staff, and people in the DIW thought they are mainly a lobby group.

  Federation of Thai Industries
  394/14 Samsen Road
  Wachira
  Dusit
  Bangkok 10300

  Tel: 2800951. Fax: 2800959.

- ***Department of Industrial Promotion, Ministry of Industry.*** They deal directly with industry, eg through management courses, seminars, workshops and some consultancy, and charge for these services. They have journals and a mailing list. Unfortunately, I was given no contact name.

  Within the Department, there is the Metalworking and Machinery Industries Development Institute:

  Virat Tandechanurat
  Deputy Director
  Tel: 3811051-6, Fax 3611812.

  During my first meeting with AIT, it was also said that MOI have a food processing information service (but I might have misunderstood).

- ***Department of Industrial Works, Ministry of Industry***. Apparently they are the principal enforcement agency. Although they maintain that the Department of Industrial Promotion is a better outlet for the EEIS than they are, they might be interested in taking the EEIS intermediary role on board to assist companies in complying with environmental regulations. Contact them through a German contacts seconded there by GTZ:-

  Bernhard Meyhoefer
  Office of Industrial Services and Wastes Management
  Industrial Works Department
  Ministry of Industry
  Soi Bangyikhan
  Bargkoknoi
  Bangkok 10700

  Tel: 4347830. Fax: 4281879.

- ***Thai Chamber of Commerce***. They are probably less suited than FTI to serve as a contact point, because their concerns are less on the manufacturing side, b ıt should be approached in any case, both for access to their members and to obtain a list of Thai trade associations and chambers of commerce. Individual associations with close contacts to their members should be well suited as contact points, particularly if they are active in working for their membership. For instance, there appear to be four textile industry associations.

  150 Rajbopit Road
  Bangkok 10200

  Tel: 2250086. Fax: 2253372.

- ***Industrial Estates Authority of Thailand (IEAT)***, which has a captive client base. It is long-term government policy to relocate most industries to industrial zones.

  618 Nikom Makkasan Road
  Phayathai
  Bangkok
  Tel: 2530561, 2532965, 2534085. Fax: 2534086

- ***Engineering Institute of Thailand, Chulalongkorn University***. The Institute has a member journal through which the EEIS could be advertised, and might itself be a suitable EEIS contact point.

  Tel: 2526051-2

- ***King Monkut Institutes*** (in addition to the one in Thonburi which houses the ASEAN SCNCER).

- ***Energy Conservation Centre of Thailand***
  National Energy Administration
  17 Rama I Road
  Patumwan
  Bangkok

- ***Thailand Development and Research Institute (TDRI)*** which acts as an independent Government think-tank and undertakes collaborative R&D with industry. Contact Dr Thera, Director, Natural Resources and Environment Division.

- ***Board of Investments*** who have an overview of investments in Thailand which would recommend them for the role of a contact point, especially as environmental criteria are part of the process of deciding on investment privileges.

  Office of the Board of Invetment
  555 Vipavadee Rangsit Road
  Bangkhen
  Bangkok 10900

  Tel: 2701400, 2701410, 2701420. Fax: 2710777

- ***Office of the National Environment Board***: probably unsuited as they are not in daily contact with SMIs and other industries.

- ***Board of Trade***: mainly a lobbying organisation, probably unsuited.

DEMAND FOR ENVIRONMENTAL AND ENERGY INFORMATION AMONG THAI SMALL AND MEDIUM INDUSTRIES

The following briefly describes answers given to the question whether there was a demand for energy and environment information information among Thai SMEs (quotations in italics).

THAI-GERMAN CHAMBER OF COMMERCE: Interest to be informed is *astonishingly great* but nothing is done as there is no pressure. They could not think of any cases in which environmental regulations have been enforced.

TPA: *From time to time people come with environmental queries. We get the answers to these mostly from Japan.* Queries come from Thai regulators and concern mainly Japanese regulations. There is little demand for information from SMIs; the enforcement of environmental standards would drive companies into bankruptcies. Everything environmental needs to be subsidised. On the other hand, *you have to charge for the provision of information for people to recognize the value of information.* There is high practical concern about safety and hazardous materials.

TISTR: They perceive increasing demand resulting to greater enforcement pressures. However, most environmental requests are not by companies but by government officials and researchers.

SCNCER: Environment is the biggest issue requested through their SDI. There is *definitely demand* for environmental information. For instance, recent energy conservation and environmental legislation has set aside Baht 1bn (of which 60% direct incentives) as building incentives, and reduces total import duty to only 10%. Companies are expected to have an energy manager on the premises, and national agencies have been designated for energy audits. Baht 4bn have been earmarked for the environment. There is *direct pressure* on industry (despite lack of monitoring capabilities), and there has been much resistance to the bill. Yet despite this pressure and definite demand, in SCNCER's experience few customers are willing to pay.

TTC/MOSTE: SMIs are unfamiliar with the concept of buying information and do not have enough money. They should not pay, and the service should be fully subsidised.

STRATEGY POINTS

A number of strategy points were made by interviewees during my visit. These are listed in the following, by source:-

ASIAN INSTITUTE OF TECHNOLOGY

- AIT are happy with the two-level concept but think that there should be no bar to direct access to them by SMIs.
- AIT are happy to be the first level focal point for Thailand but think they ought to include other countries, possibly Vietnam. This is due to their regional rather than national mandate. They are doubtful that Thai organisations would come to them for information, although this doubt relates more to governmental than to private sector organisations and entities.
- In the long term, AIT would like to include some ENSICNET members as contact points.
- There is a relative oversupply of information in Bangkok. We should seek to market the system in provincial industry centres such as Chiang Mai and Song Kla.
- 60% cost recovery is a realistic maximum to achieve.
- The EEIS, like ENSIC, should function as a bank, with members having credits/debits with EEIS rather than real transfer of funds.
- There is currently no need to access Vienna on-line.

- EEIS should be two-way. LDRC would built UNIDO information into their existing information systems and would welcome UNIDO to access their resources. EEIS should be a two-way flow of information.

- There is a definite need for a strong training component in the project.

- Quite rightly, AIT say that *it is difficult to sell something that you cannot show*. They would like an IDA update now, preferably of a Thailand or ASEAN subset, or of records covering the last five years.

Department of Industrial Works

- The first level contact point should not be a government agency.

- The first level contact point should prepare a list of approved consultancies to assist SMIs in the implementation of information provided through the EEIS.

ASEAN Sub-Committee for Non-Conventional Energy Resources

- Thailand being the biggest AIT donor, it is fair to give *preferential treatment* to Thailand, ie choosing Thailand for the pilot system.

- The system should be partly bilingual (eg hard copy in English and titles and abstracts in Thai, for marketing purposes; this is possible within RERIC).

- The initial marketing letter should be signed by someone big in Thailand. Adverts should be place in FTI and IEAT newslettors and annual directories.

- The EEIS should aim at 7,000 companies on the mailing list and 30% usage of the system.

- AIT needs to set up a unit to handle the EEIS, including a separate postbox.

Department of Industrial Promotion, Ministry of Industry
Industrial Services Division
ISI Building, Soi Treemit, Kluay Nam Thai, Rama 4 Road, Prakanong
Bangkok 10110
Tel 381 16 02
Fax 381 1601

Persons met: Ms Sumonman Kalayasiri, Director, Industrial Services Division
Ms Sukothai, Chief, Industrial Information Services Centre
Mr. Chanarong, Chief, Information Acquisition & Services Section

Located in the Ministry of Industry, the Department of Industrial Promotion's primary objective is to :

- assist existing manufacturing businesses to attain greater production efficiency and growth
- promote the establishment of new manufacturing businesses, in particular new medium and small industries in the regional areas by providing technical assistance and other consultancy services to entrepreneurs setting up a business.

Within the DIP itself, the **Industrial Development Division** is mandated

1. to provide technical information, extension and advisory services.
2. to conduct training courses in specific fields of industrial technology
3. to conduct technology research and development, product testing and certification, current technical awareness
4. to promote better design and packaging

Within the IDD, the **Industrial Information Services Centre (IISC)** is responsible for providing information services to industry. A Rural Industry Information Service was set up in 1986 as a pilot project with external funding. This service provides technical and management information to rural industries. However, in reality, services are today not limited to rural SMI, but available to any entrepreneur who requests them.

IISC/IDD has 5 regional centres, three of which are fully operational. These centres are attached to DIP's Regional Industrial Promotion Centres (Chiang Mai for the North, Khon Kaen for the Northeast and Songkhla for the South). The IISC acts as coordinator and covers the Central Region. Two centres in the East and West are not yet fully operational. (See Organization chart of Industrial Development Division of DIP.)

The service focusses on seven priority (rural) industry sectors :

- Agro-processing (flour produ[redacted], fish and marine products; fruit and vegetable products)
- Wood and furniture
- Construction materials
- Metal-working and machinery
- Ceramics (pottery, bricks, refractory material)
- Rubber products
- Silk production

IISC/IDD processes specific information requests[1] received from individual entrepreneurs. These may concern requests for information on suppliers of raw materials or equipment, details on regulations, data on prices, information technology. It functions very much as a technical query service. The client usually receives an evaluated response to his query along with selected abstracts and/or photocopies of relevant articles. Assistance in replying to a query may be sought from another department of DIP, a government agency (e.g. Food and Drug Authority for information on certain chemicals), or private industry. An example was given of a request from a small rural company who had a problem repairing a new motorbike model. IISC/IDD obtained the necessary information from the manufacturer and passed on to the client. At the same time, this information was also passed on to the MIDI (Metal Working and Machinery Industries Development Institute) for use in their future training courses for mechanics.

The IISC/IDD publishes regularly two journals:

- *Current Awareness Service* containing abstracts of technical publications (in Thai)
- *Industrial Information Newsletter* (providing essentially management information news) - also in Thai

The latter is published every 2 months and is distributed free of charge to around 600 industries. The Current Awareness Service (bi-monthly) is upon subscription, but photocopies of up to 10 articles are given free of charge; The IISC/IDD is trying to educate its users to the idea that they have to pay for information.

IISC/IDD produces four in-house databases on:

- information sources
- factories which have received assistance or have been visited by the department
- repackaged information - 2000 abstracts (in Thai)

[1] According to the information document supplied by DIP, about 1000 such requests were processed in 1990.

- subscribers to Current Awareness Service and Information Newsletter

Each regional centre receives on diskette updates to these databases. They also receive a photocopy of each article which has been abstracted.

The IISC/IDD is very interested in being involved in the EEIS project. They already are active as a clearinghouse and their client base is essential small industries, for the most part based outside Bangkok. They would be willing to promote the EEIS service to their clients. They see their function as that of a clearinghouse, forwarding requests for information to the host; they also believe they could contribute by translating into Thai selected information provided by EEIS.

Industrial Estate Authority of Thailand
618 Nikom Makkasan Road, Bangkok 10400
Tel 2530561
Fax 2534086

Persons met : Ms Kasemsri Homchean, Director, Environmental and Safety Control Division
Dr. Verapong Chaiperm, Environmental Engineer

The IEAT is a semi-public government agency existing under the jurisdiction of the Ministry of Industry. It is chartered to implement the Government's industrial development policy which has a policy to relocate factories to industrial estates. Under the Factory Act, the Department of Industrial Works (Ministry of Industry) controls all factories except those located on industrial estates which are licensed by IEAT. 7 industrial estates are fully operational and 11 more are under construction.

The IEAT is empowered by law to issue all permits to factories seeking to set up business on an industrial estate. The IEAT also provides information on investment and tax privileges as well as on the design and proper construction of a factory. IEAT provides basic infrastructure and amenities including solid waste and waste water treatment. Hazardous waste is also taken care of by IEAT.

The companies establishing factories on industrial estates are for the most part large companies or joint ventures.

The **Environmental and Safety Control Division** provides technical assistance and advice to companies moving to an industrial estate, regarding solid waste and waste water treatment. The Environmental and Safety Control Division also intervenes when problems occur with waste treatment.

IEAT has an office on each est[redacted] assistance to factories and trouble-shooting.

The **Investment Promotion Department** is in charge of all information activities of IEAT. It produces a bi-monthly Newsletter which is distributed to all investors, government agencies, and interested individuals (3000 companies/individuals).

This Department also has a database containing information on factories located on estates (Name, location, contact person, production capacity, investment, ...).

IEAT would be interested in cooperating with AIT and UNIDO. Promotion of the service could be made through IEAT newsletter or directly with the representatives of IEAT on each site. However, since IEAT takes care of all infrastructure/amenities aspects (including waste treatment and other related environmental problems), both Ms Kasemsri and Dr. Verapong felt that companies on industrial estates would probably have less need for the type of information offered through EEIS than say factories located elsewhere. In fact, a potential client of EEIS would be the Department itself.

Department of Industrial Works, Ministry of Industry
Soi Bangyikhan, Bangkok 10700
Tel. 434 78 30
Fax 428 18 79

Persons met: Mr. Boonyong, Director, Office of Industrial Services & Waste Management
Mr. B. Meyhoefer, Office of Industrial Services & Waste Management

An initial contact was established with the Office of Industrial Services & Waste Management. The Director of this Department, Mr. Boonyong, suggested that, given the interest in DIW for such a service and since it could concern several departments, AIT should send an official letter to the Director-General of the Department of Industry, who could organize a meeting with all concerned departments.

National Energy Information Centre
Energy Policy and Planning Division,
Department of Energy Administration
17 Rama 1 Road, Bangkok 10500
Tel. 2210139

Persons contacted: **Ms Nongklak Boonyawatn**
Ms Renoo Pongsomrite

NEIC is the information arm of the Department of Energy Administration (Ministry of Science, Technology and the Environment). It has an important network function as it is the national node for the NATIS energy information network (16 public institutions working in the energy field, list in Thai attached). It is also the national focal point of INNERTAP, and has three provincial focal points in Chieng Mai, Khon Kaen and Songkhla.

NEIC maintains and updates a factual/numerical database of 210,000 records on energy resources, supply and production, demand and consumption, distribution, prices, import and exports for all forms of primary, secondary and final energy. It also produces and maintains a bibliographic database of its energy collection (6500 monographs in English 3549 in Thai) and a database on energy projects undertaken in Thailand:

Library (Minisis) - 6500 monographs in English, 3549 in Thai
INNERTAP(Thai)
Projects on energy in Thai

Its main users are students and government officials. A few private companies use its services particularly regarding standards/regulations and energy conservation. They have a mailing list of some 100 addresses.

They are interested in EEIS but felt it would be difficult for them to act as a second-level point since, as a government body, they are unable to charge for their services.

Federation of Thai Industries
394/14 Samsen Rd, Bangkok 10300
Tel 280 0951
Fax 280 0959

Persons met : Pairote Gesmankit, Executive Director
Mit Pramuanvorachat, Deputy Executive Director (also in charge of information)

The FTI represents medium and large industrial enterprises at the national and international levels. It has a leading advisory role and is actively involved with the Board of Investment, the Department of Export Promotion, the Industrial Estate Authority of Thailand and Thailand's Industrial Standards Institute. It has 3000 members, organized in 24 Industry clubs and 13 Provincial Clubs. It is open to both corporate industry and all types of industrial trade associations registered in Thailand but also to small enterprises and companies (Associate members). The organizational chart of FTI is attached.

Among its various activities, the FTI provides services to its members "involving the study, research, analysis, test, experiment, training, dissemination of information on technology and technical know-how related to manufacturing".[2] The FTI publishes a regular newsletter for its members ; it also co-publishes "Thailand Update" a newsletter in English.

The FTI is very interested in providing information services to its members. In addition to the information services to be provided through the Industrial Environmental Management Program (see below), it also has an incipient Information Service for providing technological information. For the time being, they disseminate information through their bulletins and through technical seminars/training workshops on specific topics. (For instance, a seminar may be planned on information services). They have also produced a certain number of video tapes which can be borrowed by members.

Under an ASEAN project, they would be the Thai node of a subregional trade information network between chambers of commerce and industries in the ASEAN region. The Information Centre is equipped with an IBM-400 and it is planned to provide an electronic link with the FTI's regional centers as well as with the Board of Trade, the Thai Bankers Association, Thai Chamber of Commerce.

FTI Information Centre would be definitely interested in participating in the AIT/UNIDO Information Service. The function of the intermediary institutions was explained to FTI. The FTI representatives were quite eager for FTI itself to host the EEIS databases but it is doubtful whether they would have staff to provide the necessary services.

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[2] Thai Federation of Industries' Brochure

Industrial Environmental Management Program (Federation of Thai Industries)
Tel 241 2141
Fax 243 3875

Person met: Ms. Pornthip Pitucklimskul
Data Analyst

The **Industrial Environmental Management** which is part of the FTI was set up jointly by FTI and USAID in 1990. (It is one of the subject projects of the programme on Management of Natural Resources and Environment for Sustainable Development). Its programme covers 4 main areas :

- Environmental awareness activities (seminars, training sessions, radio and TV programmes to develop industrial awareness of environmental issues)
- International exchange
- Cooperative technical assistance (including UNIDO and US Environmental Protection Agency)
  - technical assistance in cooperation with leading US organizations and industries
  - provides consulting services to members in the field of industrial promotion to enable the industries to comply with standards and regulations
  - undertakes environmental impact studies
  - advises state and private industry about the appropriate regulations and standards for pollution control
- Industrial Environmental Database which will serve as a major source of information on various aspects of industrial environmental problems, pollution prevention, treatment and disposal of industrial wastes and related areas.

Since the Director of IEM, Mr. Sarawoot Chayovan and Ms. Dominica Dacera, Environmental Engineer, were both absent in September. Ms. Pornthip Pitucklimskul, who is in charge of data collection and analysis, presented the information activities of IEM.

Since IEM has only recently been established, its information programme is still at the incipient stage. IEM currently has a reference library continuing more than 1000 technical books (mostly in English). It is also subscribed to a certain number of periodicals dealing with environment issues. The library is open to FTI members and academics. The IEM is well equipped. It is in the process of setting up a statistical database on industrial waste (quantities, projects). Another on-going activity is the establishment of a waste materials exchange database. At the moment data are being

collected through a questionnaire survey. The IEM does not charge for its services provided to FTI members .

The IEM might be interested in participating in the EEIS project and promoting it among the members of FTI. Ms. Pornthip requested however that Mr. Sarawoot and Ms Dacera be contacted upon their return.

FTI is a very dynamic and forward-looking institution which enjoys a privileged position with both government and industry. Their involvement in EEIS, through their Information Centre or through the Industrial Environmental Management Program would certainly be extremely positive.

Technical Information Service
Asian Sub-Committee on Non-Conventional Energy Research
Food Technical Information Service
King Mongkut's Institute of Technology Thonburi
Rasburana, Bangkok 10410
Tel 427 042 42
Fax 427 80 77

Person met : Terry Commins (SCNCER)

Two information services operate out of KMIT-Thonburi. the ASEAN Sub-Committee on Non-Conventional Energy Research - Technical Information Service (SCNCER-TIS) and the Food Technology and Agro-Industry Technical Information Service. (FTIS)

SCNCER-TIS

ASEAN Sub-Committee on Non-Conventional Energy Research Secretariat is located in King Mongkut's Institute of Technology and serves as the administrative and coordinating centre for cooperative energy research projects in the ASEAN countries. Its Technical Information Service has three bibliographic databases containing some 1600 references. TIS provides a computerized Selective Dissemination Information service to registered subscribers in the field of non-conventional energy and energy conservation research. Information is disseminated mainly in the form of abstracts, reports and journal articles. Each subscriber is entitled to receive 5 free articles per month. Additional titles are charged $.36 per page. Of 4000 subscribers, 700 use the SDI service but only 12 pay for articles. SCNCER-TIS intends to publish one or two quarterly abstract journals on a subscription basis. The subscription to these journals would be around $50 p.a. and would subsidize the SDI service. TIS is also planning to connect to DATANET.

FTIS

Food Technology and Agro-Industry Technical Information Service is also housed on KMIT's campus. It receives support from different agencies on the campus (Pilot Plant Training Institute, Department of Food Engineering, Department of Chemical Engineering, Food Processing Plants in Rural Thailand and Food Standards Office). It is also closely connected to the Food Industry Club (FTI?). They have a database of food (codex) standards and a bibliographic database. Like the SCNCER-TIS, the FTIS provides a SDI service to its subscribers - 5 articles per month. This service which is relatively recent is being provided free of charge in the initial period.

FTIS has a newsletter 4000 copies of which are distributed worldwide. Its mailing list contains some 3000 names and addresses of which perhaps 90 % are the private sector companies.

ASCNER and FTIS are interested in EEIS. They would be willing to promote it through the FTIS newsletter or by sending an announcement about it to their subscribers.

Thai Development Research Institute
Natural Resources and Environment Division
Rajaphat Building , 163 Asoke Road, Bangkok

Persons contacted : Dr. Thera, Director, Natural Resources & Environment Division
Dr. Paul Hastings, Geographical Information Systems

TDRI is a government sponsored "Think-tank" which undertakes R&D in crucial issues in cooperation with industry. Although several managers interviewed in the user survey mentioned TDRI's research programme, it was not felt to be very involved in information dissemination. The information service of TDRI is essentially for its own researchers and consultants. TDRI does not have any information activities targetting outside users.

Thai Institute of Scientific a[redacted]search (TISTR)
196 Phahonyothin Road
Bangkhen, Bangkok

Tel[redacted]21-30

Persons met : Ms. Sachee Piyapong[redacted]irector, Industrial Cooperation and Promotion Centre
Ms. Nongphanga Chitrahora, Director, Thai National Documentation Centre

The TISTR is a non-profit-making state enterprise under the Ministry of Science Technology and Environment, which has responsibility for undertaking scientific and technological research. It is intended to operate as a centre of excellence by providing S&T services to both public and private enterprises. These services include testing and standards, and provision of relevant information.

The two units which could serve as second-level contact in TISTR are:

- Thai National Documentation Centre
- Industrial Cooperation and Promotion Centre

Directors of both Centres took part in the meeting to discuss EEIS. They cooperate closely.

The main objective of the **Thai National Documentation** (comprising a Library Division, Information Division, Scientific Media Production Division and a Computer Division and Scientific Editorial Service Division) is to provide scientific and technological information to scientists, research workers and industrial entrepreneurs. The TNDC is the national node for scientific and technological information within the National Information System of Thailand. It is also the Thai focal point of several information networks operating in the region (ASTINFO, APINMAP on medicinal and aromatic plants and APPINESS for the social sciences...). It has an on-line connection with 7 institutions in MOSTE.

It provides the following services to clients

- Literature searches (from its own sources and from other information sources in Bangkok - TIAC, AIT, Universities)
- Compilation of specific subject bibliographies
- Current awareness
- Selective dissemination of information
- Document delivery
- Translation service

TNDC has also established a certain number of STI computerized databases :

Database on Scientific Serials in Thai Libraries
Abstracts On Medicinal and Aromatic Plants in Thailand
TISTR Technical Reports
Indexes to the Royal Gazette (Acts, Regulations, Standard Specifications related to science and technology)

Its publishing activities include

Technical Reports of research carried out by TISTR units
TISTR Conference and seminar proceedings
Journal of Science and Technology (3 times)
Thai Abstracts
Abstracts of TISTR Technical Reports
List of Scientific and Technical Literature Relating to Thailand

TNDC charges a fee for the information services it provides. Publications are sold or exchanged. The fee for a bibliography is 45 Bahts per page. Hard copy costs 1.50 Bahts per page and translation costs approximately 200 Bahts per page (A4).

The Industrial Cooperation and Promotion Centre (ICPC) is responsible for activities concerning the transfer of technology to industry. The main objective is the dissemination of TISTR research results and the provision of TISTR operational support facilities (training, testing, analysis, quality control) to the private sector. This centre works closely with TNDC in providing industry with the scientific and technological information they request.

Both Centres have computerized mailing lists. In the case of TNDC, this list contains the names and addresses of institutions in Thailand and abroad with whom they exchange information. ICPC's mailing list contains the names and addresses of companies who have used their services.

Both ICPC and TNDC were extremely interested in participating in the EEIS service. They already have close working relationship with AIT and with UNIDO. They would be very willing to promote the service with their users.

TIAC (Technical Information Access Centre)
6th Floor Vidyabhathana Building (#602)
Chulalongkorn University Soi 12, Phya Thai Road, Bangkok 10330
Tel 2168801-4
Fax 216 8800
Director : Dr Sudhiporn Patumtaewapibal

Person met : Ms Praditta Siripan (Senior Information Scientist)

The TIAC service which is part of the National Science and Technology Development Agency (NSTDA) was set up relatively recently with funding from USAID. Its objective is to provide information access to the scientific, technological and industrial communities of Thailand. It also aims to develop a resource-sharing network of institutions in Thailand. The institutions presently participating in this consortium are

American University Alumni
Asian Institute of Technology
Chiangmai University
Chulalongkorn University
Industrial Finance Corporation of Thailand
Kasetsart University
Khon Kaen University
King Mongkut Institute of Technology Thonburi
Mahidol University
National Institute of Development Administration
Prince of Songkhla University
Srinakarinwirot University
Thai Business Information Centre
Thai Industrial Standards Institute
Thailand Institute of Scientific and Technological Resarch

At the present time, members of the consortium can channel requests requiring on-line database searches to TIAC who acts as a gateway for international database searching and document delivery.

TIAC currently provides information searching of international on-line databases (through DIALOG, BRS, ORBIT, STN) in a wide range of fields (science, technology, business, social science and development-related areas). It also hosts a number of Thai databases :

- Thai Union List of Serials,
- Company Profiles, produced by the Thai Business Information Centre
- Theses databases (Chulalongkorn, Mahidol, KMIT Universities)
- Database of CDROM subscriptions in Thailand

TIAC itself subscribes to some 16 CDROMs, several of which are full-text articles. The list as of September 1992 is given in the Appendix.

Regarding document delivery, TIAC usually tries to procure hard copy from one of the university libraries, otherwise it uses the British Library and UMI facilities.

All services are paying, but the on-line database searches have until now been subsidized. The average cost of an on-line search of an international commercial database would be about 1000 Bahts (50 titles with abstracts), but the customer is only charged 200 Bahts.

A new pricing policy is due to be introduced. For a cost of 200 Bahts per 10 records, the user would be faxed the results of the on-line search.

For a CD-ROM search, the cost is as follows:

bibliographic list	50 Bahts per request (60 records)
CD-ROM printout (full text)	7 Bahts per page

The tariff structure of TIAC's FAST service is given in Appendix VI. FAST Service provides full-text searches from Business CD-ROMS. The services offers three types of subscriptions: individual, organization and libraires. Each type of subscription gives a certain number of free searches of ABI/INFORM. The fulltext printout proposed for members is10 Bahts/page.

For the time being, TIAC does not publish its own newsletter. However, this is scheduled for the near future. It has a mailing list of some 5000 names and addresses of users of their services (all sectors). It would be possible to select from this database the users from industry.

TIAC is interested in cooperating with AIT and UNIDO in the proposed EEIS. It sees its role both in promoting the service and in forwarding requests for technological information to AIT. TIAC organizes each year 10-12 training seminars on information searching. These seminars are intended for potential users in the private and public sectors. Should AIT so wish, a presentation of the EEIS service could be made in one of these seminars.

Conclusion

All the institutions visited expressed keen interest in participating in the EEIS service. They are all involved to a greater or lesser extent in promoting or providing technological information services.

Annex B

Price and Tariff Structures of Selected Institutions

TIAC

Your best information service

TIAC/CD-ROM List
February 1992

1. CAB (Commonwealth Agricultural Bureau International)
   1990 Volume 3 Part 1
   1987-1989 Volume 2

2. Adonis : a full-text articles from over 300 core journals on medical and biomedical subjects with graphic and images display.

   TIAC has a trial disc covering 1991 releases.

3. AIDS (Maxwell Compact Libraries)
   covering 1983 to date
   Quarterly updates/Full-text

   AIDS knowledge base,
   Articles from medical journals:
   1. AIDS
   2. Annals Internal Med
   3. BMJ
   4. J Infectious Diseases
   5. Lancet
   6. Med Letters
   7. MMWR
   8. N Eng J Med
   9. Science

   Plus articles from AIDSLINE and Medline.

4. Viral hepatitis (Maxwell Compact Libraries)
   Volume 1, No 2 Fall 1991
   Articles from:
   1. Am J Public Health
   2. Annals Internal Med
   3. BMJ
   4. J Allergy & Clinical Immuunology
   5. J Infectious Diseases
   6. Lancet
   7. Med Letters Drugs & Therapeutics
   8. MMWR
   9. N Eng J med
   10. Seminars on Liver Diseases

5. British Medical Journal, (Maxwell Compact Libraries)
covering 1986-1990 full-text BMJ,
1966-1990 Medline citations of BMJ

6. Morbidity and Mortility Weekly Report (Maxwell Compact Libraries)
Volume 1, No 1 Spring 1991
covering full-text from Volume 34, No 51 Jan 3,1986-
Volume 39, No RR 18 Dec 28,1990
Medline MMWR cumulative index
Jan 1981-Dec 1990

CD-ROM Request Prices

1. Bibliographic list with abstracts	50.00 Baht/request (60 records)
2. Full-text from CD-ROM (No image/graphic prints)	7.00 Baht/page
3. Full-text from CD-ROM (Business periodicals, Image/graphic prints)	10.00 Baht/page (FAST members)
	35.00 Baht/page (non-members)

TIAC introduces Summer 1992 OFFERS for fulltext readers:
Business management, Administration, Computers:
Information technology, Communications, and Marketing

Call TIAC now for more FAST information
Tel 216-8801-4

FAST price list/March 1992

Membership:	Annual fee	Benefits
Individual	1,000.00 Baht	Free ABI/INFORM searching Fulltext from FAST list 10.00 Baht/page
Organization	2,500.00 Baht	Free 50 ABI/INFORM requests Other ABI/INFORM fee is 25.00 Baht/request(60 rec) Fulltext from FAST list 10.00 Baht/page
Libraries	10,000.00 Baht	
	Choice 1	Free 400 ABI/INFORM requests Additional ABI/INFORM requests 25.00 Baht/request(60rec) Fulltext from FAST list 10.00 Baht/page
	Choice 2	Free 200 ABI/INFORM requests 25.00 Baht/request(60rec) Free 50 content pages Fulltext from Fast list 10.00 Baht/page
	Choice 3	Free 100 content pages ABI/INFORM fee is 25.00 Baht/request(60rec) Fulltext from Fast list 10.00 Baht/page
Non-membership	NO	ABI/INFORM requests fee is 50.00 Baht/request(60rec) Fulltext from FAST list 35.00 Baht/page

* Fast pricelist is subject to change with prior notice to our members.

LIST OF PUBLICATIONS AVAILABLE FOR SALE

1. Housing in Thailand.	100 baht US.$5.00
2. Abstracts of Master Theses in Thailand. 1944-1974, 1977, 1018 pp.	500 baht US.$50.00
3. Index to Master Theses in Thailand. 1975-1979, 699 pp.	300 baht US.$30.00
4. List of Scientific and Technical Literatures Relating to Thailand.	100 baht US.$5.00
No. 1-7 Out of Stock	
No. 8, 1984	
No. 9, 1990	
5. Thai Abstracts.	
No. 1-5 Out of Stock	
No. 6, 1976	100 baht, US.$5.00
No. 7, 1977	
No. 8, 1981	
No. 9, 1984	
No. 10, 1985	
No. 11, 1986	
No. 12, 1987	
No. 13, 1988	
No. 14, 1989	
No. 15, 1990	
No. 16, 1991	
6. Scientific Serials in Thai Libraries	2,000 baht
7. Thai National Documentation Centre Bibliographical Series	
No. 1. Water Resources in Thailand 1971, 49 pp.	100 baht US.$5.00
No. 4. Water Hyacinth Abstracts, 1972, 119 pp.	100 baht US.$5.00
No. 6, Abstracts on Medicinal Plants in Thailand no. 1, 1980	100 baht US.$5.00
No. 7. Selected Bibliography on Biogas 1982, 68 pp.	100 baht US.$5.00

ENSIC PRICE LIST (All in US$)

EMBERSHIP FEES

	Individual	Institutional
:veloped Countries[1]	60.00	110.00
:veloping Countries[2]	35.00	65.00
IT Alumni, All Countries	(15% discount)	

ese fees include air-mailing of "ENFO Newsletter" and surface-iling of all other ENSIC publications.

Europe, U.S.A., Canada, Australia, Japan, New Zealand, Middle East

All other countries.

) get all your ENSIC publications by air-mailing, add:

Asia	15.00
Africa, Europe, Oceania	20.00
Americas	30.00

NSIC members will receive the following documents through nual (January to December) membership fees:

ENFO Newsletter	= 4 issues a year
Environment Index	= 3 issues a year
Environmental Systems Reviews	= 2 issues a year

:E FOR ENSIC SERVICES

eference Service Fee:

First hour	$15.00
Hourly rate thereafter	$ 5.00

bliographic Search on Computer:

	Subscriber	Non-Subscriber
: connect hour	$40.00	$60.00
inimum charge for up to 50 references	$10.00	$15.00
: each additional reference	$ 0.10	$ 0.15

PAYMENT SUPPLY SERVICE CHARGES

NON-AIT Publications (within the limitations of copy-right laws)

Photocopies

The prices charged are made up as follows:

a) a minimum charge of US$10.00 for up to 10 pages

b) a charge on the number of pages calculated from the following rates:

US$0.20/page for developing countries

US$0.30/page for developed countries

These prices include airmail costs and binding if needed.

AIT Publications (Theses, Dissertations, Research Reports, etc.)

A Charge of US$10.00 per AIT publication will be added to the above photocopying charges.

Microfiches

Microfiches (60 pages/fiche):US$10.00/fiche

(By airmail to any country)

Advertising Rates

The advertising rates for including an advertisement in four issues of the newsletter are as follows:

- One full page (19 x 25 cm)	US$300.00
- One half page (19 x 12.5 cm)	US$200.00
- One quarter page (9.5 x 12.5 cm)	US$100.00

Advertisements must be sent to ENSIC as the final art-work ready for offset printing.

MODES OF PAYMENT

Advance payment is requested and can be made by a bank draft or an international money order, payable to ENSIC/AIT.

For other countries with Thai bank branches, payments can also be made in local currencies by buying Thai Baht. Please contact the banks for more details.

The completed form and remittances should be sent to:

Environmental Systems Information Center (ENSIC)
Asian Institute of Technology (AIT)
G.P.O. Box 2754, Bangkok 10501
Thailand

ENSIC MEMBERSHIP APPLICATION FORM

ck one: [ ] Individual [ ] Institutional

ame: (Mr/Ms/Dr/Prof) _____ Position: _____

stitution/Organization: _____

ailing Address: _____ City/Province/State: _____

_____ Zip Code: _____ Country: _____

ate: _____ Signature: _____

Annex C

List of Enterprises in the Survey

LIST OF ENTERPRISES INCLUDED IN SURVEY

1500	**Fish farming**
World Aquaculture Co. Ltd.	606-608 Luang Rd, Samphanthawong, Bangkok 10100
1512	**Processing of food fish and fish products**
Chaiyporn Rice Co. Ltd.	613-617 Songwad Rd., Samphanthawong, Bangkok 10100
Champaca Co. Ltd.	142/4-5 Soi, Suksawitthaya, Sathorn Nua Road, Bangrak, Bangkok 10500
Kwang Ew Lang Canning Factory	58-60 Anuwongse Road, Bangkok
Luxco Foods Co. Ltd.	1075 Charoen Nakorn Rd, Klong San, Bangkok 10600
Shianlin in Bangkok	159 Surawong Rd, Bangrak, Bangkok 10500
1513	**Processing and preserving of fruit and vegetables**
Fruits & Farm Co.	462/59 Rama III, Chongnonsi, Yan Nawa, Bangkok 10120
Khong Guan Food Products Co.	410 Rama IV, Bangkok 10500
Thai Fruit Canning	Meneeya Centre, /15, 518/5 Ploenchit Rd, Bangkok 10500
Thep Padung Porn Coconut	392/56-58 Preechapanich Maharaj Rd, Pranakhon, Bangkok 10200
1520	**Manufacture of dairy products**
Lam Soon Thailand	43 soi Sangchan, Sukhumvit 40, Bangkok
Yakult Thailand	Siam Square Sect 4, 474-476 Rama 1 Rd, Bangkok 10330
1531	**Manufacture of grain mill products**
Asia Kaset Pong	600/85 Sadthupradit Rd, Bang Phongphang, Yan Nawa, Bangkok 10120
Bangkok Starch Industrial Co.	415/11-14 Amarin Rd, Bangkok Noi, 10700
Kamolkit Co.	293/23-26 Surawongse Rd, Bangrak, Bangkok
Kitti Rice	5/1 Soi , Charoenkrung 35, Talat Noi, Samphanthawong, Bangkok 10100
Trakulkan	1594-8 Sukhumvit, Bangkok 10110
United Flour Mill Co.	Bigd 9, 177 Ratchawong Rd, Chak Krawat, Samphanthawong, Bangkok 10110
1533	**Manufacture of prepared animal feeds**
Charoen Pokhand Feedmill	CP Tower, 313 Silom Rd, Bangrak, Bangkok 10500
Samroiyod Ltd	ITF Bldg, 160/433 Silom Rd, Bangkok
1542	**Manufacture of sugar**
Mid Siam Sugar Co. Ltd.	243 Sap Road, Bangrak, Bangkok 10500
Thai Sugar Mill Ltd.	9/5 Planplachai Rd:, Thepsirin, Pom Prap Sattru Phai, Bangkok 10110

1549	**Manufacture of other food products**
Acme International LP.	49/1Soi 91 Sukhumvit, Bangkok 10250
C P C Thailand	84 Soi Samanmitr, Ramkhamhaeng Rd, Prakanong, Bangkok 10230
Cerebos Thailand Ltd.	Kian Gwan Bldg, 140 Wireless Rd, Bangkok 10500
1712	**Finishing of textiles**
Capital Tricot Textile Co.	Sin Hua Bldg ./2, 185-15 Soi Talardsuanmali, Chalermkhet 2 Rd. Bangkok 10110
Chanawatra Thai Silk Shop	94, m004, soi PrasanmitrSukhumvit, Bangkok 10110
Chya Agricultural Entreprise	145 Soi, Areesampan 2, Phaholyothin Rd., Bangkok 10110
Orient Printing & Dyeing Co.	167, Petchawong Rd., Samphanthawong, Bangkok 10100
Thai Printers & Finishers	9 Surawong Rd, Bangkok 10500
1911	**Tanning of leather**
Chung Wang Bros.	2600 Rama IV, Bangkok 10110
2101	**Manufacture of pulp, paper and paperboard**
Capital Paper Manufacturers	1/4-5 Soi Santhipap, Nares Rd, Bangkok 10500
Eastern Industrial Co.	156 Vibhavadi Rangsit Rd, Bangkhen, Bangkok 10900
Industrial Krungthai Co	6 Rongmuang Rd., Pathum Wan, Bangkok 10500
Prasit International Co.	437 soi Sirichulsawek, Silom Rd, Bangkok 10500
2413	**Manufacture of plastics in primary form and of synthetic rubber**
HMC Polymers Co, Ltd.	Maneey Centre Bldg, 518/5 Ploenchit Rd., Bangkok
Siam Resin & Chemical Co	Boonmitre Bldg., Silom Rd., Bangkok 10500
Thai Chemical Corp. Ltd.	Cathay Trust Bldg., 1016 Rama IV, Bangkok 10500
2520	**Manufacture of plastic products**
3 TM Plastics Co,	Taniya Bldg /11, 62 Silom Rd, Bangkak, Bangkok 10500
Diaglas Co. Ltd.	Cathay Trust Bldg, 1016 Rama Rd IV, Bangkok
Hong Seng Plastic	560 Siphya Rd, Bangkok 10500
Inter Plast Corp	16/25-26 Sukhumvit 19., Prakhanong, Bangkok
Melamine Thai	57/4 Soi Songphra 2, Rama IV, Bangkok 10500
T N P Industry Co. Ltd	75-77 Chalemket 2 Rd., Thepsirin, Pom Prap Sattru Phai, Bangkok 10110
Wilk & Hoeglung	MBK Tower, /10, 444 Phyathai Rd, Bangkok
2732	**Casting of non-ferrous metals**
Anan's Bronze	157/11-2 Petchburi Rd, Bangkok 10400
P.S. Metal Works	307-309 Mahaputtaram Rd, Bangrak, Bangkok 10500
S N Thai Bronze	157/33 Petchburi Rd, Bangkok 10400
S T Thailand	157/16 Petchburi, Bangkok 10400
Thai Copper Rod	Panumee Bldg, /6 518/3 Ploenchit Rd, Bangkok 10330
Treasure Siam	Siam Centre, 301, 306/3, 965 Rama I, Bangkok 10500
YKK Zipper Thailand	1547/28-30 New Petchburi Road., Bangkapi, Bangkok 10400

Annex D

Sample Questionnaire

SURVEY ON INFORMATION NEEDS OF SMALL AND MEDIUM-SIZED ENTERPRISES IN BANGKOK AREA

INFORMATION ON COMPANY

Name of Company: _____

Address (office) _____

(factory) _____

Telephone: _____

Fax: _____

Sector of activity _____

No. of employees _____

Registered capital _____

Annual turnover in bahts _____

Factory:

What are the main raw materials used in production and which of these have to be imported (%)? _____

_____

Does the company export? If so, what are the major exports and to which countries? _____

_____

Exports as a percentage of total production _____

How are waste materials treated in the plant? _____

_____

How does the company plan for treatment of waste? _____

_____

Production process (degree of automation): _____

_____

CURRENT INFORMATION STRATEGY

Does your company have a specific information and/or EDP unit and if so, how many staff does it employ?

_____

Equipment

computer (micro, mini . . .) _____

modem _____

fax _____

telex _____

Do you currently use any information services?

If so, what type of information do you receive from them? Do you pay for this information (if so how much)? How often do you request this information?

Type of information: requested	Source of information (private, governmental, consulting firms, professional/trade associations)	Cost	Frequency (no. times per month)

Are you satisfied with the information you receive? How would you assess its usefulness?

Are you a member of any network, association, etc. that provides you with information?

Do you receive regularly any specialized journals and other documents related to **environmental** issues, **energy conservation** matters, to **business/commerce/economics**?

Do you ever make on-line database searches? If so, please give the name of the database with indication of the volume, frequency and cost per search.

Are you already aware of the existence of the following institutions which provide technical information services?

Asian Institute of Technology

United Nations Industrial Development Organization (UNIDO) - INTIB

Management Information Services

Are you aware of any other organizations, networks, etc. which provide information services in this field? If so, which

_____

_____

Do you use information mainly for:

R&D _____

Production _____

Marketing _____

If you do not use information services at the present time, why not? _____.

_____

_____

_____

FUTURE INFORMATION REQUIREMENTS

You will find below a list of different types of information which could be offered under the proposed information service for small and medium-sized enterprises in Thailand. Please indicate on a scale of 1 to 3 the interest of your company in obtaining the following types of information. 1=Very interested, 2= quite interested, 3=not at all interested

	Environmental	Energy conservation	Business-oriented
Reference services (including on-line database searches) for:			
. Bibliographic information	_____	_____	_____
. Abstracts	_____	_____	_____
.. References (e.g. institutions, experts, projects)	_____	_____	_____
. Numeric/statistical data	_____	_____	_____
. Policy/regulatory information	_____	_____	_____
. Patents	_____	_____	_____
. Specifications/standards	_____	_____	_____
. News information (full text)			
SDI (Selective Dissemination of Information)	_____	_____	_____
Technical inquiry (query and answer) service	_____	_____	_____
Technical consultancy	_____	_____	_____
Testing of equipment	_____	_____	_____
Training	_____	_____	_____
Current awareness (new technologies)	_____	_____	_____
Business consultancy (e.g. market research)			
Clipping service			
Translation services	_____	_____	_____
Photocopying	_____	_____	_____

Please indicate which of the above services you would be willing to pay for (and how much)?

_____

_____

_____

Are there any other information services you would be interested in obtaining?

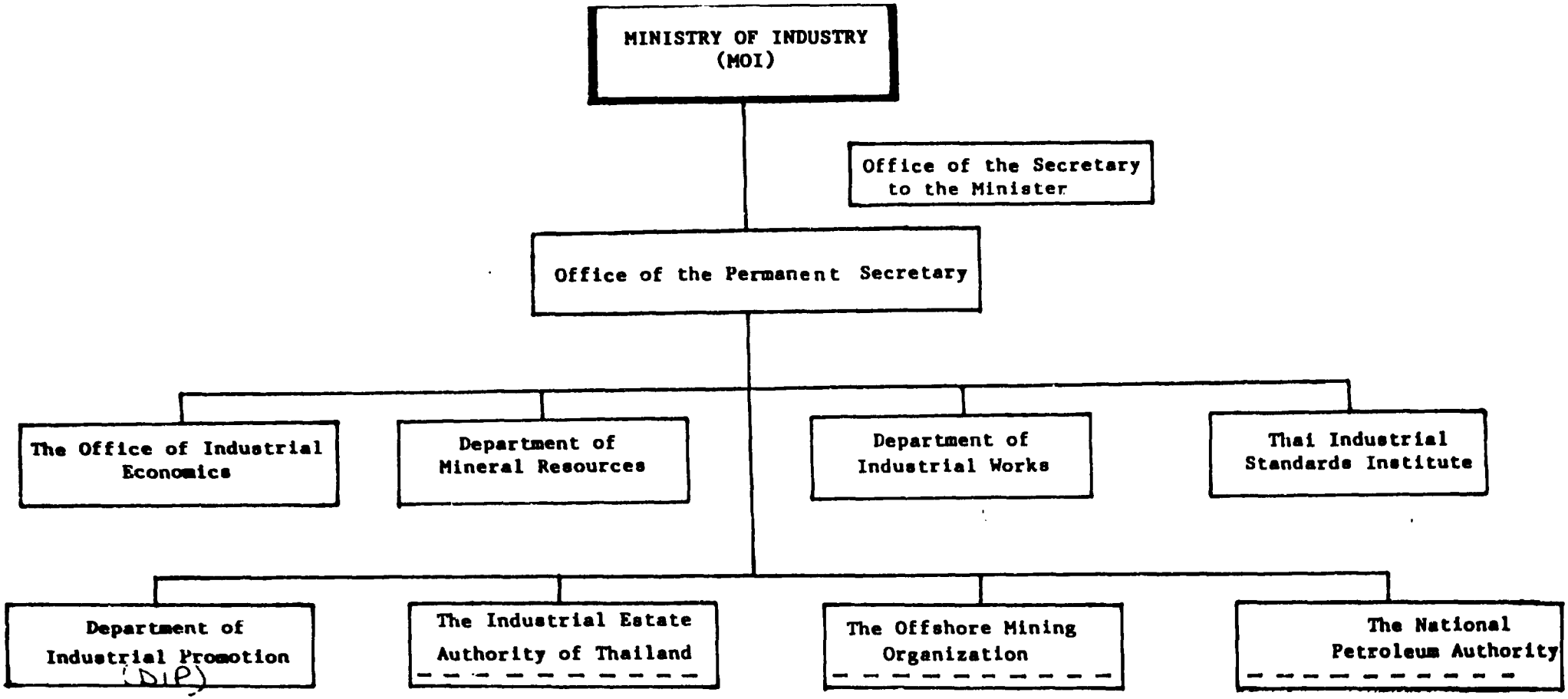
_____

_____

_____

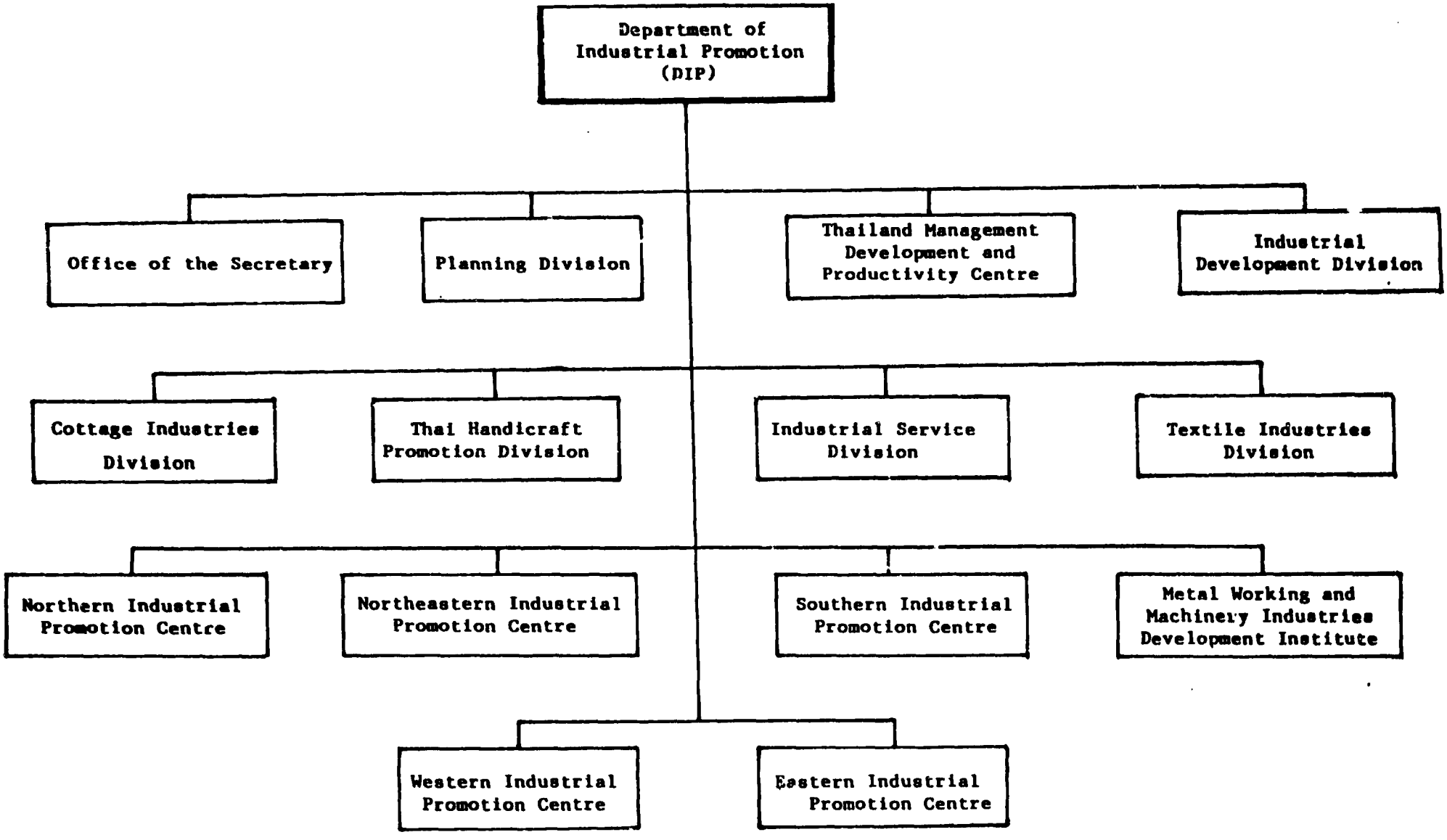
Annex E

Organisation Structure of MOI and FTI

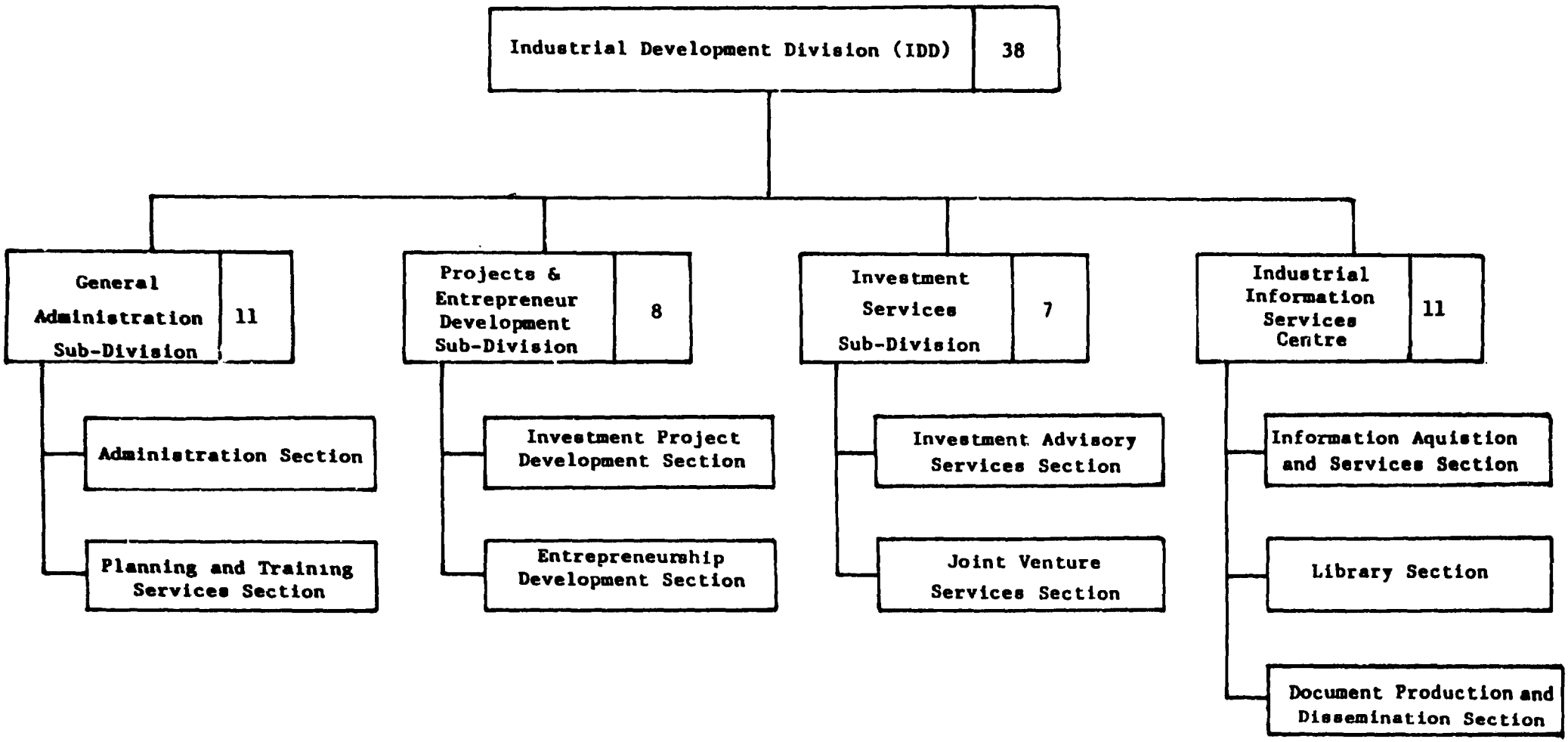


APPENDIX III

Date : 16 March, 1992

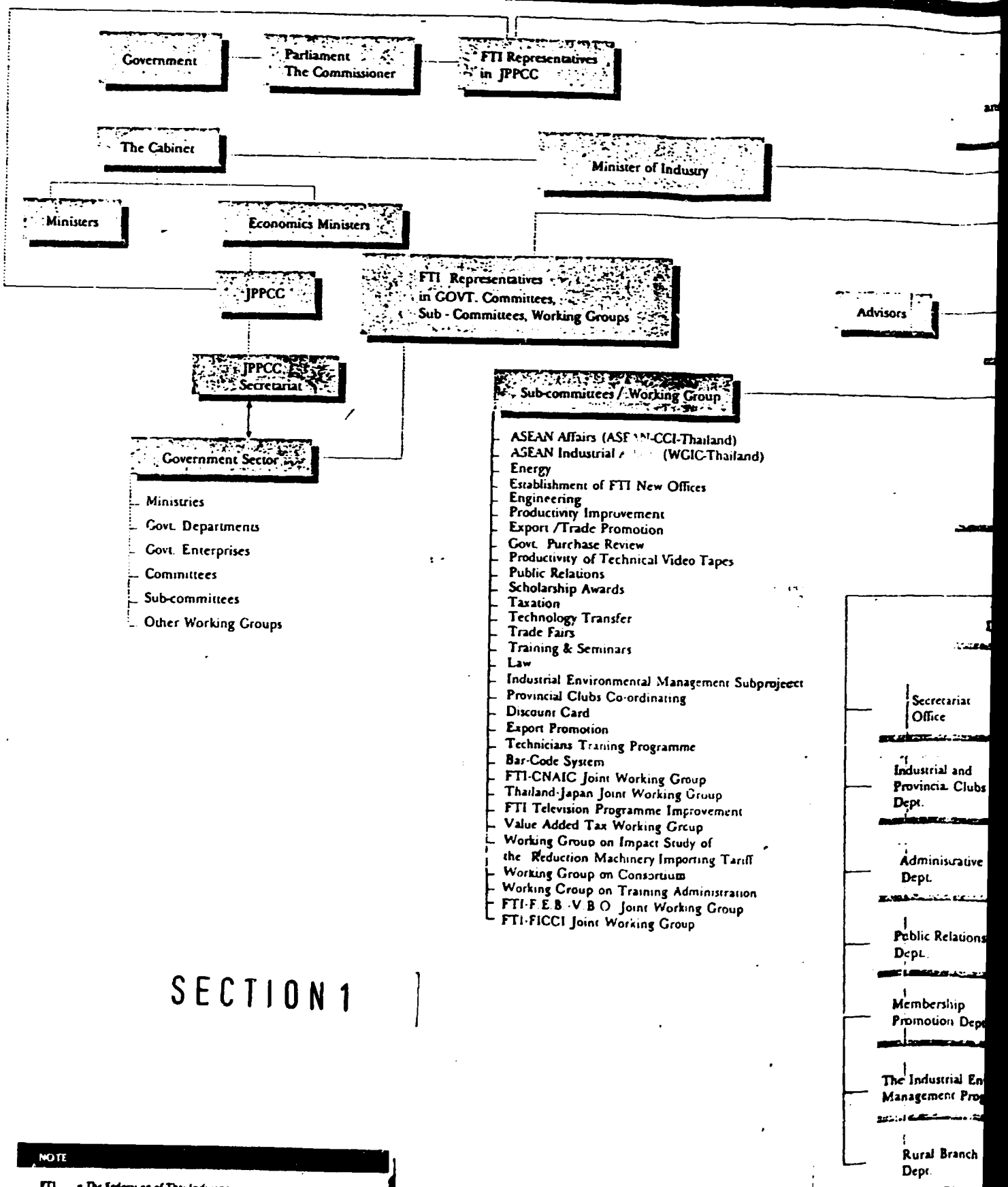


Date : 16 March, 1992



Date : 16 March, 1992

THE FEDERATION OF THAI INDUS

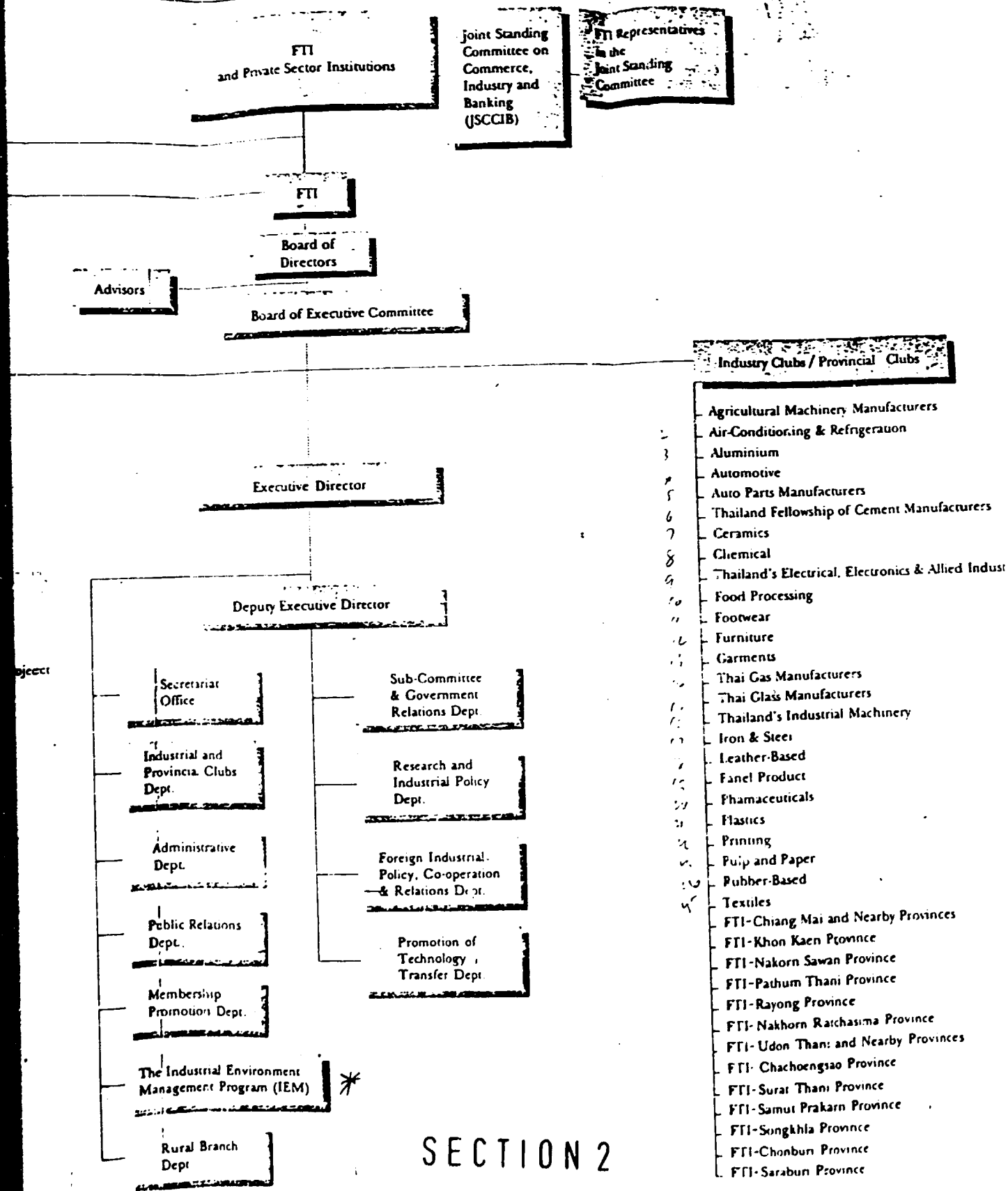


SECTION 1

NOTE

FTI = The Federation of Thai Industries
JPPCC = Joint Public/Private Sector Consultative Committee
JSCCIB = Joint Standing Committee on Commerce, Industry & Banking

THAI INDUSTRIES' ORGANIZATION CHART



SECTION 2