Study on New Sustainability Standard of Industrial Parks in Mekong Area, Thailand (THAICOBAN)
Kingdom of Thailand

Final Report

January 2014

Japan International Cooperation Agency

The Japan Research Institute, Limited
Nikken Sekkei Civil Engineering, Limited

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
AEC	ASEAN Economic Community
ASEAN	Association of Southeast Asian Nations
BOI	The Board of Investment of Thailand
DIP	Department of Industrial Promotion, Ministry of Industry
DIW	Department of Industrial Works, Ministry of Industry
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
F/R	Final Report
F/S	Feasibility Study
FDI	Foreign Direct Investment
FIRR	Financial Internal Rate of Return
FTI	Federation of Thai Industries
FTWZ	Free Trade Warehouse Zone
FY	Fiscal Year
GDP	Gross Domestic Product
GoT	Government of Thailand
Ic/R	Inception Report
IEAT	Industrial Estate Authority of Thailand
IP	Industrial Estate
IR	Investment Region
IRR	Internal Rate of Return
It/R	Interim Report
JBIC	Japan Bank for International Corporation
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JPY/JPN Yen	Japanese Yen
JV	Joint Venture
METI	Ministry of Economy, Trade and Industry
MOF	Ministry of Finance
MOFA	Ministry of Foreign Affairs of Japan
MoI	Ministry of Industry
MOP	Ministry of Power

MoU	Memorandum of Understanding
NEDO	New Energy and Industrial Technology Development Organization
NESDB	National Economic and Social Development Board
NEXI	Nippon Export and Investment Insurance
O&M	Operation & Maintenance
ODA	Official Development Assistance
OECD	The Organization for Economic Co-operation and Development
PPP	Public–Private Partnership
SEZ	Special Economic Zone
STP	Sewage Treatment Plant
TISA	Thai Industrial Estate and Strategic Partner Association
TISI	Thai Industrial Standards Institute
TOR	Terms of Reference
WB	World Bank

Summary

Executive Summary

Chapter 1. Framework of the Study

1.1 Background of the Study

Many industrial parks in Thailand suffered damage from the heavy flood in 2011, so it is necessary to take actions to strengthen the industrial competitiveness of Thailand in order to avoid diminishing the attractiveness of the country as a manufacturing base for foreign companies including those of Japan. In this regard, it is necessary that those industrial parks be more sustainable in the aspect of environment, safety and reliability and the upgrading of industry, to increase foreign direct investment in the manufacturing sector. Therefore, one effective solution will be to create a new standard for evaluating the levels of sustainability in each industrial park.

In particular, to secure the sustainability of those industrial parks, a practical, acceptable, and sustainable standard will be created with a focus on the following areas: i) Environment, ii) Safety and Reliability, and iii) Upgrading of industry. The spread of this standard will contribute to increasing the competitiveness of the Mekong area, where the importance of a regional connectivity will be required in the near future.

1.2 Objectives of the Study

The objective of this Study is to promote steady and continuous foreign direct investment to Thailand, by proposing the basic policy of the standard for sustainability of industrial parks, and operational scheme for the Standard.

Chapter 2. Study of existing standards/ guidelines

2.1 Study of existing standards of industrial parks in the US and EU

In order to clarify advanced efforts which should be referred to when enacting sustainability standards and basic guidelines, in this Chapter we will confirm and classify the state of industrial park standards in the United States and in Europe.

2.2 Study for existing standards of industrial parks in the ASEAN countries

Major standards for industrial parks for the countries of Asia, mainly in the Mekong River region, where the goal is the introduction and development of sustainability standards to be enacted based on this survey, are organized as shown below. These results have revealed that basic development systems have been established to be used to provide industrial parks based on investment from investors in each country and from foreign investors, and in Thailand and

Vietnam, where industrial parks are particularly numerous, detailed standards have been established.

In all countries, laws and regulations are being provided based on laws and regulations of Europe, the United States, and Japan, and the contents of some of these laws and standards are extremely strict. On the other hand, many problems hamper their operation: laws, regulations, and standards are not necessarily obeyed because of differences in the people's awareness level, or technological or cost related dilemmas.

2.3 Global standards of industrial parks by international organizations

The study team did research on any criteria set by international agencies/international private organizations for certification, in order to understand the advanced efforts for global standards of industrial park or business sustainable policies.

2.4 Utilization and operation of industrial park standards, and the Best Practice

As a result of an overview of the industrial park standards in Western and Asian countries, and the standards of international organizations, we have found the two issues for the reference of this study. One is that the standard should be "standards" to clear the minimum level, or "guidelines" to lead the industrial estates to the ideal level. The other one is deciding which ones will be of reference to the making industrial standards in the fields Environment, Safety and reliability, Industrial upgrading.

For the first point, should be a "Guideline" to induce the achievement levels for industrial parks, rather than a "Standard" to evaluate industrial parks on the basis of uniform factors, because items and levels would be different for each company. Thus, on the other hand, it is better for developers to use this as a marketing tool point out their strong points to appeal to potential customers.

In conclusion, "ISO/IEC Directives Part 2, Rules for the structure and drafting of International Standards" is appropriate for the Best Practice, because management systems of ISO are based on this standard.

2.5 Standards for industrial parks in Japan

We have organized major standards for industrial parks in Japan as follows in order to indicate strategic priorities and challenges related to the enactment of basic guidelines to sustainability standards in Japan.

The following three points are important ways to improve the sustainability of industrial parks: lowering long-term costs, ensuring stable natural resources, and capability of avoiding or reducing risk.

As methods of inducing these, the following is a classification of differences in the degree of involvement in industrial parks of companies located in these parks.

- Enterprises are counted on to take autonomous actions
- Providing incentives is counted on to change behavior
- Change of behavior is encouraged coercively through regulations.

It is presumed that at the minimum, Japanese companies doing business overseas must adopt, as a corporate posture from the perspective of CSR both domestically and regionally, a policy of not only providing the minimum level of protection on the scene, but autonomously taking countermeasures that conform to Japanese standards.

2.6 Strategic advantage of Japan, and the interest of Japanese government

As mentioned above, the standards for industrial estates in Japan have been formulated mainly for regulating land use, rather than for keeping sustainability. On the other hand, private companies in Japan have been struggling to reduce operating cost, not to be forced by others by their own efforts. Many technologies and systems are originally developed in Japan or introduced from overseas and modified technologies and systems. Japan has an advantage in these technologies and systems, and Japanese government are promoting strategically expand overseas. On the other hand, we can point out the problems such as less competitiveness because of such unique systems and high capital cost.

Chapter 3. Needs of Thai government and Japanese companies

3.1 Policies for standards of industrial estates, business continuity and certification system

Thailand's industrial estate was first created in 1967 and was regulated by the Ministry of Industry. In 1972, the Industrial Estate Authority of Thailand (IEAT) was established in order to develop administrate and industrial estates, and since 1979, the Public Regulations Act for Industrial Estates in Thailand has been enforced to this day.

This chapter explains the Facility Standards in Industrial Estates and Specifications of Standards and criteria of Eco-Industrial Estates & Networks. It also explains how the BOI's incentive policy is expected to be changed dramatically within 5 years after 2013.

3.2 Industrial estates/parks' ecosystems for Government and private sector in Thailand

It is expected that ecosystems in the industrial estate standards of government and private entities and companies differ depending on the classification of the industrial estate.

As described earlier, industrial estates in Thailand can be classified into 3 different types: 1) owned and managed by IEAT; 2) owned by private developers following IEAT standards; and 3) owned and managed by private developers.

In summary, in the industrial estates classified in 1) and 2) land and environment are all managed by IEAT; however, in 3) selling points vary in industrial estates depending on the management companies. Therefore ecosystems need to be looked at from two different aspects.

3.3 Policies for eco city development by the Royal Thai Government

Regarding EID (Eco Industry Development), six industrial estates (Northern Region, Bangpoo, Eastern Seaboard, Amata Narkorn, Laem Chabang, and Nongkae) formulated master plans for EID from 2010 to 2011, and after that three additional industrial estates (Amata City, Bangchan, and Samut Sakorn) formulated master plans in 2012.

Parties involved in policymaking are the Ministry of Industry (MOI), Industrial Estate Authority of Thailand (IEAT), Federation of Thai Industries (FTI), and National Science and Technology Development Agency (NSTDA).

3.4 Disaster Prevention Countermeasures by Thai Government

According to the results of research at the University of Tokyo, in 2011, rainfall during the rainy period (May to October) was 1.4 times that of a typical year, and record-breaking monthly rainfall occurred in July and September. As a result, by early October, two large dams upstream on the Chao Phraya River (Bhumibol Dam, Sirikit Dam) were filled, so they could no longer perform flood regulation.

3.5 Labor Policy in Thailand

In the process of drafting standards for industrial parks, a survey was carried out to study the country's current policies and trends as well as needs in the business circle and among local Japanese affiliated companies. In this chapter, we summarize the results of the survey on labor policies and the policies toward introducing QC systems. With the labor shortage still lingering, it is safe to assume that the key elements for a company to engage itself in stable recruitment of human resources and labor forces are 1) wage, 2) foreign workers, 3) labor relations, and 4) labor policy toward occupational safety.

After the ASEAN Economic Community (AEC) takes effect in 2015, Thailand will race against its neighboring countries in markets. There are worries that the country would lose its standing as one of ASEAN's leading manufacturing countries. It is thus essential for Thailand to advance industries and improve their competitiveness. In the context of industry upgrading, we believe that 1) technological innovation and HRD, and 2) introduction of QC systems will play a key role in industry upgrading.

3.6 Needs for the industrial estate standard for Thai Government, Industries and private companies

1) Thai Government

Through the interview survey, we realized that the Thai government and related organizations recognize the importance of upgrading operation levels for industrial estates, and actually they have various policies for this matter. However, these policies are not working together. For example, IEAT's eco-industrial estate policy is only by MOI, but not by MOE, even though they are directing industrial estates in the environmental issue.

2) Thai industries

IEAT JV industrial estates and private industrial parks are making efforts to invite tenant companies by improving their satisfaction, such as providing services and stable infrastructure. They say that they will use the standard if it will support their promotion of customers. On the other hand, it is important for tenant companies not only by comparing industrial estates/parks, but also by improving and upgrading them.

3) Private firms (especially Japanese SMEs)

In some cases, Japanese SMEs are forced to go abroad with their main customers, however, SMEs have to decide the site and other procedures by themselves. In those cases, SMEs need support because they face problems such as having less experience in entering overseas markets or having no income in the period of setting up a new company. SMEs sometimes cannot have insurance, especially in Thailand after the flood disaster in 2011. In addition, the most serious problem for SMEs is to gather workers, according to our interview survey. That is actually a crucial problem for SMEs who do not have enough budget. Private companies expect not to increase expenditure because of the standard, and expect the standard not only to compare candidate industrial estates/parks, but also to improve services.

Chapter 4. Business opportunities for Japanese companies

It is possible for Thai industrial estates and parks to achieve a high level of standards after implementing Japanese infrastructure and technologies based on THAICOBAN assessment results. This indicates that THAICOBAN has potential to create new business opportunities. Interviews were conducted with those who might implement Japanese products in the future in order to evaluate the feasibility of such business opportunities.

4.1 Viability of system proposals for industrial parks in the field of environment

Japan has been developing environmental technology for sustainable development, which is

absent in Thailand as of now, and therefore, Japanese companies have a good chance to expand their businesses.

- Dust treatment technology (exhaust gas treatment)
- Water treatment technology/ Heavy metal recovery technology
- Monitoring system

4.2 Viability of system proposals for industrial parks in the field of safety and reliability

Below are Japanese systems that could be utilized in Thailand.

- Security systems
- Flood countermeasure systems
- Infrastructure systems
- Automation and after-service

4.3 Viability of system proposals for industrial parks in the field of industry upgrading

Below are Japanese systems that could be utilized in Thailand.

- Safety devices of industrial machinery
- Electric Data Interchange (EDI)
- Devices and equipment required for R&D and after-sales services
- Automated machinery and after-sales services
- Information exchange services and matching events required for human resources recruitment
- Education Programs for Human Resources Development
- QA services

4.4 Integration and classification of system proposal for Japanese infrastructure companies

Research was conducted in the above-mentioned areas, such as environment, safety and reliability, and industrial upgrading, in order to define business opportunities for Japanese companies. Japanese companies have advanced technologies and products in these areas, and it is critical to find a way to combine multiple products into one package to increase competitiveness. Because single products or systems are so easy to copy for other countries, Japanese companies have been involved in cost competition with other countries.

We have identified possible combined technologies and systems below. This kind of combination strengthens the competitiveness of Japanese companies. Therefore, making a database of products as business seeds and further discussion should be held to figure out the best combination of these products.

4.5 Packaging of technologies and know-how as a new brand

In the previous paragraph, it was argued that the importance of combining multiple products into one package would increase Japan's competency. In order to implement these packaged products, it is necessary to increase their brand awareness and create new values. Three fields- environment, safety and reliability, and industrial upgrading- are the ones in which Japanese companies have high potentiality of competitive technologies, systems and products.

It is also critical to combine different technologies and products to become competitive while protecting Japanese brands and providing solutions that meet the needs of developing countries.

In fact, Japanese products have high reliability in other countries, in Asia and emerging countries. The value of Japanese brands is still high, but other countries' products, such as Koreas' LCD TVs are also popular. This is because these countries have provided products of reasonable price and reasonable quality. In fact, their products often seem to be comparable to or exceed the quality of Japanese products.

It has been said that Japanese products are difficult to be accepted in emerging counties' markets because they are too costly and have high specifications. Now other countries are catching up with Japanese products, not only in cost, but also in quality. Therefore, it is important that not only to increase the value of each product, but also to achieve added value by combining multiple products. In that case, it would be crucial to establish a brand package system which meets the needs of the market and is difficult for other countries to copy.

Chapter 5. Basic Policy of THAICOBAN, as the Sustainable Standard for Industrial Parks

5.1 General idea

1) Objectives of THAICOBAN

THAICOBAN has two objectives: one is to upgrade industrial estates/parks in Thailand, and the other is to support the expansion of industrial estates/parks to the Greater Mekong Sub Region.

2) General idea

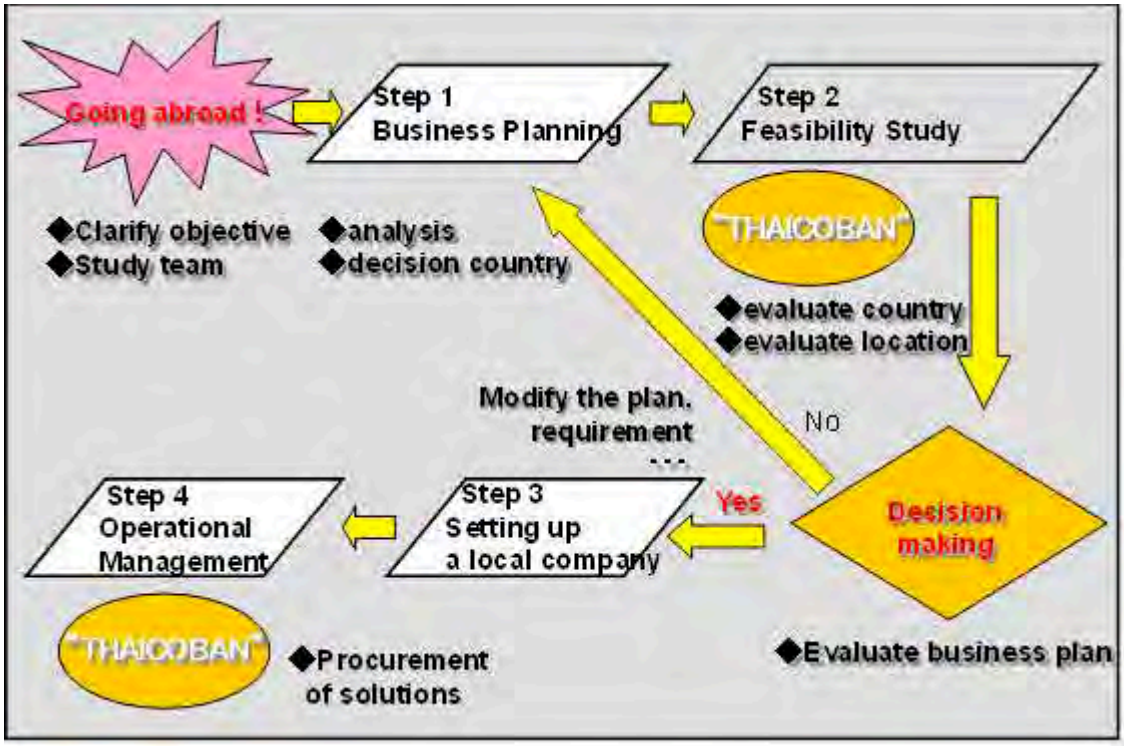
It is expected that THAICOBAN will be a new guideline for both tenants and industrial estates to assess sustainability of industrial parks, rather than a mandatory standard.

3) Roles of THAICOBAN

For Japanese companies, going abroad requires a great deal of time and effort, such as deciding on the country and the site, setting up a local company, constructing a factory, hiring workers, and so on. It is especially difficult for SMEs to do by themselves because they do not have much experience and know-how. THAICOBAN would be the support tool for these SMEs

to expand abroad as a de facto standard for industrial estates/parks.

Generally, companies take planning steps as shown below. In this process, THAICOBAN can provide support: 1) evaluating candidate countries and sites, and 2) proposing solutions for upgrading industrial estates/parks already in operation.



4) Elements of THAICOBAN

THAICOBAN is consists of evaluating standard and database of industrial estate/parks, as the tool for best matching between Japanese SMEs and Thai industrial estates/parks.

5) Flow of THAICOBAN use

The flow of the use of THAICOBAN is shown in the Figure below. The tenant company decides the country first, and then checks the points they think important for themselves, such as “necessary conditions”, or “additional conditions”. Companies which have no idea as to what to check can follow the recommendations based on the industry and company size.

5.2 Merits of THAICOBAN

Industrial estates and parks have many stakeholders from both Thai and Japanese sides, and it is not rare that their interests do not necessarily match with one another. As such, it is necessary to create a de-facto guideline in order to benefit all parties involved to be fair and just.

5.3 Formulation of THAICOBAN

1) Setting up of evaluating items

As step 1, top categories are set based on the Value Chain concepts of tenants in order to ensure complete coverage. Next, as step 2, criteria are set by extracting factors from step 1, corresponding to the three areas: environment, safety and reliability, and industry upgrading. Items common to the above three areas--quality, cost, and delivery--are categorized as the QCD of industrial estates/parks, because these items are important but difficult to set up as internal or external environment.

2) Set up levels of each items

The concept for setting up items of four items is below.

3) Evaluation level

Each item is evaluated relative to 5 levels. For some items, 2-3 levels are appropriate at this time, however, it will be possible to evaluate items in more detailed levels in the future. Level 5 means the best quality all over the world, level 3 means the standard level in Thailand, and level 1 means the lowest level.

5.4 Pilot study of THAICOBAN

A pilot study carried out to check how THAICOBAN works by using actual data of industrial estates/parks. With regard to ownership, six industrial estates/parks were considered. Using an interview survey with the subject industrial estates/parks above, each item of each estate/park was evaluated by 5 levels, based on actual data, information and evidence.

The results are shown with images. Characteristics of each industrial estates/parks became clear, and strong points and points to be improved were revealed through this study. This means THAICOBAN works as we expected.

Along with the pilot study, an interview survey of developers and tenant companies was held to determine their opinions about items and levels of THAICOBAN. It was made sure that THAICOBAN can be accepted by them, even if it is necessary to modify the detail points and presentation style.

Chapter 6. Implementation of THAICOBAN, as the Sustainable Standard for Industrial Parks

In this Chapter, several ideas of the appropriate operational set up of THAICOBAN were examined and described to realize THAICOBAN system which was discussed in the preceding chapters. From section 6.1 to 6-5, the detailed consideration is shown based upon watch 5W1H

element is used to show the THAICOBAN system. In section 6.6, the relation with the OTAGAI project is described based on the present situation as of this writing. Lastly, the roadmap of the THAICOBAN system is shown in section 6.7.

6.1 Definition of THIACOBAN Operation（What）

In this section, the definition of THAICOBAN operation was considered in terms of its operational policy, expected operational tasks, sustainable PDCA-cycle for improvement, its monitoring system and risk management. The following 3 items are considered as THAICOBAN operational policy:

i) To secure its credibility by regular update of its database

ii) To maintain its neutrality with its evaluation method

iii) To ensure transparency by information disclosure

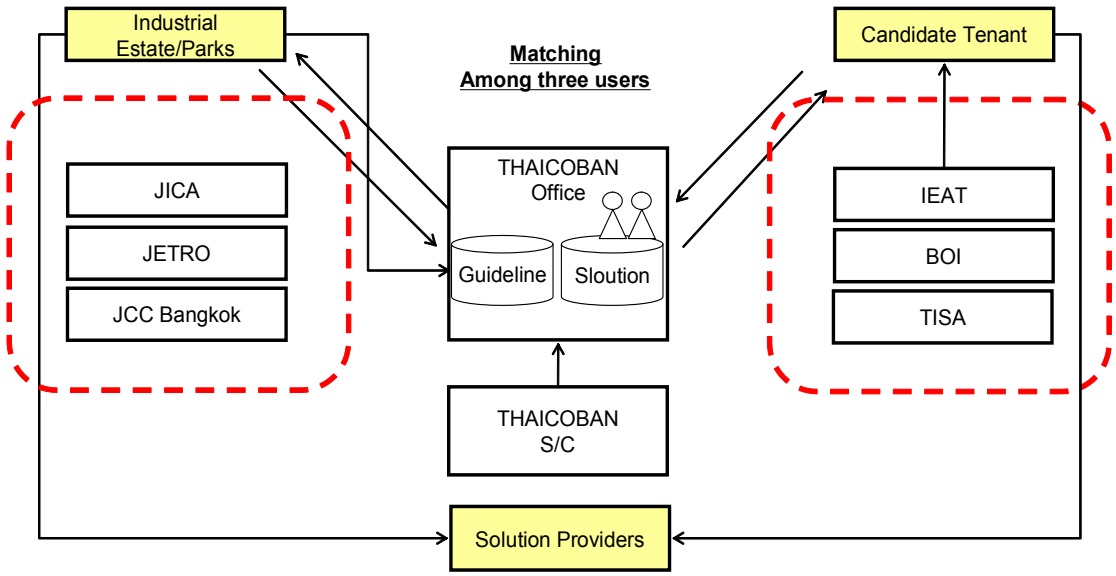
For the operation of THAICOBAN, the expected tasks are mainly divided into the following 2 categories: “day-to-day task” and “regular improvement task”.

6.2 Organizational Structure and Place of THAICOBAN Operation (Who&Where)

THAICOBAN will be operated by the “THAICOBAN Operational Office” and the “THAICOBAN Steering Committee”. The former will be in charge of daily-operation of THIAICOBAN such as updating the existing data of solution and industrial estates, while the latter is to be in charge of updating and improving THAICOBAN system itself with its evaluation criteria. As of now, the above-mentioned structure will be established as the following table shows.

Name of Group	Main Roles	Scheme	Venue
THAICOBAN Operational Office	・Day-to-day work（such as registration, update, and delete of data ） ・Receiving and answering inquiry from users / ・ Communication and arrangement with stakeholders related to the above mentioned work	Special purpose company is recommended	THAILAND
THAICOBAN Steering Committee	・Regularly work for improvement of the whole system ・ Allocation of Management Resources for Operation ・ Improvement of THAICOBAN operation task ・ Improvement of THAICOBAN itself ・Monitoring and Evaluation ・ Communication and arrangement with stakeholders related to the above mentioned work	Meeting based (quarterly)	THAILAND and Japan

For the main stakeholder, JICA, JETRO and JCC Bangkok were selected while IEAT, BOI and TISA were selected as the chart below shows with the dot-lined circles. The point to be discussed here is "how those selected organizations can be involved for THAICOBAN operation".



We must also consider who takes the lead on building on operational scheme after the study. There are mainly three types of groups who could continue working on THAICOBAN.

1) Governmental organizations that promote and implement THAICOBAN
2) Affiliated companies or organizations with governmental organizations mentioned above
3) Private companies who wish to join THAICOBAN Office

6.3 How to Operate THAICOBAN (How)

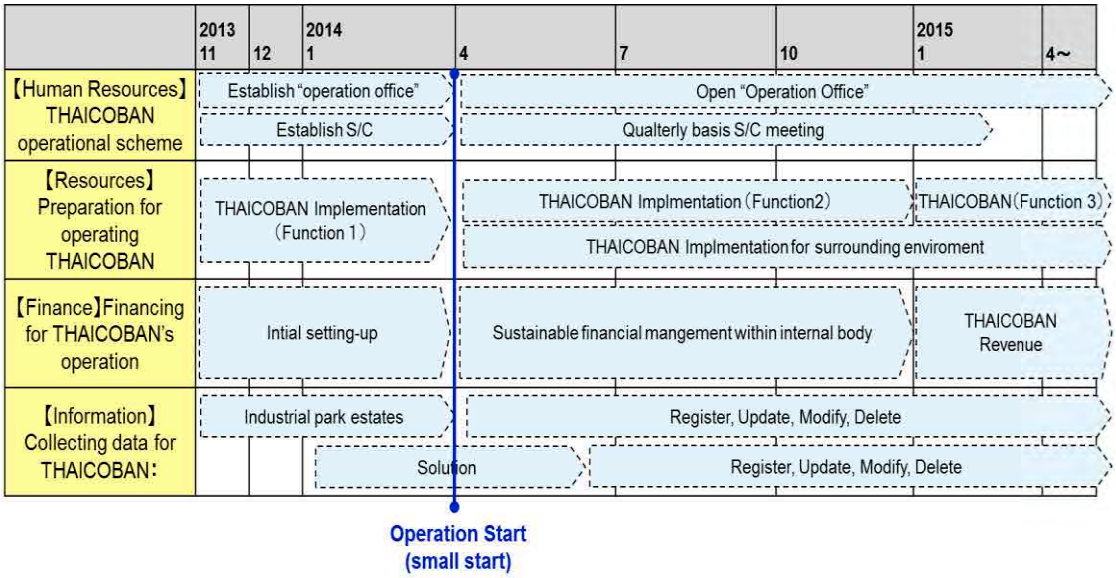
The following table shows necessary management resources for each structure of THAICOBAN Operation.

Structure	Human Resource	Material Resource	Financial Resource	Information
① THAICOBAN Operational Office	・Manager ・Staff (2 or 3)	・THAICOBAN itself ・Venue of Office	・Operational Fee for the Office ・Remuneration ・Venue	・Industrial Park/Estates ・Solution ・Tenants
② THAICOBAN Steering Committee	・Chair from Japanese side ・Governmental Body ・Operational	・THAICOBAN itself ・Venue of meetings	・Operational Fee for the Committee ・evaluation and	・Industrial Park/Estates ・Solution Tenants ・Operational

	Office ・Other Experts for several areas related to industrial park/estates		monitoring expense	Data

6.4 Schedule for building operational scheme (When)

Below is a complete schedule of possible resources required for THAICOBAN operation as mentioned above. This schedule assumes that the end of this study is November 2013, and the earliest staring date is April 2014. In order to build operational scheme and implement THAICOBAN system, it is required that we focus on these deadlines first. After a test run, business model and revenues must be reviewed again while increasing cases of solution implementations and registered users in order to operate outside of Thailand.



6.5 Reference materials for consideration of THAICOBAN Operation (Why)

All of the contents of THAICOBAN operation in this Chapter are discussed mainly based on the result of several interviews, email communications, and phone calls. In addition to those primary sources, the secondary sources such as public information on internet are duly considered.

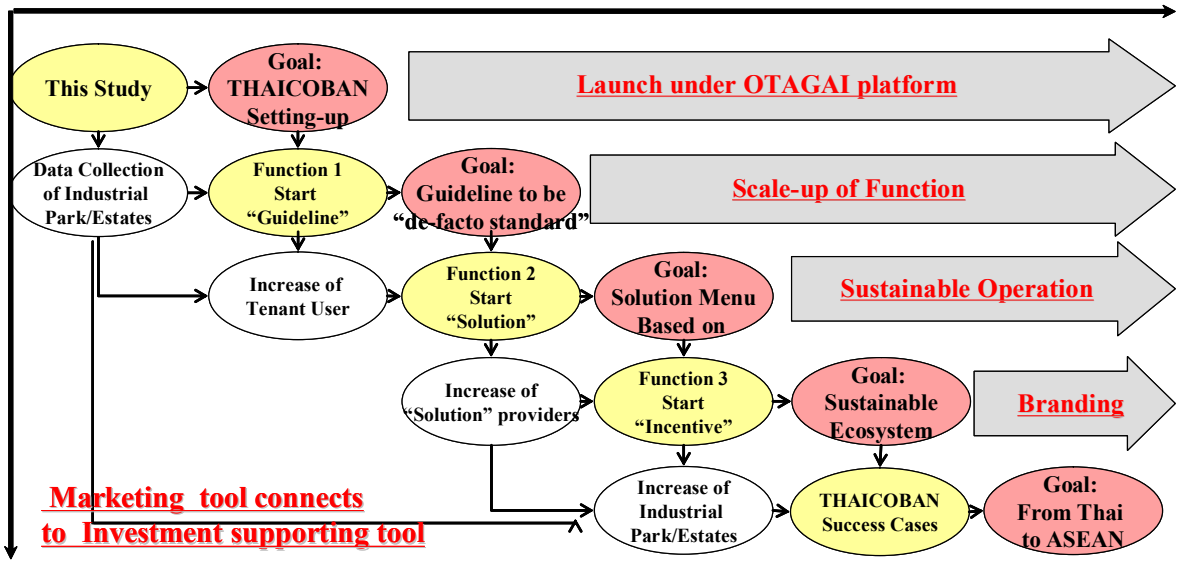
6.6 Relation with the OTAGAI Project

As for THAICOBAN operation, it should be considered with the OTAGAI project, "Study on Establishing a System for Enforcing Industrial Cluster Linkage between Thailand and Japan",

which is also conducted by JICA. Since the concept of THAICOBAN is one of the tools which promote OTAGAI project. The below chart shows the relation between THAICOBAN and OTAGAI Project and it defines THAICOBAN as a Guideline for SMEs to enhance industrial cluster.

6.7 Roadmap of THAICOBAN

The chart below is a roadmap of THAICOBAN, which will expand its functions as well as users in a phased manner. At the final phase, THAICOBAN is expected to disseminate to the other Mekong and ASEAN countries with success cases in Thailand.



Source: Study team

Chapter 7. THAICOBAN Seminar in Bangkok

The study Team conducted the seminar to explain advantages of applying THAICOBAN to the government of Thailand and private sectors in order for early implementation of this project.

7.1 The seminar was conducted as below;

Date: 11th October (Fri), 2013 1:00PM-4:15PM

Place: Westin Hotel Sukhumvit

Host: Japan International Cooperation Agency (JICA)

National Economic and Social Development Board of Thailand (NESDB)

7.2 Result

20 Japanese and Thailand government officials attended the seminar. Comments from Government officials of Thailand are shown below.

Organization	Comments
TISA	• It is important HOW to make THAICOBAN happen. Funding is an issue in this project and it is thought that help of Japanese government is essential. • It is necessary to think how Thailand's SMEs can be involved in TAICOBAN project in Thailand. Local companies which support larger enterprises are particularly sensitive issue. • "Competitive" is a key word in this project. Addition to the industrial estates which are used as marketing tool, improving and expending will lead to competitiveness of industrial estate. • It is important to support and give service in the industrial estate, and not only to provide the land.
IEAT	• It is important to discuss how to gain understanding of THAICOBAN as a research engine to ASEAN countries. Creating a system which operates constant monitoring and giving feedback will also benefit IEAT.

Chapter 8. Conclusion and Recommendations

8.1 Conclusion

This study was carried out the end of November 2012 to beginning of November 2013, with the cooperation of the Thai government, related organizations, and private companies, to make THAICOBAN, a sustainable standard for industrial estates/parks. THAICOBAN is as in annexure I.

8.2 Recommendations

For executing THAICOBAN, we suggest four actions below for the Japan side especially JICA, the project owner of THAICOBAN.

- Executing agency of Japanese side
- Sustainable scheme
- Technical background
- Linkage with Otagai project

Chapter 1.

Framework of the Study

Chapter 1. Framework of the Study

1.1 Background of the Study

Many industrial parks in Thailand suffered damage from the heavy flood in 2011, so it is necessary to take actions to strengthen the industrial competitiveness of Thailand in order to avoid diminishing the attractiveness of the country as a manufacturing base for foreign companies including those of Japan. In this regard, it is necessary that those industrial parks be more sustainable in the aspect of environment, safety and reliability and the upgrading of industry, to increase foreign direct investment in the manufacturing sector. Therefore, one effective solution will be to create a new standard for evaluating the levels of sustainability in each industrial park.

In particular, to secure the sustainability of those industrial parks, a practical, acceptable, and sustainable standard will be created with a focus on the following areas: i) Environment, ii) Safety and Reliability, and iii) Upgrading of industry. The spread of this standard will contribute to increasing the competitiveness of the Mekong area, where the importance of a regional connectivity will be required in the near future.

In addition to the above, it is expected that Japanese companies will need support to advance in the country and to accelerate the export of Japanese service and infrastructure technology by creating a new standard with the consideration of adopting Japanese advanced technologies. With the background above, it was decided to carry out this Study to make a standard for sustainability of industrial parks.

1.2 Objectives of the Study

1.2.1 Objective of the Study

The objective of this Study is to promote steady and continuous foreign direct investment to Thailand, by proposing the basic policy of the standard for sustainability of industrial parks, and operational scheme for the Standard.

1.2.2 Targeted Study Areas

The targeted area of this study is Thailand, however, it is though that it may be expanded to the entire Greater Mekong Sub Region.

1.3 Implementation Policy of the Study

Our team has conducted this study by pursuing the following points.

1.3.1 Establishment of De-facto Standard in the Mekong area

It is most important for the THAICOBAN guideline, to be a feasible and effective one with practical actions on regional scale in Thailand. The goal of this study is not only to make a Standard, but that it be executed effectively.

1.3.2 Design of Sustainable operation

This study shall be made by building a consensus of stakeholders between Thailand and Japan, and by creating incentive scheme to introduce the Standard.

1.3.3 Booster of Business Opportunity between Thailand and Japan

This study shall be made by focusing on the areas of “Environment”, “Safety and Reliability” and “Upgrading of Industry” which are considered as essential and imperative for sustainability of the new Standard

1.4 Implementation Structure, Study Team, Work Flow, and Schedules

1.4.1 Implementation Structure and Composition of the Study Team

This Study will be conducted in a phased manner. Phase 1 focuses on Research and Interview while Phase 2 focuses on development of Standard and its operational design. The implementation structure and time schedule is below.

Table 1: Implementation Structure (the 1st year)

	Assignment	Name	Company	2012-2013 11 12 1 2 3
Local	Team Leader	M. Suzuki	The Japan Research Institute	11/20-23 2/24-27
	Sub Leader	Y. Yamano	The Japan Research Institute	11/20-23 12/16-22 2/24-27
	Standard	T. Otomo	Nikken Sekkei Civil Engineering	12/16-22 2/24-27
	Operational Structure	M. Hashizume	The Japan Research Institute	1/21-27 2/24-27
	Operational Structure	T. Yuasa	Pacific Consultants	
	Environment	K. Soejima	The Japan Research Institute	
	Environment	T. Umezu	The Japan Research Institute	12/19-22
	Sagety and Reliability	T. Saito	Nikken Sekkei Civil Engineering	12/16-22
	Industrial Upgrading	H. Kanda	The Overseas Human Resources and Industry Development Association	12/16-22
	Industrial Upgrading	H. Hiyama	CTI Engineering	
	Industrial Upgrading	Y. Tokiyoshi	The Japan Research Institute	
Japan	Team Leader	M. Suzuki	The Japan Research Institute	11/26-2/22
	Sub Leader	Y. Yamano	The Japan Research Institute	11/26-12/14 1/4-2/22
	Standard	T. Otomo	Nikken Sekkei Civil Engineering	11/21-12/14 1/4-2/22
	Operational Structure	M. Hashizume	The Japan Research Institute	11/21-1/18 1/28-2/22
	Operational Structure	T. Yuasa	Pacific Consultants	12/10 3/4
	Environment	K. Soejima	The Japan Research Institute	11/21- 1/4-3/4
	Environment	T. Umezu	The Japan Research Institute	11/26-12/14 1/4-3/4
	Sagety and Reliability	T. Saito	Nikken Sekkei Civil Engineering	
	Industrial Upgrading	H. Kanda	The Overseas Human Resources and Industry Development Association	12/10 3/4
	Industrial Upgrading	H. Hiyama	CTI Engineering	12/10 3/4
	Industrial Upgrading	Y. Tokiyoshi	The Japan Research Institute	11/21 3/4

Table 2: Implementation Structure (the 2nd year)

	Assignment	Name	Company	2013 5	6	7	8	9	10	11	12	1
Local	Team Leader	M. Suzuki	The Japan Research Institute			7/28-8/3			10/8-13			
	Sub Leader	Y. Yamano	The Japan Research Institute	5/28-6/1		7/28-8/3			10/7-13			
	Standard	T. Otomo	Nikken Sekkei Civil Engineering			7/28-8/3	9/15-21					
	Operational Structure	M. Hashizume	The Japan Research Institute			7/28-8/3			10/8-13			
	Environment	K. Soejima	The Japan Research Institute									
	Environment	T. Umezu	The Japan Research Institute			7/28-8/3						
	Safety and Reliability	T. Saito	Nikken Sekkei Civil Engineering	5/28-6/1		7/28-8/3			10/8-13			
	Industrial Upgrading	H. Kanda	The Overseas Human Resources and Industry Development Association	5/28-6/1		7/28-8/3	9/15-21		10/8-13			
	Industrial Upgrading	Y. Madenokoji	The Japan Research Institute			7/28-8/3			10/8-13			
Japan	Team Leader	M. Suzuki	The Japan Research Institute	5/22-7/27			8/5-10/7			10/16-1/31		
	Sub Leader	Y. Yamano	The Japan Research Institute	5/22-5/27	6/3-7/27		8/5-10/4			10/16-1/31		
	Standard	T. Otomo	Nikken Sekkei Civil Engineering	5/22-7/27			8/5-9/13			9/23-1/31		
	Operational Structure	M. Hashizume	The Japan Research Institute	5/22-7/27			8/5-10/7			10/16-1/31		
	Environment	K. Soejima	The Japan Research Institute	5/22-1/31								
	Environment	T. Umezu	The Japan Research Institute	5/22-7/27			8/5-1/31					
	Safety and Reliability	T. Saito	Nikken Sekkei Civil Engineering	5/22-5/27	6/3-7/27		8/5-10/7			10/16-1/31		
	Industrial Upgrading	H. Kanda	The Overseas Human Resources and Industry Development Association	5/22-5/27	6/3-7/27		8/5-9/13	9/23-10/8		10/16-1/31		
	Industrial Upgrading	Y. Madenokoji	The Japan Research Institute	5/22-7/27			8/5-10/7			10/16-1/31		

Chapter 2.

Study for Existing Standards/ Guidelines

Chapter 2. Study of existing standards/ guidelines

2.1 Study of existing standards of industrial parks in the US and EU

In order to clarify advanced efforts which should be referred to when enacting sustainability standards and basic guidelines, in this Chapter we will confirm and classify the state of industrial park standards in the United States and in Europe.

In the United States, states and local governments often set their own industrial park standards and incentives to attract industry based on policies and measures that each state or local government has independently established. The contents are generally concepts presented as guidelines or construction and operation manuals intended to establish the minimum standards that must be satisfied, to establish a desirable level of infrastructure, and deal with advanced environmental problems.

In recent years in particular, a system of dealing with environmental problems in individual industrial park units has been introduced, and guidelines and manuals written in order to respond to environmental pollution, and waste and energy related problems, called Eco-Industrial Development and Eco-Industrial Parks.

In Europe, few large scale new industrial park development projects are now underway. Thus, while overall the EU has not established standards to be applied to develop new industrial parks, some member countries have established standards based on their independent policies and measures. In Germany for example, the Building Construction Law, Environmental Protection Regulations, and Emissions Permits, etc., are set, and in the United Kingdom, in addition to laws such as the Factory Location Law or Industrial Development Law governing factories, the Environmental Law, Water Resources Law, Pollution Prevention Management Law, etc., have been enacted. On the other hand, in the countries of the EU, where citizens are sensitively aware of environmental problems and efforts to protect the environment are being made, when industrial parks are redeveloped or reused, energy conservation incentive policies specifying subsidies encouraging environmental protection and energy conservation are often implemented. The following table organizes major cases.

Table 3: Standards of Industrial parks in US and EU (Examples)

Country	Standards (Examples)	Purpose of enactment, basic concepts etc.
U.S.	・Industrial/Business Park Standards：Nebraska Department of Economic Development ・Lake County Zoning Ordinance：Lake County City, California ・ORLANDO AIRPORT INDUSTRIAL PARK DESIGN	In the U.S., industrial park standards are established at the local government level. Facility scales, infrastructure levels, restrictions, etc., are set by industry.

	STANDARDS	
	Eco-industrial Park Handbook for Asian Developing Countries : A Report to Asian Development Bank Resource Manual On Infrastructure for Eco-Industrial Development : University of Southern California	Systems (Eco-Industrial Development Parks etc.) are established for individual industrial parks to tackle environmental problems in order to deal with environmental pollution, and waste and energy problems. In 2001, a manual was proposed by the ADB, and is a concept that has spread widely in the United States in recent years.
EU	Intelligent energy Europe programme (Projects such as those shown below are subsidized) ・Energy-saving concepts for the European ceramic industry (German) ・Deploying large-scale poly generation in industry (Belgium) ・Expert system for an Intelligent supply of thermal energy in industry (Austria) ・Promotion of energy management practices in the textile industries of Greece, Portugal and Spain (Greece)	In the EU, new industrial park development is not being undertaken, but existing industrial parks are being redeveloped or reused. Meanwhile, many factory energy conservation policies are implemented and the use of waste heat, for example, in industrial parks is subsidized.
United Kingdom	London sustainable industries park for example	As in the EU, in recent years, industrial parks have been renewed with the main goal being sustainable industrial parks.
	Factory Location Law, Regional Employment Law, Industrial Development Law, Industrial Park Management Public Corporation, Environmental Law, Water Resources Law, Pollution Prevention Management Law, etc.	Industrial park development has a long history beginning in the early Twentieth Century in the United Kingdom. The system of laws shown on the left stipulates management by the Industrial Park Management Public Corporation.
Germany	Building Standard Law, Construction Law, Building Permits, Water Management Law, Environmental Protection Regulations, Emission Permits, Federal Pollution Prevention Law Water Disposal Law, etc.	In Germany, laws are categorized as laws of the national government and of state governments. In the building construction field, laws are categorized as the Building Standard Law, which is a federal law, and construction laws for each state government. Emission restrictions are not covered by building permits. Water turbidity, exhaust gas, radiation, soil pollution restrictions, etc., are established under the Environmental Protection Regulations, and large-scale factories are governed by emission restrictions.

Source: Prepared by the Study Team from web sites of each country.

2.2 Study for existing standards of industrial parks in the ASEAN countries

Major standards for industrial parks for the countries of Asia, mainly in the Mekong River region, where the goal is the introduction and development of sustainability standards to be enacted based on this survey, are organized as shown below. These results have revealed that basic development systems have been established to be used to provide industrial parks based on investment from investors in each country and from foreign investors, and in Thailand and Vietnam, where industrial parks are particularly numerous, detailed standards have been established.

In countries such as Myanmar, Laos, or Cambodia, where sufficient investments have not yet been made, the provision of the legal infrastructure has been delayed, with building codes not established. For example, in Myanmar where investment has advanced in recent years in particular, there are very few areas in which laws and standards have been enacted.

Also, the rise of environmental consciousness which has occurred in recent years has resulted in the provision of laws in the environmental field, and environment assessment systems have been established everywhere except Myanmar.

In all countries, laws and regulations are being provided based on laws and regulations of Europe, the United States, and Japan, and the contents of some of these laws and standards are extremely strict.

On the other hand, many problems hamper their operation: laws, regulations, and standards are not necessarily obeyed because of differences in the people's awareness level, or technological or cost related dilemmas.

Industrial parks are developed based on investment from both within each country and from overseas, so legal systems providing investment incentives are enacted. The following is an outline of each country.

Table 4: Laws and Standards related to Industrial parks in Asian countries

Category	Japan	Thailand	Vietnam	Myanmar	Laos	Cambodia
Establish-ing industrial parks	・Plant Location Law	・Factory Law ・Industrial Estate Corporation Law	・Industrial park, export/processing district, and economic district standards	・Factory Law	・Industry law ・Prime Minister's Order on Management Regulations and Promotion Policies	—

					for the Savan Seno Special Economic Zone	
Land develop-ment	・Housing Site Preparation Regulation Law ・Housing Land Disaster Prevention Manual ・Disaster Prevention Regulation Pond Technology Standards	・Land laws ・Foreign corporation land ownership BOI declaration	・Construction Law	—	・Land law ・Prime Minister's Order on Land Law Enforcement	・Constitution ・Cabinet Order No. 126 Concerning Management and Use of Jointly Owned Buildings ・Concession Law
Buildings	・Building Standard Law ・City Planning Law (use of land, district planning)	・Building Standard law ・Ministerial Order to Establish Principles for Building Inspections	・Construction Law ・Various design standards	—	・City Planning Law	—
Infrastr-ucture facilities	・City Planning Law ・Development permit system ・Road Construction Ordinance ・Sewer Facility Planning And Design Guideline ・Water	・Road Law ・Ministerial Order on Safety Standards for Electric Systems in Factories ・Groundwater Law ・Irrigation Law ・Channel Conservation Law ・Laws concerning	・Construction Law ・City Planning Law ・Building Standards of Vietnam ・Technical Standards for Urban Infrastructure Systems ・Water supply pipe network standards ・Design	—	・City Planning Law ・Water and Water Resources Law ・Electricity Law ・Land Transport Law ・Public Road Law ・Communication Law	・Water Resources Management Law ・Regulations concerning drainage and wastewater systems ・Regulations concerning water supply

	Supply Facility Design Guideline ・Fire Service Act ・Flood Prevention Law	levees and channels	standards for storm water and wastewater drainage network facilities			
Environ-ment	・Basic Environment Law ・Plant Location Law ・Act for Assessment of Environmental Impacts ・Air Pollution Control Act ・Water Quality Pollution Control Act ・Vibration Regulation Act/Noise Regulation Act ・Basic Act for the Promotion of the Recycling-Oriented Society ・Wastes Disposal and Public Cleansing Act ・Recycling Act ・Pollution prevention	・Environment Conservation Law ・Plant Law ・Ministerial order on Inspection of Odors Emitted by Plants ・Ministry of Industry Declaration on Waste Disposal ・Ministerial Order on Labor Safety Standards for Temperature, Light, and Noise ・Environmental Assessment Declaration ・Ministry of Industry Declaration under Article 67 of the Constitution ・Thailand Technology Association : Water and	・Environment Conservation Law ・Atmospheric Environment Standard ・Industrial Waste Gas Standards ・Water Quality Environmental Standards ・Industrial wastewater drainage standards ・Noise related standards ・Vibration related standards ・Regulations concerning environmental management and protection of economic zones, high tech zones, industrial parks, and industrial bases	・Forest Law	・Environmental Conservation Law ・Prime Minister's Order on enforcement of the Environmental Conservation Law ・Water and Water Resource Law ・Order by the Minister of Industry on Emission Standards	・Environmental Conservation and Natural Resources Law ・Water Quality Pollution Prevention Regulations ・Industrial Waste Regulation ・Solid industrial waste management regulations ・Environmental assessment procedure regulations

	ordinances	Drainage Analysis Manual ・Standards for wastewater from Plants and Industrial Parks ・Wastewater Quality Standards ・Energy Conservation Promotion Law	・Energy Conservation Law			
Labor	・Labor Standards Act ・Labor Union Act ・Labor Relations Adjustment Act ・Labor Contract Act ・Industrial Safety and Health act ・Employment Security Act ・Minimum Wage Act	・Civil Commerce Laws ・Worker Protection Law ・Labor Relations Law ・Ministerial Order on Workplace Labor Safety Management Standards ・Labor Protection Law Related Royal Edicts and Cabinet Orders ・Labor Safety Law ・Law on Employment of Foreigners ・BOI	・Labor Law ・Labor Union Law ・Social Security Law ・Occupational Training Law ・Regulation Concerning Employment and Management of Foreigners	・Labor Law ・Labor Union Law ・Employment Training Law ・Employment Restriction Law ・Wage Payment Law ・Minimum Wage Law	・Revised Labor Law ・Prime Minister's Order Concerning Enforcement of the Labor Law	・Labor Law ・Worker's Social Security Law ・Law on Revision of Article 139 and 144 of the Labor Law

		Declaration on the Inexperienced Foreign Labor Employment Permits ・Labor Safety/Hygiene/ Environment Law				
Rivers	・River Law ・Flood Prevention Law ・River Sedimentation Prevention Technology Standards	・Water Law (Draft)	・Levee Law ・Building Standard Law of Viet Nam ・Natural Disaster Prevention Strategy ・Protocol on River Basin Management	・River Levee Law ・Canal Law	・Water and Water Resource Law	―

Source: Web site in each country.

Table 5: Outline of Legal Systems Concerning Investment in Asian countries

Category	Thailand	Vietnam	Myanmar	Laos	Cambodia
Laws Related to Investm-ent	・Civil Commerce Laws ・Investment Incentive Law ・Foreign Business Law ・Investment Committee Declaration	・Common Investment Law ・Integrated Industry Law ・Corporate Income Tax Law	・New Foreign Investment Law ・Special Economic Zone Law ・Company Law	・Foreign Investment Incentive and Control Law ・Detailed Enforcement Regulation of the Foreign Investment Incentive and Control Law ・President's Order Concerning Preferential Measures ・Domestic Investment	・Investment law ・Collateral Cabinet order Concerning the Enforcement of the Investment Law

				Encouragement Law ・Overseas Investment Encouragement Law	
Investm-ent fields	■Incentive fields ○Agriculture and agricultural products ○Ores, metals and ceramics ○Light industries ○Manufacture of metal products, machinery, and transport machinery ○Electronics and electrical industries ○Chemical industry, paper and plastic ○Services and public facilities ■Special important industries ○Manufacturing industries from agriculture and agriculture products ○Business involved in technology development and development of human resources	■Incentive fields ○Businesses involved in new materials, new energy, high tech products, high tech products, biotechnology, IT, and manufacturing machines. ○Agriculture, forestry, and culturing and processing of fish, production of common salt, incubation, reforestation ○Research and development related to the application of eco-technologies and scientific technologies ○Labor-intensive type industries ○Construction and development of infrastructure and of large important projects	■Encouragement of business types that conform to the following policies ○Import expansion ○Natural resources development requiring large-scale investment ○Obtaining high tech technologies, production of financial services requiring large investment ○Expanding employment opportunities ○Saving energy costs ○Other development	■Incentive fields ○Activities producing products for export ○Agricultural and forestry industries, processing and handicrafts manufacturing activities ○High-skill technologies, modern technologies, scientific research and analysis activities, research and development analysis activities, environmental conservation activities, industrial processing activities and industrial production activities to perform various ecosystem conservation activities ○Personnel resource development,	○Supporting industries supplying all its products (100%) to export industries ○Manufacturing feed for animals ○Manufacturing leather products and related products, metal products, electronic and electrical equipment and office equipment, toys and sports goods, motorcycles, parts, and accessories, and manufacturing ceramics ○Manufacturing food and beverages, products for the textile industry, clothing, textiles, shoes, and hats, wooden furniture and fixtures, paper and paper

	○Public works projects public works construction, basic services ○Business involved in environment conservation and countermeasures ○Special purpose industries	○Business involved in education, training, medical treatment, sports and ethnic culture ○Traditional arts and crafts development business ○Other production and service fields which should be encouraged		high-skill technologies, and public hygiene ○Activities to produce raw materials, accessories, and equipment needed for infrastructure construction activities and other industrial production ○Tourism industry development activities and transit service activities ○Construction materials production activities	products, rubber and plastic products, supplying water supply systems, making traditional medicines, freezing and processing marine products for export, processing grains and crops for export ○Manufacturing chemical products, cement, agricultural use fertilizers, petro-chemical products. Manufacturing modern medicines. ○Construction of modern markets and trading centers. ○Developing technologies for industry, agriculture, tourism, infrastructure, environment, engineering , science, and other industries. ○Training and educational institutions

					that give training to improve technology ○International trade exhibition centers and meeting halls
Fields regulated	■ Industries that regulate the entry of foreign companies are regulated by the Alien Business Law	■ Fields where investment is prohibited ○Investment businesses that harm the national defense, national safety and public interest of Vietnam ○Investment businesses that harm historical and cultural legacies, customs, or traditions of Vietnam ○Investment business that harm the health of the people or ecology and environment of Vietnam ○Businesses involved in the disposal of harmful wastes ■Fields where investment is conditional ○Fields which impact the	■Fields where the entry of the private sector is restricted a)Logging, sale and export of teak b)All reforesting and forest management excluding home use firewood c)Extraction and sale of petroleum or natural gas d) Extraction and export of pearls, jade and other precious stones e)Cultivating fish or shrimps f)Postal and communicati on businesses g)Aviation and railway businesses h)Banking and insurance businesses i)Radio and TV broadcasting businesses j)Mining, refining, or	■Fields requiring authorization for foreign investment are set in detail by the Detailed Enforcement Regulations of the Foreign Investment Incentive Law ■Fields requiring conditional authorization for foreign investment are set in detail by the Detailed Enforcement Regulations of the Foreign Investment Incentive Law ■ Fields requiring authorization for foreign investment in the Savan-Seno Special	○All commercial activities, importing, exporting, wholesale, retailing, tax-free stores ○Transport services by sea, road or air. Excluding investment in railways. ○Restaurants, karaoke, bars, night clubs, massage parlors, fitness centers ○Tourism services ○Casinos and gaming business ○Banks, financial institutions, insurance companies and other currency and financial services

		national defense, national safety, public order and social stability ○Financial and banking industries ○Fields which impact the health of the people ○Cultural, information, newspaper, and publishing industries ○Amusement industries ○Real estate business ○Natural resource related industries and business related to environmental conservation ○Education and training businesses ○Other fields covered by special laws.	exporting metals k)Electric power business l)Making products needed to maintain public order and national security ■Fields requiring authorization by authorities ○Hotel business or home rental business ○Tourism ○Financial businesses	Economic Zone are set in detail by the Detailed Enforcement Regulations of the Foreign Investment Incentive Law	○Information and broadcasting businesses including radio, TV, newspapers, and magazines ○Specialized services ○Manufacturing and processing wooden products made using wood from natural forests which are legal national supply sources ○Combined entertainment facilities including hotels, theme parks, sports facilities, and zoos occupying less than 50 hectares ○Three-star or lower rated hotels ○Real estate development, warehouse business
Preferential Measures	■Thailand divides the country into three regions to provide preferential measures according to the location	■Preferential measures concerning corporate taxes paid by companies investing in incentive investment	■Exemptions from corporate income taxes for three years after beginning to manufacture or provide	■ Import customs taxes and import tax exemption policies are provided for machinery and	■Exemptions from corporate taxes ■Special depreciation system for 40% of tangible

	of factories. ○Reduction of import taxes on machinery ○Exemption from corporate taxes for fixed periods according to conditions ○Exemption for fixed periods from import taxes on wood and resources for export use ■Others ○Incentive measures for supporting industries ○Preferential measures for special important industries ○Preferential measures for movement of factories to outlying regions ○Incentive measures for research and development projects ○Preferential measures for trade investment support businesses ○Special incentive measures to improve and promote technological	fields and incentive investment regions ■New companies in high tech fields, or science and technology development fields which satisfy conditions enjoy incentives related to corporate income tax, are exempt from the stamp tax paid to register rights to use of land and rights to ownership of homes, and are exempt from land rentals or land use fees. ■Companies and cooperative associations that conduct environmental conservation businesses receive preferential corporate tax measures ■Exemptions from import taxes on fixed assets and specified	services are approved. ■If approved by the Myanmar Investment Committee, they enjoy the following preferential measures (MIC decides each request separately) a)Extension of tax exemption or reduction period b)Income tax reduction measures for the said profits c)Accelerated depreciation measure for tangible fixed assets used for business d)Tax reduction on profits from production and export in Myanmar (limit 50%) e)Paying income taxes on behalf of foreign employees and deduction of the amount paid from income subject to corporate income tax. f)Application of	materials, parts, direct manufacturing equipment, raw materials domestically not available or in short supply, and partially completed products imported to be processed or assembled as export products. ■Tax reduction measures for customs taxes, commodity taxes and transaction taxes for the import of raw materials, completed products, and partly completed products ■Tax reduction measures for customs taxes, commodity taxes and transaction taxes for the import of raw materials, completed products, and partly completed products ■Tax reduction measures for customs taxes,	fixed asset value of new or used products used for manufacturing or for processing. ■Duty-free importation of manufacturing equipment and construction materials, etc. ■Introduction of investment preferential measures for supplementary investment for specified industries in the form of ministerial orders or other regulations ○Reduction of import customs taxes or system for governmental payment of VTA ○Priority periods for corporate tax exemption systems in agriculture and agricultural processing fields are approved. ○Imported production

	reform (STI)	goods for incentive industries ■Exemption from value added taxes on imports of raw materials for production and processing of products for export in line with product production and processing contracts with foreign partners. ■Corporations investing in incentive fields or incentive regions enjoy preferential measures related to the land use fees. ■Non-agricultu re use land use tax exemptions are given regarding investment in a special investment incentive field, investment in regions where economic society faces	Myanmar residential tax rates on personal income tax of foreign employees g)Deduction from annual income tax of research and development costs of doing business h)Carrying forward losses for three business years i)Measures to reduce customs taxes on the import of equipment and raw materials and other domestic taxes when establishing a factory j)Measures to reduce customs taxes on the import of raw materials and other domestic taxes for 3 years after the start of business operation and production k)Exemption	commodity taxes and transaction taxes for the import of equipment, machinery and spare parts ■Tax exemption measures for customs taxes, commodity taxes, and transaction taxes for imports of automobiles ■Transfer of automobiles imported applying exemptions from customs tax, commodity tax, and transaction taxes ■Tax exemption measures from customs taxes, commodity taxes, and transaction taxes on the import of raw materials, equipment, machinery, or automobiles used directly for production	machinery, equipment and materials in the sewing industry enjoy exemption from VAT when they export final products ○Exemption from VAT on imported production machinery equipment and materials in supporting industries that support the export of sewn products, textile products, and shoes.

		special difficulties, investment in investment incentive fields in regions where economic society faces special difficulties, and to companies with 50% or more of their work force consisting of injured veterans.	from commercial taxes on goods for export.		
Content of regulat-ions	■The following are investment ratios when subject to incentive measures of the Investment Committee 1.In the case of agriculture, animal husbandry, fisheries, and mineral extraction and mining industries or other service industry projects, citizens of Thailand own at least 51% of the registered investments. 2.Registered investment in manufacturin	■Based on Article 21 of the Common Investment Law, investment by foreign investors in the following forms is approved. ○Establishment of a local corporation by 100% foreign investment. ○Establishment of a local corporations through a joint venture or a merger with a Vietnamese company ○Business collaboration contracts ○BOT contract, BTO	■Foreign investment of 100% is permitted. In the case of a joint venture, the foreign investment rate must be at least 35%, and in the case of the merger with a government owned company, the foreign investment ratio can be up to a maximum of 50%.	■Joint ventures are restricted to a minimum investment of 30% or more, and the minimum registered investment must be $100,000 or more, and the valid period of a license is 20 years. The valid license period is 15 years for 100% foreign capitalized company, and it is 20 years for a joint venture. ■There is no upper limit on the investment ratio. (investment	■There are no fields in which a restriction is added limiting investment by foreigners. ■Industries in which investment by foreigners is prohibited 1)Manufacturing and processing psychotropic medication and illegal drugs 2)Manufacturing and processing of toxic chemical products, agricultural insect repellents and

	g industry projects may, regardless of where the project is located, be more than half of whole investment by foreign investors (previously, this was restricted by export rate or location zone). 3.In the case where there is a rational reason, the Committee can set a share-based ratio for foreigners limited to industries which are to be encouraged. ■The following industries are designated as special important industries, and they enjoy even greater benefits in the tax area. 1.Manufacturing industry from agriculture or agricultural products 2.Businesses involved in technology	contract, BT contract ○Representative offices of foreign service businesses (operation of a business directly earning profits is not possible) ○Indirect investment ○Others (sub-contracted processing etc.) ■Legal capital is set for some conditional investment fields (banking business, insurance business, dispatching workers overseas, real estate, aviation services, movie production etc.) ■Concerning conditional investment fields in which the 100% joint venture form of foreign investment is not approved, the investment ratios of		of 100% is recognized.) In the joint venture case, foreign ownership of at least 30% is obligated.	insecticides, and drugs made of other chemicals that are prohibited by international treaties and the WHO and which harm people's health and the environment. 3)Processing and producing electric power using waste material imported from outside the country 4)Forest opening businesses prohibited by the Forest Law

	development and personnel resources development 3.Public works business public works construction, basic services 4.Businesses involved in environmental conservation and countermeasures 5.Special purpose businesses	Vietnam investors and foreign investors in various business fields such as the logistics field and communication field are stipulated.			
Foreign workers	■Companies which are promoted by incentives are permitted to employ foreigners who are technologists and specialized workers by the Investment Committee. But the Investment Committee encourages the hiring of Thais as managers and technologists . ■There are 38 occupations which	■Foreigners who work inside Vietnam must satisfy the following conditions ○Be 18 years of age or older. ○Satisfy essential health related conditions to ensure they can continue to work ○Have long years of experience and high level of expertise in manufacturing or the management of business ○Have no criminal	■Foreigners who foreign companies employ shall be individually approved by the investment committee (MIC). The MIC shall issue approvals of the employment of foreigners considering the occupations of the foreigners, their numbers, the period, and technology ■To hire 5 or more local	■Foreign workers who work in the Lao People's Democratic Republic must; ○Be healthy (free of communicable diseases) ○Be experienced workers with the required specialized knowledge.	■In a case where the said qualifications and specialized skill are not available in Cambodia, it is possible to gain approval for a visa or work permit in order to employ foreigners as managers, technologists , or highly skilled veteran workers.

	foreigners cannot perform inside Thailand. All foreigners employed inside Thailand must obtain permission to work in advance.	record in Vietnam or overseas ○Obtained a work permit to work for 3 or more months	people, a company notifies the regional labor office of employment conditions, and interviews and hires candidates based on a recruitment list given to it by the same office. But at this time, it is possible to publish a recruitment announcement in a newspaper with the approval of the labor office.		
Land owner-ship	■According to the Land Law, foreigners cannot possess land. ■A company that the Investment Committee certifies to be a company promoted by incentives can possess land. ■A company can also possess land by locating in an industrial estate that the	■In Vietnam land is a common asset of the people and is under government control. ■Foreign companies or foreign parties to business cooperation contracts are not permitted to own land when the carry out investment, but rather, rent the land	■Foreigners and foreign corporations cannot own land, and may obtain rights to use of land based on a lease contract under the Real Estate Transfer Regulation Law (10 to 30 years, but can be extended to 50 years. Limited to 5,000 acres)	■Land in Laos is national property and individual ownership is not permitted. ■The limit on the loan of or license to land that a foreigner investing inside Laos obtains from the government is 50 years, and it is set according to method, scale, and	■Ownership of land by investors is only possible for a person who is a natural-born citizen or for a corporation of Cambodia, but land use can be approved as a concession, unlimited long term rental, or a renewable limited period short-term loan.

	Industrial Estate Authority of Thailand (IEAT) has developed.	from the Government of Vietnam. ○Usage fees are calculated for land water and ocean surface and they pay these as rents.		type of activity or project, and the government can agree to its extension.	■Ownership of real estate or personal assets on land, and placing land as security for a loan are also approved.

Source: Web site in each country.

2.3 Global standards of industrial parks by international organizations

The study team did research on any criteria set by international agencies/international private organizations for certification, in order to understand the advanced efforts for global standards of industrial park or business sustainable policies.

In the ecology and green area, International Standard Organization (ISO) has established environment management system ISO-14001 as a global standard, in which there are guidelines that suggest how to reduce environmental burdens in factories and industrial estates/parks. On the other hand, the Japanese government promotes activities to certify eco-friendly industrial estates as eco towns based on existing standards under “Zero Emission Concept”. In addition, “Pollution Prevention Managers Act” and “Energy Managers Act” put obligations on designated factories to hire managers who have related national qualifications in Japan. Since these two systems have been applied with modifications in Thailand under the support of the Japanese government, standards to put managers or guidelines in the two systems will be a good reference point for new systems.

Next, in the fields of security and safety, the ISO has enacted two international standards: a Risk Management System (ISO31000 Series) and a Business Continuity Management System (ISO22300 Series). Concerning operation (work) continuity, in the United States, the Federal Emergency Management Agency (FEMA) has published a guideline to the enactment of business continuity plans for the operation (work) of federal government bodies. In Japan, the Small and Medium Enterprise Agency has announced a similar handbook for medium and small enterprises. Also concerning security and safety, the Hazard Analysis Critical Control Point (HACCP) is a food safety evaluation system that has been established, and standards for the control of all processes from the acceptance of raw food materials to manufacture and shipping are also stipulated.

Lastly, in the field of industry upgrading, certification in the ISO 9000 series quality management systems and the OHSAS 18001 occupational safety management system has been standardized as a global guideline. On a global level, there are quite a few industrial standards specifying the quality of industrial products. Such standards can be used as references when preservation and improvement of product quality are done. Important elements for enhancing sustainability of an industrial park are creating an appropriate organizational structure, as well as stably recruiting human resources who constitute the system, and advancing their skills. In the US, a guideline called the Capability Maturity Model Integration (CMMI) has specified criteria for measuring organizational capacity and skill levels among workers. In Japan, the Skill Standards for IT Professionals (ITSS) and the Criteria for Evaluating Vocational Ability Levels have taken effect. Practical cases of Eco Green, safety and security as well as industry upgrading are shown in the table below.

Table 6: Global International Standards about Industrial Parks by International Organizations (Environment)

International Organization Etc.	Standard name	Purpose of Enactment, Basic Concepts, etc.
ISO	Environmental Management system(ISO-14001 family)	Standards for environmental management system for companies and organizations looking to control their environmental impact from their activities, products or services, and to constantly improve their environmental performance. To be used as guidelines specifying (a) Systemization, (b) Documentation, (c) Implementation, and (d) Recording, on the activities to control environmental impact.
Japan	Eco-town project	This system is established with the purpose of promoting advanced eco-friendly towns, under the “Zero emission concept”, that aims to reduce all kinds of waste to zero by utilizing the waste as material for other areas. To utilize this system, local governments first need to make an “Eco Town Plan” reflecting each region’s feature. Then, the plan will be checked if its concept and proposed project have creativity and pioneer spirit to a satisfactory extent and it could serve as a model for other local governments. After the evaluation, the plan will be officially approved as “Eco Town Plan”.
Japan	Pollution Control Manages Act	To be used as guidelines to promote pollution prevention by requesting “designated factories”, which belong to manufacturing industry and have some facilities

		generating pollutants such as smoke, to set a specialist for pollution prevention. Employees in those factories are obligated to comply with instruction from the management system including "pollution prevention general managers" who monitor the whole factory, "pollution prevention technology managers" who monitor the factory from the technology aspect, and "pollution prevention senior managers" who support the general managers and take control of the technology managers.
Japan	Energy Management Act	Factories that consume energy more than the specified quantity are designated as "Type 1 designated energy management factory". Five industries, including manufacturing, mining, power supply, gas supply and heat supply, shall set a certain number of full-time energy managers. To be used as guidelines to explain that energy managers shall be engaged in the following tasks : (a) maintenance of facilities which consume energy, (b) improvement and monitoring of energy usage, and (c) other energy management tasks set by the act of Ministry of Economy, Trade and Industry.
Japan	CASBEE	Method to evaluate buildings with their environmental performance. This system comprehensively evaluates quality of buildings including comfort inside of buildings and consideration on landscape, as well as environmental consideration by using environment-friendly material and equipment. Each country proposes its own method, and the three methods are well-known.
United States	LEED	
United Kingdom	BREEAM	

Source: Web site in each country, organizations

Table 7: Global International Standards about Industrial Parks by International Organizations (Safety and Reliability)

International Organization Etc.	Standard name	Purpose of Enactment, Basic Concepts, etc.
ISO	Risk management system (ISO31000 Family) Implementation guide to CAN/CSA-ISO 31000, Risk management - Principles and guidelines	ISO31000 aims to serve as a top-level document to cover all the organizations and risks although it does not target emergency correspondence and business continuity management to avoid overlapping with other TC (Technical Committee). ISO31000 provides not only versatile processes for operation and maintenance control against all risks, but also the framework to effectively manage the processes. It shows the necessary risk management. ISO31000 shows the system to continuously improve both the framework and risk management processes based on the PDCA model, that is Plan (Plan), Do (Do), Monitor / Evaluate (Check) and Correct / Improvement (Act).
ISO	Business continuity	Standards for business continuity management system

	Management Standards (ISO22300 Family)	(BCMS) for companies and organizations to frame and implement countermeasures in an efficient and effective manner against crises / disasters, accidents or any other unexpected incidents.
FEMA	Continuity of Operations Plan Template and Instructions for Federal Departments and Agencies	Guideline template collection to be used to enact business continuity plans for federal government organizations by the Federal Emergency Management Agency (FEMA). Prepared to respond to all possible crises which could obstruct normal operations, this guideline can be used to enact business continuity plans required by the federal government.
Small and Medium Enterprise Agency	Small and medium enterprise BCP enactment guideline	Easy-to-understand explanations in this guideline permit Japan's small and medium enterprises to autonomously enact and operate their own BCP. They can prepare BCP simply by following the instructions in the guideline.
JIS	Q2001	In response to the Hanshin-Awaji Earthquake of January 1995, Japan began to study the development of crisis management systems, and in March 2001, issued the Guideline to Construction of Risk Management Systems as JIS Q 2001. In addition to the management of risk, it presents information about responding to emergency conditions and concerning restoration. The ISO (International Standards Organization) has developed ISO-31000, which is a risk management standard. When it came into force, JIS Q2001 was cancelled.
United States	HACCP (Hazard Analysis and Critical Control Point)	This is a sanitary management method applied to continuously monitor and record important points in order to prevent the occurrence of risk throughout the process starting with the reception of raw materials for food products and including manufacturing and shipping of the products.
Japan	Guideline to the safety assessment of a chemical plant.	Method of performing an advance assessment of the safety of a chemical plant.

Source: Web site in each country, organizations

Table 8: Global International Standards about Industrial Park by International Organizations (Industrial upgrading)

Countries / International Organizations	Names of Standards	Purpose of Enactment, Basic Concepts, etc.
ISO	Quality management systems (ISO 9000 family of standards)	Specify organizational management quality system to assure product and service quality, and standardize the requirements for continuously improving the systems'

		effectiveness. Used as a guideline categorizing the activities required for quality assurance into 1) systemization, 2) documentation, 3) execution, and 4) recording.
UK	Occupational safety and hygiene management system (OHSAS 18001)	Systematically integrates the management of an organization itself, and of employees' and a concerned third party' s safety, hygiene and health, in corporate management. Evolved from BS 8800. A guideline for sound and smooth organizational management by identifying and managing risks such as accidents, unwanted events, and threats to the organization.
Japan	Japanese Industrial Standards (JIS)	Enacted as unified national standards on industrial products. Aim to 1) assure convenience of socio-economic activities (compatibility), 2) improve productivity (mass-production by reducing variety), 3) assure fairness (consumer benefits and simple transactions), 4) facilitate technological progress (knowledge creation, and support for technology development / diffusion), and 5) maintain safety and health, and protect the environment. Specify a set of criteria by compiling what can be served as industrial requirements in various fields.
US	CMMI (Capability Maturity Model Integration)	A 5-level organizational maturity model used as a guideline or criteria for introducing, improving and appraising software (particularly) development process. Level 1 (initial): Being dependant on individuals, control is unorganized. Level 2 (Reproducible): Procedures for planning and management are in existence, and carried out using experience. Level 3 (Defining): Processes are undisputedly documented, and readily usable. Level 4 (Managed): Processes and process quality are periodically managed, enabling confirmation of status, risk assessment, and countermeasures provision. Level 5 (Optimized): Processes are constantly optimized to the needs of the organization through continuous improvement.
Japan	Skill Standards for IT Professionals (ITSS)	Systematize the competencies required for providing IT-related services. A 7-level scale represents the indices of achievement levels, and skills required for achieving the levels as well as maturity levels in each of 11 large categories of IT services. Also used as a guideline for capacity development in IT skills.
Japan	Criteria for Evaluating Vocational Ability Levels	Categorize knowledge and techniques / skills required for workers' job execution and result-oriented occupational behavior models (ability to execute jobs) in accordance with types of business, and occupation as well as job responsibility. Used as a guideline for recruitment, appraisal, career development, and HRD. List 6,300

		vocatonal abilities (ability units) for 245 occupations in 48 businesses. Specify ability criteria on a scale of 1 to 4, depending on the scopes of the person's responsibilities and roles as well as associated difficulties that the organization expects him or her to fulfill.

Source: Web site in each country, organizations

2.4 Utilization and operation of industrial park standards, and the Best Practice

As a result of an overview of the industrial park standards in Western and Asian countries, and the standards of international organizations, we have found the two issues for the reference of this study. One is that the standard should be "standards" to clear the minimum level, or "guidelines" to lead the industrial estates to the ideal level. The other one is deciding which ones will be of reference to the making industrial standards in the fields Environment, Safety and reliability, Industrial upgrading.

For the first point, should be a "Guideline" to induce the achievement levels for industrial parks, rather than a "Standard" to evaluate industrial parks on the basis of uniform factors, because items and levels would be different for each company. Thus, on the other hand, it is better for developers to use this as a marketing tool point out their strong points to appeal to potential customers.

In conclusion, "ISO/IEC Directives Part 2, Rules for the structure and drafting of International Standards" is appropriate for the Best Practice, because management systems of ISO are based on this standard.

This is intended to ensure the freedom for product development in the future to aim for the best "prescribed performance" for each items, and to allow for the application all over the world.

The management system of the ISO was not actually an original concept, but was modified from a local standard to an international standard. For example, the 22300 series was originally The British Standards Institution standard. Reference was made to the ISO concepts in developing this guideline with a view to expansion to the Greater Mekong Sub Region.

In addition, ISO standards are suitable for the sustainable guideline, because they include a system to revise guidelines in line with circumstances and situations. Also, it is a de-facto standard which was not determined by government.

Table 9: Sample descriptions in "ISO/IEC Directives Part 2, Rules for the structure and drafting of International Standards"

Items	Descriptions
The aim-oriented approach	Any product has an infinite number of properties, and only some of them are subject to international standardization. The choice depends on the aims of the document to be prepared, the overriding aim being to ensure fitness for purpose of the product concerned.
Performance approach	Whenever possible, requirements shall be expressed in terms of performance rather than design or descriptive characteristics. This approach leaves maximum freedom to technical development.
The principle of verifiability	Whatever the aims of a product standard, only such requirement shall be included as can be verified. Requirements in documents shall be expressed in well-defined calues. Phrases such as "sufficiently strong" or "of adequate strength" shall not be used.
Fitness for Implementation as a regional or national standard	The content of a document published by ISO and IEC shall be drawn up in such a way as to facilitate its direct application and its adoption without change as a regional or national standard.

Source: ISO/IEC Directives Part 2, Rules for the structure and drafting of International Standards:

On the other hand, at the view point of reference for items and levels of industrial estates/parks standard, we should refer to ISO guidelines below.

Table 10: Standards of reference for items and levels of industrial estate standards

Field	Name of system
Environment	Environmental management system (ISO14000 family)
Safety and Reliability	Risk management system (ISO31000 family)
	BCP management system (ISO22300 family)
Industrial Upgrading	Quality management system (ISO9000 family)

2.5 Standards for industrial parks in Japan

We have organized major standards for industrial parks in Japan as follows in order to indicate strategic priorities and challenges related to the enactment of basic guidelines to sustainability standards in Japan.

An examination of the results shows that while on one hand, in Japan, laws to restrict the use of land have been provided in detail, in fact it must be admitted that Japan was deficient regarding sustainability, and we must carry out desirable reforms of our systems in order to establish new standards.

The following three points are important ways to improve the sustainability of industrial parks:

・Lowering long-term costs
・Ensuring stable natural resources
・Capability of avoiding or reducing risk

As methods of inducing these, the following is a classification of differences in the degree of involvement in industrial parks of companies located in these parks.

・Enterprises are counted on to take autonomous actions
・Providing incentives is counted on to change behavior
・Change of behavior is encouraged coercively through regulations.

It is presumed that at the minimum, Japanese companies doing business overseas must adopt, as a corporate posture from the perspective of CSR both domestically and regionally, a policy of not only providing the minimum level of protection on the scene, but autonomously taking countermeasures that conform to Japanese standards.

Table 11: Organization of Major Standards and Related Laws and Regulations for Industrial Park Development in Japan

Standard	Overview	Districts applicable etc.	Object scale etc.	Approving body (by type of application)	Supplemental
City Planning Act Development Permission System	Intended to guarantee zone demarcation of urbanized areas and urbanization control areas to form good quality and safe cities and prevent chaotic urbanization	City planning areas and urbanization promotion areas	Min. 1,000m^2 (in existing built-up area of the 3 major cities, and in suburban development areas: min. of 500m^2) Authorizing authority can lower it to 300m^2 under an ordinance.	Prefectural governor, etc. (authorization)	Key words: Technology standards (Law No. 33), use district, district plan, etc.
		City planning areas – urbanization control areas	In principle, all development activities		
		City planning areas –non-delineated city planning areas	Min. 3,000m^2 Authorizing authority can lower it to 300m^2 under an ordinance.		
		Quasi city planning areas	Min. 3,000m^2 Authorizing authority can lower it to 300m^2		

			under an ordinance.		
		Areas other than the above	1ha or more		
Building Standard Law, Enforcement Order, Enforcement Regulation and related Notifications	Establishes the minimum standards for the site, construction, equipment, and uses of buildings, in order to protect the lives, health, and assets of the people and thereby contribute to the improvement of the public welfare.	All areas	Special building with total flood area provided for this use larger than 100m^2	Building official etc. (authorization)	Regulations covering structures and elevator equipment. New construction, expansion, renovation, relocation, repair, facelift, change of use and other categories
			Wooden buildings with 3 or more stories or total floor area more than 500m^2, height more than 13m and eave height more than 9m		
			Buildings other than wooden construction, 2 or more stories, or total floor area larger than 200m^2		
		City planning area, quasi-city planning area, or area etc. designated by prefectural governor	In principle, all buildings other than the above		
Law for Regulation of Development, etc., of Building Land	By stipulating regulations needed to prevent the disasters—cliff failures or discharge of sediment—accompanying building land development, it is intended to protect the life and assets of the people, thereby contributing to the public welfare	Building Land preparation control areas	Cutting, work on a cliff higher than 2m (slope of 30° or more)	Prefectural governor etc. (authorization)	
			Embanking, work on a cliff higher than 1m		
			Simultaneous cutting and embanking, and even at embankment of 1m or lower, work on a cliff higher than 2m matched to cutting		
			Work on building land preparation		

			area larger than 500m^2, regardless of the height of the cliff created by cutting and embanking		
Act for Assessment of Environmental Impacts, Enforcement Order, Enforcement Regulation, and related notifications	・Environmental impact assessments are based on awareness that environmental conservation is extremely important ・Clarifies the responsibility of the national government, etc., and stipulates procedures to appropriately and smoothly assess environmental impacts, and ensures that appropriate concern will be paid to conservation of the environment by business by taking measures so that decisions concerning the contents of projects reflect the results of assessments of the environmental impact. ・Its ultimate purpose is to contribute to ensuring the	Industrial parkland development projects, logistics work park land preparation projects	Category 1 project: enforcement area of 100ha or larger Category 2 project: enforcement area of 75ha to 100ha	Authorizing authority judges each project in light of the views of the prefectural governor, etc.	Object scale can be lowered under an ordinance Object projects are extremely diverse, not limited to those on the left

	health and cultural lives of the people today and in the future.				
Agricultural Land Act Agricultural land diversion authorization system	When agricultural land is considered to not be agricultural land or the right of ownership or other right is to be set or transferred in order for agricultural land to be converted to other than agricultural land, under the agricultural land act, in principle, permission of the prefectural government is necessary (for 4ha or more, ministerial authorization, etc.).	When diverting agricultural land to other uses	4ha or less	Prefectural governor etc. (authorization)	There are also regulations for mown pasture land
			Over 4ha	Minister of Agriculture, Forestry, and Fisheries (Authorization)	
Forest Act Forestland Development Permission System	To develop a forest, it is necessary to do so correctly in order to avoid harming the roles of the forest, and this is a natural responsibility inherent in the party's right to perform the development. This law is intended to ensure appropriate use of the land of these forests from this viewpoint.	Privately owned forest covered by the regional forest plan	Less than 1ha	Prefectural governor etc. (notification)	
			1ha or more	Prefectural governor etc. (authorization)	
		In forest preserve and facility preserve area	All	Minister of Agriculture, Forestry, and Fisheries or Prefectural Governor (Cancellation) Prefectural Governor (Approval)	
Factory Location Act	In order that the locating of factories can be done appropriately while conserving the environment, surveys of factory	Factories for which a notification is obligatory Manufacturers, electric power, gas, and heat	Site area of 9.000m^2 or more or building area of 3,000m^2 or more	Minister of Economy, Trade and Industry or a Prefectural Governor (notification)	There are national government, prefectural, and city, town, and village

	locating are done and standards governing the locating of factories are announced, and recommendations and orders are made based on these, to contribute to the development of the soundness of the people's economy and the welfare of the people.	suppliers (excluding hydro and geothermal power plants)			standards

Table 12: Organization of Representative Standards other than in Table 11

Item	Standard Name	Purpose, Basic Concept of Enactment etc.
Standards and related laws and regulations concerning city planning	Land Readjustment Act	The Land Readjustment Act is intended to prepare land for sound urban districts, thereby contributing to the enhancement of the public welfare by setting standards for matters necessary for land readjustment projects, such as executing party, execution method, sharing of costs, etc. A land readjustment project is a project to improve the provision of public facilities such as roads or parks, thereby enhancing the use of housing land in city planning areas. It is a law which effectively forms planned urban districts, so it is called the "Mother of City Planning" in Japan, and both before and after the end of the war, has been used to overcome many challenges faced in numerous regions.
Regulations and related laws concerning the safety of housing land	Housing land disaster prevention manuals	To prevent disasters caused by the collapse of cliffs or discharge of sediment and obstructions such as the settlement or submersion of land during development project work, this manual organizes basic concepts and points which must be handled carefully during design and execution regarding cutting, embanking, protecting slopes, retaining walls, soft ground countermeasures, disposing of wastewater, and earth slide prevention countermeasures. It is intended to contribute to the smooth execution of development projects by preventing disasters and obstructions at the same time as it speeds up and optimizes authorizations and other administrative procedures for development of building land under the Act for Regulation of Preparing Housing Sites etc., and development work under the City Planning Law.
	Disaster Prevention Pond Technology Standards (Draft)	These enact basic matters which must be ensured concerning the planning, design, execution, and multi-purpose use of disaster prevention ponds (permanent structures) and regulating ponds provided accompanying housing land development (temporary

		structures) in order to control the rise of runoff accompanying urbanization of river basins and to reduce the burden of flood discharge on downstream rivers.
Technology standards and related laws and regulations concerning infrastructure facilities	Road Structure Ordinance	A cabinet order enacted under Article 30 of the Road Law, it enacts general technical standards for the structure of roads in a case where a new road is constructed or a road is reconstructed. It stipulates road categories, structure of lateral section, alignment, grade intersections and grade separated intersections, pull-offs, automobile parking areas, and roads in tunnels and on bridges and viaducts etc.
	Sewage Works Facility Planning and Design Guideline	This is a summary prepared as a practical guide to technologies for the planning of sewage disposal systems, and the general design of sewage disposal system facilities and equipment. It was compiled as an easy to use guideline reflecting regional characteristics and actual conditions, covering basic planning, pipeline facilities, pumping station facilities, water purification facilities, sludge disposal facilities, electrical instrumentation equipment, general facilities and testing and management facilities for environmental conservation etc. And it incorporates the most up-to-date knowledge regarding planning methods adapted to changes in the social environment surrounding sewage systems, the organization of earthquake countermeasures and reconstruction planning, and in the area of stormwater management planning, regional prioritization software countermeasures, emphasis on the need for citizen participation, and precautions concerning the effective use of sludge.
	Water supply facilities design guideline	This guideline reflects the most recent examples concerning general waterworks technologies under fundamental guidelines concerning 10 items such as, “aiming for facilities that permit rational waterworks management into the future,” “considering expanding its area and public-private sector links,” “showing concepts based on asset management regarding renewal, reinforcement, and reconstruction etc.,” “aiming for facility design with priority on conserving energy and reducing carbon use.” And in response to lessons taught by the Great East Japan Earthquake which wreaked vast damage, it is intended to build highly reliable water supply facilities and incorporates new knowledge about earthquakes, liquefaction, and tsunami countermeasure so that water supply can be continued in the face of a future crisis such as a large earthquake.
	Fire Service Act	This act is intended to maintain peace and order and to contribute to enhancing the welfare of society, by preventing, issuing warnings about, and extinguishing fires to protect the lives, health, and property of the people from fire, and at the same time to reduce damage caused by fire, earthquakes, and other disasters, and to appropriately transport people injured by fire, etc.
	Flood Prevention Law	This law is intended maintain public safety by issuing flood warnings, and providing protection from flood discharge, tsunamis, and storm surges, to mitigate the damage these phenomena cause.

		It has established general rules for flood-Fighting organizations and flood-fighting activities. These place basic responsibility for flood prevention measures on cities, towns and villages but, flood-Fighting affairs associations established jointly by concerned cities, towns, and villages, and flood prevention associations, which are regional public organizations established under the Flood-Fighting Association Act, also bear responsibility to perform supplementary flood fighting. These three types of organizations are called flood-Fighting management groups, but flood-fighting management groups can form flood fighting groups to perform flood-Fighting work.
Standards and related laws and regulations concerning the environment	Basic Environment Law	This law is intended to help ensure the health and cultural life of people now and in the future and to contribute to the welfare of humanity, by establishing basic ideals and clarifying the responsibility of the national government, local governments, businesses, and the people concerning environmental conservation, and at the same time, establishing basic matters concerning countermeasure to conserve the environment, thereby comprehensively and systematically promoting countermeasures to conserve the environment,
	Soil Contamination Countermeasures Act	This law is intended to preserve the health of the people, by establishing measures to clarify the state of pollution caused by specified hazardous substances in soil and measures to prevent damage to human health caused by pollution, thereby taking soil pollution prevention countermeasures,.
	Air Pollution Control Law	This law is intended to restrict emissions of soot, volatile organic chemical compounds, and dust created by business activities of factories and offices and the demolition of buildings, promote the implementation of hazardous atmospheric pollutant countermeasures, and establish allowable limits related to automobile emissions gasses, thereby conserving living environments while protecting the health of the people from harm caused by atmospheric pollution, and establishing the responsibility of business enterprises to pay compensation for damage to human health caused by atmospheric pollution, thereby protecting victims.
	Water Pollution Prevention Law	This law is intended to regulate discharge of water from factories and business offices into public water areas and the permeation of water permeating the ground, and to promote domestic wastewater countermeasures, thereby preventing pollution of public bodies of water and groundwater (including worsening of the state of water other than its quality; same below.), thereby conserving living environments while protecting the health of the people and establishing the responsibility of business enterprises to pay compensation for damage to human health caused by polluted water and other waste fluids emitted by factories and business offices, thereby protecting victims.
	Vibration Control Law	This law is intended to perform necessary control within an appropriate range of vibration produced accompanying business activities in factories and business offices and construction work, and to establish required measures concerning road traffic

		vibration, thereby conserving living environments, and contributing to protecting the health of the people.
	Noise Control Law	This law is intended to perform necessary control within an appropriate range of noise produced accompanying business activities in factories and business offices and construction work, and establish allowed limits for automobile noise, thereby conserving living environments, and helping preserve the health of the people.
Standards and related laws and regulations concerning rivers	River Law	This law is intended to maintain public safety and enhance the public welfare by preventing disasters on rivers caused by flood discharge or storm surges, etc., to appropriately use rivers, and to maintain the normal functions of their flowing water, and to perform integrated management of these to improve and conserve river environments, thereby contributing to the preservation and development of the national land,.
	Erosion Control Act Designated Erosion Control District Activity Authorization System	The Erosion Control Act is intended to prevent sediment disasters caused by the production and discharge of unstable sediment accompanying avalanches and riverbed erosion, etc., resulting from torrential rainfall, thereby ensuring a good quality environment and conserving the flood control, water supply and other functions of rivers. Parties intending to carry out the following activities in a district designated as an erosion control district, must, in principle, obtain authorization from the prefectural governor. (1) Build a structure or other property or facility for erosion control, and continually use an erosion control facility. (2) In a case where there is a danger of earth and stones, gravel or other similar material flowing into a river, etc. (refers to rivers, lakes, marshes, and other flowing water or water surfaces), it is deposited or discarded. (3) Standing trees are cut or roots are extracted. (4) Wood and bamboo is transported by sliding or seining. (5) Soil is excavated, embanked, cut, or the ground is changed in other ways. (6) Earth and rocks or gravel are extracted or a mineral ore is extracted. (7) Grass is dug up.
	Technical Criteria for River Erosion Control	These technical criteria are intended to establish technical matters necessary to survey, plan, design and maintain rivers, erosion control, landslides, steep slopes, snow avalanches, and the seacoast, in order to correctly manage soil and water, which are important constituent elements of the national land, including the river basin perspective, and in this way, to systematically organize river technologies, contributing to the maintenance and improvement of their level.

2.6 Strategic advantage of Japan, and the interest of Japanese government

As mentioned above, the standards for industrial estates in Japan have been formulated mainly for regulating land use, rather than for keeping sustainability. On the other hand,

private companies in Japan have been struggling to reduce operating cost, not to be forced by others by their own efforts. Especially, in the field of environment, they have been improving their technology for severe environmental regulation. At the same time, in the field of industrial upgrading, they achieved high profitability by quality control activity, and in the field of safety and reliability, Japanese companies have improved their technology in the unique and severe natural disasters in Japan, such as earth quakes or typhoons.

These are originally developed in Japan or introduced from overseas and modified technologies and systems. Japan has an advantage in these technologies and systems, and Japanese government are promoting strategically expand overseas. On the other hand, we can point out the problems such as less competitiveness because of such unique systems and high capital cost.

For making industrial standard in this study, we need to consider these problems such as technical advantage and less cost competitiveness of Japanese companies.

It is important to make necessary condition of Japanese technology or systems in targeted countries. For example, we should make the items and levels in industrial standard considering Japanese technologies and systems to apply it. It will lead Japanese technologies and systems automatically to be applied to standards. This is also useful for recognizing the usefulness of life cycle cost for emerging countries and we believe it will be accepted by such emerging countries in the future.

We will design the standard to accelerate the export of Japanese systems and technologies in the Greater Mekong Sub Region.

Chapter 3.

Needs of Thai Government and Japanese Companies

Chapter 3. Needs of Thai government and Japanese companies

3.1 Policies for standards of industrial estates, business continuity and certification system

3.1.1 Industrial Park Policies in Thailand

Thailand's industrial estate was first created in 1967 and was regulated by the Ministry of Industry. In 1972, the Industrial Estate Authority of Thailand (IEAT) was established in order to develop administrate and industrial estates, and since 1979, the Public Regulations Act for Industrial Estates in Thailand has been enforced to this day.

Thailand's industrial estates have two major groups: 1) industrial estates which IEAT develops and operates and, 2) industrial estates which local corporations develop and operate following the IEAT's facility standards. Business facilities which are established by local corporations are not subject to IEAT's incentives, but are able to receive investment promotion by the Board of Investment (BOI).

IEAT had complete control over delegating public regulations for taxation on duty free items and import on foreign goods in Thailand. In 1979, the Public Regulation Act for Thailand was established by IEAT, dominating in making regulations for Industrial Estates, Factories, and Building Constructions. Additionally, industrial estates which IEAT is involved can be called "Industrial Estates"; however, industrial estates which are not established by IEAT are not allowed to use the name "Industrial Estate", so they use "Industrial Park" or "Industrial Zone" instead. Currently, most of the industrial estates that are established in Thailand are set up by IEAT.

3.1.2 Standards by IEAT

In the industrial estates set up by IEAT, Facility Standards in Industrial Estates apply.

Within the standards, 11 fields (water supply, water treatment system, information, electric power, firepower, human power, monitoring, security, etc.) have been planned to be improved as follows (Green Area, Eco Belt, Water Resource Conservation, Holding Treated Water & Reuse, Monitoring BOD & COD, Environment Monitoring Control Center : EMC2).

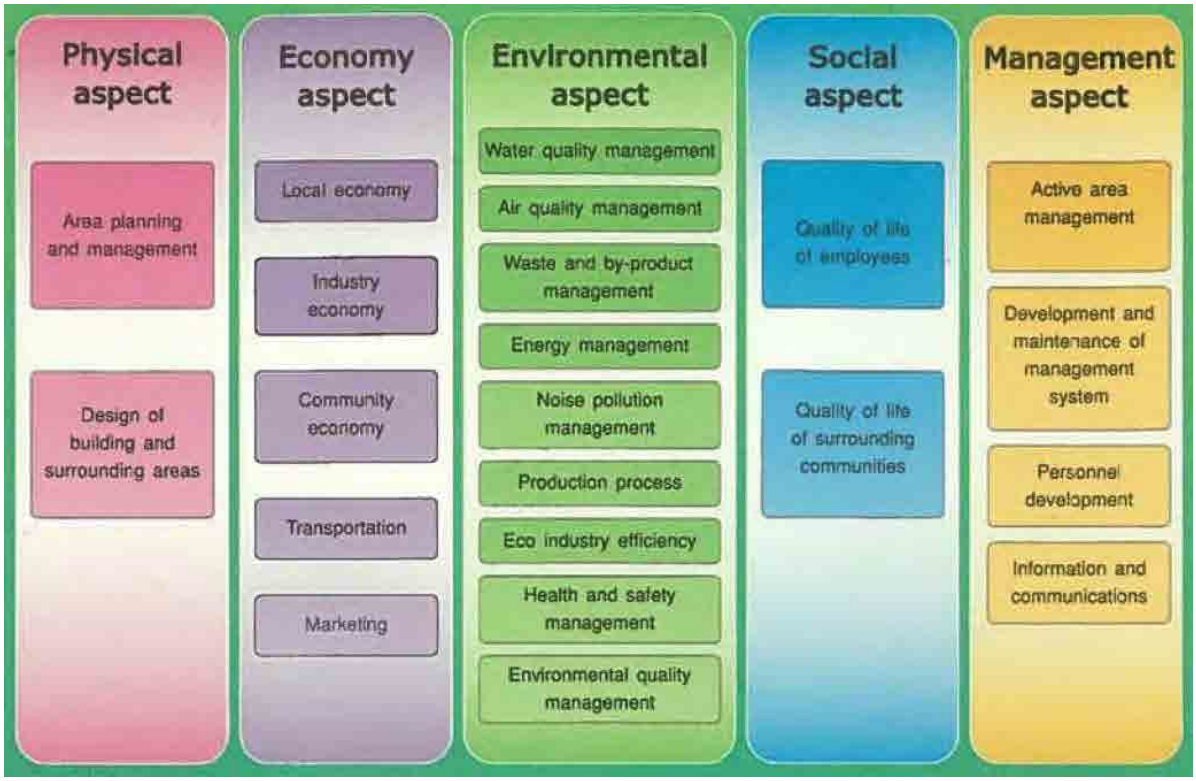
IEAT is also working on Specifications of Standards and criteria of Eco-Industrial Estates & Networks. This project was originally started with GIZ from Germany. Because there was an increase in movements against the environmental surroundings of industrial estates such as Map Ta Phut, IEAT decided to put more effort into Eco Industry Development as a basic policy of IEAT to protect local communities as was done in Kitakyushu and

Kawasaki. The master plan of Industrial Estates was made in 2010, and draft has been made for Eco Industrial Estate & Networks Standard's evaluation criteria in 2012 which had been studied since 2009. IEAT aims to have the industrial estates to follow the Utility and Facility criteria, and focuses on enriching the environment of industrial estates.

Eco Industrial Estate & Networks Standard set up 22 different fields in 5 aspects as evaluation criteria. Each field is evaluated in 3 levels, "Eco-Champion", "Eco Excellency", and "Eco Champion", and each industrial estate is evaluated in 4 levels, "Eco Platinum", "Eco Gold", "Eco Silver", and "ISO14001 Certified" (Figure 14~15). These standards are intended to comply with industrial estates and not to impose responsibility on each corporation. Each industrial estate assesses the achievement of standards and is managed by IEAT.

Assessment has been currently conducted in 9 areas of industrial estate as a pilot project, and new installations will be made from newer industrial estates. IEAT will cover 100 % of the cost for the industrial estates IEAT owns, and private corporations will cover the cost for the industrial estates they own with JV in this Eco project. The time required for development is expected to be approximately 2-5 years.

Table 13: 5 aspects and 22 areas of Eco Industrial Estate & Networks Standard



Source: "Eco Industrial Estate & Networks Standard"

Table 14: Evaluation criteria in Eco Industrial Estate & Networks Standard

		Sustainability			
		Economy	**Social**	**Environment**	
Eco World Class	Leading industrial estate capable of being a model for community's quality of life and environmental quality improvement	Promotion of National Economy	Leader in the improvement of community's quality of life	Leader in the improvement of environmental quality	**Development**
Eco Excellency	An industrial estate that strives to develop/ enhance the community's quality of life and environmental quality		Improvement/ enhancement of community's quality of life	Improvement/ enhancement of environmental quality	
Eco Champion	An industrial estate that promotes national economy development and pleasantly coexists with communities on the basis of environmental governance		Pleasantly coexist with communities on the basis of collaboration	Environmental Governance	

Source: "Eco Industrial Estate & Networks Standard"

Table 15: Classification in Eco Industrial Estate & Networks Standard

Estate Level Manager/ Developer			
	Eco-Silver	**Eco-Gold**	**Eco-Platinum**
ISO 14001 Certified	Eco-Champion	Eco-Excellency	Eco-World Class
Eco Team/ Eco Network/ Eco Forum	22 Criteria 22 S	Prerequisite/ Elective 5 G	Leadership/ Pilot Model 1P
Eco-Policy Deployment	Local Agency, LE, Community, Entrepreneur	Eco Efficiency	Recycling Oriented Low Carbon I.E ISO 26000
	Pleasantly coexists with communities on the basis of environmental governance	Develop/ Enhance the community's quality of life and environmental quality	Leader in the improvement of community's quality of life and environmental quality
Eco industrial Estate & Networks			

Source: "Eco Industrial Estate & Networks Standard"

Table 16: Examples for Evaluation Criteria

(Management Aspect "Area Based Cooperative Management")

Management Aspect	Eco-Champion	Eco-Excellency	Eco-World class
18. Area based Cooperative Management	18.1.1 Equipped with collaborative environmental-quality surveillance system as specified in Green Star Award or EIA monitoring program or other equivalent programs hosted by an industrial estate 18.2.1 Annual operating plan of Eco team and Eco network as well as implementation result summary	18.2.2 Collaborative plan/program for a joint management of land with communities, local governments or other organizations	18.2.3 An industrial estate is succeeding in solving community problem with local.

18. Management Aspect
Area 18: Area based Cooperative Management
Criteria 18: Area based Cooperative Management

Indicator	Target (Criterion)	Description of Indicator/Formula/Source	Source of data or Reference
18.1 Collaborative environmental-quality surveillance system	18.1.1 Equipped with collaborative environmental-quality surveillance system as specified in Green Star Award or EIA monitoring program or other equivalent programs hosted by an industrial estate; **[C]**	An industrial estate has a collaborative environmental quality surveillance system which encourages public participation in regulating factories in an industrial estate. The aim is to strengthen good relations between factories resided in an industrial estate and communities around industrial estate and to encourage factories to engage in the practical adoption of environmental governance and corporate social responsibility (CSR) concepts throughout its operation. (i.e. Green Star Award)	Documents or evidences acknowledging the existence of collaborative environmental-quality surveillance system that could be in the form of program, work plan, operating report or certificate
18.2 Plan and implementation results of Eco team and Eco network	18.2.1 Annual operating plan of Eco team and Eco network as well as implementation result summary; **[C]**	An industrial estate has an annual operating plan of Eco Team and Eco Network as well as implementation result summary.	Report containing the annual operating plan of Eco Team and Eco Network and summary of the implementation result
	18.2.2 Collaborative plan/program for a joint management of land with communities, local governments or other organizations; **[E]**	An industrial estate has an enhancement master plan for an industrial estate which comprises of plan/program for a joint management of land with communities, local governments or other organizations. Examples of the plan are security, accident, and disaster surveillance and collaborative efforts in resolving environmental and social issues.	Collaborative land management plan/program
	18.2.3 An industrial estate is succeeding in solving community problem with local.; **[W]**	-An industrial estate is succeeding in solving community problem with local. - Item in 18.2.3 represent the successful outcome according to plan/program of Item 18.2.2. -Successful outcome of collaborative management plan/program with communities, local governments or other organizations. Examples of such area based collaborative management are collaborative and sustainable solution to environmental problem, joint disaster prevention, collaboration on happiness and security development for community in a sustainable manner.	Documents, evidences or reports that serve as proof of success in solving community problem with local.

Source: "Eco Industrial Estate & Networks Standard"

3.1.3 BOI's incentive

Another policy concerning industrial parks in Thailand is under the Investment Encouragement Law (1977) concerning investment. The Investment Committee (BOI) has the right to give them benefits, guarantees, and protection based on the same law. Under the Investment Encouragement Law, the BOI now divides the country into 3 zones and provides different tax system benefits in these zones. It is now studying introducing a new investment encouragement measure to replace the zoning, with the target year for the change set as 2015.

Table 17: Outline of the BOI Benefit, Guarantee, and Protection System

Benefits

Tax benefits

- Exemptions from import taxes on machinery (Articles 28/29)
- Exemptions from import taxes on raw materials and necessary materials (Article 30)
- Immunity from income tax and tax on dividends for corporations (Article 31 and Article 34)
- 50% exemption from income tax for corporations (Article 35(1))
- Deduction equal to double transport costs, electricity costs and water costs (Article 35(2))
- Additional deduction of 25% of capital investment in building infrastructure and buildings (Article 35 (3))
- Exemption from import taxes on raw materials and required materials used to manufacture goods for export (Article 36)

Non-tax benefits

- Entry permits for foreigners intending to study investment opportunities (Article 24)
- Permission to bring highly skilled workers and experts into Thailand to work in an encouraged business (Article 25 and Article 26)
- Permission to own land (Article 27)
- Permission to send foreign currency overseas (Article 37)

Guarantees

- The government will not nationalize an encouraged business (Article 43)
- The government will not establish a new business competing with an encouraged business (Article 44)
- The government will not monopolize sales of products similar to products of an encouraged business (Article 45)
- The government will not regulate prices of products of an encouraged business (Article 46)
- The government will constantly permit export (Article 47)
- The government will not permit the tax-exempt import of products manufactured by the encouraged business by a government body, government organization, or government owned enterprise. (Article 48)

Protection

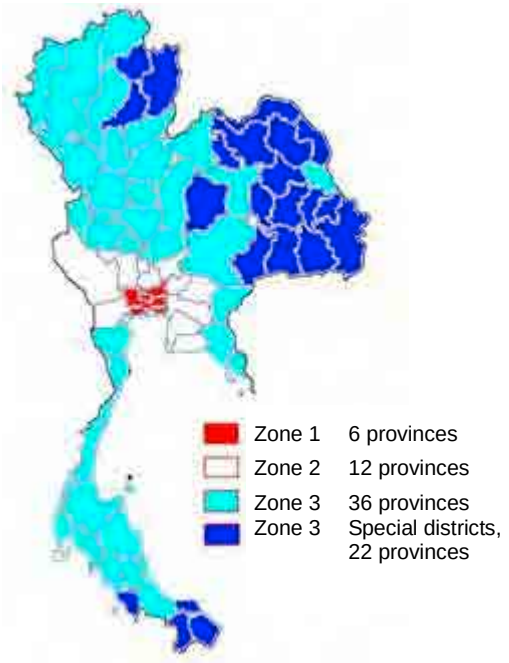
- For products similar to those that an encouraged business manufactures, a maximum 50% increase of import commission fee shall be applied to the CIF price for a maximum of 1 year (Article 49)
- In a case where Article 49 is not sufficient to protect the business of an encouraged business, the committee will strengthen measures in order to prevent importing of products similar to the said domestically manufactured product. (Article 50)
- In a case where an encouraged business faces obstructions or problems in conducting its encouraged business, the Committee Chairman has the power to give appropriate assistance. (Article 51)

Table 18: BOI Zoning and Descriptions of Benefits

Zones, categories, and provinces	Exemption from corporate income tax	Reduction of import tax on machinery and equipment	Exemption from import tax on raw materials for use in exported products

Zone 1 6 provinces	Bangkok, Samut Prakan, Samut Sakhon, Pathum Thani, Nonthaburi, Nakhon Pathom		
	Three years tax exemption only when locating in an industrial park	50% reduction of taxes for those with a tax rate of 10% or higher	One year (can be extended)
Zone 2 (12 Provinces)	Samut Songkhram, Ratchaburi, Kanchanaburi, Suphan Buri, Ang Thong, Ayu thaya, Sara Buri, Nakon Nayok, Chacheongsao, Chon Buri, Rayong, Phuket		
	1) Five year tax exemption when locating in an industrial park (conditionally, 7 years (Note 1)) 2) Three years tax exemption when locating outside an industrial park	1) 50% reduction of taxes for those with a tax rate of 10% or higher 2) When locating in an industrial park, tax exemption when conditions apply (Note 2)	One year (can be extended)
Zone 3 (1) (36 provinces)	Krabi, Kanphaeng Phet, Khon Kaen, Chanthaburi, Chai Nat, Chumphon, Chiang Rai, Chang Mai, Trang, Trat, Tak, Nakhon Ratchasima, Nakhon Sri Thammarat, Nakhon Sawan, Prachuap Khiri Khan, Prachin Buri, Phang Nga, Patthalung, Phichit, Phitsanulok, Petchabun, Petchaburi, Mukdahan, Mae Hong Son, Ranong, Lop Buri, Lampang, Lampun, Loei, Songkhla, Sra Kaew, Sing Buri, Sukhothai, Surat Thani, Uttaradit, Uthai Thani		
	1) Eight year tax exemption 2) Case of locating in an industrial park a) After completion of an 8 year tax exempt period, 5 year tax reduction of 50% In a case corresponding to (Note 3), preferential tax of zone 3 (2). b) It is possible to deduct up to double transport costs, electric cost, and water cost for 10 years after day when earning of profit starts. 3) In case of locating outside an industrial park, it is possible to also deduct 25% of infrastructure construction and building construction costs in addition to normal depreciation from net profits for 10 years after the day when earning of profits starts (Note 4).	Tax exemption	1) Five years (can be extended) 2) Case of locating in industrial park, deduction up to 75% of import taxes on materials used for sales in Thailand for 5 years. But whether or not production is done in Thailand, limited to cases where quality is lower than imported products, and cases where the quantity is insufficient. Excludes Laem Chabang *Industrial* Est ate and industrial parks in Rayong Province. There are conditions. (Note 5)

Zone 3 (2) (22 provinces)	Kalasin, Chaiyaphum, Nakhon Phanom, Nara Thiwat, Nan, Buriram, Pattani, Payao, Phrae, Maha Sarakham, Yasothon, Yala, Roi-et, Sri Saket, Sakon Nakhon, Satun, Surin, Nong Khai, Nong Bua Lamphu, Amnat Charoen, Ubon Ratchathani, Udon Thani		
	1) Eight years tax exemption 2) After the 8 year tax exemption period, 50% reduction for 5 years 3) It is possible to deduct up to double transport costs, electric cost, and water cost for 10 years after day when earning of profit starts. 4) It is possible to also deduct 25% of infrastructure construction and building construction costs in addition to normal depreciation from net profits for 10 years after the day when earning of profits starts (Note 4).	Tax exemption	1) Five years (can be extended) 2) Case of locating in industrial park, deduction up to 75% of import taxes on materials used for sales in Thailand for 5 years. But whether or not production is done in Thailand, limited to cases where quality is lower than imported products, and cases where the quantity is insufficient. Excludes Laem Chabang *Industrial* Est ate and industrial parks in Rayong Province. There are conditions. (Note 5)



Source: Investment Environment of Thailand
(December 2012, Japan Bank for International Cooperation)

The incentive policy is expected to be changed dramatically within 5 years after 2013. The new zone system is likely to be a benefit system based on industrial features. The purpose is to rebuild Thai economy and to create sustainable growth. On January 11th, 2013, a public hearing was held in Thailand and a draft plan was shown. Details are shown below.

Table 19: Change in Investment Incentive Policy of BOI (Draft plan)

Current	2013～2017	Changes made
Investment Incentive Policy in wide range	Select particular industry in order of preferences	− Incentives are given only to particular industries, and amount varies in order of preferences
By Sector	Sector and benefit system	− Reduced tax cuts − Incentives are given based on the result of the actions made by the corporation. Especially R&D and environmental protection are encouraged.
By Zone system	New region cluster	− Discontinue zone system − New industry cluster in each region and encourage investment
Exemption of corporate income tax	Exemption of corporate income tax & facilitation	− Facilitate by 「one-start one-stop investment center」 − Improve investment rules and regulations for investment environment − Receive support from Thailand government agencies
Domestic investment (foreign corporation)	Domestic and foreign investment	− Promote foreign investment in order to enhance the competitiveness of Thailand businesses. Priorities are following 1)Indonesia, Myanmar, Vietnam, Cambodia 2) China, India, other ASEAN countries 3) Middle East, South Asia, Africa
Investment evaluation: evaluation on activity	Investment evaluation: value chain as a whole	− Set Key Performance Indicator (KPI)

The Thai government aims to develop “knowledge economy, creative industries, green industry, new energy, hospitality/wellness, logistic hub”. The industries shown below are expected to play important roles in the growth of the Thai economy.

Table 20: 10 Specific Industries subjected to new Investment Incentive policy (draft)

Section	Industry	Example
Chemical products, paper, plastic	Key industry	Iron and Steel, petrochemical
	Medical and chemical equipment	-
Service, public	Logistics and Infrastructure	Natural gas power generation

facility	New energy and environmental service	Renewable energy, recycle
	Support service for industrial sectors	R&D、engineering design
	High technology	Biotechnology, Nanotechnology
	Agriculture and related facilities	Processed food, food additives
	Hospitality and wellness	Tourism, sport events, Thai movie, nursing home
Others	Automobile and transportation facility	Train, motorcycle, ship
	Electronics	Electronic design, solar cells

Specific industries can be divided into broad categories such as 「chemical product, paper, plastic」 and 「service, public facility」 as shown above. Within the category, activities are divided into those that can benefit from dutyfree and those that are not[1]. Specific industries' activities which can benefit from corporate income tax exemption are divided into A and B.

Activities which are essential to the growth of the Thai economy and competitiveness are shown in A. Those that do not receive tax free, but are subject to exemption of import tax on machinery and raw materials are shown in B. Activities which do not belong to either do not subject to exemption.

Table 21: Specific industry A･B Provision

Group	Corporate income tax exemption	Industrial machinery tax exemption	Import raw material tax exemption	Others[2]
A1*	8 years ＋ merit[3] (No Cap)	✓	✓	✓
A1	8 years ＋merit	✓	✓	✓
A2	5 years ＋merit	✓	✓	✓

[1] Details
http://www.boi.go.th/upload/content/12%20Sector%20Group%204_Eng_14592.pdf
7～12

[2] Figure "Others": nursing homes, health centers, and hotels. Use of Trade and Investment Service Center.

[3] Figure "Merit": this policy applies to A1-3, and extension of tax exemption is decided by the point of view of "R&D, Environment, and Industrial Estate." For example, if 1% of 1.5 billion baht was assigned to R&D, or obtain ISO14000 or the standard of BOI, tax exemption will extend by 1 year. At the same time, using the industrial estate BOI recommends will also extend the exemption period.

A3	3 years ＋merit	✓	✓	✓
B1	—	✓	✓	✓
B2	—	✓	—	✓
B3	—	—	✓	✓
B4	—	—	—	✓

BOI had been gathering public comments from January to February 2013, and check the result in March with Investment Promotion Policy Subcommittee. Based on the result, BOI is going to implement the new policy in 2015 at the earliest.

3.1.4 Other policies

Along with a growing international awareness of energy conservation, Thailand is aware of the importance of energy efficiency standards and labeling (energy conservation S&L) policies, and led by the Department of Alternative Energy Development and Efficiency (DEDE), it has implemented a policy of aiming for a maximum reduction of 25% of energy consumption (predicted value) by 2030. Targeted areas are industry and transportation, and industrial parks are not exempted. Also, it is thought that even further energy conservation S&L policies (certification system etc.) will be introduced in cooperation with the Thai Industrial Standards Institute (TISI).

TISI, which is under the jurisdiction of the Ministry of Industry (MOI), is responsible for the development and operation of standards for industrial products in Thailand, and for the management and operation of international standards. It also enacts a number of standards for BCM (Business Continuity Management) or for CSR (Corporate Social Responsibility) for companies. To enact new industrial park standards, it will be necessary to harmonize them with these standards.

3.2 Industrial estates/parks' ecosystems for Government and private sector in Thailand

It is expected that ecosystems in the industrial estate standards of government and private entities and companies differ depending on the classification of the industrial estate.

As described earlier, industrial estates in Thailand can be classified into 3 different types: 1) owned and managed by IEAT; 2) owned by private developers following IEAT standards; and 3) owned and managed by private developers.

Infrastructures of power, water supply, waste, and communication are described in the Utility Handbook of IEAT. The industry estates that private developers own classified 2) and 3), promise "unlimited supply of water and power" and "power will be supplied

depending on the needs" which exceed the infrastructure level of IEAT's.

In summary, in the industrial estates classified in 1) and 2) land and environment are all managed by IEAT; however, in 3) selling points vary in industrial estates depending on the management companies. Therefore ecosystems need to be looked at from two different aspects.

3.3 Policies for eco city development by the Royal Thai Government

The Royal Thai Government has revised industrial estate development methods. It aims to develop Eco Industrial Towns nationwide under the "Eco: Economy & Ecology" in order to increase competitiveness while protecting community and environment. This means that the Eco-town policy is promoted centered on industrial areas in Thailand.

Regarding EID (Eco Industry Development), six industrial estates (Northern Region, Bangpoo, Eastern Seaboard, Amata Narkorn, Laem Chabang, and Nongkae) formulated master plans for EID from 2010 to 2011, and after that three additional industrial estates (Amata City, Bangchan, and Samut Sakorn) formulated master plans in 2012.

Parties involved in policymaking are the Ministry of Industry (MOI), Industrial Estate Authority of Thailand (IEAT), Federation of Thai Industries (FTI), and National Science and Technology Development Agency (NSTDA).Their policies are as folows.

<<Mitistry of Industry (MOI)>>

Item	Contents
Policy	Eco Industry town comcept : Department of Industrial Works (DIW) - Concept of environmental conscious industrial estate and urban development - Though it is not the same as Eco Industrial Estate & Networks initiated by IEAT, the two concepts are promoted in collaboration with each other. - A study for Rojana industrial estates was implemented in 2009.
Collabora-tion	New Energy and Industrial Technology Development Organization (NEDO) - Start technical cooperation related to environment in industrual estates according to Eco Industrial Town concept in December 2010. - Release a joint statement between MOI and NEDO related to promotion of energy saving activities in Map Ta Phut industrial estate in April 2012.
Target site	- Rojana industrial park, etc. : Entered into MOU with DIW

<<Industrial Estate Authority of Thailand>>

Item	Contents
Policy	- Promote activities to make industiral estates more environmental conscious centered on 3Rs (Reduce / Reuse / Recycle). - Pilot projects to develop and verify the concept of environment conscious

	industrial estates were implemented in 5 industrial estates from 2001 to 2004.
Collabora -tion	- Though it is not the same as the Eco Industry Town concept initiated by MOI (DIW), the two concepts are promoted in collaboration with each other. - GTZ (Deutsche Gesellschaff fur Technische Zusammenarbeit) supported IEAT from 1995 to 2005. - After 2009, IEAT promoted this concept on their own accord.
Target site	The following industrial estates: - Bangpoo - Northen Region - Eastern Seaboard - Amata Nakorn - Laem Chabang

<<Thai National Science & Technology Development Assoication (NSTDA)>>

Item	Contents
Policy	Support R&D activities in 5 areas and 15 programs. <Example> (1) The Renewable Energy and New Technology Research Program - Applied research for short- and mid-term impact on the economy ➢ Biomass quantity increases for energy production ➢ Efficiency improvement and development on the first-generation biofuel production system (ethanol + biodiesel) for sustainable use ➢ Electricity production from biomass fuel / community waste ➢ Biogas production efficiency improvement ➢ Using heat from solar energy to produce hot water and dry agricultural products. - Basic research and new energy technology research that have a long-term impact on the economy ➢ Future biofuel and green products for engines ➢ Solar energy power generation system ➢ Carbon capturing and storage technology (2) The Automotive and Automotive Parts Industry Program - Support the Thai automotive industry in its efforts to design key automotive parts, drives, electric car safety equipment and energy-saving and environment-friendly automotive parts. ➢ Developing prototypes and designing technologies and manufacturing electric cars ➢ Developing industrial-level SUV prototypes, increasing manufacturing and designing capabilities to higher standards for local use and overseas export in the future ➢ Developing industrial-level prototypes or technologies related to mechanical and electronic automotive parts
Collabora -tion	New Energy and Industrial Technology Development Organization (NEDO) - Entered into MOU related to conprehensive cooperation in R&D activities for

	energy-, environment-, and industry-related technology
Target site	—

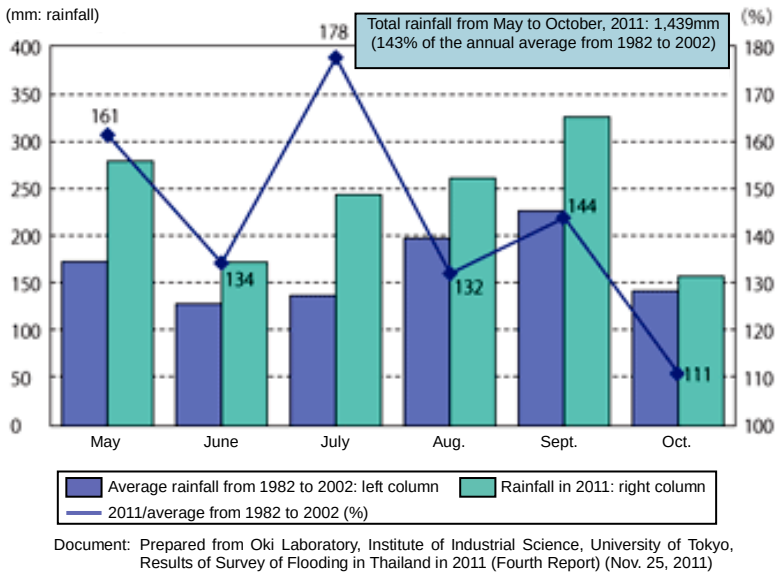
<<Others>>

Item	Contents
Policy Policy (continued)	- Eco project for SME launched by MOI in May 4, 2011 (MOI, BOI, IEAT, and other related organizations entered into MOU at the end of the year) - To promote development of environmental industry, the following levels are defined: Level 1 : Commitment in factory units and communication within organizations for reducing environmental burden Level 2 : Implementation in factory or organization units for reducing environmental burden Level 3 : Formulate environmental management system in enterprise units and build "Green System" Level 4 : Set environment protection in place as culture of enterprises or organizations Level 5 : Build environment-friendly industrial processes by networking the whole supply chain - Enterprises who would achieve the abovementioned 5 levels by 2014 under this project will be awarded "Green Industry Mark (GI Mark)", and will enjoy incentives such as tax incentives, etc., from DIW or BOI. In addition, "Green Loan" or favorable treatment by government procurement will be provided in the future.
Collabora -tion	—
Target site	—

3.4 Disaster Prevention Countermeasures by Thai Government

3.4.1 State of the Flooding of 2011

According to the results of research at the University of Tokyo, in 2011, rainfall during the rainy period (May to October) was 1.4 times that of a typical year, and record-breaking monthly rainfall occurred in July and September. As a result, by early October, two large dams upstream on the Chao Phraya River (Bhumibol Dam, Sirikit Dam) were filled, so they could no longer perform flood regulation.



Document: Prepared from Oki Laboratory, Institute of Industrial Science, University of Tokyo, Results of Survey of Flooding in Thailand in 2011 (Fourth Report) (Nov. 25, 2011)

Source: 2012 White Paper on Trade

Figure 22: Comparison of Average Rainfalls in the Basin of the Chao Phraya River in Thailand (2011 and average from 1982 to 2002)

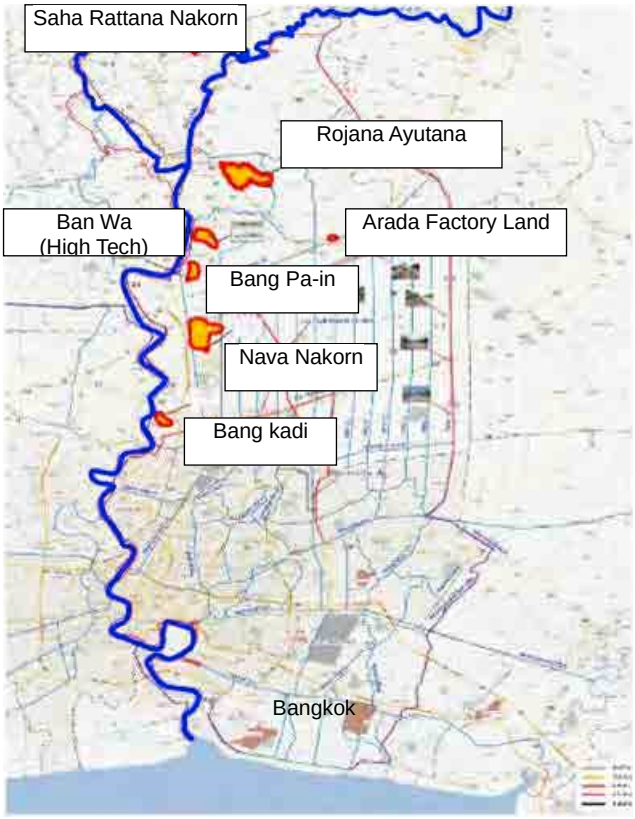
As a result, the river inundation expanded in the middle and lower reaches of the Chao Phraya River, causing unpredicted damage to levees and sluice gates, and beginning in October, 7 industrial estates / parks located near the Chao Phraya River were submerged.

Because of the extremely shallow river bed gradient in the middle and lower reaches of the Chao Phraya River, it took a long time for the flood water to withdraw. Because the industrial parks had constructed water blocking walls around their peripheries to prevent inundation, it took a long time to drain the water that entered the parks, resulting in the industrial parks being flooded for more than a month.

Table 23: State of Damage to Industrial Estate / Parks by Flooding in 2011

Damaged Industrial Estate	Number of Companies Damaged	Start of flooding	Start of drainage	Completion of drainage
Saha Rattana Nakorn	Total: 42, Japanese: 35	Oct. 4	Nov. 30	Dec. 4
Rojana Ayutana	Total:218, Japanese: 147	Oct. 9	Nov. 7	Nov. 28
Ban Wa (High Tech)	Total:143, Japanese: 100	Oct. 13	Nov. 8	Nov. 25
Bang Pa-in	Total:84, Japanese: 30	Oct. 14	Nov. 8	Nov. 17
Arada Factory Land	Total:93, Japanese: 7	Oct. 15	Nov. 26	Nov. 16
Nava Nakorn	Total:190, Japanese: 104	Oct. 17	Nov. 18	Dec. 8
Bang kadi	Total:34, Japanese: 28	Oct. 20	Nov. 25	Dec. 4

Source: JETRO Document



Source: ASEAN Center: Thailand Investment Seminar Document, Revised in March 2012

Figure 24: Industrial Estate / Parks Damaged by the Flood of 2011

3.4.2 Flood Countermeasures by the Government of Thailand

Four major countermeasures were taken by the Government of Thailand after the flooding.

(1) Preferential measures for companies and industrial parks damaged by the disaster

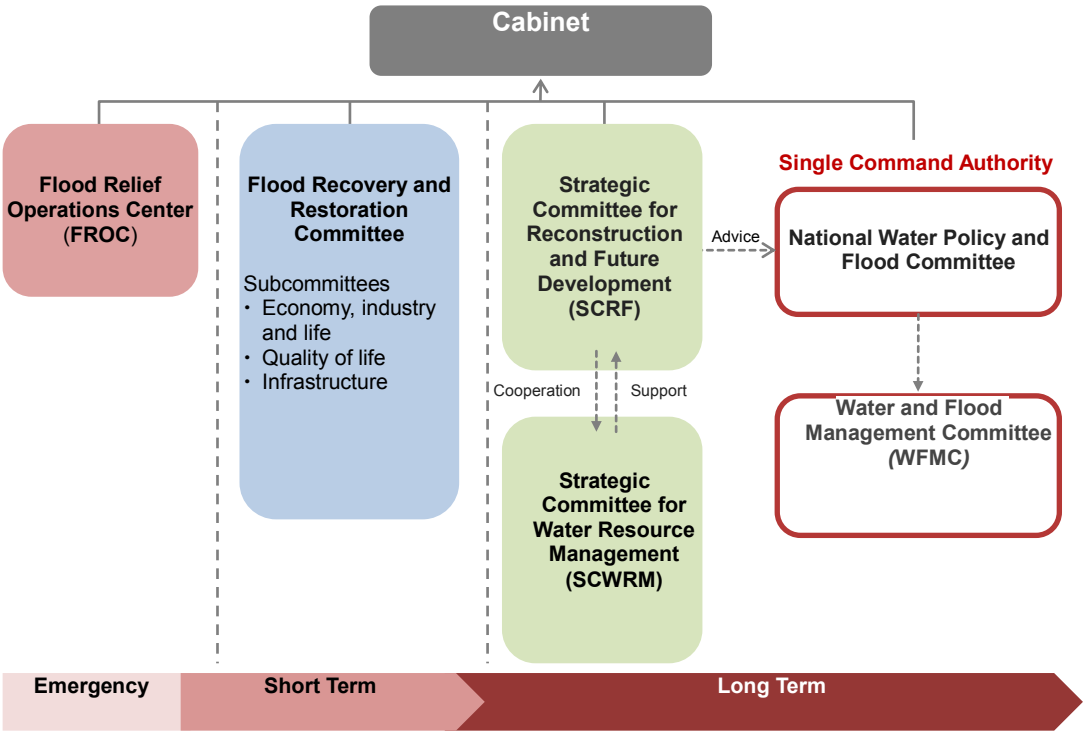
Industrial parks that were damaged received low-interest financing (annual interest of 0.01%, repayment period of 7 years) through a government saving bank. In addition, for BOI encouraged companies damaged by the disaster:

- Industry moved temporarily for 6 months to continue production
- Production temporarily consigned
- Foreign experts and technicians admitted to Thailand to reconstruct factories
- Tax exempt importing of machinery to replace damaged machinery
- Permitted to dispose of damaged imported raw materials as waste without a tax burden
- Additional tax benefits

(2) Establishment of a single command authority to handle unified water management and flood prevention

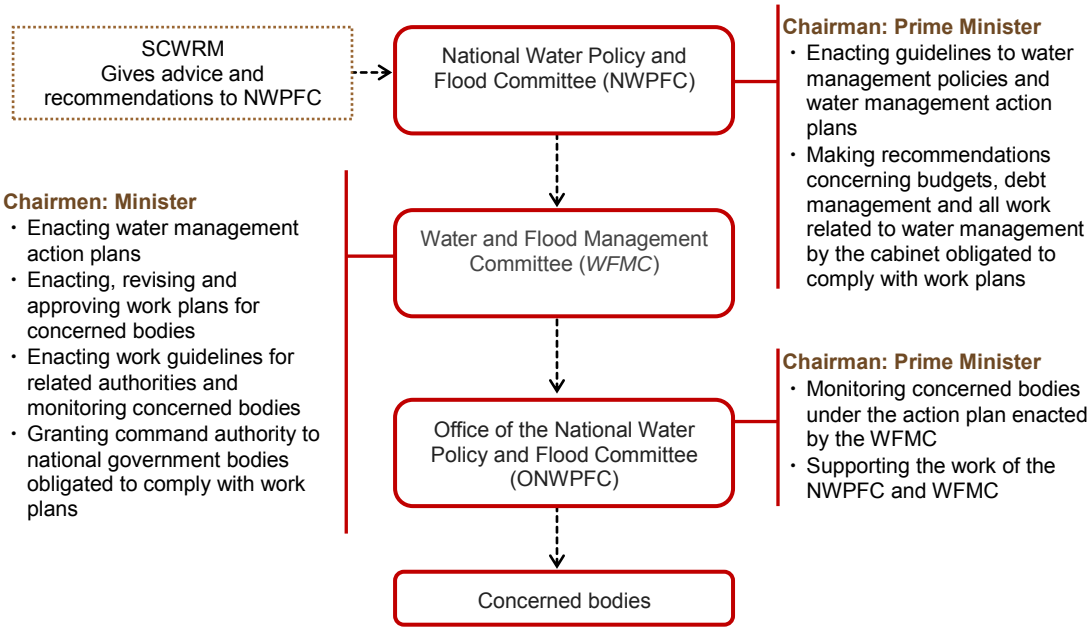
Thailand not only suffers flood disasters, but frequent droughts in some regions, so water resource management plays an important role in the nation, requiring complex management processes considering both water use and flood control. It has been pointed out that during this flood disaster, the command systems that controlled the government's flood countermeasures were not unified and communications between the national and regional governments were not conducted smoothly.

In response to such circumstances, the cabinet approved the establishment of a single command authority in charge of water management and flood prevention in Thailand. Specifically, it established the National Water Policy and Flood Committee (NWPFC) chaired by the Prime Minister to combine all water management policies. At the same time, it formed the Strategic Committee for Water Resources Management (SCWRM) to create a system to give advice and recommendations to the NWPFC while preparing water management strategic plans.



Source: ASEAN Center: Thailand Investment Seminar Document, Revised in March 2012

Figure 25: Flood Aid, Restoration, and Prevention Systems in Thailand



Source: ASEAN Center: Thailand Investment Seminar Document, Revised in March 2012

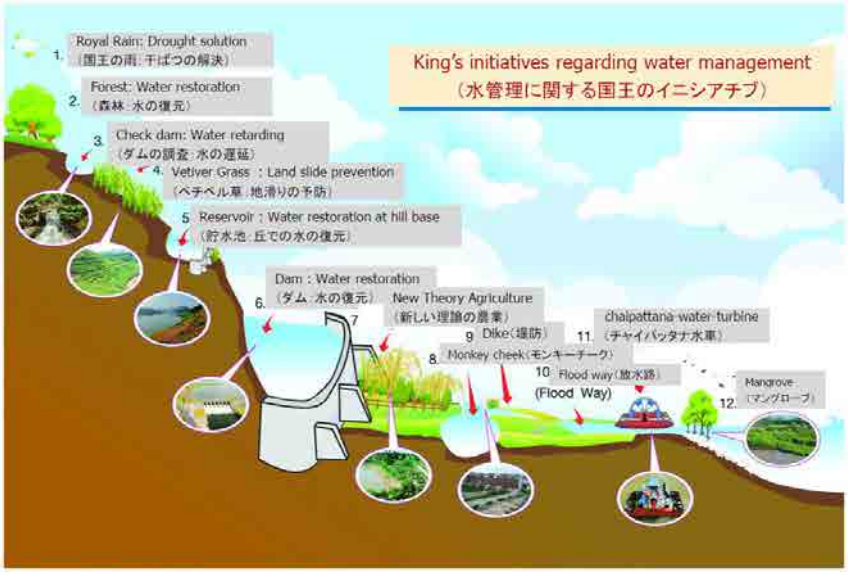
Figure 26: Organization of the Single Command Authority for Water Management and Flood Prevention in Thailand

(3) Establishing a new water resource management plan

A Water Resource Management Master Plan was enacted to manage water resources.

The water management system was organized as a King's Water Resource Management Initiative, and policy guidelines were enacted for: restoring and conserving forests and ecosystems, systematizing management of major reservoirs and water management, restoring and improving the capacities of existing physical structures and those planned for the future, information warehouse and prediction/disaster warning systems, countermeasures for specified regions, selecting retarding basins and restoration measures, improving water management organizations, and obtaining the understanding and approval and gaining the participation of all disaster damage related parties in large scale flood management.

Among these, water management action plans for emergencies, and integrated and sustainable flood mitigation action plans for the Chao Phraya River Basin were enacted. Specifically, these stipulate that protection be based on a six step flood prevention scheme: Reforestation and Dam Management, Flood Collection Area and Infrastructure Strengthening, River Dredging, Dike and Watergates, Inner Logistics Roads, Industrial Park Protection, and Local Defense. As the action plan, countermeasures will be realized in the short, medium, and long term phases.



Source: ASEAN Center: Thailand Investment Seminar Document, Revised in March 2012

Figure 27: King's Initiatives Regarding Water Management in the Water Resource Management Master Plan

Source: ASEAN Center: Thailand Investment Seminar Document, Revised in March 2012

Figure 28: Future Flood Prevention Scheme in the Emergency Water Management Action Plan

	Action	Immediate (短期)	Medium Plan (中期計画)	Long-term Plan (長期計画)
1	Dike in industrial Parks(工業団地の堤防)	X		
2	King Dike(国王の堤防)	X		
3	Dredging River Delta(河川デルタの浚渫)	X		
4	Road Rehabilitation(道路の改修)	X		
5	Water Detention Area(水阻止エリア)	X	X	
6	Raising Level of Highway(ハイウェイの高架)	X	X	
7	River/Canal Dredging(川、運河の浚渫)	X	X	
8	Upgrading Logistic Routes (ロジスティクス・ルートの整備)	X	X	X
9	New Dam / Reservoir(新しいダム／貯水池)		X	X
10	New Flood Way(新しい放水路)			X
11	Single Command Center(単一指揮センター)	X		
12	Forecasting and Warning Systems (予報と警告システム)	X	X	

Source: ASEAN Center: Thailand Investment Seminar Document, Revised in March 2012

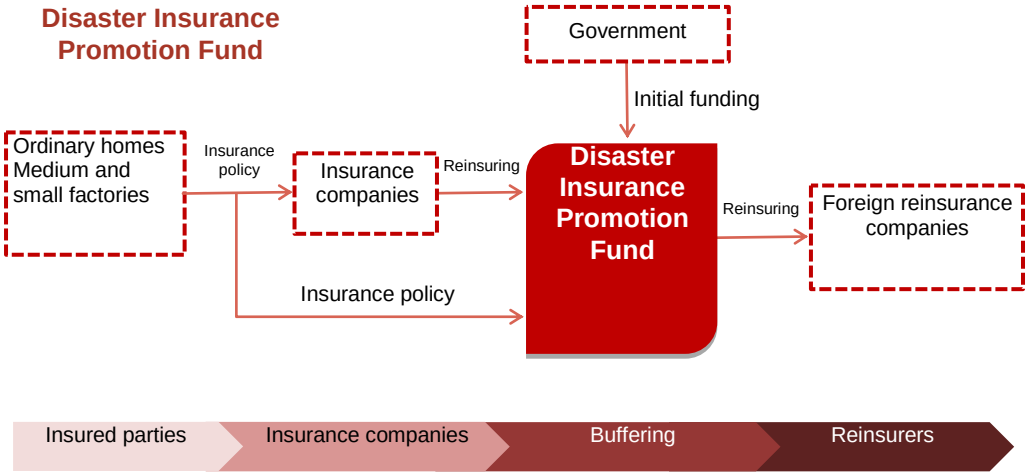
Figure 29: Outline of the Action Plan for the Future Flood Prevention Scheme

(4) Development of a New Insurance System

Damage caused by the flooding cost about 328 billion baht (about 886 billion yen) expressed in NESDB, and a World Bank calculation obtained a total of 1.425 trillion baht (about 3.848 trillion yen), including physical damage worth about 660 billion baht and lost production income of about 795 billion baht.

Under these circumstances, insurance payments made by domestic non-life insurance companies to Japanese companies which suffered losses are expected to exceed the 900 billion yen paid out for the Great East Japan Earthquake, huge insurance payments that will clearly damage business performance. As a result, non-life insurance companies and reinsurance companies are in a situation where they will not subscribe to new insurance to cover flooding, which is one type of disaster insurance, placing the assets of companies in an actual uninsured state.

The Government of Thailand has established the governmental natural disaster insurance fund to prevent this from happening. This natural disaster fund was established inside the Ministry of Finance, mainly to control the destructive risk of insuring or reinsuring and providing financial support to insurance companies based on initial funding of 50 billion baht.



Source: ASEAN Center: Thailand Investment Seminar Document, March 2012

Figure 30: Natural Disaster Insurance Fund System Design

3.4.3 Flood Countermeasures by the Government of Thailand

As stated above, flood countermeasures themselves are taken by the government so flood countermeasures at industrial parks are taken to keep water out of industrial parks (by building levees, etc.), and to permit quick drainage of the water that does enter (by installing pumping stations, etc.). Companies that were damaged by this flood are taking the following countermeasures centered on raising the heights of the levees.

Table 31: State of Countermeasures at Damaged Industrial Parks after the Flooding of 2011

Industrial Parks Damaged	Countermeasures	Work period
Saha Rattana Nakorn	Building earth embankment (13km) Raising entrance roads (MSL6.5m→8m、3km)	From April 2012 (6 months)
Rojana Ayutana	Building a MSL6.05m high levee (77.6km)	From Feb., 2012 (7 months)
Ban Wa (High Tech)	Building earth embankment (11km) Building concrete wall (2km) Installing a waterproof gate at the entrance road	From March 2012 (8 months)
Bang Pa-in	Building a MSL4.4m high earth embankment (13km) Building a concrete wall	From Feb. 2012 (6 months)
Arada Factory Land	Building an earth embankment (2km) Building a concrete wall (400m)	From Jan. 2012 (6 months)
Nava Nakorn	Building a MSL5.5m high steel sheet pile levee (17.72km)	From Feb. 2012 (7 months)
Bang kadi	Building a MSL4.5m height concrete wall (9.48km)	From March 2012 (6 months)

Source: JETRO Document

3.4.4 Flood Countermeasures by Companies in Industrial Estates / Parks

The results of interviews at companies that suffered damage conducted during a field survey has shown awareness of the following challenges to flood countermeasures.

- Information obtained by various media was vague, so we were not sure what we should believe.
- We were told the industrial park was safe, but it was flooded. We have to take our own self-protection measures.
- Because we are responsible for supply as part of the supply chain, it was difficult to decide when to stop supply, but if a decision were made at the industrial park level, it would be easy to act.
- Even though we were able to prevent flooding, we could not operate the factory because the surroundings were inundated for more than a month.

After the flood, the companies were counting on sweeping flood countermeasures by the national government as public assistance, and construction of levees and installation of drainage pump facilities by the industrial park as mutual assistance. However, being keenly aware of the need to take their own protection measures, they took the initiative, such as moving electric power equipment and important machinery to higher locations, and removing important parts of machinery that could not be lifted so that they can be raised.

They are now aware that as future countermeasure directions, systems able to obtain correct information at appropriate times are needed, BCP plans must be enacted and implemented as industrial park measures (clarifying actions during disasters, appropriate methods of post-disaster restoration, etc.), and measures must be taken to ensure replacement functions during periods when a factory cannot be operated during a flood.

3.5 Labor Policy in Thailand

In the process of drafting standards for industrial parks, a survey was carried out to study the country's current policies and trends as well as needs in the business circle and among local Japanese affiliated companies. In this chapter, we summarize the results of the survey on labor policies and the policies toward introducing QC systems.

We begin with an overview on the Thai work environment. The country has a population of 67.85 million (May 2012). Working-age population (aged 15 and above) stands at 39.84 million. The unemployment rate is very low at 0.6 % (July-Sep 2012: an NSO census). It has become difficult to recruit human resources in recent years, partly because the aging of the population combined with lower birth rates.

Recruitment of managers, technicians and engineers is far more difficult. In a society

where hierarchy still remains strong, an individual who has not graduated from university can find a worker job only. On the other hand, a mere 17 % of the working population is university or vocational school graduates. Hence, professionals who graduated from faculties of engineering in university or polytechnics have been chronically scarce. Furthermore, highly educated individuals have been attracted to large makers, making it enormously challenging for local Japanese-affiliated SMEs to hire them. At the hearing sessions, the SMEs pointed out that human resources recruitment had been a critical matter for them.

With the labor shortage still lingering, it is safe to assume that the key elements for a company to engage itself in stable recruitment of human resources and labor forces are 1) wage, 2) foreign workers, 3) labor relations, and 4) labor policy toward occupational safety.

After the ASEAN Economic Community (AEC) takes effect in 2015, Thailand will race against its neighboring countries in markets. There are worries that the country would lose its standing as one of ASEAN's leading manufacturing countries. It is thus essential for Thailand to advance industries and improve their competitiveness. In the context of industry upgrading, we believe that 1) technological innovation and HRD, and 2) introduction of QC systems will play a key role in industry upgrading.

3.5.1 Points of Labor Policy in Thailand

[1] Wages

Almost all of the local Japanese-affiliated SMEs surveyed pointed out that stable recruitment of labor forces and human resources was the most critical issue for them. According to the Economic Trends Survey among local Japanese-affiliated companies (FY2012 / 1H) compiled by the Japanese Chamber of Commerce, Bangkok (JCCB), management problems identified by the local affiliates are: 1) wage increase (56%), 2) lack of managers (48%), and 3) lack of workers and staff members (40%).

With the Labor Law being amended in April 2012, the national minimum wage rose by 40% (national). In Bangkok and its 6 neighboring provinces (Samut Prakan, Pathum Thani. Samut Sakhon, Nakhon Phanom, and Nonthaburi), daily wage was raised to 300 Baht. In January 2013, the rest of the provinces where it had been under 300 Baht followed suit. As Thailand's economic boom is being felt, companies are competing against each other to hire labor forces and human resources. Large auto makers, whose robustness has been observed in recent years, give bonuses equivalent to more than 6 months' pay. Stable human resources recruitment has thus become a daunting task for local Japanese-affiliated SMEs, whose bonus payment is typically equivalent to 2 to 3 months' pay.

It may also be the case that migrant workers choose to return home, with nationwide wage

uniformity being introduced. There is a growing concern that companies will continue to raise national average wages to prevent employees from leaving them. It would undermine the benefits of the local Japanese-affiliated SMEs, which were primarily set up to take advantage of low cost production.

[2] Foreign Workers

14% (5.51 million) of Thailand's working population is accounted for by the manufacturing industry. Whereas the largest share (41%) is occupied by the agro-forestry-fishery sector (16.36 million). It has been said that the manufacturing sector may be able to recruit labor forces from the agricultural sector. However, as the country's economy continues to grow, the current population bonus is expected to cease to exist by 2015. Some argue that the labor shortage will become worse.

The business circle has pointed out that the restrictions currently imposed on employment of foreign workers need to be lifted. In September 2010, the Thai government announced a provisional countermeasure lifting the ban on employing irregular foreign workers at a large corporation whose investment in the country has lasted for more than 20 years, and the cumulative amount has exceeded 10 billion Baht. Such a company can hire foreign workers up to 15% of the total workforce. Though none of the Japanese-affiliated SME surveyed hired foreign workers, we were told in various occasions that large Japanese affiliates had hired a sizable number of them.

Being geographically proximate to but economically distant from Thailand, Myanmar has sent 3 million workers to Thailand, constituting a major workforce in the recipient country. Nonetheless, the Thailand government has tightened its control on foreign workers including the late 2012 deportation of illegal foreign workers to their home countries. Though the Thailand Board of Investment (BOI) has permitted companies to employ unskilled foreign workers for a maximum of 2 years, the companies are obliged to reduce the number by 25% every 6 months. The overall tendency for employment of foreign workers is tighter control. Moreover, Myanmar's policy shift toward economic liberalization may cause mass repatriation of Myanmar workers. It has been pointed out that utilization of foreign workers may not necessarily solve the chronic labor shortage in Thailand.

[3] Labor relations

Since 2005, Thailand has seen an increasing number of labor disputes chiefly in the manufacturing and financial sectors. In late 2012, three thousand employees organized a protest meeting at the Laem Chabang Factory operated by MEYER, a US cookware maker

famous for electric ovens and pressure cookers. They sought bonus payments equivalent to 5 months' pay, and increases in benefits. Japanese affiliates also have experienced labor disputes: TOSTEM's Thailand Factory (2009) and Mazda's JV factory (January 2010). Labor problems have become a concern for Japanese companies planning to expand their businesses in Thailand. Many of the companies surveyed identified labor problems as a parameter to decide factory location. They were afraid that their labor relations would be affected by other companies in the surroundings.

There exist a total of 1,264 private sector unions (October 2010) in Thailand. It is an extreme low of less than 10 percent. However, an office / factory with not less than 50 employees is required to set up a Health and Welfare Committee comprised of not less than 5 worker representatives. Such a committee is regarded as a de facto union.

Labor disputes revolve around 1) discharges, 2) breakdown in employment contract negotiations, and 3) unlawful acts under the Labor Protection Act (cf. Investment, Corporate Law, Accounting and Taxation as well as Labor Management in Thailand: P279). Even if it is a minor case which does not evolve into a labor dispute, the committee and the employer are mandated to discuss matters related to employee health and welfare every three months. There are many cases in which improved health and welfare has caused labor costs to rise.

[4] Labor (Occupational) safety

According to an ILO survey (2007), 30 thousand industrial accidents occur in Thailand a year. Though the number has not changed so much in recent years, it is higher than Japan's annual average (29 thousand). Considering the two countries' population, Thailand suffers from a very large number of industrial accidents.

In January 2011, the Ministry of Labor (Thailand) promulgated the Occupational Safety, Health and Environment (OSHE) Act, which specifies the items previously prescribed by the Labor Protection Act in conjunction with labor safety, in more details. Major amendments list employer obligations, thorough notification of safety standards and penalties as well as hazards, nomination of safety managers, hazards indication, use of protectors, nomination of safety inspectors, and establishment of the OSHE Committee and Funds / Association. Rigorous penal provisions are applied to any offences.

The country has seen active advocacy of labor safety recently. The Thai Industrial Standards Institute (TISI) has set the OHSAS18001 to promote policy measures aimed at introducing labor safety.

3.5.2 Points of Industry Upgrading

[1] Technological Innovation and Human Resources Education (HRE)

As stable human resources recruitment has become more difficult, awareness of the needs for emulating a model for developed countries has gained momentum in the country. The model represents value-added industries relying on skillful human resources and technological innovations. The BOI has established special incentives for Skill, Technology and Innovation (STI). There are 8 incentive categories of business. Investment in and/or expenditures for R&D, design, high-level technical training, and support for educational and research institutions as well as contribution to the Technology and Human Resources Development Fund, are additionally exempt from corporate income tax and machinery import tax for 1 to 3 years depending on the amounts.

Table 32: STI incentive business categories

1	Manufacture of medical devices and equipment	2	Manufacture of scientific equipment
3	Manufacture / repair of aircrafts	4	Electronics-related design
5	R&D	6	Laboratory services
7	Measurement and calibration services	8	HRD (business development and design)

The Skill Development Promotion Act, which was enacted in 2002, mandates that a company with not less than 100 employees must provide training for not less than half of the employees. The company would be otherwise obliged to contribute to the Skills Development Fund. HRD initiatives are vigorously promoted. For instance, twice as much as the costs of outsourced training and education can be written off. The hearing sessions revealed that most of the local Japanese-affiliated SMEs have provided employee education by inviting lecturers to organize in-house seminars. It was also reported that Japanese clients of the educational / training institutions listed below are chiefly large companies.

Table 33: Educational / training institutions (examples)

Names	Overviews
Thai-German Institute (TGI)	Jointly established by the two governments (with 1992 cabinet approval) with a specific focus on industrial technological transfer. Independently managed under the Ministry of Education. With the support of the Industrial Promotion Fund, the unconventional educational institution

	has provided training, industrial services, and consulting. Taking advantage of being located near an entrance to the Amata Nakorn Industrial Estate and equipped with accommodation facilities, its services are often patronized by individuals from far distant places. Aside from regular short standard programs, longer customized programs are available.
Technology Promotion Association (Thailand-Japan) [TPA]	A public corporation set up in January 1973 for promoting transfer / diffusion of latest technologies and knowledge from Japan to Thailand, as well as HRD promotion. Has contributed to the strengthening of the two countries' ties, in liaison with the Japan-Thailand Economic Society (JTECS). Provides technical and business publications, and organizes management seminars and language courses, consulting, and calibration of measurement and laboratory equipment. A total of 50 thousand individuals attend the seminars and courses a year.
Thai-Nichi Institute of Technology (TNI)	Established as a spin-off from the TPA in 2007. Aims to promote friendship between the countries, and HRD initiatives among the Thai business circle. Accommodating HRD needs in various industries such as automobile components and assembly, electronics, electric, machinery and information; the institute imparts technical knowhow and skills focused on Japanese-style *Monozukuri*. It also operates a graduate school. Japanese language study is compulsory for the undergraduates. 54 % of the first year's graduates (FY 2011) found their jobs at local Japanese affiliates. The business circle, particularly local Japanese affiliates, has high expectations of the institute as a resource of excellent human resources. Receiving donations from the JCC and local Japanese affiliates, the institute has started a scholarship.

Furthermore, Thailand has attempted to visualize human resources ability. With the 2008 amendments to the Labor Protection Act, a 3-level wage criteria has been set in accordance with one's skill levels in each of 11 business types. The Thai Tool and Die Industry

Association (TDIA) and the TGI have taken the initiative in creating more detailed competence criteria for the industry. Aside from being used to set wage levels, the criteria have been referred to as a guideline for improving personnel skills.

Table 34: Levels of competence / skills in 11 types of occupations under 2008 amendment

<11 types of occupations>

1	Building maintenance electrician	2	Industrial electrician
3	Air conditioning specialist	4	Television electrician
5	Computer repair technician	6	Automobile repair technician
7	Automobile sheet metal worker	8	Automobile paint worker
9	Thai food chef	10	Thai massage therapist
11	Western spa therapist		

<Levels of skills>

Level 1:	Has basic skills, but still needs to be guided or verbally instructed by supervisor
Level 2:	Has intermediate skills and knowledge. Capable of handling machines and tools alone.
Level 3:	Has high-level skills. Capable of analyzing and solving problems. Confident enough to vigorously introduce new technologies.

[2] Measures for introducing QC system

Thailand has adopted 2 policy measures for introducing QC systems, for the purpose of ensuring the manufacturing industry's sustainable growth.

First is a system assuring the quality of the manufacturing process. A company receiving BOI-granted investment incentives, the amount of which is no less than 10 million Baht (excluding land prices and working capital), is obliged to get certified to ISO 9000 QA management system series or ISO 14000 environmental management system series, or comparable international standards, within 2 years after operation begins. The corporate tax abatement period would otherwise be shortened by a year.

Second is a system assuring the quality of products. TISI has stepped up its efforts in setting industrial standards in producing parts of automobiles, electronics and electric equipment, in time for the advent of the AEC. The Electrical and Electronics Institute (EEI), a surveyed entity, has been commissioned to carry out factory audits and product inspections by TISI. Such approaches have prevented cheap and non-conforming products from being merchandized in markets.

While the Thai government has adopted policy measures for introducing QC systems, the local Japanese-affiliated SMEs surveyed generally consider that each company is responsible for its own QC activities. They do not think that their own systems brought

from Japan have been affected by the Thailand's local policy measures. It is safe to assume that the local Japanese affiliates' QC systems have worked better than what might be achieved through Thai governmental standards.

As written above, local Japanese-affiliated SMEs have focused on stably recruiting labor forces on a short-term basis. On the other hand, Thailand has been much concerned about improving its own industrial competitiveness by advancing labor productivity and adopting a value-added approach to industrial development. A draft of the BOI's new investment incentives put forward in January 2013 revealed that the existing preferential treatments (zone system) provided on a regional level would be replaced by designated industrial groups and business categories, both of which are capable of advancing the industries in Thailand. It can be argued that the draft reflects the current move toward industry upgrading.

3.6 Needs for the industrial estate standard for Thai Government, Industries and private companies

3.6.1 The needs of the Royal Thai Government

For Thai government and related organizations, such as DIP, DIW, IEAT, TISA, we have received the comments below.

Organizations	Comments
DIP, MOI	• The sustainability standard for industrial estates/parks is very important for Thai industry and industrial estates. • The study should be carried out with interview at IEAT, OSMEC, BOI and other related organizations. • It is necessary to consider who will operate the standard,
DIW, MOI	• The standard should be constructed to make linkage between incentive and regulation. • It will be more difficult to apply at existing factories, rather than at new factories. • The study team needs to consider factories outside of industrial estates/parks.
IEAT	• Now IEAT are making "Eco-Industrial Estates and Networks"Standard. The study team need to avoid any confusion between the IEAT standard and THAICOBAN. • We are not against for THAICOBAN because it is useful for Japanese SMEs. We have same objective. • We also are revising the utility standard for industrial estates, in the field of environment.
TISI	• It is difficult to operate industrial estates/parks smoothly without support

	and understanding of surrounding communities. We suggest considering that aspect when making the standard. • It is better to consider TISI's existing standard, such as BCP, CSR and so on.

Through the interview survey, we realized that the Thai government and related organizations recognize the importance of upgrading operation levels for industrial estates, and actually they have various policies for this matter. However, these policies are not working together. For example, IEAT's eco-industrial estate policy is only by MOI, but not by MOE, even though they are directing industrial estates in the environmental issue.

THAICOBAN is expected to unify these simultaneous policies as a guideline for tenant SMEs.

3.6.2 Thai Industries

For Thai industries, such as developing companies and private organizations, we have received the comments below.

Organizations	Comments
Developers	• Each industrial estate/park is promoting its own strong points. THAICOBAN will be useful if it will support these promotions for each developer. ➢ We are trying to invite Japanese SMEs recently. The Japanese local government is also eager to support such SMEs. ➢ Generally speaking, such SMEs do not have enough capability to go abroad. We are providing such support for SMEs.. ➢ SMEs can get opportunities to expand their business, apart from *Keiretsu* in Japan. • It is important to maintain good relationships with surrounding communities. We are building relationships through donations to public schools and original scholarships for them.
Private organizations	• We are anxious about abolishing the BOI incentive with zoning, because we will lose our advantage of zone 3. The effect of ASEAN economic unity has a large impact. • It is unavoidable to change advantages with the construction of infrastructure, such as Suwarnabhumi new airport and Laem chabang deep sea port. They have dramatically changed the relationships with Bangkok industrial estates/parks.

IEAT JV industrial estates and private industrial parks are making efforts to invite tenant companies by improving their satisfaction, such as providing services and stable infrastructure. They say that they will use the standard if it will support their promotion of

customers. On the other hand, it is important for tenant companies not only by comparing industrial estates/parks, but also by improving and upgrading them.

In addition, suitable and flexible designing for the changing situations for industrial estates/parks are expected.

3.6.3 Private firms (especially Japanese SMEs)

In some cases, Japanese SMEs are forced to go abroad with their main customers, however, SMEs have to decide the site and other procedures by themselves. In those cases, SMEs need support because they face problems such as having less experience in entering overseas markets or having no income in the period of setting up a new company. SMEs sometimes cannot have insurance, especially in Thailand after the flood disaster in 2011. In addition, the most serious problem for SMEs is to gather workers, according to our interview survey. That is actually a crucial problem for SMEs who do not have enough budget.

Private companies expect not to increase expenditure because of the standard, and expect the standard not only to compare candidate industrial estates/parks, but also to improve services.

The table below demonstrates their needs based on interviews.

Interviewee	Needs
Governmental Organizations	Various regulations and standards exist for both industrial estates and industrial parks because multiple parties within the government establish their own sets of rules. It is necessary to unify these standards for tenants, and THAICOBAN can fulfill such needs.
Industries	Industries would like to use THAICOBAN if it can be used to assess the benefits of each industrial estate/ park. They hope that THAICOBAN will be constructed in accordance with on-going changes such as BOI's new investment policy and increase in minimum wage.
Private Companies	It is important for small to medium companies that are trying to expand businesses abroad to be able to compare different industrial estates and parks. They hope that implementing THAICOBAN as a guideline can encourage industrial estate/park managers (developers) to provide better services.

Chapter 4.

Business Opportunities for Japanese Companies

Chapter 4. Business opportunities for Japanese companies

It is possible for Thai industrial estates and parks to achieve a high level of standards after implementing Japanese infrastructure and technologies based on THAICOBAN assessment results. This indicates that THAICOBAN has potential to create new business opportunities. Interviews were conducted with those who might implement Japanese products in the future in order to evaluate the feasibility of such business opportunities.

4.1 Viability of system proposals for industrial parks in the field of environment

As a result of interviews with many companies, industrial emission treatment technologies, heavy metal recycling, waste recycling, monitoring systems, and FEMS (Factory Energy Management Systems) came up as potential technologies that Japan could export to Thailand. Japan has been developing environmental technology for sustainable development, which is absent in Thailand as of now, and therefore, Japanese companies have a good chance to expand their businesses.

4.1.1 Dust treatment technology (exhaust gas treatment)

In Japan, emission of dust from factories, construction sites, and waste treatment facilities, etc., is strictly restricted by the “Dust Pollution Prevention Law” established in 1972. This regulation has been accelerating development of technologies related to dust treatment in Japan.

On the other hand, though strict regulation about emission of dust is set in Thailand, there are not enough countermeasures to reduce air pollution except emissions from cars. Focusing on the industrial sector, the Thai government does not emphasize countermeasures for air pollution problems compared to water pollution problem. Therefore, it is expected that needs of technology development to reduce air pollution would be increasing in the future.

Since air pollution caused by emission of dust from factories of the crushed stone industry, iron manufacture, and the cement industry has been becoming a more serious problem these days, the Thai government considers setting new standards for those industries. Japanese enterprises should focus on export of technologies related to air pollution in those industries.

4.1.2 Water treatment technology / Heavy metal recovery technology

In Japan, emission of wastewater from factories or other facilities has been strictly

restricted by the "Water Pollution Prevention Law" established in 1970. These days, not only technologies to fulfill emission standards for wastewater but also technologies to enable recycling wastewater including membrane-related technologies have been rapidly developed in Japan.

On the other hand, though strict standards about emission of wastewater from factories are set in Thailand (some standards are more strict than Japanese standards), many factories cannot comply with the standards due to lack of technologies and know-how for operation. It is necessary to introduce core technologies including membrane technologies to comply with the strict standards and monitoring technologies to improve operation.

It is expected that the wastewater recycling systems Japanese enterprises have been developing using advanced membrane technologies in Japan will be applied broadly in the industry sector in Thailand. In addition, there is a possibility to provide pure water supply systems by utilizing recycling water treated to be less than 10μS electric conductivity based on the standard for recycling water in Thailand.

4.1.3 Monitoring system

In Japan, environmental standards have been set for various pollution sources and monitoring has been implemented to make companies comply with the standards since the high economic growth period when serious pollution problems developed. As a result, technologies for monitoring have been drastically improved and operation methods to implement monitoring appropriately have been formulated in Japan. Regarding activity to export such monitoring know-how, there is a good example of Kitakyushu city providing ASEAN countries with advice to solve pollution problems based on their experience.

On the other hand, companies have difficulty in operating environment-related regulations in Thailand, and it is expected that operation should be improved by introducing new monitoring methods.

With the support of the Japanese government, Japanese enterprises should aim to provide operators of industrial estates in Thailand with monitoring systems that can monitor tenant companies individually and support operations of the systems continuously.

4.2 Viability of system proposals for industrial parks in the field of safety and reliability

4.2.1 Security systems

Security systems are broadly categorized as security countermeasures by individual companies and as security measures by an industrial park. The former means taking countermeasures based on the concept of company level security maintenance, ranging

from posting guards at the gate to integrated guard systems including mechanical monitoring by crime prevention and monitoring systems in addition to patrols by guards. Security measures by an industrial park on the other hand, are often limited to posting guards at the entrance to the industrial park, because the ultimate crime prevention countermeasures are the responsibilities of individual companies in the park. But at the Rojana Industrial Estate for example, a 24-hour patrol system has been established.

The results of interviews at companies located in the industrial parks show that theft is a major security problem, and in some areas, another problem is the intrusion of dangerous people. In Thailand, the status of security guards is generally low, and they may conspire with criminals to commit thefts, so systems limited to guards often do not ensure a sense of security. Japanese companies in these parks demand a security system equal to that in Japan, so building a high level security system is a challenge.

At this time, the only Japanese companies able to provide security systems in Thailand are large security companies. Interviews with one of them obtained the following information.

- The system in the field includes tie-ups with local security companies, plus employing its own personnel to meet the high level requirements of Japanese companies.
- At this time, it mainly provides security services to Japanese companies in industrial parks; but not to entire industrial parks.
- The services it can provide are, in addition to general security services (human monitoring + machine monitoring), preparing risk management manuals and offering risk training as an overseas security service.
- Regarding mechanical monitoring, the machinery is procured in Thailand because the local technical level is high so it can be used without problems.

In the future, it should be possible to improve the capabilities of security personnel and at the same time, construct high level security systems. Also, to enable industrial parks to provide comprehensive risk measures, not only anti-crime countermeasures, but disaster protection measures should be available. For example, training will be given permitting guards to handle accidents and to be able to provide support as fire-Fighters. In addition, it is important to propose business continuity plans including comprehensive risk countermeasures, and it should be possible to prepare evaluation or countermeasure manuals presenting security and disaster response matters etc. And it is predicted that to establish mechanical monitoring systems, Japan’s advanced security technologies will be introduced, but it is necessary to be aware that this might be hampered by export restrictions.

4.2.2 Flood countermeasure systems

Flood countermeasures at the industrial park level are structural measures: building levees or installing drainage pumping equipment. They also include non-structural countermeasures: providing information about the actual state of the flood and predictions of its future state, evacuation planning, planning for substitution after the disaster, and restoration plans, for example. In addition it is assumed that an insurance system, subsidies, and other measures will be taken to prepare for damage.

The results of interviews with companies located in the parks shows that they are aware of the need to take countermeasures such as providing systems that can obtain correct information at the right times, proposing and implementing BCP plans at the industrial park level or preparing substitute functions for periods when factories cannot be operated because of the flooding.

At this time, the Chao Phraya River Basin Flood Countermeasure Project is being implemented as a JICA project in Thailand. In addition, a flood countermeasure master plan is being prepared, free reconstruction support facilities are being designed, and support is being given to building a flood control system. The provision of flood information, which is now considered to be a vital local need, is being carried out by the Foundation of River and Basin Integrated Communications as flood control system establishment support. This flood management system will predict flooding of rivers and flood plains, provide flood information such as past measured river water levels and the predicted river water level for the next 7 days, and predict submerged parts of the inundation region. The system will perform these functions based on the H08 model built by the project, “Construction of an adaptation proposal and implementation support system for the water field during climate change” of Tokyo University, the applicability of which has been verified on the scene, and on the RRI model built by the Global Center of Excellence for Water Hazard and Risk Management (ICHARM). In September 2012, a prototype was built, it was adjusted while interviews were held at local companies, and the formal version was introduced in January 2013. It will be improved and final delivery is scheduled to be completed by June.

Looking ahead, being able to provide highly precise flood information of this kind will enable industrial parks to predict future conditions, allowing them to concretely respond to flooding (building flood protection systems, judging when to close the park, providing information to the companies occupying the park). To do so, disaster response plans should be prepared and the organization and matters to be implemented clarified in advance. From the results of local interviews, at Rojana Industrial Estate and others, flood control prediction systems will be independently built, and the cooperation of ICHARM will be

requested to study disaster countermeasure plans, while at other industrial parks similar plans will be proposed in advance to reduce flooding risk.

With the RRI model built by ICHARM, it will be possible to link to information from artificial satellites (topography, rainfall), and even in regions where information cannot be adequately measured at ground level, it will be possible to perform runoff analysis relatively easily, which can be easily applied to other regions. Also, it should be possible to provide not only river information, but also comprehensive information including that about the state of submersion of roads and of logistics, and information about the impact on human life. Because the development of information provision systems is hampered in many ways by copyright on programs, and copyrights and usage rights on systems, it will be important to organize issues in this area to gain the participation of Japanese companies.

In addition, companies in industrial parks and the industrial parks should propose BCP plans including links with substitute production during a flood disaster, so it will be possible to support the enactment of a series of plans.

4.2.3 Infrastructure systems

Supply related infrastructure systems are assumed to be waterworks, electric power, and communications and so on. In industrial parks in Thailand, water is often provided mainly by the park, while electric power is obtained by companies either purchasing it from the public utility or generating it on their own premises. Communications services are provided by local enterprises.

The results of interviews at companies located in the parks, mainly medium and small scale companies reveal that the provision of infrastructure is relatively advanced in Thailand and that few companies have any worries about their supplies of water or electric power.

Many supplies related infrastructure systems are relatively large scale, and often specialized. Water treatment is done over a wide range, from relatively small scale systems used by individual companies to overall water treatment systems, and includes operation support. So a survey of water treatment was done, focusing on the situation at Japanese companies.

Water treatment services range from makers selling their own products, to plant makers that assemble overall water treatment systems. In recent years, some regional governments expanded overseas by applying technologies that can be used to support system construction and management.

We conducted interviews at one of the large companies concerning the state of overall water treatment plants. This company constructs water treatment plants internationally, on a

scale which is relatively easy to apply in industrial parks. Specific typical systems it builds range from water supply systems that apply IT called Intelligent Water Systems, to integrated overall water cycle control systems that even treat wastewater, and water control systems with their operation controlled by the BTO method.

We also conducted an interview survey in Osaka City, a regional government which has expanded overseas. Merits of participation by a local government include its ability to administratively link up with local governments in the other country through MOU, etc., enhanced creditworthiness when implementing a project and the ability of local governments to share know-now concerning operating management and administrative guidance.

In the process of future development, with regard to industrial parks, water treatment is not particularly complicated so there are companies able to provide this service in Thailand, and it is difficult to characterize them through building individual products or individual systems. What is intended is to lower the quantity of water used by building an overall system including wastewater treatment and cyclic reuse in addition to simply supplying water, and presumably will recover energy from the entire industrial park through links with the environmental field, and will provide services such as integrated management of the operation of the system, including giving guidance to individual companies in the parks.

To create a system encompassing administration, it will be necessary to clarify methods of linking private companies and administrative bodies in order to be able to respond quickly to business opportunities.

4.3 Viability of system proposals for industrial parks in the field of industry upgrading

Speaking of the draft of standard for industrial parks, which are put forward through this survey, it is possible to make system proposals particularly in the field of industry upgrading. We studied the viability of proposals for not only tangible hardware in infrastructure, but also intangible assets such as services, information systems and certifications.

4.3.1 Safety devices of industrial machinery

Safety education has traditionally focused on worker education in Japan. However, with the recent year increased awareness of the needs for safety-focused designing of, and incorporating elements of, safety protection, in industrial machinery, safety devices are increasingly featured. With this in mind, a sample case of Japan’s infrastructure exports

will be made by encouraging exports of Japanese industrial machinery equipped with safety devices.

The ISO 14121 risk management standard specifies the procedures for selecting appropriate safety devices. In Japan, the Nippon Electric Control Equipment Industries Association (NECA) has proposed a professional system of risk assessment (risk assessors), and worked on transplanting the risk assessment system and ideal safety education in Thailand. Such exports of software and hardware hopefully build customer confidence in Japanese equipment.

Name	Overview
Nippon Electric Control Equipment Industries Association (NECA)	Established in 1964, aiming at carrying out research on and drafting standards of electric and electronic equipment for controlling industrial machinery and devices as well as implementing safety measures concerning electric control equipment usage. Regular members are legal entities manufacturing electric control equipment and safety devices. Chiefly engaged in standardization incorporating ISO / IEC certifications, managing the safety assessor certification system for assuring machine safety, and conducting research on and providing information of LCA tools and carbon footprints.

4.3.2 Electric Data Interchange (EDI)

There is an urgent need for EDI standardization, which facilitates the building of a framework of electronic exchanges of standardized formats containing B2B information, for example, exchanges of electronic business documents (order forms and bills).

In the 1970's, Japanese chain stores started to introduce standardized EDI systems for the purpose of rationalizing order placement operations. The systems became widely used in Japan in the 1980's, and currently are used in B2B commerce and physical distribution systems in companies other than merchandisers. However, Thailand, a critical pivot point in the supply chain, has not fully committed toward EDI standardization. It is thus highly likely that Japan can promote development and export of software customized for Thailand's EDI standardization.

4.3.3 Devices and equipment required for R&D and after-sales services

R&D promotion requires cutting-edge devices and equipment and after-sales services such as maintenance and inspection. As Thailand is keen on technological innovations, there is a growing likelihood that Japan can export R&D devices and equipment to the

country. A de facto standard can be established by swiftly penetrating targets such as educational institutions and public organizations. This is a necessary action to promote diffusion of Japanese products and services. The two countries may thus be able to create a common platform in the manufacturing industry in conjunction with high precision testing machines, and measurement tools as well as CAD and CAE, leading to improvement of operational environment among local Japanese affiliates.

4.3.4 Automated machinery and after-sales services

As the labor shortage has become more severe in Thailand, there exists a growing demand for automated production lines in the manufacturing industry. However, the country is still dependent on industrial machinery imported from various countries, particularly Japan. With the current rising environmental awareness and introduction of energy saving incentives in Thailand, the potentials in exporting Japanese high performance industrial machinery and expanding after-sales services has progressively grown.

4.3.5 Information exchange services and matching events required for human resources recruitment

Though Thailand's chronic labor shortage is so often referred to, the shortage itself is unevenly felt in varied areas and at different timings. There is a prevailing preference for finding jobs in and around large cities among university graduates, but some wish to stay near their neighborhood. Currently, the number of job seekers grows at the approximate timing of university graduation. If it is possible to collect and grasp human resources information about where, when and what types of human resources can be recruited, local Japanese-affiliated SMEs may be able to carry out recruitment more efficiently.

HR databases as well as provision of recruitment and career change opportunities can be effective solutions. Staff and temp agencies have their own HR databases. As in the case of TNI's JOB-TNI, educational institutions have operated HR matching websites. In recent years, match-making between companies and students are often held. For instance, Job Fairs are organized by the JCC and the Japanese government for the benefit of local Japanese affiliates in Thailand. Though such activities have just begun, they may be systematized and widely spread among industrial parks.

4.3.6 Education Programs for Human Resources Development

Owing to both employer obligation to educate employees and abundant support to encourage employee education such as corporate tax exemption, a very large number of people are enrolled in adult education programs provided by the TGI and TGA. There is a

keen interest in employee education. On the other hand, because of adverse conditions in terms of the number of local educational institutions and location, one may find it difficult to attend such a program if s/he works in industrial parks in far distant areas. The survey revealed that there was a solid need for training programs in such industrial parks. Some additionally pointed that there was room for improvement in terms of curriculum contents and faculty quality (lack of experience in Japan) among programs provided by the local Thai educational institutions.

Local Japanese affiliates hope that a practical program would cover topics related with Japanese-style *monozukuri*. A public HRD institute such as the Overseas Human Resources and Industry Development Association (HIDA), by training and / or certifying Japanese and local lecturers, may be able to dispatch such individuals to industrial parks in Thailand, for the purpose of jointly organizing training programs concerning Japanese technologies and management methods as well as Japanese language courses. This may not only cause local Japanese affiliates to improve their technical prowess, but also lead to strengthening of the two countries' relationships by allowing the attendants to become more knowledgeable about and sympathetic to Japan. Moreover, using HIDA's projects such as overseas dispatch of Japanese specialists, and provision of training for foreign invitees in Japan as well as its past experiences, it is possible to make a proposal for value-added systems combining the elements of infrastructure exports and HRD.

As mentioned earlier, Thailand has stipulated wage levels which varied with one's competence. The Thai version can be improved by referring to its Japanese counterpart---the competency evaluation criteria put forward by the Japan Vocational Ability Development Association (JAVADA). This may make it easier to implement education concerning human resources recruitment and skill improvement, and use external resources. The improvement enables Japan to transplant technologies and techniques required for Japanese-style Monozukuri to Thailand, and may thus indirectly promote exports of Japanese machinery and products.

Name	Overview
Overseas Human Resources and Industrial Development Association (HIDA) (http://www.hidajapan.or.jp/)	Established in 2012 with the merger between the Overseas Technical Scholarship Association (AOTS) and the Japan Overseas Development Corporation (JODC). An HRD institute promotes international technical cooperation by providing training for industrial human resources in the developing countries, and dispatching Japanese specialists overseas. Aside from Japanese language courses, the project formerly provided by the AOTS has offered training concerning

	technical and management techniques to a cumulative number of 166,700 individuals in Japan and 190,852 persons overseas (End of FY2011)
Japan Vocational Ability Development Association (JAVADA) (http://www.javada.or.jp/index.html)	Established in 1979. Aims to realize the guiding principle---further development and improvement of vocational abilities, by facilitating sound growth of prefectural vocational ability development associations as well as promoting vocational abilities through close coordination with national and prefectural governments. Chiefly engaged in stipulating the competency evaluation criteria as well as developing questions and guidelines of and implementing skill evaluation tests.

4.3.7 QA services

A company receiving BOT grants needs to get certified to ISO 9000 series. There exists a host of ISO certification bodies. Japan Quality Assurance Organization (JQA) has launched JQA Asia (Thailand) [TQA] for providing ISO auditing services. It has been reported that the choice of ISO certification bodies affects the fundamental principles of QA management systems as well as business credibility, and ultimately product quality. In recent years, local Japanese-affiliated companies have started turning to JQA, seeking auditing service levels comparable to similar cases in Japan. There are high hopes for future development.

Name	Overview
Japan Quality Assurance Organization (JQA) (http://www.jqa.jp/index.html)	Established in 1957. Being designated by the Export Inspection Law, the inspection agency has carried out certification, testing and inspection of management systems, products and the environment, as an impartial third party. JQA Asia (Thailand) [TQA] has assured auditing service levels equivalent to similar cases in Japan, using JQA-registered auditors. The TQA has also provided support to occupational safety and hygiene systems through the OHSAS 18001 implementation process.

We have studied the feasibilities of hardware export promotion as well as exports of intangible assets such as certifications and information systems, in conjunction with

industry upgrading. It is possible to gain customer confidence in the superiority of Japanese products, and add values to the packaged system incorporating the exports, by providing after-sales services and various educational programs. There are high expectations for infrastructure exports.

4.4 Integration and classification of system proposal for Japanese infrastructure companies

4.4.1

Research was conducted in the above-mentioned areas, such as environment, safety and reliability, and industrial upgrading, in order to define business opportunities for Japanese companies. Japanese companies have advanced technologies and products in these areas, and it is critical to find a way to combine multiple products into one package to increase competitiveness. Because single products or systems are so easy to copy for other countries, Japanese companies have been involved in cost competition with other countries.

We have identified possible combined technologies and systems below. This kind of combination strengthens the competitiveness of Japanese companies. Therefore, making a database of products as business seeds and further discussion should be held to figure out the best combination of these products.

Table 35: Combination of Japanese companies' technologies

		Environment And eco					Safety and reliability				Industry upgrading					
		1	2	3	4	5	1	2	3	4	1	2	3	4	5	6
E1	Exhaust purification system	■														
E2	Membrane technology for water treatment		■													
E3	Waste Recycling Management			■												
E4	Monitoring system	◎			■											
E5	FEMS				◎	■										
S1	Security system				◎		■									
S2	Flood forecasting system							■								
S3	Disaster information	◎						◎	■							

	system															
S4	Infrastructure system	○														
I1	Safety equipment for industrial machinery															
I2	EDI(Electric Data Interchange)					◎										
I3	R&D Equipment, after service		○							○						
I4	Automation machinery, after service						◎			○						
I5	Education program			◎						◎	◎					
I6	Service for Quality control					◎					◎					

Source: Study Team

4.5 Packaging of technologies and know-how as a new brand

In the previous paragraph, it was argued that the importance of combining multiple products into one package would increase Japan's competency. In order to implement these packaged products, it is necessary to increase their brand awareness and create new values. Three fields- environment, safety and reliability, and industrial upgrading- are the ones in which Japanese companies have high potentiality of competitive technologies, systems and products.

It is also critical to combine different technologies and products to become competitive while protecting Japanese brands and providing solutions that meet the needs of developing countries.

In fact, Japanese products have high reliability in other countries, in Asia and emerging countries. The value of Japanese brands is still high, but other countries' products, such as Koreas' LCD TVs are also popular. This is because these countries have provided products of reasonable price and reasonable quality. In fact, their products often seem to be comparable to or exceed the quality of Japanese products.

It has been said that Japanese products are difficult to be accepted in emerging counties' markets because they are too costly and have high specifications. Now other countries are catching up with Japanese products, not only in cost, but also in quality. Therefore, it is important that not only to increase the value of each product, but also to achieve added value by combining multiple products. In that case, it would be crucial to establish a brand

package system which meets the needs of the market and is difficult for other countries to copy. Below are a few examples.

Table 36: Examples of combinations of technologies and systems by Japanese companies

Technology, system	Current situation in Thailand	Effect of packaging
Exhaust purification system	Purifying exhaust air is not so popular compared with purifying drainage water.	High level Japanese purifying systems and monitoring systems have competitiveness in Thailand and the Mekong area, where pollution is a crucial problem.
Monitoring systems	Companies in industrial estates/parks are monitoring their exhaust by themselves.	
FEMS	Energy management systems in factories will be more important along with industrial upgrading.	FEMS and EDI which are expected to be introduced in Thailand will be competitive package. It is also affinity with industrial standard.
EDI (Electric Data Interchange)	EDI (Electrical Data Interchange) is not popular even though Thailand is part of the chain base of the Mekong area.	
Security system	Automatic security systems are not so popular.	Factory automation requires high security systems. Security systems linking factory automation requires high technology. Japanese companies have an advantage in that area.
Factory automation, after service	It is considered that factory automation systems will become popular as industry is upgraded and increases labor cost.	

Chapter 5.

Basic Policy of THAICOBAN, as the Sustainable Standard for Industrial Parks

Chapter 5. Basic Policy of THAICOBAN, as the Sustainable Standard for Industrial Parks

5.1 General idea

5.1.1 Objectives of THAICOBAN

THAICOBAN has two objectives: one is to upgrade industrial estates/parks in Thailand, and the other is to support the expansion of industrial estates/parks to the Greater Mekong Sub Region.

Regarding the former objective, the number of Japanese companies which have come to Thailand has been increasing, even after the flood disaster of 2011. Possible reasons for this are that (1) Thailand has recovered its manufacturing capability after the flood disaster; (2) the yen is strong in relation to the baht; and (3) there are risks involved in dealing with China.

Also, not only have tier 1 companies expanded their business to Thailand, but tier 2 and tier 3 companies have followed, along with a good number of SMEs.

With that in mind, THAICOBAN aims to improve the industrial estates/parks in Thailand by upgrading them, to increase the number of sites which Japanese companies will be able to use.

Regarding the latter objective, industrial estates/parks developers are making efforts for increasing customer satisfaction. Many developers intend to expand their business to the Greater Mekong Sub Region. After the ASEAN economic integration in 2015, manpower, goods, capital and information will flow smoothly, and it is considered that Thailand will continue to be a strong manufacturing base in the region. In addition, the Thai government intends to upgrade their industry from assembly factories to businesses the value added function, such as R & D centers. Along with that policy, Japanese companies can transfer simple assembly processes to neighboring countries where labor costs are lower than in Thailand if Thai labor costs rise. In that case, THAICOBAN, as the industrial standard for GMS countries will be useful for tenant companies and also for Thai developers who wish to expand to GMS countries.

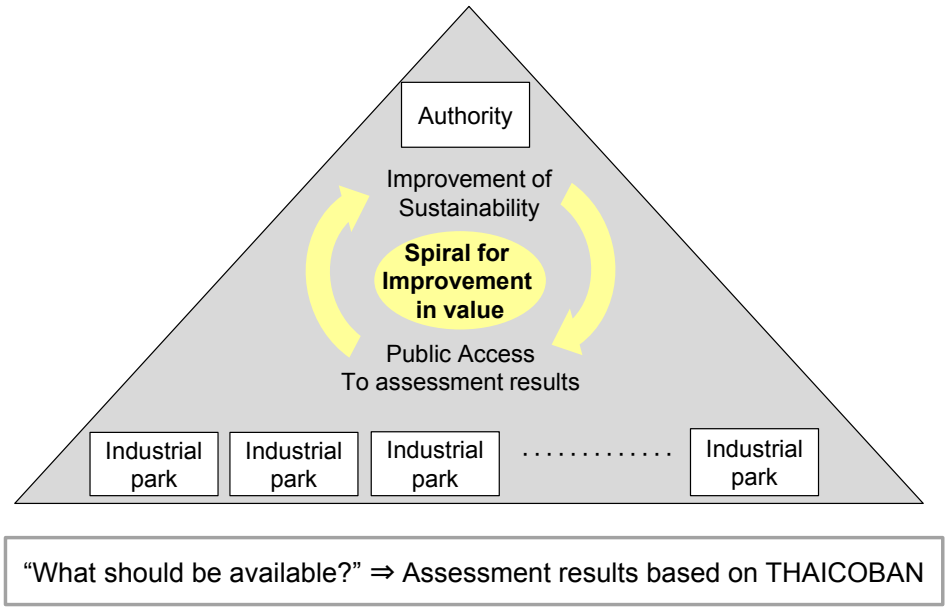


Figure 37: the image of improvement of industrial parks

5.1.2 General idea

It is expected that THAICOBAN will be a new guideline for both tenants and industrial estates to assess sustainability of industrial parks, rather than a mandatory standard.

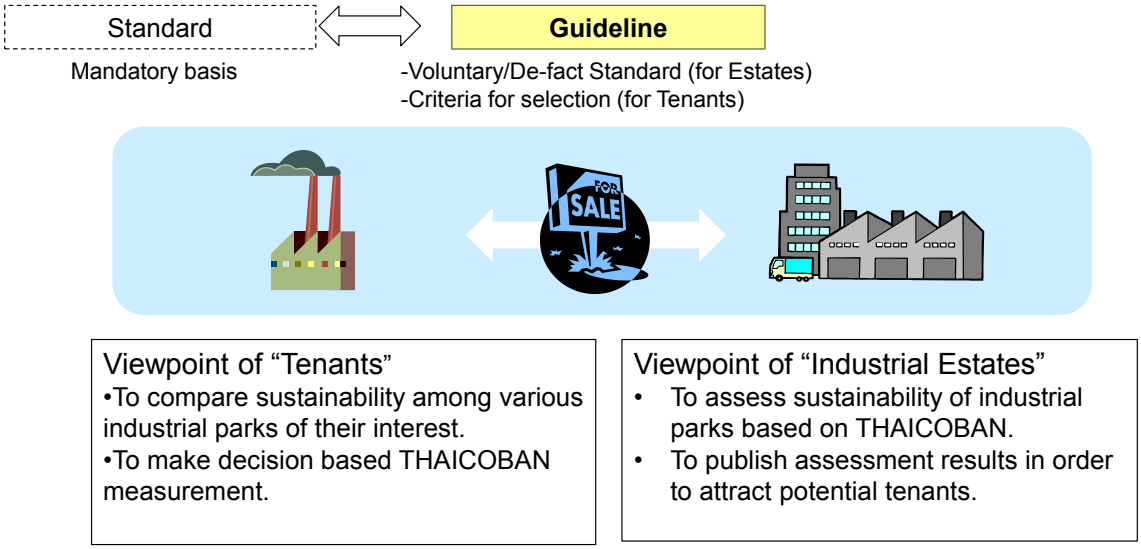


Figure 38: Guideline rather than Standard

5.1.3 Roles of THAICOBAN

For Japanese companies, going abroad requires a great deal of time and effort, such as deciding on the country and the site, setting up a local company, constructing a factory, hiring workers, and so on. It is especially difficult for SMEs to do by themselves because

they do not have much experience and know-how. THAICOBAN would be the support tool for these SMEs to expand abroad as a de facto standard for industrial estates/parks.

Generally, companies take planning steps as shown below. In this process, THAICOBAN can provide support: 1) evaluating candidate countries and sites, and 2) proposing solutions for upgrading industrial estates/parks already in operation.

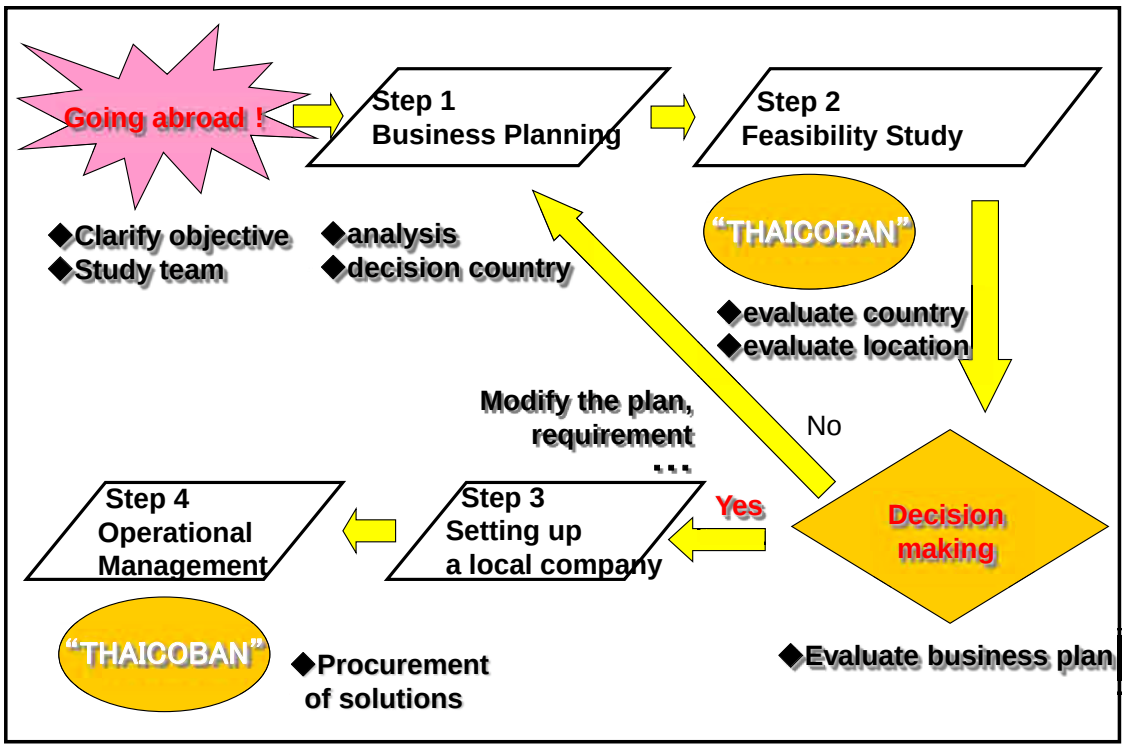


Figure 39: Processes for companies considering going abroad, and position of THAICOBAN

Process	Item	Points	THAICOBAN
1. Business strategy	Clarify readers for going abroad	Clarify the objectives for overseas business (e.g. cost reduction, find a new market, request of client, and so on)	—
	Strategy for oversea business, business planning	・ decision of management element(manpower, goods and capital) ・decision of country, etc.	—
2. Feasibility Study	Pre F/S : Preliminary survey in Japan	・PEST analysis (macro situation of politics, economics, society, technology) ・Market survey (micro situation of	Evaluating system for industrial estates/parks *useful for selecting the factory site

		sales, manufacture, labor, capital, living circumstances, local partner, etc.) ・Evaluation of a country and a site	
	F/S : Field survey	・checking pre F/S ・meeting with business partner and accounts ・legal check for setting up a local company	－
3. Setting up a local company	Procedure for setting up a local company	・BOI application and approval ・setting up a company ・tax, VAT registration ・IEAT application, etc.	－
4. Operational management	Preparation for operation	・construction of a factory ・procurement for machinery and elements ・hiring workers ・production system ・application for work permission, etc.	Proposal for procurement of solution system *useful for procurement of solutions for weak points

5.1.4 Elements of THAICOBAN

THAICOBAN is consists of evaluating standard and database of industrial estate/parks, as the tool for best matching between Japanese SMEs and Thai industrial estates/parks.

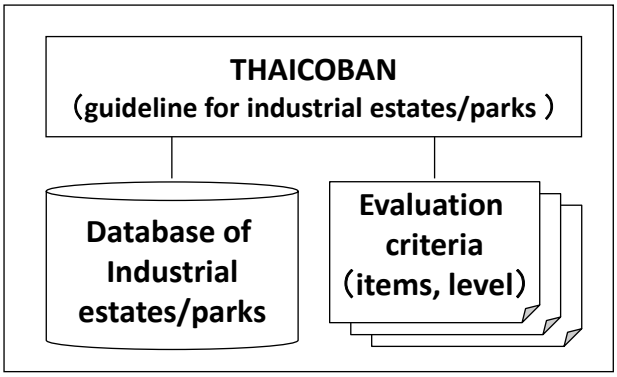
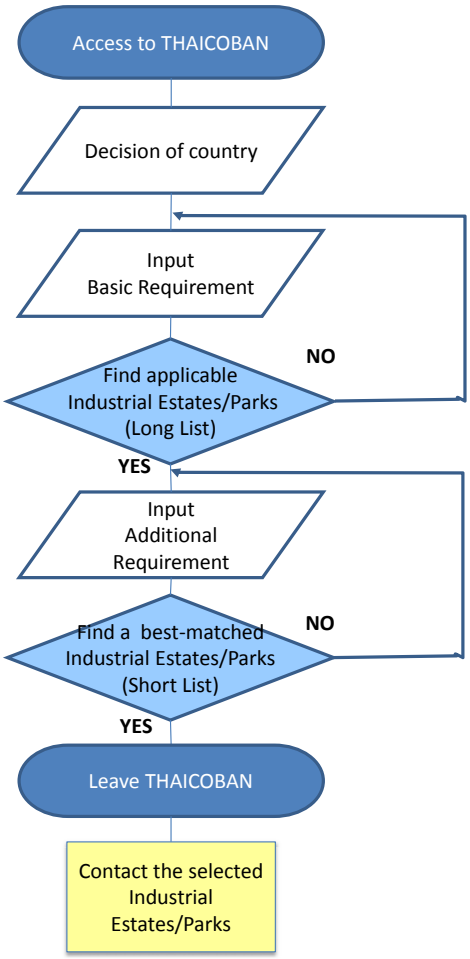


Figure 40: THAICOBAN elements

5.1.5 Flow of THAICOBAN use

The flow of the use of THAICOBAN is shown in the Figure below. The tenant company decides the country first, and then checks the points they think important for themselves, such as “necessary conditions”, or “additional conditions”. Companies which have no idea as to what to check can follow the recommendations based on the industry and company size.

THAICOBAN is a simple system for any company to use, and does not depend on unique conditions.



Source: Study Team

Figure 41: The flow of THAICOBAN usage

5.2 Formulation of THAICOBAN

5.2.1 Setting up of evaluating items

As step 1, top categories are set based on the Value Chain concepts of tenants in order to ensure complete coverage. Next, as step 2, criteria are set by extracting factors from step 1, corresponding to the three areas: environment, safety and reliability, and industry upgrading. Items common to the above three areas--quality, cost, and delivery--are categorized as the QCD of industrial estates/parks, because these items are important but difficult to set up as internal or external environment.

THAICOBAN set-up steps are shown in Figure 42, and set-up sample items are shown in Table 43.

Step 1

- Top categories based on the Value Chain concepts by Tenants in order to ensure complete coverage

Internal Environment	Primary Activities	Inbound/Outbound Logistics
		Operations (Manufacturing)
		Marketing and Sales
	Supporting Activities	Human Resources Management
		Technology Development
		Procurement
		Infrastructure (other management aspects)
External Environment		PEST Analysis (Policy, Economy, Society, Technology)
		Competitive environment

Step 2

- Criteria by extracting factors from the Step 1, corresponding to the 3 areas such as Environment & Eco, Safety, and Industry Upgrading
- Items common to the above 3 areas such as Quality, Cost, and Delivery categorized as the QCD of Industrial Estate/Park

Environment & Eco	Evaluates how the environment and eco activities/factors by/of Industrial Estates/Parks can create benefits to the tenants
Safety	Evaluate the activities/factors by/of the Industrial Estates/Parks to secure the safety for the tenants' activities
Industry Upgrading	Evaluate the activities/factors by/of the Industrial Estates/parks to upgrade the tenants' industrial strengths
QCD	Evaluate the Quality, Cost and Delivery of the Industrial Estate/Parks from various aspects

Source: Study Team

Figure 42: Set-up steps for THAICOBAN

Table 43: Sample items for THAICOBAN

ASPECT			ENVIRONMENT	SAFETY & RELIABILITY	INDUSTRIAL UPGRADING
Internal environment	Main activity	Purchasing procedure Shipping procurement	1.1 Green logistics	2.1 Stable logistics system	3.1 IT procurement 3.2 Import- export management (customs etc)
		Manufacturing operation	1.2 Energy efficiency 1.3 Waste management and monitoring 1.4 Resource recycling	2.2 Stable and safe water supply 2.3 Stable power supply 2.4 Stable telecommunication supply	3.3 Automation
		Marketing and sales (after-sales service)	1.5 Product recycling	2.5 Stable sales channel 2.6 Credit reports & scores on clients	3.4 Business development
	Support	Human Resources Management	1.6 Environmental management training	2.7 Safety and health management	3.5 Recruitment (workers, staff, engineers) 3.6 Retention rate of employees (including labor management) 3.7 Training
		Research and development (R&D)	1.7 Eco production process system	2.8 Product liability 2.9 Machinery safety	3.8 R&D environment
		Procurement process	1.8 Green purchasing	2.10 Credit reports & scores on procurement provider	3.9 Local supplier development
		Other management aspects	1.9 Environmental stewardship activities 1.10 Landscape management	2.11 Privacy management 2.12 Disaster management 2.13 Manmade disaster management	3.10 Information system 3.11 Funding sources 3.12 Intellectual property management
External environment		Politics, economics, social, technology	1.11 Law and regulation 1.12 Subsidies 1.13 Environmental awareness	2.14 Political stability 2.15 Difference in business practice	3.13 Incentive system (incentives, restriction) 3.14 International trade, FTA 3.15 Japanese community 3.16 Community building
		Competitive environment			3.17 Industry clusters
QCD (Quality, Cost, Delivery) of industrial parks		Quality of service in industrial parks	・Conditions of factory rentals ・Land area ・Additional service for Japanese companies ・Management service within industrial parks ・Interactions between Japanese companies ・One-stop service ・Customer care for Japanese clients ・Landscape management ・Safety of industrial park ・Congestion relief within industrial park		
		Cost of industrial parks	・Initial cost ・Maintenance cost		
		Delivery of industrial parks	・Waiting time for entering industrial park (occupancy rates, procedures)		

Source: Study Team

5.2.2 Details of THAICOBAN evaluation items

5.2.2.1 Environment

With regard to the areas of Environment and Eco, it is necessary to consider the reduction of burden from business activities, and the promotion of voluntary activities that contribute to environment.

As the primary activities, “Green logistics” for logistics, “Low-carbon”, “Management of pollution resources”, and “Waste recycling” for manufacturing operations, and “Recycle of products” for marketing and sales are shown.

Supporting activities include “Compliance related to environment and ecology” as personnel resources management, “Environmental and ecology technology” as technology development, “Green procurement” as procurement activities, and “Contribution to the environment” as overall management.

Specific evaluation items (proposed) were organized as outlined in Table 44.

Table 44: Evaluation Items/Criteria for Environment

Approaches for analysis			Evaluation Items	Evaluation Criteria
Primary Activities	Inbound and outbound logistics	Green logistics	Ecological transportation	Status of streamlining transportation
	Manufacturing operation	Low-carbon	Usage of energy	Implementation status of energy saving or utilization of renewable energy
		Management of pollution resources	Discharge standard	Status of setting of discharge standards (Wastewater)
				Status of setting of discharge standards (Exhaust gas)
			Monitoring	Implementation status of monitoring
		Waste recycling	Management of discharged waste	Implementation status of waste management
	Marketing and Sales	Recycle of products	Activities for recycling products	Status of countermeasures to obligation of recycling products as an after service
Supporting Activities	Human Resources Management	Compliance related to environment and ecology	Human resources related to environmental management	Status of education and recruitment of human resources related to environmental management
	Technology Development	Environmental and ecology technology	Development of environment and ecology related technologies	Progress in development of environment and ecology related technologies
	Procurement	Green procurement	Procurement of low-carbon material	Implementation status of procurement of low-carbon material

	Overall management	Contribution to the environment	Environmental management	Implementation status of environmental management
			Communication	Status of communication with local community

5.2.2.2 Safety and reliability

With regard to the areas of safety and security, it is hypothesized that there are contents concerning safety—broadly classed as crime prevention and disasters—and contents concerning security—the ability of corporations to conduct their activities stably without problems.

As the primary activities, "stabilization of logistics" for logistics (purchasing/shipping), "stably supplying water, electricity, and communications services" for manufacturing operations, and "confidence (trust) of customers" for marketing and sales.

Supporting activities include "safety and hygiene management" as personnel resources management, "manufacturing machinery safety" as technology development, "confidence (trust) of suppliers" as procurement activities, "information management" or "PL method response" as overall management, plus "natural disaster countermeasures" and "human accident countermeasures".

Specific evaluation items (proposed) were organized as outlined in Table 45.

Table 45: Evaluation Items/Criteria for Safety and Reliability

Approaches for analysis			Evaluation Items	Evaluation Criteria
Primary Activities	Inbound and outbound logistics	Stable logistics	Access to ports	Time to reach the closest international port
			Access to airports	Times to reach the closest international airport
			Access to railway station	Time to reach the closest international railway station
			Road condition	Road condition to reach the industrial park
			Logistic condition	Existence of the logistic system
	Manufacturing operation	Stable water supply	Stable supply	States of water shortage
			Safety of supply	Quality of water supply
		Stable power supply	Stable supply	Status of power shortage and voltage fluctuation
	Marketing and Sales	Stable sales channel	Stable sales channel	Tenant assistance by industrial parks for credit research of counterparties

Supporting Activities	Human Resources Management	Safety and health management	Safety and health management	Tenant assistance by industrial parks for safety and health management
	Technology Development	Product liability	Product liability	Tenant assistance by industrial parks for product liability
		Machinery safety	Machinery safety	Tenant assistance by industrial parks for machinery safety
	Procurement	Credit on procurement provider	Credit on procurement provider	Tenant assistance by industrial parks for credit research of counterparties
	Infrastructure (other management aspects)	Private information management	Private information management	Tenant assistance by industrial parks for authorized technical support institution
		Safety	Safety level	Crime rate in the area
			Security system	Level of security system in the industrial park
		Disaster management	Flooding	Risk of flooding and risk management
			Land subsidence	Risk of land subsidence and its risk management
			Drought	Drought risk and prevention system
			Earth Quake Tsunami Liquefaction Typhoon Thunderbolt Landslide Snow damage Salt damage	Risk of other disasters
		Manmade disaster management	Fire	Fire prevention system
		Casualty insurance	Casualty insurance	Difficulty to joining flood insurance
		Business Continuity Plan	Business Continuity Plan	Preparation of disaster management documents or Business Continuity Plans

5.2.2.3 Industry upgrading

Subject domains of industry upgrading are considered to be topics related to production activities such as QC and R&D as well as organizational management. Chief activities, studied in the context of physical distribution (purchasing and shipping) are (1) IT-equipped distribution systems as well as import and export control; (2) automation in

conjunction with manufacturing operations, and (3) business expansion in terms of marketing and sales.

Supporting activities studied in the context of HR management are (1) recruitment and labor relations; (2) in conjunction with technological development, R&D environment; (3) in terms of procurement, local procurement, and (4) from the view point of general management, information systems as well as intellectual properties.

Table 46 details a draft of practical evaluation criteria.

Table 46: Evaluation Items/Criteria for Industry Upgrading

Approaches for analysis			Evaluation Items	Evaluation Criteria
Primary Activities	Inbound/Out bound Logistics	Logistics IT Systems	Logistics Soft Infrastructure	Existence of inter-companies logistics service provider
	Operations (Manufactur-ing)	Mechanization (Automation)	Installation of used machines	Possibility to install used machines
	Marketing and Sales	Business Development	Business Development with existing or new Business clients	Industrial Cluster Situation within the same Industry
Supporting Activities	Human Resources Management	Recruitment	Regular worker-level	Recruitment possibility in regular worker-level
			Staff-level	Recruitment possibility in staff-level
			Engineer-level	Recruitment possibility in engineer-level
			Senior/management-level	Recruitment possibility in senior/management-level
			Non-regular workers	Recruitment Possibility of non-regular workers
		Labor-Manage-ment Relations	Retention rate in regular worker-level	Retention rate in regular worker-level
			Retention rate in staff/engineer levels	Retention rate in staff/engineer levels
			Labor-management problems	Occurrence of labor-management problems
		Employee Training/ Education	Training/Education	Accessibility to training/education programs(management/ manufacturing techniques, Japanese style MONOZUKURI)
	Technology Development	R&D	Environment for Research & Development(R&D)	Environment favorable for R&D
	Procurement	Local Procurement/ Purchase	Local Procurement/ Purchase from a Japanese companies	Matching support to Japanese part/material suppliers

			Local Procurement/ Purchase from local companies	Matching support to local part/material iers
	Infrastructu-re (other management aspects)	Information System	In-company Information System infrastructure	Matching support to IT vendors
		Intellectual Property	Intellectual property management	Protection and use of intellectual property

5.2.2.4 Industrial QCD and exterior environment

In addition to the above three fields, as conditions for location in an industrial park, and the QCD of the industrial park should consider "service quality of the industrial park", "cost of the industrial park", and "delivery of the industrial park." Specific evaluation standards (proposed) were organized as shown in Table 47.

As external environment matters, the items, "benefits", "foreign trade", and "Japanese peoples' environment" such as political, economic, social, and technical trends, "competitive environment" and "industrial achievements" as conditions for location in an industrial park should be evaluated. Specific evaluation standards (proposed) were organized as outlined in Table 48.

Table 47: Evaluation Items/Criteria for Industrial QCD and External Environment

Approaches for analysis		Evaluation Items	Evaluation Criteria
Industrial park QCD	Service quality of industrial park	Incentive	BOI zone, IEAT benefits
		Alleviation of traffic jams inside the industrial park	Traffic situation
		Size of the site at the time of acquisition	Shape and dimensions of the site
		Site	Possibility of expansion
		Factory rental	Availability status
			Size
		Communication service	Service capability
		One-stop service	One-stop service when business begins
		Industrial park help desk	Help desk for Japanese speakers
		Services for Japanese people	Housing, health care, commercial services, and various service facilities
			Specialist business support
		Interaction with Japanese people	Interaction of Japanese companies
	Cost of industrial parks	Initial fee	Site price
		Maintenance cost	Maintenance fee
		Factory rental fee	Factory rental
	Delivery of	Time until occupation	Time until occupation

	industrial parks		
	Other items	Finances	Funds trust
Politics Economics Society Technology	Industry Upgrading	Benefit System (incentives, conditions)	Status of benefits system
			Restriction on the investment ratio by foreign companies
			Obligation with investment
		Foreign Trade, Free Trade Agreement (FTA), Economic Partnership Agreement(EPA)	Current situation of FTA and EPA with other countries
	Environment	Legal systems or regulations related to environmental issues	Status of regulations related to emission standards, etc.
		Subsidies for environmental activities	With or without subsidy programs for industrial estates
		Interest in environmental issues	Establishment of environment-related NPOs and their main interest
	Safety & reliability	Political stability	Status of terrorism or riot or protest demonstration
		Foreign exchange risk	System and trend of exchange market
		Difference in business practices	Unique business practices , etc.
Competitive environment	Competitive environment	Status of industrial accumulation	National trends of industrial accumulation

5.2.3 Set up levels of each items

The concept for setting up items of four items is below.

5.2.3.1 Evaluation level

Each item is evaluated relative to 5 levels. For some items, 2-3 levels are appropriate at this time, however, it will be possible to evaluate items in more detailed levels in the future. Levek 5 neams the best quality all over the world, level 3 means the standard level in Thailand, and level 1 means the lowest level.

5.2.3.2 Categorize of evaluation items

Each item is categorized in 3 types, even though they may be different areas or items.

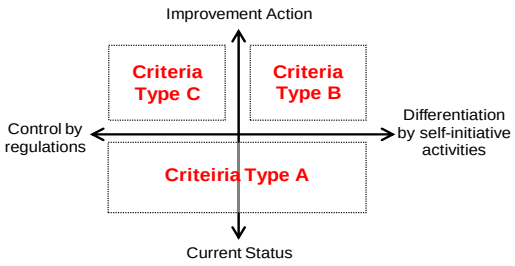
A: Explain the level of the location merit or current status of the industrial estates/parks

B: Evaluate the self-initiative activities by the industrial estates/parks to differentiate from other estates/parks

C: Evaluate the status or activities related to the criteria/standards set in a government level

The concept of setting up evaluation level is shown Figure 49.

Basic Ideas for the criteria levels	
Level 5	With big merits for the tenants' operations
Level 4	With merits for the tenants' operations
Level 3	Level required normally (Thai average)
Level 2	With few merits for the tenants' operations
Level 1	With no merit for the tenants' operations



Criteria Type	Explanation of criteria type	Level 1	Level 2	Level 3	Level 4	Level 5
A	Explain the level of the location merits or current status of the Industrial Estates/Parks	Much Lower than the national average	A little lower than the national average	The national average	A little higher than the national average	Much higher than the national average
B	Evaluate the self-initiative activities by the Industrial Estate/Parks to differentiate from other Estates/Parks	Unable to use the services	Able to use the services which have problems (expensive or complicated)	Able to use the services without any problem	Able to use the services with advantages	Able to use the services with great advantages
C	Evalute the status or activities related to the criteria/standards set in a governmentl level	Minimum level of activities towards criteria/standards	Planning more self-initiative activities	Implementing the activities more than complying to the criteria/standards	Implementing the activities differentiated from othe Industrial Estate/Parks	Managing in a globally higher level

Figure 48: Levels and types of criteria

See annexure 1, as the THAICOBAN sustainability guideline for industrial estates/parks.

5.3 Benefits of THAICOBAN

THAICOBAN is aimed to be actually used by stakeholders. It is important to bring benefits for all stakeholders. The concept of THAICOBAN follows.

5.3.1 General idea

In industrial estates/parks, many stakeholders have roles to play. The relationship between them is complicated, so it will be important to have benefits from THAICOBAN.

All stakeholders should have benefits of THAICOBAN as the following points show.

5.3.2 Developers

Developers are developing and operating industrial estates/parks, in order to maximize their profits by selling sites for high price and in short period. As for the operation of industrial estates/parks, they can improve their profitability by increasing operational income and reducing operational cost.

THAICOBAN can bring benefits for developers by contributing to their promotion for candidate tenant companies.

No	Items	Current situation (without THAICOBAN)	Effect of THAICOBAN	background
1	Increase of land sales	To promote land sales To invite Japanese companies	THAICOBAN supports the promotion effectively.	THAICOBAN increases the company location, and contributes to the sustainability of industrial estates/parks
2	Increase of operational income	Unstable business due to depending on land sales income	Stable business by increasing the operational income such as electricity, water, logistics, and so on	

5.3.3 Tenant companies

Tenant companies set up and operate factories in industrial estates/parks. THAICOBAN is useful for such companies, especially SMEs because they do not have enough experience and know-how for selecting sites. In addition, for operating companies, THAICOBAN can reduce the operational cost for each factory. THAICOBAN can upgrade the operational service of each industrial estates/parks by standardization.

No	Items	Current situation (without THAICOBAN)	Effect of THAICOBAN	background
1	Obtaining useful information	It is difficult to compare different industrial estates/parks because there is no standard for them	Ability to compare industrial estates/parks by THAICOBAN	THAICOBAN can reduce the cost and time for tenant companies
2	Reducing the capital and operational cost	Large loads for each company • Each company are monitors its owns exhausts • Recruiting workers by each company	Reduce the load of each company • Monitored by industrial estates/parks • Human resources are provided routes by industrial estates/parks	
3	Obtain the operational know-how	Each company has their own operational know-how • Different situation of relationship between	Operational know-how can be shared by THAICOBAN • Reduce the risk of strikes	

		labor and management		

5.3.4 Thai government, public organizations

The Thai government has two concepts; one is industrial policy decision and promotion, and the other is approval and administrative guidance for industrial estates/parks. Concerning policy, THAICOBAN can contribute to the industrial upgrading policy which the Thai government is promoting. For example, THAICOBAN can be linked with BOI's new incentives policy to be more effective and useful for companies. Concerning the administrative aspect, THAICOBAN can contribute to strict operation of related rules with monitoring systems, because such rules are not necessarily operated strictly.

No	Items	Current situation (without THAICOBAN)	Effect of THAICOBAN	Background
1	Industrial development	Assembly base changing to value added center	Promote industrial upgrading with industry-academia collaboration	THAICOBAN contributes to the upgrading of industrial estates/parks, invites foreign direct investment
2	Measures for disaster	Public and private organizations are promoting measures for flood disaster	Appropriate public and private role-sharing	
3	Environmental measures	Not strictly operating environmental regulations	Effective environmental measures in industrial estates/parks	

5.3.5 Surrounding communities

Pollution has been a big issue in Thailand, the same as high economic growth in Japan. Many Thai organizations point out the importance of surrounding communities.

It is important for surrounding communities that they are free from pollution from industrial estates/parks and have monitoring systems for emergency case. THAICOBAN should include systems of environmental safety and communication between industrial estates/parks and communities.

No	Items	Current situation (without THAICOBAN)	Effect of THAICOBAN	background
1	Improving the safety of life environment	People feel unease due to environmental pollution	THAICOBAN accelerates the disclosure of industrial estates/parks	THAICOBAN strengthens the social and environmental sustainability of industrial estates/parks and surrounding communities
2	Contribute to stability of life	Employment in industrial estates/parks are not positive for developers	Surrounding community provide workers	

5.4 Pilot study of THAICOBAN

A pilot study carried out to check how THAICOBAN works by using actual data of industrial estates/parks.

5.4.1 Subject of study

With regard to ownership, six industrial estates/parks were considered.

Owner	Industrial estates/parks
Private developer	A industrial park, D industrial park
Joint venture of IEAT and private developer	B industrial estate, C industrial estate
IEAT	E industrial estate, F industrial estate

5.4.2 Method of study

Using an interview survey with the subject industrial estates/parks above, each item of each estate/park was evaluated by 5 levels, based on actual data, information and evidence.

5.4.3 Results

The results are shown below. Characteristics of each industrial estates/parks became clear, and strong points and points to be improved were revealed through this study. This means THAICOBAN works as we expected.

Along with the pilot study, an interview survey of developers and tenant companies was held to determine their opinions about items and levels of THAICOBAN. As shown below, it was made sure that THAICOBAN can be accepted by them, even if it is necessary to modify the detail points and presentation style.

1) Short list

Short list of candidate industrial estates/parks to compare the general items

THAICOBAN Result –Short List

Industrial park / Items	Industrial Park A	Industrial Park B	Industrial Park C	Industrial Park D	Industrial Park E	Industrial Park F
1. Area of location	Center - West	East	East	North east	Center - West	Center - West
2.Timing of possible move-in	Within 1 year	Within 1 year	Within 1 year	Within 1 year	No available (Within 1 year as usual)	No available (Within 1 year as usual)
3. Standard price of land unit	3.5 million THB/rai	9 million THB/rai	11 million THB/rai	3 million THB/rai	8-11 million THB/rai	15-20 million THB/rai
4. Level of infrastructure	・Abundant water ・Stable electricity ・Near airport ・There is FREE ZONE	・Stable electricity ・Near airport and port ・There is FREE ZONE	・Stable electricity ・Near port ・There is FREE ZONE	・Abundant water ・Stable electricity ・Near airport and port	・Abundant water ・Stable electricity ・Near airport and port ・There is FREE ZONE	・Abundant water ・Stable electricity ・Very Near airport and port ・There is FREE ZONE
5. BOI Zoning / Benefit	Zone 2	Zone 2	Zone 2 （Regarded as Zone 3 by 2014）	Zone 3	Zone 1	Zone 1
6. Utilization of human resources		・Many opportunities for education/training	・Relatively high labor availability ・Many opportunities for education/training	・Affluent labor force ・Relatively low labor cost ・Few labor-management problems		・Few labor problems
7. Acquisition of land, or Renting of rental factory	・BOI approval needed for land acquisition ・There is a rental factory （1,000㎡）	・Is an IEAT industrial park where land can be acquired. ・There is a rental factory （1,000㎡）	・Is an IEAT industrial park where land can be acquired. ・There is a rental factory （500㎡）	・BOI approval needed for land acquisition ・There is a rental factory （1,000㎡）	・an IEAT industrial park ・There is no rental factory available	・an IEAT industrial park ・There is no rental factory available
8. Space of industrial estate/park	・Partitioning handled flexibly ・Expansion work in progress	・Expansion work in progress	・Expansion work in progress	There is an expansion plan. work has not begun	・No expansion plan	・No expansion plan
9. Environment favorable for Japanese people	・Contact office for Japanese ・Facilities for Japanese	・Contact office for Japanese ・Facilities for Japanese	・Contact office for Japanese ・Facilities for Japanese ・Japanese school is nearby	・Contact office for Japanese ・Facilities for Japanese	・Convenient for commuting from Bangkok	Convenient for commuting from Bangkok
10. Located industrial cluster	-Automobile industry cluster (Supporting and Assemble Maker) -EE industry cluster	-Automobile industry cluster (supporting companies and Assemble Maker)	-Automobile industry cluster (supporting companies and Assemble Maker)	-Automobile industry cluster (supporting companies)	-Electrical and Electronics industry cluster (supporting companies)	-Lots of SMEs -Variety of industries
11. Environment friendliness	・		・Approved as an Eco-industrial park		・Approved as an Eco-industrial park	・Approved as an Eco-industrial park
12.Disaster risk	・There is flood risk, but countermeasures completed ・Ground is relatively soft	There is a little flood risk, but countermeasures completed ・Ground is relatively soft	・Elevation is high so no flood risk ・Ground is solid	・Elevation is high so no flood risk ・Ground is solid	・Elevation is low but few flood risk ・Ground is solid	・Elevation is low but work has been done ・Ground is not solid

2) General result

To check how much the items meet the user company's needs

THAICOBAN Result - General

Category	Item	Assessment points	My company's requirement	Industrial Park A	Industrial Park B	Industrial Park C	Industrial Park D	Industrial Park E	Industrial Park F
Stable logistics	Access to major ports	Average time to reach a major port by car on weekdays around noon	**Level 4** Can Reach within an hour	× **Level 1**	× **Level 4**	○ **Level 4**	× **Level 2**	× **Level 3**	× **Level 3**
Natural disaster	Flooding	- Existence of major flooding - Risk management against flooding	**Level 5** No flooding due to the condition of land	× **Level 3**	× **Level 4**	○ **Level 5**	○ **Level 5**	○ **Level 5**	× レベル 4
Quality of services in industrial park	Rental factory	- Existence of rental factory - Vacancy of rental factory	**Level 4** Is considering to build a rental factory for manufacturing	○ **Level 5**	× **Level 2**	○ **Level 5**	× **Level 2**	× **Level 2**	× **Level 2**
	Size of rental factory	- Response to size request by tenant companies	**Level 4** Is considering to build a rental factory of size 500㎡ to a few thousand ㎡	× **Level 2**	○ **Level 4**	○ **Level 4**	× **Level 2**	× **Level -**	× **Level 2**
Recruitment	Full time worker	Labor cost within industrial park (salary, compensation, bonus, benefits)	**Level 3** Less than 50 times of minimum wage	○ **Level 3**	○ **Level 3**	○ **Level 3**	○ **Level 4**	× **Level -**	× **Level 2**
Business development	Business with new clients	- Numbers of companies in the same industry - Existence of end product manufacturer	**Level 5** More than 50 companies in the same industry and at least 1 end product manufacturer	○ **Level 5**	○ **Level 5**	○ **Level 5**	× **Level 4**	× **Level 3**	× **Level 2**
Recycling	Waste management	- Exercising waste management	**Level 5** Supporting activities that improve the condition of accidents caused by waste management company	× **Level 3**	× **Level 3**	○ **Level 5**	× **Level 3**	× **Level 2**	× **Level 2**
Contribution to environmental issues	Communication	Communication with surrounding communities	**Level 4** Communication with surrounding communities, and community activities (such as free events, donation)	○ **Level 4**	○ **Level 4**	○ **Level 5**	× **Level 3**	○ **Level 5**	× **Level 3**
			Colored label／Total ns	**4/8 (50%)**	**5/8 (63%)**	**8/8 (100%)**	**2/8 (25%)**	**2/8 (25%)**	**0/8 (0%)**

3) Detail result

Detail information of candidate industrial estates/parks

THAICOBAN Results - detail

Category	Item	Assessment points	My company's requirement	Industrial Park A	Industrial Park B	Industrial Park C	Industrial Park D	Industrial Park E	Industrial Park F
Stable logistics	Access to major ports	Average time to reach a major port by car on weekdays around noon	Level 4 Can Reach within an hour	Level 4 Approx. 180km and more than 2 hour to Port of Laem Chabang	Level 4 Approx. 50km and less than 1 hour to Port of Laem Chabang	Level 4 Approx. 45km and less than 1 hour to Port of Laem Chabang	Level 2 Approx. 130km and less than 2 hour to Port of Laem Chabang	Level 3 Approx. 150km and less than 1.5 hour to Port of Laem Chabang	Level 3 Approx. 150km and less than 1.5 hour to Port of Laem Chabang
Natural disaster	Flooding	Existence of major flooding Risk management against flooding	Level 5 No flooding due to the condition of land	Level 3 Flooding risk but concrete levee constructed.	Level 4 Flooding risk but pumping system has been set.	Level 5 Average elevation is high at 60m above sea level, so there is no danger of flooding	Level 5 20m Above the Sea Level. No risk of flooding	Level 5 Low risk of flooding because of huge pumping system at airport	Level 4 0m Above the Sea Level Plan to build concrete levee
Quality of services in industrial park	Rental factory	Existence of rental factory Vacancy of rental factory	Level 4 Is considering to build a rental factory for manufacturing.	Level [illegible] Provided but no available Operated by a group company	Level 2 Provided but no available (waiting) Operated by a group company	Level 5 [illegible]	Level 2 Provided but no available Plan to build 20 factories.	Level 2 Provided but no available	Level 2 Provided but no available
	Size of rental factory	Response to size request by tenant companies	Level 4 Is considering to build a rental factory of size 500m² to a few thousand m²	Level 2 1,000/1,500/2,000m²	Level 4 320m²/unit 1,000~5,000m²	Level 4 [illegible]	Level 2 2,000-3,000/unit (Min 1,000m²)	Level- No data	Level 2 >400m²
Recruitment	Full-time worker	Labor cost within industrial park (salary, compensation, bonus, benefits)	Level 3 Less than 50 times of minimum wage	Level 3 [illegible]	Level 3 [illegible]	Level 3 [illegible]	Level 4 [illegible]	Level- No data	Level 2 A bit higher than average labor cost
Business development	Business with new clients	Numbers of companies in the same industry Existence of end product manufacturer	Level 5 More than 50 companies in the same industry and at least 1 end product manufacturer	Level 5 70 or more of automobile industry 6 Japanese Auto Manufacturer locating	Level 5 130 or more of automobile industry 4 Japanese Auto Manufacturer locating	Level 5 [illegible]	Level 4 30 or more of automobile industry	Level 3 12 automobile parts factories	Level 2 7 automobile parts factories
Recycling	Waste management	Exercising waste management	Level 5 Supporting activities that improve the condition of accidents caused by waste management company	Level 3 Recommend companies listed in local government	Level 3 Recommend appropriate local companies	Level 5 [illegible]	Level 3 Provide companies list	Level 2 Only approved companies by MOI	Level 2 Provide companies list
Contribution to environmental issues	Communication	Communication with surrounding communities	Level 4 Communication with surrounding communities, and community activities (such as free events, donation)	Level 4 [illegible]	Level 4 Attend local events Donner hospital	Level 5 Various events are held: get-togethers or CSR activities with the Japanese Association, among them. A traffic committee including various concerned parties such as administrative bodies is formed to end congestion problems.	Level 3 Good relationship with local community because of CSR. Cooperate to EIA public hearings.	Level [illegible] Investigation when there are claims from surrounding community. Communicating 4 times a year between IE, community and tenant companies	Level 2 Quarterly magazine to disclose information. Important data is opened at the gate.

Table 49: Comments for THAICOBAN

interviewee	Comments for THAICOBAN
A industrial estate/park	• It is difficult but important to update the data of industrial estates/parks for developers; however, it can be a good marketing tool for SMEs. • Around 50% of potential candidates approach vie the Internet, remainders are introduced by clients, BOI and banks. • In the past, we had joint marketing with a different developer, but it was not easy because we had different expectations and results.
B industrial estate/park	• THAICOBAN seems good as a promotion tool, but we would like to avoid inequality of disclosure. For example, availability of land is strategic information for industrial estates/parks. • Investment for solutions is a management matter, different from promotion team. For more effective use of THAICOBAN, we need to change the organization system to recognize "solution for inviting tenants," however, the solutions list is useful for us. • We have promotion channels such as trading companies, financing companies, real estate brokers, construction companies, BOI and so on.

interviewee	Comments for THAICOBAN
	Commission depends on cases.
C industrial estate/park	• We basically understand THAICOAN as a good marketing tool and useful for industrial estates/parks. • It is a little bit stimulating to have direct results as good and bad. It can be expressed as a kind of diagram.
D tenant company	• THAICOBAN is easy to understand as a guideline system. Items are comprehensive and appropriate. It is so difficult for SMEs to cover all these items that this system is useful. You should have seminars for THAICOBAN users in and out of Japan. • It should be most important to collect information of industrial estates/parks, for example, industrial exhaust is a sensitive matter even in Thailand. • Taxation, infrastructure such as electricity, water, transportation, communication, stability of land, procurement of workers is crucial for a tenant company.
E tenant company	• We have started our research after determining to go Thailand, as a subcontractor of a mother company. • We have experience to have the support of trading companies in India and Indonesia. As banks also give us the same kind of support, it should be better for THAICOBAN to be used with such kinds of service providers. • In executing stage, actual opinion is the most important, especially reliability and freshness of information. • 38 industrial estates/parks out of approximate 70 are still now expanding. The study team had better mind that information is always changing.
F tenant company	• Basically easy to understand and seems useful. It is easy to use like a real estate searching site. This can be useful to go abroad. • It will be more useful not to list up candidate site, but to suggest remarkable point for companies. • Characteristic of industrial estates/parks based on data is quite useful for companies. • In my company case, we assumed to important things that adequate proximity to clients, zoning in BOI incentive, reliable developer, and number of Japanese locating companies to exchange information.

Chapter 6.

Implementation of THAICOBAN, as the Sustainable Standard for Industrial Parks

Chapter 6. Implementation of THAICOBAN, as the Sustainable Standard for Industrial Parks

In this Chapter, several ideas of the appropriate operational set up of THAICOBAN were examined and described to realize THAICOBAN system which was discussed in the preceding chapters. From section 6.1 to 6-5, the detailed consideration is shown based upon watch 5W1H element is used to show the THAICOBAN system. In section 6.6, the relation with the OTAGAI project is described based on the present situation as of this writing. Lastly, the roadmap of the THAICOBAN system is shown in section 6.7.

6.1 Definition of THIACOBAN Operation（What）

In this section, the definition of THAICOBAN operation was considered in terms of its operational policy, expected operational tasks, sustainable PDCA-cycle for improvement, its monitoring system and risk management.

6.1.1 Operational Policy

The following 3 items are considered as THAICOBAN operational policy:

i) To secure its credibility by regular update of its database
ii) To maintain its neutrality with its evaluation method
iii) To ensure transparency by information disclosure

As for the first point, “ i) To secure its credibility by regular update of its database”, this means that the information provided by THAICOBAN should be regularly updated. In general, the less the database is updated, the less the users are likely to access it due to the lack of credibility. Therefore the most important information for users who are looking for a new slot in industrial estates/parks, such as price, space and vacancy of industrial parks/estates, should be updated by the developers. It can be said the credibility of the database is very important to see an increase of users, and then the sustainable operation of

the THAICOBAN system.

As to the second, " ii) To maintain its neutrality with its evaluation method", this means that the evaluation method through THAICOBAN provides the same result no matter who uses it. For example, if a developer tries to promote its industrial park with its marketing and promotion, the THAICOBAN evaluates all of the industrial parks/estates with the same criteria to avoid arbitrary understanding.

As to the third, "iii) To ensure transparency by information disclosure", this means that the information provided from develop should be confirmed by the THAICOBAN operation side with its reference data to disclose it to the public. This enables all industrial parks/ estates which join THAICOBAN to compare their own status to the others so that the transparency of accurate information leads to improved average quality of infrastructure of industrial parks/estates.

6.1.2 Expected Tasks

THAICOBAN will be operated by the "THAICOBAN Operational Office" and the "THAICOBAN Steering Committee." The former will be in charge of daily-operation of THIAICOBAN such as updating the existing data of solutions and industrial estates, while the latter is to be in charge of updating and improving the THAICOBAN system itself with its evaluation criteria. As of now, the above-mentioned structure will be established as the following chart shows.

For the operation of THAICOBAN, the expected tasks are mainly divided into the following 2 categories: "day-to-day task" and "regular improvement task". The details are shown in the below table.

Table 50: List of Operation Tasks of THAICOBAN

	Category	Item	Description
1	Day-to-day task of THAICOBAN		
1-1	①	Update of Database	Update, Register, Correction of Information about Industrial estates/parks
	②	Update of Database	Update, Register, Correction of Information about Solution
1-2	①	Respond to inquiry from users	Tenant companies and companies who are looking for a site
	②	Respond to inquiry from users	Owner/developers of Industrial Parks/Estates
	②	Respond to inquiry from	Solution providers who registers their

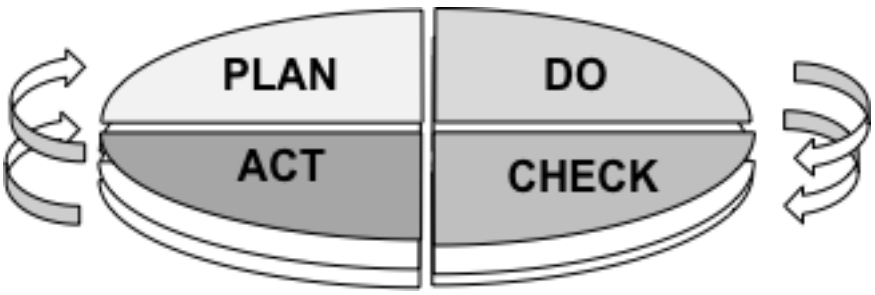
		users	services and products in THAICOBAN
2	Regular improvement task of THAICOBAN		
2-1	①	Improvement of THAICOBAN	Update, Register, Correction of each criteria for evaluation
	②	Improvement of THAICOBAN	Update based on the change of local rule and standard (ex. BOI's incentive scheme, environmental standards)
	③	Improvement of THAICOBAN	Update level definitions, Level settings
2-2	①	Verification of registered data and its evaluation result	Information about Industrial estates/parks
	②	Verification of registered data and its evaluation result	Solution data
2-3	①	Operational expenditure	Budget and revenue management
	②	Operational expenditure	Operation of Incentive scheme for THAICOBAN
	③	Operational expenditure	Promotion plan as a marketing tool
2-4	①	Monitoring and evaluation	Review of monitoring items set based on PDCA-cycle（See the next section 6.1.3）
	②	Monitoring and evaluation	Review of user status (See the section 6.1.4)）

Source: Study Team

6.1.3 Regular improvement of THAICOBAN operation based on PDCA cycle

In addition to the day-to day tasks, THAICOBAN should be monitored and improved regularly, from quarter to quarter based on PDCA cycle. This enables THAICOBAN to be sustainable based on the actual situation. It is shown in Table 52.

Table 51: THAICOBAN operation based on PDCA cycle



i) Plan:

Setting up the annual goal of THAICOBAN with evaluation indicators such as numbers of registered users

Planning for dissemination from Thailand to the other ASEAN countries

Establishment and improvement of incentive schemes

ii) Do

Implementation of the initial plan

Marketing promotion

iii) Check

Monitoring goals, indicators, achievement (etc. number of matching)

Extracting success cases and failure cases

iv) Action

Plan for continuous improvement

Reviewing and re-examining success cases and failure cases

Reviewing and re-examining success cases and failure cases

Source: Study Team

6.1.4 Monitoring and Evaluation

In addition to the improvement of THAIOCBAN itself, Table 53 shows the expected items which are to be considered for the monitoring and evaluation to see if THAICOBAN is appropriately-operated.

Table 52: Sample Items for Monitoring of THAICOBAN Operation

THAICOBAN Guideline:		yearly	Quarterly
	Number of registered industrial parks/estates	✓	✓
	Number of candidates, registered tenant companies	✓	✓
	Page view of THAICOBAN Guideline Website	✓	✓
	Number of matching between industrial parks/estates and tenant companies	✓	✓
	Revenue from Users	✓	
THAICOBAN Service and Solution:		yearly	Quarterly
	Number of registered services and solutions	✓	✓
	Number of candidates, registered tenant companies	✓	✓
	Page view of THAICOBAN Guideline Website	✓	✓
	Number of matching between industrial parks/estates and	✓	✓

	service and solution companies		
	Revenue from users	✓	

Source: Study Team

6.1.5 Risk management

As for the risk management of THAICOBAN, the following points should be considered with a focus on its characteristics to "provide information".

i) Inaccuracy of information about industrial parks/estates
ii) Inconsistent with local rules and standards
iii) Inaccuracy of THAICOBAN criteria, evaluation framework itself

It is impossible to take responsibility for the THAICOBAN operation side in case users incur direct or indirect loss by their own action (for example, selection of industrial estates, introduction of solution) based on the information provided by THAICOBAN. This is because THAICOBAN has been created as "a support tool for decision making". Thus, the THAICOBAN operation side should let users understand that the final decision is not made by THAICOBAN results but is made by the users themselves.

Although the information was correctly provided by THAICOBAN, there might be some cases which industrial parks/estates feel opportunity loss due to the result of comparison by THAICOBAN. Therefore, the structure, function and indication method of THAICOBAN should be explained to both the tenant and the owner/users.

6.2 Organizational Structure and Place of THAICOBAN Operation (Who&Where)

6.2.1 Organizational Structure

THAICOBAN will be operated by the "THAICOBAN Operational Office" and the "THAICOBAN Steering Committee". The former will be in charge of daily-operation of THIAICOBAN such as updating the existing data of solution and industrial estates, while the latter is to be in charge of updating and improving THAICOBAN system itself with its evaluation criteria. As of now, the above-mentioned structure will be established as the following table shows.

Table 53: Main Structure of THAICOBAN Operation

Name of Group	Main Roles	Scheme	Venue
THAICOBAN Operational Office	・Day-to-day work（such as registration, update, and delete of data ） ・Receiving and answering inquiry from users / Communication and arrangement with stakeholders related to the above mentioned work	Special purpose company is recommended	THAILAND
THAICOBAN Steering Committee	・Regularly work for improvement of the whole system ・Allocation of Management Resources for Operation ・Improvement of THAICOBAN operation task ・Improvement of THAICOBAN itself ・Monitoring and Evaluation ・Communication and arrangement with stakeholders related to the above mentioned work	Meeting based (quarterly)	THAILAND and Japan

The study team received several comments from interviewees on above proposed structure.

As for “THAICOBAN Operational Office”, there are several comments that this should be not a governmental body but a private body so that the operation of THAICOBAN can be done smoothly to meet users’ requirements. If a private company joins as an operator, it should not focus on profits, and the THAICOBAN Operational Office should be a non-profit organization. This is a good point since industrial developers might become both a THAICOBAN user and its operator.

6.2.2 List of Stakeholders for THAICOBAN Operation

The below table shows the list of the expected stakeholders for THAICOBAN operation as described above. The table includes the name of the organization, its general description with a view to whether the organization would be in the “THAICOBAN Operational Office” or the “THAICOBAN Steering Committee”. The views are not official comments from each Stakeholder but are evaluated by the Study Team based on the result of several interviews during this Study.

Table 54: List of Stakeholders for THAICOBAN Operation

Remarks: the“◎”sign means “Most necessary”, and the signs of“○”,”Δ”,”×”,”-”mean “Appropriate”, “Not necessary but require cooperation”, “Unnecessary, or impossible”, “Not yet to determined” respectively.

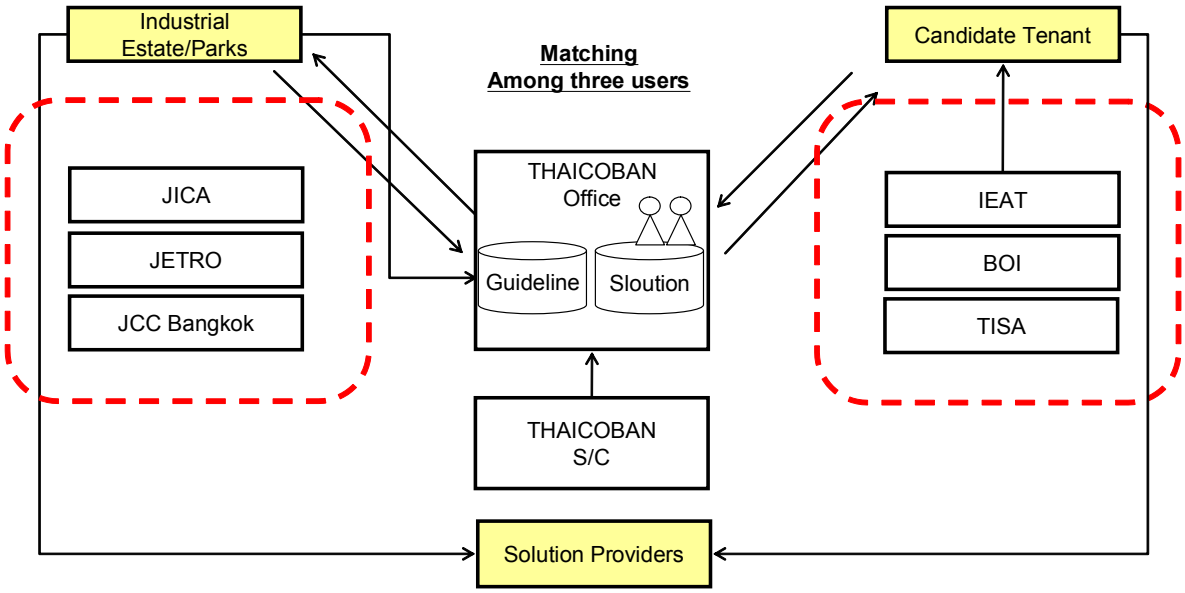
No.	Name of Organization	Roles of each organization(*generalization)	THAICOBAN Operational Office	THAICOBAN Steering Committee
1	Ministry of Industry (MOI)	・Ministry in charge of development of domestic industry in Thailand	×	○
2	IEAT	・Setting up infrastructure standards for industries in Thailand ・Managing operation of IEAT-owned industrial estates	Δ They don't operate it directly, but we need their support in acquiring data from estates	◎ They have incentive system, so their cooperation is a must
3	TISI	Setting up Thai Industrial Standards	×	Δ
4	TISA	・Organization that consists of industrial developers as well as utility related companies	Δ They won't directly operate THAICOBAN, but we need their support to acquire data on industrial estate and parks	◎ They have strong relationships with both private and public entities.
5	BOI	・Organization to promote investment under Thai Ministry of Industry. ・Setting up incentive scheme for foreign investment	Δ They won't directly operate THAICOBAN, but we need their support to acquire data on industrial estate and parks	◎ They are critical as THAICOBAN should be affiliated with their incentive schemes
6	FTI	・Organization that consists of Thai private companies	×	○
7	DIW	・Organization to manage operation and environmental issues within industrial estates and parks in Thailand	×	Δ
8	Thai industrial developers	・Thai industrial developers※ THAICOBAN main users	×	○
9	Thai real estate brokers	Brokers to introduce real estate to those companies who operate in Thailand	Δ They have the know-how, but they lack neutrality	○
10	Thai NGO and surrounding communities	・Thai NGO and surrounding communities outside of industrial estate/ parks	―	―
11	Japan's Ministry of Economy, Trade	・Government body to develop economic policies for both	×	○

No.	Name of Organization	Roles of each organization(*generalization)	THAICOBAN Operational Office	THAICOBAN Steering Committee
	and Industry	domestic and international		
12	Japan International Cooperation Agency (JICA)	・Organization to implement ODA ※Main contractor for THAICOBAN project	△ Rather than joining THAICOBAN as a direct user, they could possibly participate as part of JICA projects.	◎ They could apply existing scheme when sending experts.
13	Japan Bank for International Cooperation(JBIC)	・Give financial incentives to THAICOBAN users.	×	○
14	Japan External Trade Organization (JETRO)	・Support Japanese companies operating internationally.	△ Rather than joining THAICOBAN as a direct user, they could possibly participate as part of JETRO projects.	◎ Their existing data and know-how is useful to THAICOBAN
15	Japan Chamber of Commerce in Bangkok	・Support Japanese companies that are already in Thailand.	△ They can support THAICOBAN as long as its operate is not a specific company. They are important player as an indirect user.	◎ They have information regarding historial data on Japanese companies and their international operation
16	Japan Chamber of Commerce in Japan	・Support Japanese companies operating abroad.	△ Important player as an indirect THAICOBAN user	―
17	New eEnergy and Industrial Technology Development Organization (NEDO)	・Support promoting Japanese technologies abroad	×	△ They could join discussions on environment and disaster management
19	The Overseas Human Resources and Industry Development Association (HIDA)	・Provide training programs for developing countries' human resources development send senior experts	×	△ They could join discussions on industrial upgrading

No.	Name of Organization	Roles of each organization(*generalization)	THAICOBAN Operational Office	THAICOBAN Steering Committee
20	Japanese financial companies (banks, insurance companies)	※Provide financial incentives to THAICOBAN users	×	Δ They could consider new products that deal with THAICOBAN
21	Japanese *shosha*	・Its department that deals with industrial estate and parks	Δ As an indirect THAICOBAN user, they can collaborate with THAICOBAN	―
22	Japanese companies that are already operating or considering operating abroad	Stated already.	(* user)	(* user)
23	Solution providers	・Provide Japanese services and products for infrastructure for industrial parks	(*user)	(*user)
24	OTAGAI	・Framework or THAICOBAN system	(details on a relationship with OTAGAI are described later)	―
25	Mekong Institute	・International organization which supports framework for Japan-ASEAN economic cooperation	―	―
26	ASEAN-Japan Centre	・International organization which promotes tourism, investment, trade between Japan and ASEAN.	Δ They can cooperate with THAICOBAN as an indirect user	―
27	Japan Industrial Location Center	・Promote developing Japanese industrial parks, but they are considering international business as well.	Δ They can cooperate after OTAGAI and THAICOBAN framework becomes more concrete.	―
28	SME Support, Japan	・Have experience in assisting development of industrial parks for Japanese SMEs and promoting development	Δ They can cooperate after OTAGAI and THAICOBAN framework becomes more concrete.	―

6.2.3 Analysis for Main Stakeholders

Based on the above table, more detail is discussed in this section by selecting stakeholders which the Study team regards as important ones for THAICOBAN operation. On the Japanese side, JICA, JETRO and JCC Bangkok were selected while IEAT, BOI and TISA were selected as the chart below shows with the dot-lined circles. The point to be discussed here is "how those selected organizations can be involved for THAICOBAN operation".



Source: Study Team

Figure 55: THAICOBAN Overview and Main Stakeholders

In order to establish THAICOBAN operation framework with support and participation of those six selected organizations, we analyze three main parts. One is sales point, two is the expected role to promote THAICOBAN, and three is ways to approach them.

Table 56: Approach for main stakeholders

Stakeholder	① Sales point	② Expected role to promote THAICOBAN	③ Ways to approach them
IEAT ／ Industrial Estate Authority of Thailand	・Promote Thai industrial estates ・Understand the needs of companies that operate in industrial estates ・Upgrade	・They can promote THAICOBAN to their industrial estates (they have collaborated us with pilot studies) ・They can prove THAICOBAN as a	(There must be separate actions for Eco Team and Promotion Team) ・Promotion Team: they can collaborate with data collection and providing their incentive scheme and its relation to THAICOBAN

Stakeholder	① Sales point	② Expected role to promote THAICOBAN	③ Ways to approach them
	IEAT-owned industrial estates ・Cooperate with their own eco standards	valid activity so that THAICOBAN can spread in Thailand. ・THAICOBAN can add values when collaborating with BOI's incentive schemes（*they promised orally that they provide information on industrial estates to THAICOBAN）	・Eco Team: using THAICOBAN doesn't cannibalize their eco standards. We have to show them that THAICOBAN and their standards do not conflict with each other.
BOI/ Bureau of Investment	・Promote foreign direct investment (and Japanese companies' investments) ・Understand the needs of SMEs.	・THAICOBAN can add values when collaborating with BOI's incentive schemes	・BOI can collaborate with THAICOBAN by associating its incentive scheme with us ・We can explain the willingness of Japanese SMEs who decide to use THAICOBAN.
TISA	・Promote Thai industrial parks ・Understand the overall picture of industrial park business scene	・They can promote THAICOBAN to non-IEAT industrial estates. ・They can prove THAICOBAN as a valid activity so that THAICOBAN can spread in Thailand.	・TISA has a membership fee of 5000Thb/month (part of this fee could be allocated for THAICOBAN) ・It is important to ask Ms. Anchalee for help because she is well respected in both private and public sectors. ・It is beneficial to collaborate with TISA since it has members from utilities and other areas that are related to THAICOBAN solutions
JICA	・Consider collaboration with research scheme that implements ODA and promotes SMEs international operation after the end of this study. ・Consider exporting THAICOBAN	・As a member of Revision of the "Framework for Supporting SMEs in Overseas Business", JICA can support Japanese SMEs to operate abroad. ・They can promote THAICOBAN from Thailand to other ASEAN countries	・They can support "steering committee" (e.g. sending experts, and forming a THAICOBAN support group) ・They can do pilot studies for implementing THAICOBAN solutions

Stakeholder	① Sales point	② Expected role to promote THAICOBAN	③ Ways to approach them
	system to other countries as part of support for ASEAN integration.	・They can join steering committee as a neutral party.	
JETRO	・Update information on industrial estate and parks ・Share knowledge on industrial park evaluation and selection process through advisors. ・Easily handle inquiries about industrial park/estates from Japanese companies.	・It is important to get official approval from JETRO for THAICOBAN as a tool to support companies who want to operate abroad in order to secure THAICOBAN's reliability. ・They can join steering committee as a neutral party.	・They said during interviews that "JETRO collects information on industrial estate and parks through surveys 3 times a year. However, since these surveys are voluntary and self-assessment, some companies do not answer certain questions… In order to collect every single information, you need to make surveys mandatory. This can be done through IEAT and MOI." ・JETRO can help collect information, but they cannot evaluate any industrial estate/parks since they provide support to potential tenants.
JCC Bangkok	・Promote member companies' solutions to Thai industrial parks ・Improve the environment of industrial parks' infrastructure	They can encourage members to join THAICOBAN as either tenant companies or solution providers	They can promote THAICOBAN to SMEs who submit inquiries to JCC.

6.2.4 "Review Team" after the end of this study

Now that we have defined who could be operators, we must also consider who takes the lead on building on operational scheme after the study. There are mainly three types of groups who could continue working on THAICOBAN.

Table 57: Options for "Main promoter" for THAICOBAN

	Main promoter	Remarks	Example (*)
①	Governmental organizations that promote and implement THAICOBAN	It would be better if these organizations are already providing services that are similar to THAICOBAN's functions and values so that they might gain extra budget for THAICOBAM.	・JICA ・JETRO ・SME Support Japan
②	Affiliated companies or organizations with governmental organizations mentioned above	It would be better if these companies already have know-how that is required in THAICOBAN (*they can keep neutrality if they receive projects)	・Japan Industrial Location center ・HIDA
③	Private companies who wish to join THAICOBAN Office	It would be better if these companies already have know-how that is required in THAICOBAN (*they should join the THAICOBAN Office after returns of investment for initial set-up are collected)	・Real estate brokers ・Consultants that support SMEs and their international operation ・Industrial park unit within *Shosha*

** THAICOBAN Study Team has done interviews with organizations mentioned above, but we have not confirmed whether they could join the operational team and have budget agreement. We are assuming situations and providing examples based on interview results.

Regarding the above statement, ① or ② should be the main players prior to THAICOBAN's operation (details can be found in schedule later on), and private companies supported by ② or ③ should take control after its operation starts. The THAICOBAN Study Team has thought of THAICOBAN as a web-based system due to its nature, but it is necessary to study the know-how of web application from existing websites such as "Japan-ASEAN Centre", "Organization for Small & Medium Enterprises and Regional Innovation, JAPAN": www.smrj.go.jp/sy-navi/ and "NIKKIEI: www.land.nikkei.co.jp, etc.

6.3 How to Operate THAICOBAN (How)

6.3.1 Management Resources for THAICOBAN Operation

The following table shows necessary management resources for each structure of

THAICOBAN Operation.

Table 58: Necessary Resources for THAICOBAN Operation

Structure	Human Resource	Material Resource	Financial Resource	Information
③ THAICOBAN Operational Office	・Manager ・Staff (2 or 3)	・THAICOBAN itself ・Venue of Office	・ Operational Fee for the Office ・ Remuneration ・ Venue	・ Industrial Park/Estates ・ Solution ・ Tenants
④ THAICOBAN Steering Committee	・Chair from Japanese side ・Governmental Body ・Operational Office ・Other Experts for several areas related to industrial park/estates	・THAICOBAN itself ・Venue of meetings	・ Operational Fee for the Committee ・ evaluation and monitoring expense	・ Industrial Park/Estates ・ Solution Tenants ・Operational Data

① Detailed information on resources required to operate THAICOBAN's Office

- Human Resources : In order to execute everyday activities, there should be at least one Office Manager and two personnel. A person who wishes to work in such roles should have knowledge on industrial estate and parks, infrastructure solutions for industrial estate and parks, problems that potential tenants have, and industry insights. Personnel should be able to speak Japanese, English and the country's language (in this case, Thai), and understand country specific information. Also, a person should have basic knowledge of IT given the fact that THAICOBAN provides information through its system.
- Resources : THAICOBAN's framework which includes evaluation items and its data set are required. Also, assuming that there will be an actual office rather than a virtual one, we must secure some funding for rent.
- Financing : Other than THAICOBAN system's initial fee, there should be funding for office operational fee, expenses, human resources and rent. The most expensive item would be to register, update and delete information. There is no operational scheme as of now, so it is possible to start its operation as part of SME's Support Program in existing government organizations.

- Information : THAICOBAN aims to collect and sort data on industrial estate and parks, solutions, and registered tenants.

② Detailed information on resources required to operate THAICOBAN Steering Committee

- Human Resources : The Steering Committee will meet once every quarter in order to update data and improve the system. In addition to Japanese and Thai government officials as members, there should be experts in the areas that THAICOBAN covers. The committee should check on and discuss operation status and monitoring situations with those who have knowledge on "environment," "safety," "industrial upgrading" as well as SMEs.
- Resources : THAICOBAN's framework which includes evaluation items and its data set are required in order to extent that THAICOBAN users can use THAICOBAN with its documents and/or its information system. **This is different from THAICOBAN Office because here, the purpose is to decide whether to verify the contents of data and to update and edit it. The place for the Steering Committee could be either in Thailand or in Japan
- Financing : Other than THAICOBAN system's initial fee, there should be funding for Steering Committee's operational fee and expenses for monitoring and evaluating data. It is possible to use experts from existing governmental organizations to start operating the committee.
- Information : THAICOBAN should aim to collect and sort data on industrial estates and parks, solutions, and registered tenants. In addition, we need operational status in order to evaluate monitoring system.

③ Expected Cost of THAICOBAN operation in the first year

The below table is a brief summary of expected cost of THAICOBAN operation

No.	Items	Cost (Mil JPY)	Remarks
① THAICOBAN Office		15.1	
i.	THAICOBAN Content Management	1.0	※ Document only. In the case of formation System
ii.	Remenuration	4.0 4.0	※Chair(Full time) 12M/M ※Staff(Full/Part time) 24M/M

iii.	Office rental	3.6	※ 300,000 JPY／month ※For the first year, the venue can be set in the existing organization.
iv.	Data Collection of Industrial park/estates	3.5	※ 70 site survey ※ 50,000 JPY／site
②THAICOBAN Steering Committee		12.0	
i.	Venue (Hotel or Office)	1.0	250,000 JPY/committee, quarterly basis in Thai
ii.	Travel expense	8.0	400,000 JPY/person、5person x 4times/year
iii.	Evaluation for activities	3.0	
③Estimated cost per year （①＋②）		27.1	

6.3.2 Marketing for THAICOBAN

THAICOBAN operators should consider marketing strategies in order to promote THAICOBAN. In order to do so, there should be a clear definition of a THAICOBAN user (#1), and that of users' needs and added values (#2).

① Definition of THAICOBAN's Users

THAICOBAN's users are "tenant companies," "industrial developers," and "solution providers."

Table 59: Definition of THAICOBAN's Users

Users	Definition of Users
Tenant companies or Candidate tenants	Companies who are looking for an industrial park/estate in Thailand and other ASEAN countries, Companies who are willing to change their present industrial parks/estates
Developers/Owners of industrial estates and parks:	Developers/Owners who own industrial estates and parks in Thailand and other ASEAN countries and who are willing to invite Tenant companies or Candidate tenants
Service and solution providers:	Companies who are willing to provide their service and solution to Developers/Owners of industrial estates and parks

② THAICOBAN's functions and their values

THAICOBAN's functions are designed to fulfill the needs of users and give benefits to each user. Table 61 explains some promotion points.

Table 60: THAICOBAN's Functions and values

Functions	Users' Needs	Advantages for Users (THAICOBAN's added values)	Promotion Points
#1. "Guideline for selection of industrial parks/estates"	Tenant companies or Candidate tenants ・to evaluate industrial estates/parks in order to know which estates/parks are appropriate for them	・THACOBAN offers not only information of industrial estates/park but also a tool to evaluate and compare them, which enables tenants to make decision easily.	・They can collect certain amount of data on industrial estate and parks (this can help maintain users) ・THAICOBAN should be easy to understand for everyone including SMEs. If THAICOBAN becomes a web-based service, the user interface must be very clear and easy to use. ・There must be advertisements and promotion activities so that more SMES will join THAICOBAN. We should ask for collaboration to related parties such as JETRO, SME consultants, the Small to Medium Enterprise Agency etc.
	Developers/Owners of industrial estates and parks ・to invite more tenant companies ・to know the status of industrial estates/parks	・THAICOBAN offers the tool as marketing and promotion for Tenant companies or Candidate tenants ・THAICOBAN offers the information of other estates/parks, which contributes to the improvement of the total quality of Thai industrial estates/parks	・It is critical to make THAICOBAN in a way that "if they do not join THAICOBAN, they do not make it to long or short list of industrial estate and parks." ・THAICOBAN focuses on best business matching between potential tenants and industrial estate/ parks. Therefore, in THAICOBAN, it's not important to receive 100% in score. ・THAICOBAN is built in a way that will not emphasize the possibility of flooding, location, access to ports, and other information that seem to work against the wills of developers/owners. ・Since BOI's incentive scheme is changing, THAICOBAN can evaluate industrial estate and parks and therefore provide advantages to developers and owners.
#2. "Guideline for introduction of services	Service and solution providers ・to introduce their own	・THAICOBAN offers the tool as marketing and promotion for Developers/Owners of industrial estates and parks	・There should be certain numbers of solutions/services/products at the initial stage of THAICOBAN. ・It would be better if these solutions could be part of F/S when they register.

and solutions for industrial parks/estates ”	service and technology		
	Developers/Owners of industrial estates and parks ・to improve its quality of infrastructure by saving cost	THAICOBAN offers incentive for Developers/Owners of industrial estates and parks who will conduct F/S to consider introduction of THAICOBAN Solution,	・We should ask for help in order to build the THAICOBAN solution system.

③ “Group of THAICOBAN users”

Through informational interviews with each stakeholder, some commented that “It takes a while to understand and use THAICOBAN for those companies who have no experience or are extremely small in size.” Also, the organizations that are proving information to SMEs gave the following comments: “We can use THAICOBAN to provide information to those who ask for help,” “We want to make THAICOBAN as an informational resource because there are too many documents from both Japanese and Thai organizations, and it is confusing to choose one.” That said, it can be useful to form a group of these organizations that are helping SMEs in order to promote THAICOBAN and increase the number of users.

In addition, these organizations that have been helping SMEs can use THAICOBAN and suggest Thai industrial estates and parks to use it as well to attract Japanese companies.

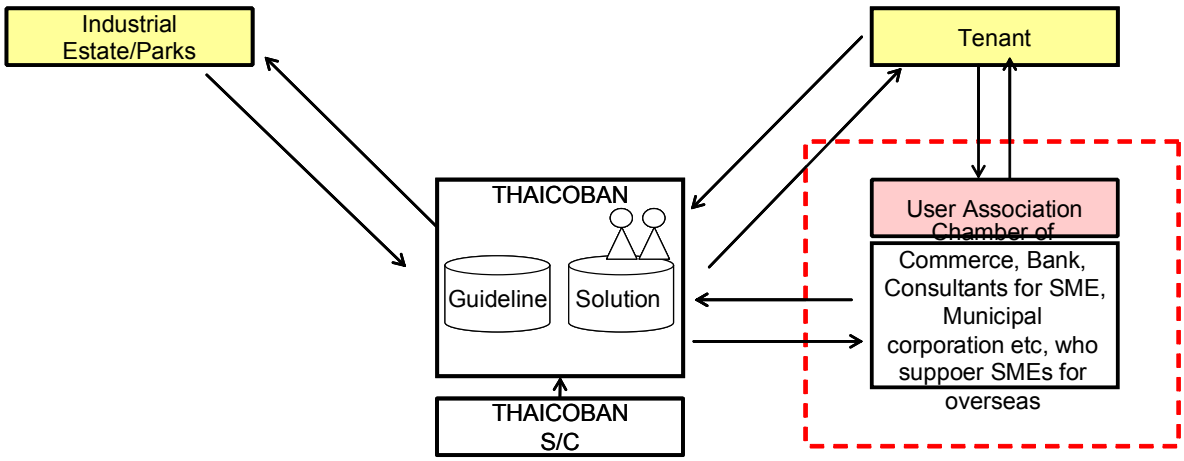


Figure 61: Group of THAICOBAN Users

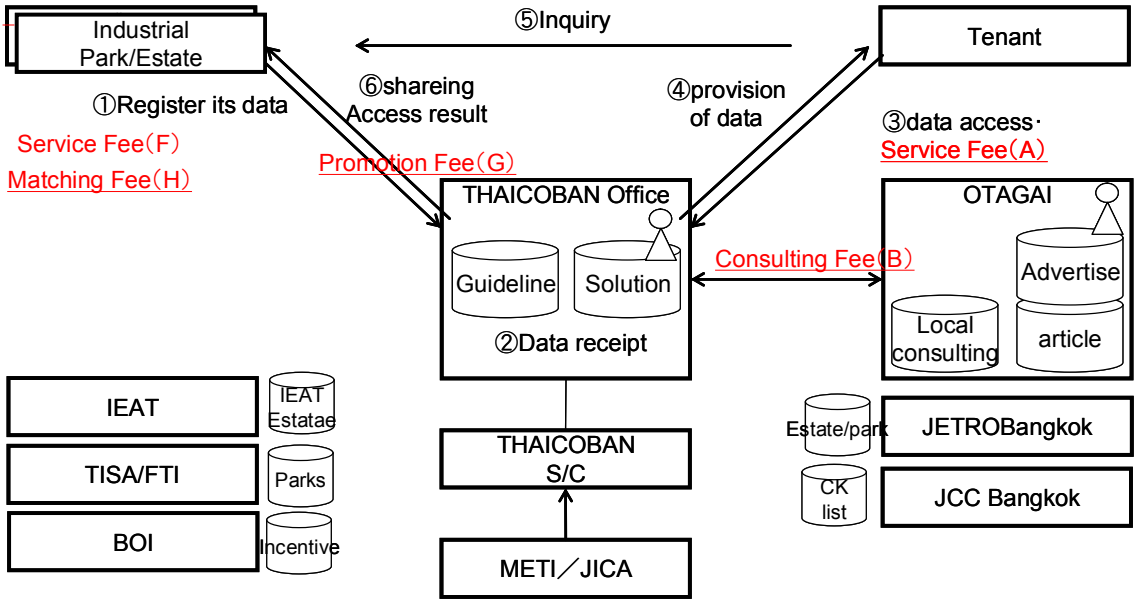
6.3.3 Expected revenue

One of the requirements for operating THAICOBAN Office and steering committee is money, and sources of potential revenues can come from category A to H (see Table 63 for details) of three parties: (1) companies looking for an industrial park, (2) industrial estate and parks, (3) and solution providers (please note that depending on the contents of services, fees, and economic situations, there may or may not be revenue. Therefore, the Table below contains every possible revenue stream). Table 64 and 65 explain the flow of revenues in detail.

Table 62 THAICOBAN Expected Revenue

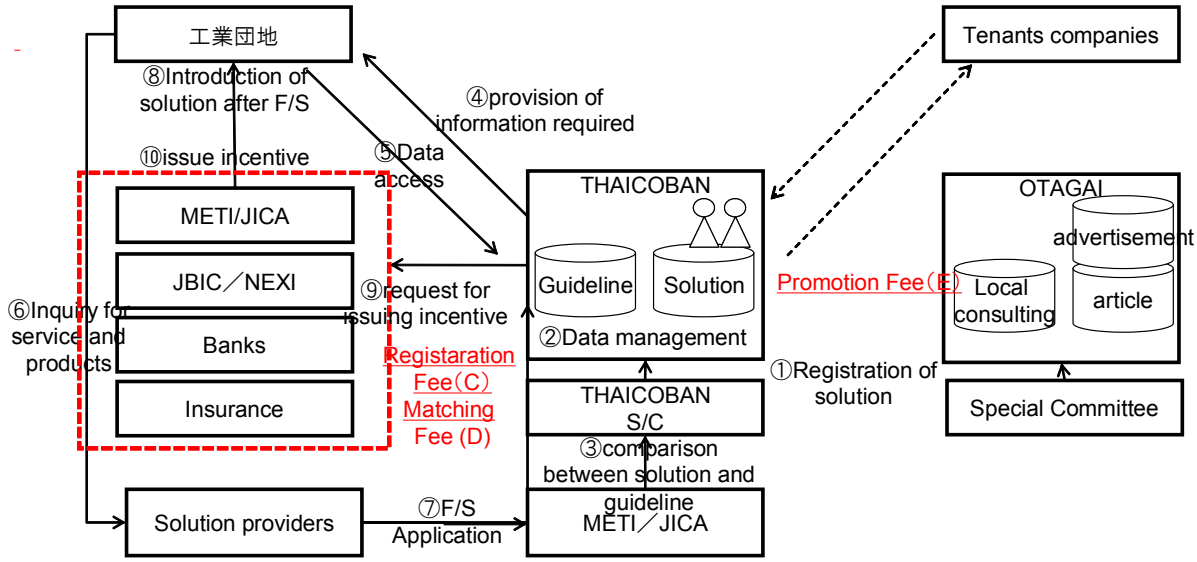
Revenue	Item	Explanation	Hypothesis
Companies that want to operate abroad	A Consulting fee	"Premium" information on industrial estate and parks through THAICOBAN guideline	If information is generic, it should be free, but if it contains valuable dataset, then THAICOBAN can charge some fees (such as availability of land)
	B Consulting fee	Consulting after obtaining results from THAICOBAN guideline	There should be consulting services for the parts that cannot be fully covered in THAICOBAN; we can introduce "samurai" from OTAGAI project, and rental factories.
Solution providers	C Registration fee	Registration and handling fees when solution providers register their products and services	THAICOBAN Office should have a function of introducing potential buyers (e.g. connecting governments and IEAT, or arranging field trip to industrial estate/parks, etc.)
	D business matching fee	Kickback fee when solutions are implemented in industrial estate/ parks	Fee should be some % of overall revenue from business matching done by THAICOBAN
	E Promotion and advertising fee	Advertisement and push-email to industrial estate and parks that use THAICOBAN guideline	Because THAICOBAN has a database of users, it could be possible that solution providers approach them through such services.
Industrial estate and parks	F User fee	Fees for advertising their own estate/ parks in THAICOBAN	It is important to make THAICOBAN "a must tool for choosing an industrial estate/park"
	G Promotion and advertising fee	Push email and advertisement to potential tenant companies that use THAICOBAN	Because THAICOBAN has database of users, it could be possible that developers approach them through such services.

Revenue	Item	Explanation	Hypothesis
	H Business matching fee	Kickback fee when tenant companies enter industrial estate/parks through THAICOBAN guideline.	Fee should be some % of overall revenue from business matching done by THAICOBAN



※ For details, Revenue A, B, F, G. H, please refer to the table shown on the previous page

Figure 63: Expected Revenue for "Guideline" function



※ For details, Revenue C, D, E, please refer to the table shown on the previous page

Source: Study team

Figure 64: Expected Revenue for "Solution" function

6.3.4 Building eco-system

THAICOBAN has three functions: namely "Guideline for selection of industrial parks/estates", "Guideline for introduction of services and solutions for industrial parks/estates," and "Incentive Scheme". To build an eco-system of THAICOBAN, all of these three functions are well-connected to promote each other.

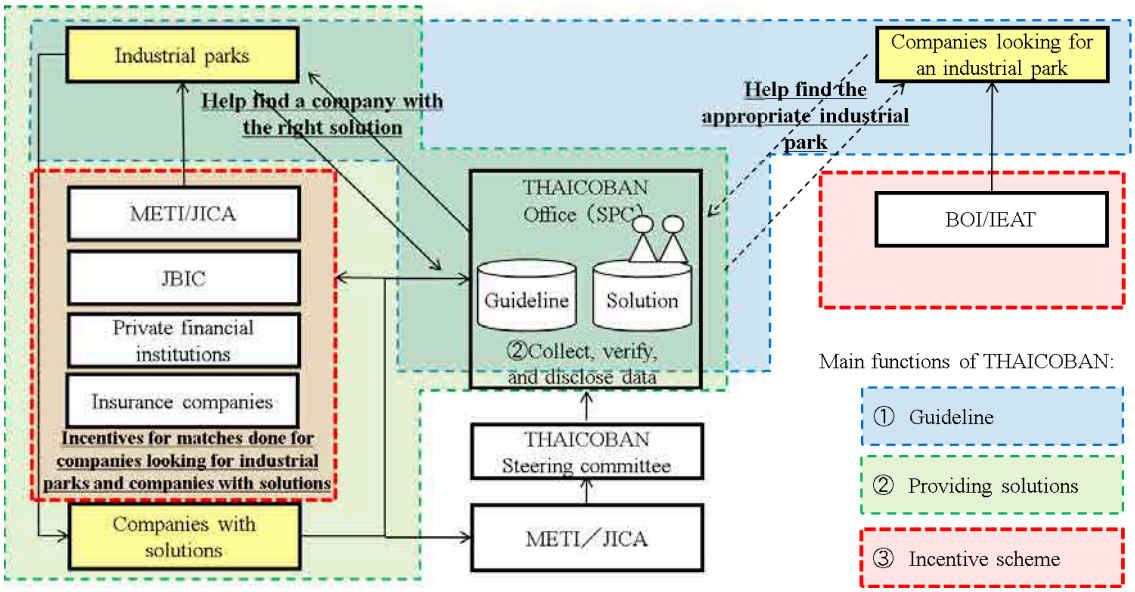


Figure 65: THAICOBAN's 3 functions and user relationships

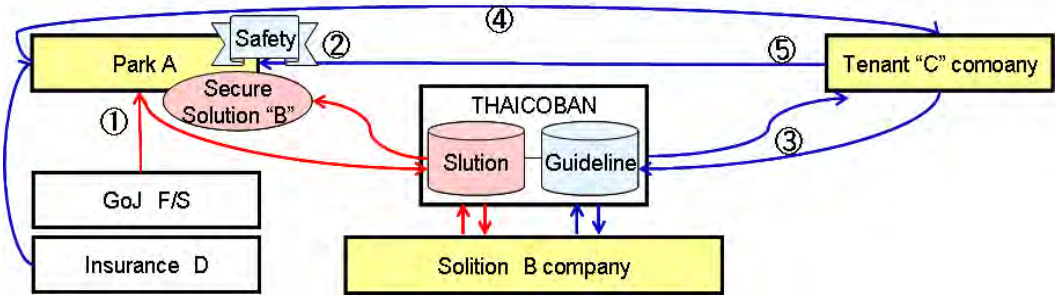
In order to build a sustainable eco-system, each function of THAICOBAN has to fulfill the needs of users and complement each other. It means that there must be a system which satisfies three parties' needs and provides benefits. Box 1 describes an example of a packaging scenario upon implementation of THAICOBAN in order to build an eco-system.

BOX 1 ：【Packaging Scenario】

「THAICOBAN」×「Disaster Prevention Solutions」×「Insurance」

（Packaging scenario）

Summary : Below is a packaging scenario for "industrial estates and parks," "solution providers," "potential tenants," who are THAICOBAN's users. This includes an incentive scheme which matches the needs of these three parties.



（Description）

① Industrial park A implemented "disaster prevention solution B" based on THAICOBAN evaluation items. It receives incentives for F/S from the government.

② Industrial B implements solutions and receives a high score on "safety" level based on THAICOBAN evaluation items.

③ Potential tenant C receives information on insurance system (regarding investment cycle for infrastructure and check-up on insurance when changing factories' infrastructures) from THAICOBAN which has similar functions as a broker.

④ Insurance company D provides insurance to potential tenant C who is considering to operate in industrial park B depending on B's level of safety and disaster prevention programs.

⑤ Potential tenants C has chosen Industrial park A for having advanced disaster prevention solutions.

（Revenues for THAICOBAN Office）

- Matching fee from insurance companies (with potential tenants)
- Matching fee from disaster prevention providers (with industrial estate and parks)
- Matching fee from industrial estate and parks (with potential tenants)

6.3.5 Incentive Scheme

THAICOBAN is designed to provide its evaluation criteria of industrial estates/parks as well as solution for each criterion. In order to promote the above-mentioned functions for #1 and #2, the THAICOBAN incentive scheme has an important role for both candidate tenants companies and industrial parks/estates to take the desired actions.

Below is a Table of possible incentive schemes which takes into consideration of the relationship with each stake holder.

① 「Function #1: increasing the number of companies that invest in Thailand through THAICOBAN guideline」

(Summary) THAICOBAN aims to increase its users, industrial estate/ parks and companies that start operating in Thailand using existing incentive schemes and marketing as well as promotions done by THAICOBAN Office.

Incentive Providers (who)	Incentive receivers (to whom)	Contents of incentives (what)	Remarks
BOI	Potential tenant companies; industrial estate/ parks	** existing incentive scheme	If their existing incentive scheme can be associated with THAICOBAN, there will be more access to both BOI incentive scheme and THAICOBAN. ** They expressed willingness to collaborate on such idea.
IEAT	Potential tenant companies	** existing incentive scheme	If BOI and IEAT incentive schemes are connected to THAICOBAN guideline, it will be useful for users. The direct link between these parties should be considers. (e.g. implementing eco-related technologies leads to gain acknowledgement from BOI)
THAICOBAN Office	Industrial estate/ parks	・situations of other industrial estate/ parks ・situations of potential tenant companies	It will be possible to create THAICOBAN in a way that “if industrial estates/ parks do not register in THAICOBAN, they will not make it to a list of estate/parks.”
THAICOBAN Office	Potential tenant companies	・Access to each streamline of THAICOBAN	It may be possible to provide access to contents by OTAGAI framework although such service although further discussion with OTAGAI is required.

② 「Increasing the number of Industrial Estates and Parks that implement THAICOBAN Solutions」

(Summary) The Japanese side must consider incentive schemes for private companies, industrial estates and parks to implement Japanese solutions, and the Thai governments giving authorizations to such solutions.

Incentive Providers (who)	Incentive receivers (to whom)	Contents of incentives (what)	Remarks
METI, NEDO, JICA	Industrial estates and parks (who consider implementing solutions)	F/S and demonstration projects cost for implementing THAICOBAN solution	It is difficult to acknowledge solutions officially, but we should explain the purpose and contents of THAICOBAN to NEDO, JICA, METI and other related parties.
METI	Industrial estates and parks (who consider implementing solutions)	Subsidies for implementing THAICOBAN solutions	It may be difficult to acquire subsidies, but it would be possible to implement many solutions in a short period of time. (e.g.. use subsidies to promote SMEs and environmental programs like those for green-cars)
JICA, JBIC, private financial institutions	Industrial estates and parks (who consider implementing solutions)	Developing financial products for THAICOBAN solutions and	In order to use their existing products, we should explain the purpose and contents of THAICOBAN to related parties. (e.g. financial products for improving infrastructure to promote SMEs to operate abroad, to come up with disaster management, to deal with environmental policies, to have access to human resources development, and to create BCP)
Japan and Thai insurance companies	Industrial estates and parks (who consider implementing solutions)	Premiums	It is already verified with Inter Risk Research Institute and SMBC's BCP model. Developing new products that accord with THAICOBAN solutions and insurance premiums.
BOI	Industrial estates and parks	**Existing incentive schemes	Check with BOI whether THAICOBAN can include information on incentive scheme. "THAICOBAN solutions" should be associated with BOI and IEAT incentive schemes. (e.g., implementing environmental technology, "XYZ" → BOI can evaluate it from environmental perspectives

Incentive Providers (who)	Incentive receivers (to whom)	Contents of incentives (what)	Remarks
IEAT	Industrial estates and parks	** promoting eco industrial parks' standards	Check whether it is possible to directly link THAICOBAN Solutions with IEAT's eco industrial standards' rating system. There must be clear explanation as to how this can benefit Thai side and how THAICOBAN wants to collaborate with them rather than competing against them.
Pollution Control Department, Department of Industrial Works	Industrial estate and parks	Promoting PRTR	This is beneficial for the Thai side as well.

6.3.6 Support from the government (tentative)

Table 67 describes the roles of government and its organizations in building an operation system of THAICOBAN described earlier. With a focus on "helping SMEs to make decisions regarding operating abroad" and "promotion of exporting Japanese infrastructure systems to foreign industrial parks" both of which are main functions of THAICOBAN, Table 67 describes possible support from these stakeholders.

Table 66: Support from the Japanese Government and its organizations (suggestions)

Organization's name	Recent activities and positioning regarding Japan's strategic plan (in other words, the meaning of joining THAICOBAN)	Tools/systems that are related to THAICOBAN within this organization	Ways to cooperate with THAICOBAN and promote THAICOBAN
Japanese Government, Ministry of Economy, Trade, and Industry	・Japanese Government's "Japan is Back" program aims to (1) revive Japanese industries, (2) create strategic market, and (3) plan strategic international business development. Regarding (2), they hope to export infrastructure that is worth more than 3 trillion yen (currently, 10 trillion yen). ・Budget bill for the fiscal year 2014 (summary at this point), includes support for "Japan is Back" program,	(Expanding import of infrastructure) ・They support companies to operate abroad through creating master plans, F/S, demonstration, and human resources education.	・They can confirm the validity of infrastructural solutions upon its registration to THAICOBAN.
		(Supporting SMEs and small enterprises to operate strategic businesses abroad) ・They aim to help more than 10,000 companies to operate	・They can provide financial support for initial cost as a tool to support SMEs.

Organization's name	Recent activities and positioning regarding Japan's strategic plan (in other words, the meaning of joining THAICOBAN)	Tools/systems that are related to THAICOBAN within this organization	Ways to cooperate with THAICOBAN and promote THAICOBAN
	and 135.1billion yen to "revolutionize SMEs and small enterprises."	abroad within the next 5 years.	
		（Official training program） ・They aim to strength trainings of know-how on revising business strategies, reviving businesses, and international operations.	・They can provide training programs to promote THAICOBAN to those who support companies that want to operate abroad.
JICA	・They are considering and developing strategies for Japanese yen loan and foreign investment. ・They also match businesses between developing countries and Japanese SME's international operation, and export developing programs to solve problems and to promote technologies and products. They also promote economic partnership to strength the relationship between Japan and its partners by providing know-how to Japanese companies regarding international operation strategies. ※The original contractor for THAICOBAN and OTAGAI project	（ODA） ・Japanese Yen Loan ・Grant ・Technical Assistance ・Private Sector Investment Finance ・Other various feasibility study and research scheme (PPP infrastructure, BOP business, SMEs support for overseas)	・They can confirm the validity of infrastructural solutions upon registration to THAICOBAN and support implementation. ・They can send experts to handle THAICOBAN system ・They can invest to make THAICOBAN Operational Office incorporated.
Japan External Trade Organization (JETRO)	・To support medium to small companies to operate abroad. There is one stop service by JETRO and other organizations, a program to send a senior expert with know-how to operate abroad, a "foreign one-stop service" that handles questions about	・They support companies that operate internationally (local briefing, advice from local advisers, and providing information etc.)	・They can promote THAICOBAN guideline to SMEs ・They can provide information by cooperating with THAICOBAN to support SMEs to operate abroad.

Organization's name	Recent activities and positioning regarding Japan's strategic plan (in other words, the meaning of joining THAICOBAN)	Tools/systems that are related to THAICOBAN within this organization	Ways to cooperate with THAICOBAN and promote THAICOBAN
	local laws, labor laws, and intellectual property.		
Japan Bank for International Cooperation (JBIC)	・Enhance policy support tools, including the use of the JBIC's Loan Facility Enhancing Global Business Development, the strengthening of local currency-denominated financing support through JBIC.	・Import Loan ・ ・Loans for SME with low interest rate, SME support	・They can promote THAICOBAN guideline to SMEs ・They can support financial aspectsof THAICOBAN solutions
Nippon Export and Investment Insurance (NEXI)	・They conduct insurance business of covering risks which arise in foreign transactions and which are not covered by commercial insurance	・Expansion for Trade insurance, the government will advance the consideration of reform of trade insurance systems to enhance function of trade insurance in areas not covered by private insurance at an early date and conclude results	・They can confirm the validity of infrastructural solutions upon registration to THAICOBAN and support implementation.
New Energy and Industrial Technology Development Organization (NEDO)	・They promote to develop Japanese energy/environmental related technologies to strength Japan's competitiveness within energy/ environmental industries in international markets.	・They deal with R&D on environmental/health care industries and demonstration projects.	・They can create projects for F/S and demonstration upon registration of solutions to THAICOBAN.
HIDA	・They are educational training provider that focuses on development of human resources in developing countries and support technology cooperation by sending experts.	・Trainings ・Sending Experts	・They can provide human resources training programs based on THAICOBAN guideline ・They can promote THAICOBAN guideline to SMEs

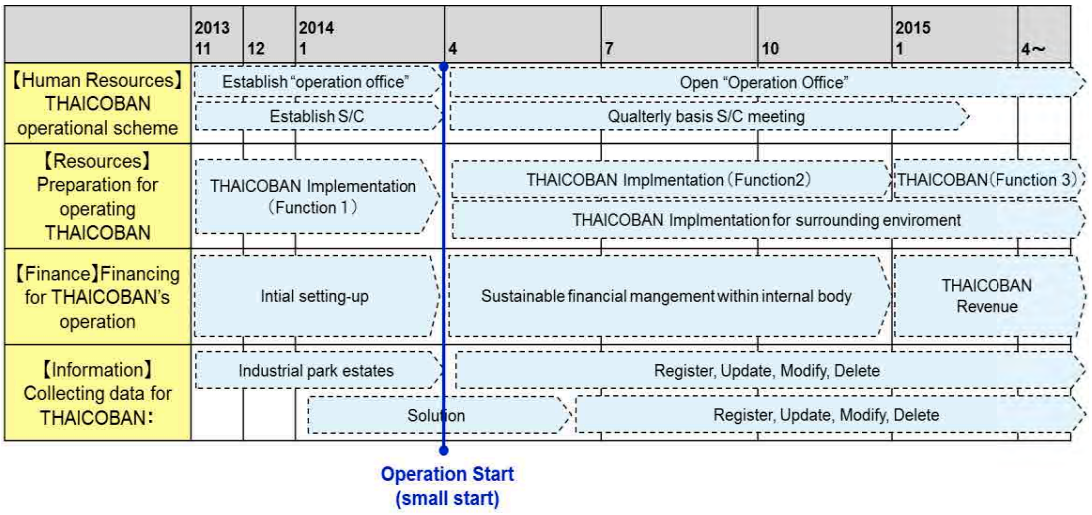
6.4 Schedule for building operational scheme (When)

This section shows the timeline as to how to realize the operation and operational scheme

mentioned above after the end of this study. Figure 68 includes a schedule as well as possible actions to be taken in order to operate THAICOBAN.

6.4.1 The entire timeline for building operational scheme

Below is a complete schedule of possible resources required for THAICOBAN operation as mentioned above. This schedule assumes that the end of this study is November 2013, and the earliest staring date is April 2014. In order to build operational scheme and implement THAICOBAN system, it is required that we focus on these deadlines first. After a test run, business model and revenues must be reviewed again while increasing cases of solution implementations and registered users in order to operate outside of Thailand.



Source: Study Team

Figure 67: Schedule for building operational scheme (suggestions)

It is important to indicate who should lead this project after the study. This point was already mentioned in the section, "main operational body for building THAICOBAN operational scheme."

6.4.2 Detailed action plans for building operational scheme

① 【Human Resources】 THAICOBAN operational scheme：

"THAICOBAN Office" and "steering committee" have to be built after each stakeholder understands the operational scheme and its contents. People who lead the formation of these entities should be members of the steering committee, and there should be a company's article association and rules to guide them. In the future, the THAICOBAN office should be incorporated, so discussions among the members of the steering committee are highly recommended.

② 【Resources】Preparation for operating THAICOBAN:

Implementation of THAICOBAN should be based on the THAICOBAN guideline, its concept, and information that was gathered throughout the study. Due to THAICOBAN's functions and its vast amount of information, it is suggested to build a computer-based THAICOBAN system in order to operate THAICOBAN efficiently.

③ 【Finance】Financing for THAICOBAN's operation：

It is already described above, but for the first year, there seems to be no revenue, and therefore, it is important to receive funding from somebody. Also, in order to keep THAICOBAN running and maintaining its quality, incentive schemes or financial support are expected.

④ 【Information】Collecting data for THAICOBAN：

Without data from industrial estates and parks, THAICOBAN is a meaningless system. That said, it is crucial to register, edit and delete information constantly. At its initial stage, it is possible to use information from JETRO, JBIC and other governmental and private organizations and organize it in a useful manner.

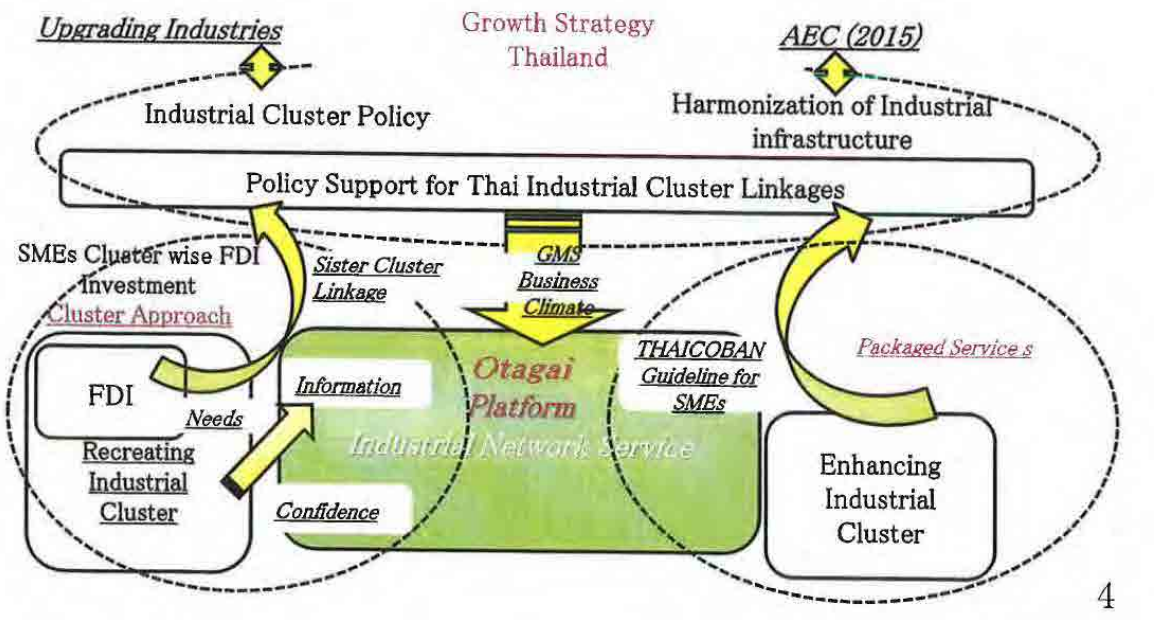
6.5 Reference materials for consideration of THAICOBAN Operation (Why)

All of the contents of THAICOBAN operation in this Chapter are discussed mainly based on the result of several interviews, email communications, and phone calls. In addition to those primary sources, the secondary sources such as public information on internet are duly considered.

6.6 Relation with the OTAGAI Project

6.6.1 THAICOBAN under OTAGAI Project

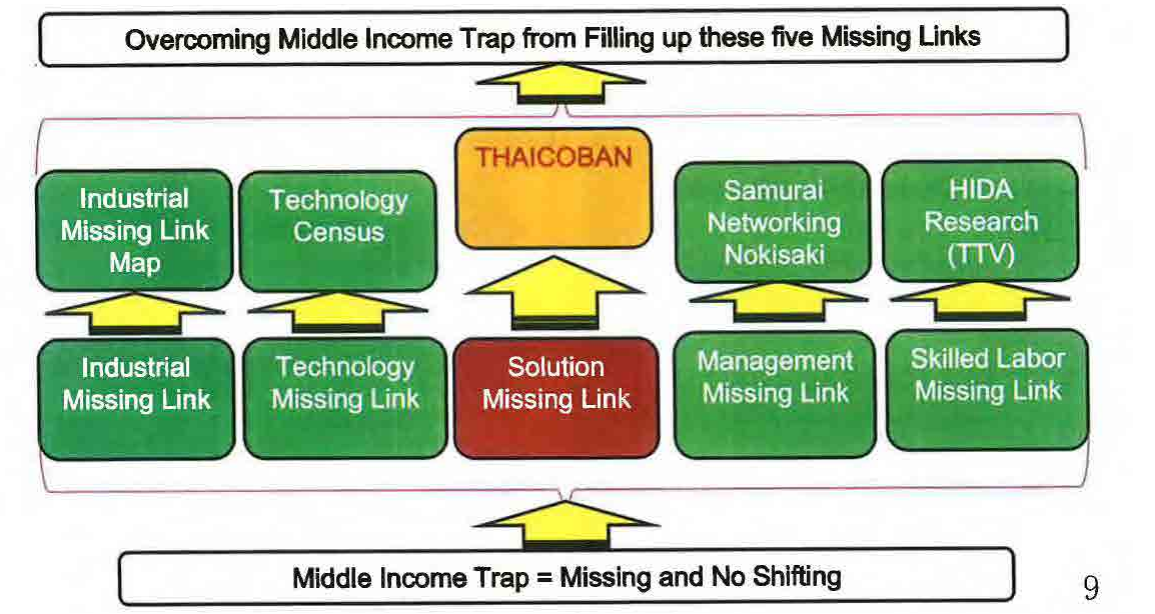
As for THAICOBAN operation, it should be considered with the OTAGAI project, "Study on Establishing a System for Enforcing Industrial Cluster Linkage between Thailand and Japan", which is also conducted by JICA. Since the concept of THAICOBAN is one of the tools which promote OTAGAI project. The below chart shows the relation between THAICOBAN and OTAGAI Project and it defines THAICOBAN as a Guideline for SMEs to enhance industrial cluster.



Source: Concept Presentation: THAICOBAN under OTAGAI Project, by Mr. Matsushima

Figure 68: Overview of OTAGAI Project

In addition, in the workshop in Oct 2013, it was explained that THAICOBAN should have a role to connect a missing link among infrastructure of industrial parks and estates in Thailand by providing a solution recommendation. The chart below shows the concept.



Source: Concept Presentation: THAICOBAN under OTAGAI Project, by Mr. Matsushima

Figure 69: THAICOBAN as a tool for solution mission link

6.6.2 For further cooperation with OTAGAI project

To realize the THAICOBAN system under OTAGAI project, the follwing four points are considered. Since THAICOBAN is created for Japanese SMEs, the large and various network created by OTAGAI project is thoroughly useful. On the other hand the network with Thai governmental organizations created by THAICOBAN study is also useful. Thus, OTAGAI and THAICOBAN have a mutually complementary relationship at this moment.

① Place:

- Logistics channel: networks that were built through informative interviews in both THAICOBAN and OTAGAI studies should be used.
- Maintenance : if THAICOBAN is paper-based or computer-based, there must be a organization or team to manage data.

② Promotion:

- Promotion : introducing THAICOBAN as a strategic tool to help SMEs operate abroad to key persons[4] in OTAGAI project in order to gain recognition.
- Advertisement : introducing THAICOBAN's concept and its related subjects through OTAGAI website and other media.

There should be a group for THAICOBAN users to promote THAICOBAN as mentioned in section 6.3.2 (THAICOBAN's marketing), but this should be done with OTAGAI as to maximize its effectiveness and efficiency.

③ Product:

- Service: added values that are created from cooperating with OTAGAI (e.g. providing information from THAICOBAN office to users) should come from resources and networks of OTAGAI (such as lawyers and municipalities)
- Contents : THAICOBAN's assessment items should match with solutions and technologies suggested by OTAGAI's technology census.

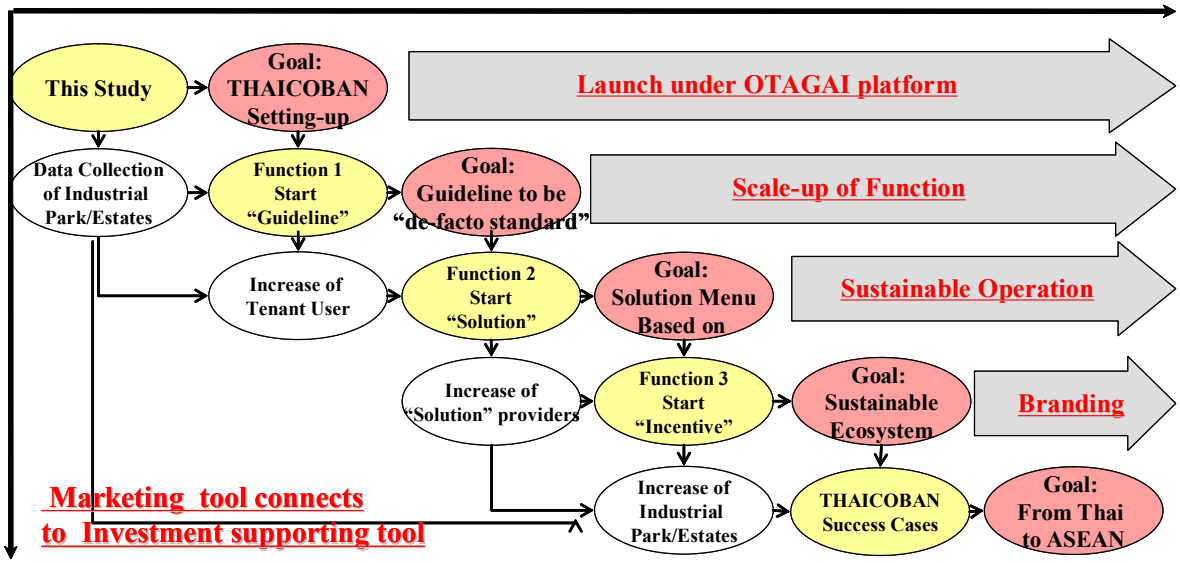
④ Price:

- Pricing : based on expected revenues mentioned above, THAICOBAN's service fees should be set assuming that its operational scheme is already arranged.

[4] OTAGAI project's meetings with municipalities

6.7 Roadmap of THAICOBAN

The chart below is a roadmap of THAICOBAN, which will expand its functions as well as users in a phased manner. At the final phase, THAICOBAN is expected to diseminate to the other Mekong and ASEAN countries with success cases in Thailand.



Source: Study team

Figure 70: Roadmap of THAICOBAN

Phase 1 Launch under OTAGAI Platform

Goal: THAICOBAN operation system set-up based on the results of this study

Necessary data: Information of industrial parks/estates

Phase 2 Scale-up of Function

Goal: THAICOBAN is getting popular and is used as a de facto standard Guideline by candidate tenants.

Necessary data: Information of industrial parks/estates

Phase 3 Establishment of Sustainable Operation

Goal: THAICOBAN is used as solution guideline for the owners of industrial parks/estates to consider.

Necessary data: Solution

Phase 4 Branding

Goal: Establishment of sustainable ecosystem with incentive schemes of THAICOBAN

Necessary data: Success cases by utilizing THAICOBAN

Last Phase Introducing outside of Thailand

Chapter 7.

THAICOBAN Seminar in Bangkok

Chapter 7. THAICOBAN Seminar in Bangkok

7.1 Objectives of the seminar

The study Team conducted the seminar to explain advantages of applying THAICOBAN to the government of Thailand and private sectors in order for early implementation of this project. The seminar was joined by the "OTAGAI" project to explain the position in the overall concept including THABICOBAN.

7.2 Summary of the seminar

The seminar was conducted as below;

Date: 11th October (Fri), 2013 1:00PM-4:15PM

Place: Westin Hotel Sukhumvit

Host: Japan International Cooperation Agency (JICA)

National Economic and Social Development Board of Thailand (NESDB)

Program: Table 72

Attendees: Annexure II

Presentation materials: Annexure III

Table 71: Seminar Program

Time Schedule	Items
12:30-13:00	Registration
13:00-13:10	Opening remarks: Mr. Passakorn Chairat, Director, Business Opportunity Center, Ministry of Industry
13:10-13:50	Keynote speech: "Concept Presentation: THAICOBAN under Otagai Project" from Mr. Matsushima, JICA expert, NESDB
13:50-14:10	Presentation: "Introduction of OTAGAI framework" from Nikkei BP
14:10-14:30	Coffee Break
14:30-15:20	Presentation: "Introduction to THAICOBAN: A Strategic Tool to Improve the Competitiveness of Industrial Estate and Parks" from Japan Research Institute
15:20-15:40	Comments on THAICOBAN by 1) Mrs. Achalee Chavanich, President of TISA 2) IEAT
15:40-16:00	Q&A
16:00-16:15	Closing remarks by Mr. Kawabata, Senior Representative, JICA

7.3 Result

7.3.1 Summary of each presentation

1) Presenter: Daisuke Matsushima, Policy adviser of NESDB and JICA specialist
Title: "Concept Presentation: THAICOBAN under Otagai Project"
Summary: "OTAGAI" started as a project to strengthen the back-up system and collaboration knowledge in order to be prepared for the natural disasters with related clusters which have the same level as industrial clusters of Japanese-Thailand. If the Japanese industrial clusters can join in Thailand, they will be able to fulfill the weakness of clusters of Thailand; therefore, will assist in the growth of Thailand's industry.

2) Presenter: Mr. Mori, NIKKEI INC.
Title: "Introduction of OTAGAI framework (The Study on Establishing a System for Enforcing Industrial Cluster Linkage Between Thailand and Japan)"
Summary: "OTAGAI" project supports the small-medium size business enterprises that have difficulties in continuing operation by itself to collaborate within the clusters and strengthen the supply chain for natural disasters. Moreover, strengthening the supply chain will help the growth of business aspects of both countries.

3) Presenter : Researchers of THAICOBAN
Title: "Introduction to THAICOBAN: A Strategic Tool to Improve the Competitiveness of Industrial Estate/ Parks"
Summary: The purpose of THAICOBAN project is to increase the investments in Thailand from domestic entities. This project benefits both countries. The criteria which has been decided for the industrial estates is not to set the rankings among the estates, but to present status quo of each estate. The criteria are divided into three categories: environment, safety, industrial development. The criteria set by THAICOBAN can give domestic enterprises an idea which industrial estate they would like to go into depending on their needs, and this has not been done so far by others.

7.3.2 Summary

20 Japanese and Thailand government officials attended the seminar. Attendees from Thailand officials were following; Department of Industrial Promotion, TISA（Thai

Industrial Estate and Strategic Partner Association）, Industrial Estate Authority of Thailand, National Economic and Social Development Board, Department of Labour Protection and Welfare. Attendees from Japanese government officials were from Japanese International Cooperation Agency (JICA), the host, and from Japan External Trade Organization (JETRO).

Each presentation successfully explained THAICOBAN project and was able to gain thorough understanding from BOI, IEAT and the officials who learned about this project for the first time. There were several important questions that were raised by the attendees, and this seminar successfully raised the expectations of THAICOBAN project.

Comments from Government officials of Thailand are shown below.

Organization	Comments
TISA	（to Mr. Matsushima） • It is said that THAICOBAN benefits Japanese small-medium enterprises and Thailand's industrial estates; however, advantages for the small-medium enterprises need to be discussed. （to "OTAGAI" project） • Concept of Rise Valley is excellent. There will be an advantage for Thailand's industry to cooperate with Japanese SMEs and to promote clusters. • Leasing of lands is an interesting idea. It needs to be thought together with urban planning; however, there are many available lands. The current situation where land price is rising and supply and demand is tight, there is a great chance in enhancing competitiveness of industrial estate. • Infrastructure Fund is a good concept. It is good that Abenomics is promoting SMEs to go overseas. （to THAICOBAN project） • It is important HOW to make THAICOBAN happen. Funding is an issue in this project and it is thought that help of Japanese government is essential. • It is necessary to think how Thailand's SMEs can be involved in TAICOBAN project in Thailand. Local companies which support larger enterprises are particularly sensitive issue.

	• "Competitive" is a key word in this project. Addition to the industrial estates which are used as marketing tool, improving and expending will lead to competitiveness of industrial estate. • It is important to support and give service in the industrial estate, and not only to provide the land.
IEAT	（to THAICOBAN project） • It is important to discuss how to gain understanding of THAICOBAN as a research engine to ASEAN countries. Creating a system which operates constant monitoring and giving feedback will also benefit IEAT.

TISA and IEAT have been discussing THAICOBAN from the first of the year, an accurate understanding has been achieved. Ongoing discussion of introduction of this research is expected.

Opening greeting by Mr. Passakorn (MOI)

Presentation by Mr. Matsushima (NESDB)

Presentation by head of researchers Mr. Suzuki

Comments by Ms. Ancaree Director of TISA

Comments by Ms. Suwatana (IEAT)

Closing by Vice chief of Thailand office Mr. Kawabata (JICA)

Figure 72: Pictures from the seminar

Chapter 8.

Conclusion and Recommendations

Chapter 8. Conclusion and Recommendations

8.1 Conclusion

This study was carried out the end of November 2012 to beginning of November 2013, with the cooperation of the Thai government, related organizations, and private companies, to make THAICOBAN, a sustainable standard for industrial estates/parks. Through this study, three bodies, TISA, BOI and IEAT, were identified as cooperative and appropriate to carry out the work. The study team met with organizations such as NESDB, MOI (DIP, DIW), TISI, and FTI. Even among these three organizations, it was difficult to understand the objective of THAICOBAN. Despite the not necessarily positive reaction in the first phase, such as “what is different from mountains of similar projects by Japan” or “Do not disturb our same kind of standard”, now the Thai organizations have shown the positive cooperation after one year of communication.

On the other hand, the study team had meetings with Japanese organizations such as JETRO, JCCB, HIDA, however, we could not identify a positive body to execute THAICOBAN. One of the reasons is that this is the study by JICA, and the study team identified potential organizations and possible scheme through this study.

The study team made THAICOBAN with the kind cooperation of private companies, such as Hemaraj, Amata corporation, Rojana industrial park, 304 industrial park, other developers, Japanese companies located in industrial estates/parks, real estate companies, financial companies, construction companies, etc. These companies cooperated not only with a single interview survey, but also by providing actual data for industrial estates/parks through the year-long study. With such cooperation, THAICOBAN was formulated as “a promotion tool for industrial estates/parks”, “a useful guideline for tenant companies”, just as the study team intended. Especially, developers expect THAICOBAN to upgrade whole industry, as pointed out “road for industrial estates/parks should be minimized as to small estates/parks can join it”.

As a conclusion, “THAICOBAN seminar” was held in Bangkok on 11th October 2013, inviting government and related organizations of Thailand and Japan. At this seminar, THAICOBAN was revealed and the process of how to introduce and expand it to GMS was discussed. It was the seminar where all related organizations were gathered and recognized the meaning and importance of THAICOBAN, and promised to cooperate to introduce it to Thai and GMS countries.

THAICOBAN is as in annexure I.

The characteristics of THAICOBAN are not to rating industrial estates/parks, but to reveal the current condition of industrial estates/parks by around 100 items. It works to select the best site for tenant companies, and to make promotion of their site to targeted companies.

The study team suggests that JICA should make a next activity seamlessly, not to let the enthusiasm of related organizations cool down. THAICOBAN is welcomed and expected by the Thai side.

8.2 Recommendations

For executing THAICOBAN, we suggest four actions below for the Japan side especially JICA, the project owner of THAICOBAN.

8.2.1 Executing agency of Japanese side

For the Thai side, as described in this report, Ms. Ancharee, the chairperson of TISA will lead the IEAT and BOI to carry out THAICOBAN, despite many related actions of industrial estate. On the other hand, for the Japanese side, it is not clear who will lead THAICOBAN, however, some agencies were identified. It will be necessary to decide on the leading agency and decide the roles of executing organizations from both the Thai and Japanese side.

In addition, we would like to point out that the implementing agency is also important. For implementing agency there three cases are possible: 1) public organization who will execute THAICOBAN, 2) an appointed agency from a public organization, or 3) a private company who thinks of THAICOBAN as a business opportunity.

8.2.2 Sustainable scheme

As mentioned, THAICOBAN is thought to be a de facto standard as a sustainability standard for industrial estates/parks. In other words, THAICOBAN should be independent from any governments, industries and private companies, be supported by broad stakeholders.

On the other hand, THAICOBAN is not profitable as it should be neutral. A Thai organization has pointed out capital investment should be done by public fund, as THAICOBAN needs large capital investment. The implementation agency needs to find the scheme to realize THAICOBAN with the cooperation of public and private organizations, and to be as the business expands.

8.2.3 Technical background

In this study, experts in three areas environment, safety and reliability, and industrial upgrading joined together and based on their knowledge and expertise, THAICOBAN was made. This expertise and knowledge is required not only in making THAICOBAN, but also in operating it, with the review of items, levels and solutions.

In operation, the study team suggests that the steering committee should have such a technical function, however, no discussion has been done about this technical issue. It is expected that the implementation body will decide this issue through discussion with Thai and Japanese related organizations.

8.2.4 Linkage with Otagai project

As explained, THAICOBAN is a tool for supporting Japanese SMEs to go abroad, under the Otagai project, however, no concrete linkage or synergy effect were determined. THAICOBAN has been decided as a guideline function, and its operational scheme shall be determined with Otagai project.

In addition, expanding to the Greater Mekong Sub Region was also not a sufficiently discussed issue in this study. It shall be discussed under the Otagai project, which is already communicating with related countries.

Annexture

Annexure I: THAICOBAN - Environment and Eco

Approaches for analysis			Evaluation Items	Evaluation Criteria	Explanations of evaluation criteria	Level 1	Level 2	Level 3	Level 4	Level 5	Relarted law
Primary Activities	Inbound and outbound logistics	Green logistics	Ecological transportation	Status of streamlining transportation	- Status of support system or incentives for streamlining transportation	The IE(industrial estate) has not been discussing this topic.	The IE has been studying this topic.	The IE provides some supporting systems such as common distribustion system, etc.	Tenant companies can use the supporting systems at a discounted price.	The IE provides incentives for tenant companies according to the status of their activities related to streamlining transportation.	
	Manufacturing operation	Low-carbon	Usage of energy	Implementation status of energy saving or utilization of renewable energy	- Activities related to energy saving and utilization of renewable energy conducted by the industrial estate - Activities related to energy saving and utilization of renewable energy conducted by tenant companies in the industrial estate	There is no discussion about activities for energy saving or utilization of renewable energy from the industrial estate side.	The industrial estate has a plan to do energy saving activities or to utilize renewable energy.	The industrial estate has been promoting energy saving or utilization of renewable energy.	The industiral estate prepares services for energy saving or utilization of renewable energy such as introduction of energy-related servicers.	The insudtiral estate set some targets of energy saving or utilization of renewable energy, and provides incentives for tenant companies according to their contribution to achieving the targets.	Energy Conservation Promote Act: - Fatocry, building, household sectors aim to reduce energy consumption by 4% in 10 years. - Transportation sector aims to reduce energy consumption by 22% in 10 years.
		Management of pollution resources	Discharge standard	Status of setting of discharge standards (Wastewater)	- Whether there is a gradual tariff system other than IEAT standards or not. - Whether the penalty for violation is strict or not.	Discharge standards are equal to those of IEAT, and companies who violate them are immediately ptohibited from discharging wastewater.	Discharge standards are equal to those of IEAT, and companies who violate them are directed to improve wastewater.	The maximum value of standard is equal to that of IEAT, and a gradual tariff system is available.	There is a tariff system that tenant companies can discharge wastewater with higher concentration than IEAT standards by paying an excess charge.	Since wastewater treatment plants owned by the industrial estate have resistence to load fluctuation, tenant companies can discharge wastewater without any restriction.	"Industrial Estate Authority of Thailand Act, B.E. 2522" Environmental aspect - water pollution- 10. 2
				Status of setting of discharge standards (Exhaust gas)	- Whether tenant companies need to manage exhaust gas more strictly than usual or not. - Whether the industrial estate provides tenant companies with support for management of exhaust gas or introduction of related techonologies.	Due to some complaints from surrouding residents in the past, tenant companies need to manage exhaust gas more strictly than usual.	Tenant companies implement discharge management on a voluntary basis based on standards of EIA given to the industrial estate or the companies.	The industrial estate provides tenant companies with support for management of exhaust gas.	The industrial estate provides tenant companies with support for treatment of exhaust gas such as the introduction of related technologies.	In addition to normal monitoring, the industrial estate manages emission status comprehensively by introducting cutting edge technologies that tenant is not obligated to do.	"Industrial Estate Authority of Thailand Act, B.E. 2522" Environmental aspect - air pollution - 1.1 & 1.2
			Monitoring	Implementation status of monitoring	- Level of pollution source monitoring conducted by the industrial estate - Voluntary countermeasure - Status of complaint from surrounding residents	There are frequent complaints from surrounding residents because some companies who violate standards do not improve their activities.	Although the industrial estate implements monitoring according to the government standard, countermeasures depend on tenant companies.	The industrial estate implements monitoring according to the government standard, and instructs tenant companies every time a tenant company causes trouble.	In addition to normal monitoring, the industrial estate provides voluntary monitoring or software support.	In addition to normal monitoring, the industrial estate manages emission status comprehensively by introducing cutting edge technologies so that tenant is not obligated to do.	"Industrial Estate Authority of Thailand Act, B.E. 2522" Management aspect- information disclosure and reporting - 22.1
		Waste recyling	Management of discharged waste	Implementation status of waste management	- List of recommended waste disposal companies - Activities for improving wasate management	The industrial estate doesn't grasp waste management status of tenant companies and wasate disposal companies.	The industrial estate knows waste disposal companies that do businesses there, but does not introduce them to tenant companies.	The industrial estate has a list of recommended wasate disposal companies, and shows a few candidates out of the list to tenant companies if requested.	Support improvement of waste management when improper waste treatment is revealed.	The industrial estate promotes activties to enchance transperancy of waste treatment.	"Industrial Estate Authority of Thailand Act, B.E. 2522" Environmental aspect- waste- 12.2
	Marketing and sales (including after services)	Recycle of products	Activities for recycling products	Obligation to recycle products.	- Supporting system for tenant companies to implement recycle of products (assuming related laws will be established in future)	The IE has not been discusing this topic.	The IE has been studying this topic.	The IE provides some supporting systems such as introduction of related consultants, etc.	The IE supports tenant companies to improve their activities when they are involved in some trouble such as violation of related regulation, etc.	The IE provides incentives for tenant companies according to the status of their activities related to recycle of products.	"Industrial Estate Authority of Thailand Act, B.E. 2522" Environmental aspect - .resource management- Eco efficiency for water and material management
Supporting Activities	Human resource Management	Compliance related to environment and ecology	Human resources related to environmental management	Status of education and recruitment of human recources related to environmental management	- Supporting system for tenant companies to recruit and educate human resoueces who can manage environmental affairs	The IE has not been discusing this topic.	The IE has been studying this topic.	The IE provides some supporting systems such as introduction of related consultants, etc.	The IE supports tenant companies to improve their activities when they are involved in some trouble such as violation of related regulation, etc.	The IE proviede incentives for tenant companies according to the status of their activities related to development of human resources who can manage environmental affairs.	
	Technology development	Environmental and ecology technology	Development of environment and ecology related technologies	Progress in development of environment and ecology related technologies	- Status of development of environment and ecology related technologies for entire industrial estate such as energy saving, low carbon, or low pollution.	There is no discussion about environment or ecology related technologies.	There are ongoing studies related to the introduction of environment or ecology related technologies for the entire industrial estate.	The industrial estate promotes development of environment or ecology related technologies, and there are some introduction examples.	The industrial estate is approved as an 'Eco Industrial Park' as a result of existing activities using the environment or ecology related technologies.	Environment or ecology related technologies that the industrial estate has introduced there won the 'Eco Industry Award'.	
	Procurement	Green procurement	Procurement of low-carbon material	Implementation status of procurement of low-carbon material	- Supporting system for tenant companies to procure low-carbon material	The IE has not been discusing this topic.	The IE has been studying this topic.	The IE provides some supporting systems such as provision of information about low-carbon material, etc.		The IE provides incentives for tenant companies according to their activities related to procurement of low-carbon material.	
	Infrastructure (other management aspects)	Contribution to the environment	Environmental management	Implemantation status of environmental management	- Support measures for aquiring ISO 14001	The industrial estate doesn't grasp the introduction status of ISO 14001 of tenant companies.	The industrial estate knows the introduction status of ISO 14001 of tenant companies, but does not provide them with any support measures.	Help desk support provided by Japanese speakers.	The industrial estate provides full support for tenant companies to aquire ISO 14001.	The industrial estate provide incentives for tenant conpanies who apply for advanced certification authority such as JQA.	ISO14001
			Communication	Status of communication with local community	- Communication status with surrounding residents or local government - Status of complaints from surrounding residents, etc.	There is no opportunity to communicate with surrounding residents.	Communication opportunity will be given only when there is some trouble with surrounding residents.	There are periodical opprotunities to communicate with surrounding residents	Along with communication with surrounding residents, activities to contribute to the region (free admission events, contribution of funds) are undertaken.	in terms of regionally specific issues originating in the industrial estate, there are communication opportunities with the government and other stakeholders to resolve issues.	"Industrial Estate Authority of Thailand Act, B.E. 2522" Social aspect - quality of life and society and community around insutrial estate- 17.2

Annexure I: THAICOBAN - Safety and Reliability

Approaches for analysis			Evaluation Items	Evaluation Criteria	Explanations of evaluation criteria	Level 1	Level 2	Level 3	Level 4	Level 5	Related law
Primary Activities	Inbound and outbound logistics	Stable logistics	Access to ports	Time to reach the closest international port	・Average amount of time it takes to reach the closest international port on a regular weekday by a car.	It takes more than 2 hours to reach the closest international port.	It takes less than 2 hours to reach the closest international port.	It takes less than 1.5 hours to reach the closest international port.	It takes less than 1 hour to reach the closest international port.	It takes less than 30 minutes to reach the closest international port.	
			Access to airports	Times to reach the closest international airport	・Average amount of time it takes to reach the closest international airport on a regular weekday by a car.	It takes more than 2 hours to reach the closest international airport.	It takes less than 2 hours to reach the closest international airport.	It takes less than 1.5 hours to reach the closest international airport.	It takes less than 1 hour to reach the closest international airport.	It takes less than 30 minutes to reach the closest international airport.	
			Access to railway station	Time to reach the closest international railway station	・Average amount of time it takes to reach the closest international railway station on a regular weekday by a car.	It takes more than 2 hours to reach the closest international railway station.	It takes less than 2 hours to reach the closest international railway station.	It takes less than 1.5 hours to reach the closest international railway station.	It takes less than 1 hour to reach the closest international railway station.	It takes less than 30 minutes to reach the closest international railway station.	
			Road condition	Road conditions to reach the industrial park	・Standard of the road that directly connects to the industrial park. ・Surface condition of the road that directly connects to the industrial park.	The industrial park is connected to an unpaved road.	The road to the industrial park is connected to is paved but there are many potholes, which affect normal transportation (vehicles must travel at low speeds and packaging has to be improved)	The industrial park is connected to a paved road.	The industrial park is connected to an arterial road.	The industrial park is connected to a freeway.	
			Logistic condition	Existence of the logistic system	・Existence of logistics system ・Tenant assistance by industrial parks	There is no logistic system near the IP		There are some logistic companies near IP		Logistic companies cooperate with the industrial park to reduce costs.	
	Manufacturing operation	Stable water supply	Stable supply	Status of water shortage	・Water shortages due to equipment failure (excluding extraordinary circumstances such as droughts).	Water shortages occur more than a few days per year.	Water shortages occur several days per year.	Water shortages occur more than a few times per year over a span of a few hours with no advance warning.	Water shortages occur a few times per year over a span of a few hours with no advance warning.	No record of water shortages with no advance notice.	Water Supply Law
			Safety of supply	Quality of water supply	・Standards of target water supply quality compared to government standards. ・Compliance status of target water quality.	Quality of water supply is not known.		Water supply quality does not meet government standards in some cases.		Quality of water supply standards set at the industrial park exceeds government standards.	Water Supply Law
		Stable power supply	Stable supply	Status of power shortage and voltage fluctuation	・Power shortages due to equipment failure. ・Occurrence of voltage fluctuation.	Power shortages that last for many hours occur more than a few times per year.	Power shortages that last for many hours occur a few times per year.	Power shortages with no advance notice that last for a short time occur more than a few times per year.	Power shortages with no advance notice that last for a short time occur a few times per year.	No record of power shortages with no advance notice.	Electric Utility Industry Law
	Marketing and Sales	Stable sales channel	Stable sales channel	Tenant assistance by industrial parks for credit research of counterparties	・Tenant assistance by industrial parks for credit research of counterparties	No assistance		Some credit research companies recommended by the industrial park.		Cooperated some credit research companies with IP and being able to order with low costs	
Supporting Activities	Human Resources Management	Safety and health management	Safety and health management	Tenant assistance by industrial parks for safety and health management	・Existence of authorized educational institutions systems ・Tenant assistance by industrial parks	No existence of authorized educational institutions system near IP		Existence of authorized educational institutions system near the industrial park.		Cooperated authorized educational institutions system with IP and being able to order with low costs	Industrial Safety and Health Law
	Technology Development	Product liability	Product liability	Tenant assistance by industrial parks for product liability	・Existence of authorized technical support institutions ・Tenant assistance by industrial parks	No existence of authorized technical support institutions near IP		Existence of authorized technical support institution near the industrial park.		Cooperated authorized technical support institutions with IP and being able to order with low costs	Product Liability Law
		Machinery safety	Machinery safety	Tenant assistance by industrial parks for machinery safety	・Existence of authorized safety inspection agencies ・Tenant assistance by industrial parks	No existence of authorized safety inspection agencies near IP		Existence of authorized safety inspection agencies by IP		Cooperated authorized safety inspection agencies with IP and being able to order with low costs	Industrial Safety and Health Law
	Procurement	Credit on procurement provider	Credit on procurement provider	Tenant assistance by industrial parks for credit research of counterparties	・Tenant assistance by industrial parks for credit research of counterparties	No assistance of credit research of counterparties		Recommend some credit research companies by IP		Cooperated with some credit research companies with IP and being able to order with low costs	
	Infrastructure (other management aspects)	Private information management	Private information management	Tenant assistance by industrial parks for authorized technical support institution	・Existence of authorized technical support institution ・Tenant assistance by industrial parks	No existence of authorized technical support institutions near IP		Existence of authorized technical support institutions by IP		Cooperated with some authorized technical support institutions with IP and being able to order with low costs	Act for Protection of Computer Processed Personal Data held by Administrative Organs
		Safety	Safety level	Crime rate in the area	・Crime rate in the area compared to the national average.	The crime rate in the area is higher than the national average.		The crime rate in the area is lower than the national average.		The crime rate in the area is far lower than the national average.	
			Security system	Level of security system in the industrial park	・The security system in the industrial park (guards, patrols). ・Security guard standard.	There is no industrial park security system.	The security system is minimal, monitoring the entrance only.	The entrance is monitored and regular patrols are conducted.	The entrance is monitored, regular patrols are conducted, and guards are available 24 hours a day.	Guards that have had specialist, long-term training monitor the entrance, conduct regular patrols, and are available 24 hours a day.	
		Disaster management	Flooding	Risk of flooding and risk management	・Risk of widespread flooding. ・Flood risk management in the industrial park.	There is a risk of floods as the area has been inundated by floods in the past but the industrial park is taking no special preventative measures.		There is a risk of floods as the area has been inundated by floods in the past and the industrial park has built physical barriers, such as levees and flood walls, that meet government standards		The ground is high and there is no record of the river flooding in this area or the surrounding area in the past.	River Law Flood Fighting Act Act on Disaster Control Measures
			Land subsidence	Frequency and organization of interaction with Japanese companies.	・Risk of widespread land subsidence. ・Implementation status of subsidence prevention measures in the industrial park.	The land is comparatively soft so a pile foundation for the factory in excess of 10m deep is necessary. The industrial park has not taken any preventative measures and problems occur.	The land is comparatively soft so a pile foundation for the factory in excess of 10m deep is necessary. The industrial park is taking steps to prevent subsidence but there are some problems with the roads and infrastructure.	The land is comparatively soft so a pile foundation for the factory in excess of 10m deep is necessary. The industrial park is taking steps to prevent subsidence and there are no problems with the roads or infrastructure.	The ground is comparatively hard and, if there is no heavy equipment in the factory, a pile foundation less than 10m deep can support the structure.	The ground is comparatively hard and, if there is no heavy equipment in the factory, a pile foundation is not necessary.	- Building Standards Act - Act on Disaster Control Measures
			Drought	Drought risk and prevention system	・Risk of widespread drought. ・Implementation status of drought prevention measures in the industrial park.	There have been water restrictions in the past due to drought but the industrial park is not taking any preventative measures.	There have been water restrictions in the past due to drought and the industrial park has an independent water reservoir but there have been problems with it.	There have been water restrictions in the past due to drought and the industrial park has an independent water reservoir that has never had any problems.	There is a low risk of drought but the industrial park has an independent water reservoir that has never had any problems.	Water can be drawn from a large river and there is almost no risk of drought.	- River Law - Law on Natural Disasters
			Earth Quake Tsunami Liquefaction Typhoon Thunderbolt Landslide Snow damage Salt damage	Risk of other disasters	・Risk of other disasters	There is a risk of other disasters				There is no risk of other disasters	Act on Disaster Control Measures
		Manmade disaster management	Fire	Fire prevention system	・Implementation status of fire prevention measures in the industrial park. ・Instruct industrial park tenants to purchase fire insurance.	No preventative measures.	A communication system is maintained in case of disasters only.	An autonomous disaster prevention organization is established and physical prevention systems, such as firefighting facilities and fire hydrants, are maintained.	An autonomous disaster prevention organization is established, physical prevention systems, such as firefighting facilities and fire hydrants, are maintained, and regular fire drills are conducted.	A specialist fire fighting organization is established and physical prevention systems, such as firefighting facilities, are maintained making a high-level firefighting response possible.	- Building Standards Act - Fire Service Act
		Casualty insurance	Casualty insurance	Difficulty to obtain flood insurance	・Difficulty to obtain flood insurance	Impossible to take out insurance which contains risk of flood damage.		Possible to take out local insurance which contains risk of flood damage.		Possible to take out Japanese insurance with substantial guarantee which contains risk of flood damage.	Insurance Act
		Business Continuity Plan (BCP)	Business Continuity Plan (BCP)	Preparation of disaster management documents or Business Continuity Plans (BCP)	・Preparation of disaster management documents or Business Continuity Plans (BCP)	No disaster management system or BCP plans	There is contact system for the disaster management in IP.	There are some handling systems for disaster management in the industrial park.	There are some handling systems for disaster management as well as BCP plan in the industrial park.	There are some handling systems for disaster management as well as BCP plans in the industrial park.	

Annexure I: THAICOBAN - Industry Upgrading

Approaches for analysis			Evaluation Items	Evaluation Criteria	Explanations of evaluation criteria	Level 1	Level 2	Level 3	Level 4	Level 5	Related law
Activities	Primary	Logistics Soft Infrastructure	Logistics soft Infrastructure	Existence of inter-companies logistics service provider	Existence of inter-companies logistics service provider (Efficient logistics)	Need to do logistics operations by themselves because there is no logistics service provider	Need to pay rather expensive fees for using the logistics serivice provider in a distant area	One or more logistics service providers can be introduced by the industry estate/park	Two or more logistics service providers can be introduced by the industry estate/park.	Total logistics service providers can be introduced by the industrial estate/park, so that the tenants can expect optimal logistics provision.	※It depends on company's logistics system.
	Inbound and outbound logistics	Mechanization (Automation)	Installation of used machines	Possibility to install used machines	Regulations and supports by the industrial estate/park regarding the possibilities of import and acquisition of used machines.	Complicated procedures exist due to the regulations of the industrial estate/ park or government offices	Tenants can receive support from the industrial estate/park, for the complicated procedures about the regulations on used machines	Tenants can install used machines on their own responsibility without any regulations.	Tenants can receive the necessary support on facility arrangement like voltage conversion to install used machines	Tenants can receive the necessary support on facility arrangement like voltage conversion to install used machines as well as on the procedures and customs regarding their import.	According to BOI, BOI- approved companies are allowed to use the most advanced machines. For used- machined less than 10 years old could be imported through approved- thirt parties.
	Manufacturing operation	Business Development	Business Development with existing or new Business clients	Industrial cluster situation within the same industry	-Number of companies within the same industry -Existence or non-existence of final products makers	No company of the same industry is located there.	1-9 companies of the same industry are located there.	10 or more companies of the same industry are located there	30 or more companies of the same industry are located there	50 or more companies and 1 or more final product makers of the same industry are located there.	※It depends on company's sales channel.
	Marketing and Sales	Recruitment	Regular worker-level	Recruitment possibility at regular worker-level	Labor cost in the industrial estate/park (average/mode) at the hiring stage (salary, allowance, welfare, bonus)	Recruitment is difficult even with labor cost of minimum wage 300THB ＋50% or more	Labor cost is minimum wage 300THB + 50% (Total: 450THB) or more	Labor cost is minimum wage 300THB + 50% (Total: 450THB)	Labor cost is minimum wage 300THB + 50% (Total: 390THB)	Labor cost is minimum wage 300THB + 50% (Total: 345THB)	Labour Protection Act: the minimum wage is 300 bahr nationwide regardless of age, sex, industry.
Supporting Activities	Human Resources Management		Staff-level	Recruitment possibility at staff-level	Labor cost in the industrial estate/park (average/mode) at the hiring stage of university graduate (salary, allowance, welfare, bonus)	Recruitment is difficult even with labor cost that is the national average(12500THB) + 100% (Total:25,000THB).	Labor cost is the wage of 12500THB＋35%-100% (Total 17,500～25,000THB)	＊National Average Level Labor cost is the wage of 12,500THB＋35% (Total 17,000THB) or less	Labor cost is that 17,000THB-10% (Total 15,000THB) or less	Labor cost is that 17,000THB-20% (Total 13,500THB) or less	
			Engineer-level	Recruitment possibility at engineer-level	Labor cost in the industrial estate/park (average/mode) at the hiring stage of university graduate (salary, allowance, welfare, bonus)	Recruitment is difficult even with labor cost that is the national average(15,400THB) + 100% (Total:30,000THB).	Labor cost is the wage of 15,400THB＋35%-100% (Total 21,500～30,000THB)	＊National Average Level Labor cost is the wage of 15,400THB＋35% (Total 21,000THB) or less	Labor cost is that 21,000THB-10% (Total 19,000THB) or less	Labor cost is that 21,000THB-20% (Total 16,500THB) or less	
			Senior/management-level	Recruitment possibility at senior/management-level	Labor cost in the Industrial Estate/Park (Average/Mode) at the hiring stage of general manager class	Recruitment is difficult even with the monthly labor cost that is 200,000THB＋the commission to HR service (regardless of experience)	Monthly labor cost is 200,000THB＋the commission to HR service or less (regardless of experience)	＊National Average Level Monthly labor cost is 120,000THB＋the commission to HR service or less (regardless of experience)	Possible to hire experienced good human resources with a monthly labor cost of 120,000THB＋the commission to HR service or less (Experienced in Japanese companies)	Possible to hire experienced good human resources with a labor cost of 80,000THB＋the commission to HR service or less (Experienced in Japanese companies)	
			Non-regular workers	Recruitment possibility of non-regular workers	Labor cost in the industrial estate/park (average/mode) at the hiring stage (salary, alllowance, welfare, bonus) + commision to HR temporary staffing company	Recruitment is difficult even with labor cost of minimum wage 300THB ＋20% or more + commision	30 or less applicants could be attracted at a labor cost that is minimum wage 300THB ＋ 20%（Total: 360THB）or more + comission	More than 100 applicants could be attracted at a labor cost that is minimum wage 300THB ＋ 20%（Total: 360THB）or more comission	30 or less applicants could be attracted at a labor cost that is minimum wage 300THB ＋ 20%（Total: 360THB）or less comission	More than 100 applicants could be attracted at a labor cost that is minimum wage 300THB ＋ 20%（Total: 360THB）or less comission	Labour Protection Act: the minimum wage is 300 bahr nationwide regardless of age, sex, industry.
		Labor-Management Relations	Retention rate at regular worker-level	Retention rate at regular worker-level	Retention rate within the industrial estate/park (average/mode) *Retention rate = the number at the end of FY is divided by the sum of the number of new comers during FY + the number at the beginning of FY (*100)	Retention rate (yearly base) is lower than 30%	Retention rate (yearly base) is lower than 50%.	＊National Average Level retention rate (yearly base) is lower than 60%	Retention rate (yearly base) is lower than 80%	Retention rate (yearly base) is 80% or higher	※It depends on labour market.
			Retention rate at staff/engineer levels	Retention rate at at staff/engineer levels	Retention rate within the industrial estate/park (average/mode) *Retention rate = the number at the end of FY is divided by the sum of the number of new comers during FY + the number at the beginning of FY (*100)	Retention rate (yearly base) is lower than 30%	retention rate (yearly base) is lower than 50%	＊National Average Level retention rate (yearly base) is lower than 60%	Retention rate (yearly base) is lower than 80%	Retention rate (yearly base) is 80% or higher	※It depends on labour market.
			Labor-management problems	Occurrence of labor-management problems	Occurrence of labor-management problems within the industrial estate/park. Small problems are ones wituout any accomanied production stop; serious problems are lock-outs, strikes, etc., with accompanied production stops.	Small problems occur. Serious problems occurred, 5 times or more within the last 3 years	Small problems occur. Serious problems occurred, 3 times or more within the last 3 years	Small problems occur. Serious problems occurred, once or more within the last 3 years.	Small problems occur but no serious problems.	Small or serious problems seldom occur.	Labour Protection Act: all employees with a workforce exceeding 50 employees must establish a Labor Welfare Committee.
		Employee Training/ Education	Training/Education	Accessibility to training/education programs(management/ manufacturing techniques, Japanese style *monozukuri*)	-Provision of short-education and training programs related to management and production techniques, etc. -Variety of programs such as training in Japan, degree programs, etc.	-No accessibility to education and training program related to management and production techniques, etc.	-Accessible to education and training programs related to management and production techniques, etc.1-6 times a year in or near the industrial estate/park	-Accessible to education and training programt related to managemen and production techniques, etc.1 a month in or near the industrial estate/park	-Accessible to education/ training programt related to management/production techniques, etc.1 a month in/near the industrial estate/park. -Customized programs for individual company available	In addition to the left shown programs, a variety of education/training programs such as degree program, Japanese style *monozukuri* are available	Labor Skill Development Promotion Act
	Technology Development	R&D	Environment for Research & Development(R&D)	Environment favorable for R&D	-Policies inviting R&D facilities -Environment favorable for R&D in relation to facilites and services -Possibilities for collaboration with universities and research instituites	There are no policies inviting R&D facitlies nor any existence of Japanese R&D centers/facilties	There are no policies inviting R&D facitlies but there are some R&D centers/facilties	Industrial estate/park is trying to invite R&D facilities by providing incentives.	There are R&D facilities/services such as laboratories, inspection, measuring, calibration, etc. that the tenants can utilize, in or around the industrial estate/park	There are R&D facilities/services that the tenants can utilize. There are universities and institutes that the tenants can collaborate within or around the industrial estate/park	National Tax Laws
	Procurement	Local Procurement/ Purchase	Local Procurement/Purchase from Jpanese companies	Matching support to Japanese part/material suppliers	-Possibility to find Japanese companies for procurement of parts/materials/die&molds -Matching supports by the industrial estate/park	No such Japanese part/material/die&molds companies are in the area.	A few part/material die&mold companies are found in the industrial estate/park area.	10 or more part/material/die& mold companies could be contacted by the tenants.	As many as 30 part/material/die &mold companies could be recommended by the industrial estate/park or a Japanese company association.	More than 30 part/material/die& mold companies could be recommended by the industrial estate/ppark or a Japanese company association.	※It depends on a company's procurement.
			Local producrement/ purchase from Japanese companies	Matching support to local part/material suppliers	-Possibility to find local companies for procurement of parts/materials/die&molds -Matching supports by the industrial estate/park	No such local companies of part/material/die&molds are in the area.	A few part/material die&mold companies are found in the industrial estate/park area.	10 or more part/material/die& mold companies could be contacted by the tenants.	As many as 30 part/material/die &mold companies could be recommended by the industrial estate/park or a Japanese company association.	More than 30 part/material/die& mold companies could be recommended by the industrial estate/ppark or a Japanese company association.	※It depends on a company's procurement.
	Infrastructure (other management aspects)	Information System	In-company Information System infrastructure	Matching support to IT vendors	-Possibility to find IT vendors necessary for developing and building the in-company information system -Matching supports by the industrial estate/park	No IT vendors in the area.	Possible to introduce IT vendors, individually in some cases	5 ore more IT vendors are listed up so that the tenants can refer to them	More than 10 IT vendors are listed up, and the industrial estate/parks or Japanese companies association can arrange matching based on the request	More than 10 IT vendors are listed up, and there is organizationalsystem arranged by the industrial estate/parks or Japanese companies association can association	※It depends on IT system within a company.
		Intellectual Property	Intellectual property management	Protection and use of intellectual property	-Contact points for consultancy in terms of industrial property rights and related dispute settlements	There are some disputes about industrial property rights in a year, but the contact points for advice are not known.	The contact points for such adivices are unknown, related to the disputes about the industrial property rights	The contact points for such adivices can be introduced by the industrial estae/park, related to the process and disputes about the industrial property rights	There are the contact points for such adivices in the Industrial Estae/Park, related to the process and disputes about the industrial property rights	The tenants can receive the consulting services in the industrial estate/park, related to the process and disputes about the industrial property rights	Intellectual Property Laws

Annexure I: THAICOBAN - Industrial Park QCD

Approaches for analysis		Evaluation Items	Evaluation Criteria	Explanations of evaluation criteria	Level 1	Level 2	Level 3	Level 4	Level 5	Related law
Industrial park QCD	Service quality of industrial park	Incentive	BOI zone, IEAT benefits	Status of corporate income tax exemption system.	None	3 year tax exemption (Zone 1)	7 year tax exemption (Zone 2)	8 year tax exemption (Zone 3A)	8 year tax exemption (Zone 3B)	Investment Incentive Law
				IEAT industrial park system?	No				Yes	Industrial Estate Corporation Law
				Free zone system?	No				Yes	Industrial Estate Corporation Law
		Alleviation of traffic jams inside the industrial park	Traffic situation	Occurrence and prevention of traffic jams inside the industrial park.	Traffic jams occur daily but nothing has been done to prevent them.	Traffic jams occur and preventative measures are under consideration.	Traffic jams occur but methods to alleviate traffic, such as creation of multiple entrances, widening of roads, and staggering worker shifts, are ongoing.	No traffic jams occur.	No traffic jams occur. Area for future expansion is being secured to respond to any future increase in traffic.	- Road Law - City Planning Law
		Size of the site at the time of acquisition	Shape and dimensions of the site	Level of freedom to divide/integrate the site.	The site cannot be changed.		It is possible to change the site but there are conditions.		The site can be integrated or divided with a high degree of freedom.	Industrial Estate Corporation Law
		Site	Possibility of expansion	Status of expansion plans.	Facilities already exist in the surrounding area so expansion would be difficult. Alternatively, there is vacant land in the surrounding area but there are no plans for expansion.	Expansion plans exist and land purchase is underway.	Expansion plans exist and land has also been purchased but construction has yet to begin.	Construction has begun but a completion date has not been determined yet.	Construction is either underway or complete and a concrete time frame for occupation can be given.	- Industrial Estate Corporation Law - City Planning Law
		Factory rental	Availability status	Factory rental and vacancies.	Not available.	Available but no vacancies. No extensions.	Available but no vacancies. Currently being extended.	Vacancies available.	New facilities were built in the past few years and there are many vacancies.	- Factory Law - City Planning Law
			Size	Size of factory depending on company needs.	Not available.	Only fixed size factories greater than 1000m2.	Support for small divisions of about 500m2.	Support for small divisions of about 500m2 as well as support for large scale factories of several thousand meters squared.	There are no major restrictions on size and there is flexibility to design your own factory.	
		Communication service	Service capability	Level of communication service.	No communication environment is available.	Only wireless communications are available.	Low speed cable communications are available.	High speed cable communications are available.	Very high speed fiber optic communications are available.	
		One-stop service	One-stop service when business begins	Status of one-stop service regarding application procedures when business begins.	No service.		Partial service.		Superior service that includes various consultation services and most companies are using the service.	
		Industrial park help desk	Help desk for Japanese speakers	A help desk for Japanese speakers and level of support.	There is no help desk support for Japanese speakers.		Help desk support provided by Japanese speakers.		A Japanese advisor is available, who will proactively provide counselling and deal with the industrial park.	
		Services for Japanese people	Housing, health care, commercial services, and various service facilities	Housing	There are no housing facilities for Japanese people in the vicinity of the industrial park.	There are housing facilities/serviced apartments for Japanese people within an hour of the industrial park	There are housing facilities/serviced apartments for Japanese people within 30 minutes of the industrial park.	There are housing facilities/serviced apartments for Japanese people adjacent to the industrial park.	There are housing facilities/serviced apartments at a low price Japanese people receive preference if they are connected to the industrial park.	
				Education	There are no Japanese schools or international schools in the vicinity of the industrial park		There are Japanese schools or international schools within an hour of the industrial park		There are Japanese schools or international schools within 30 minutes of the industrial park	
				Health care	No information is maintained.		Information about medical facilities is available immediately and a list of facilities is maintained.		A list of medical facilities and a medical emergency manual are maintained.	
				Facilities for Japanese people (Japanese restaurants, etc.)	There are no facilities for Japanese people in the vicinity of the industrial park.	There are facilities for Japanese people within an hour of the industrial park.	There are facilities for Japanese people within 30 minutes of the industrial park.	There are facilities for Japanese people adjacent to the industrial park.	There are facilities at a low price Japanese people receive preference if they are connected to the industrial park.	
				Commercial facilities	No commercial facilities for Japanese people exist in the vicinity of the industrial park.		There is a shopping mall and other commercial facilities within an hour of the industrial park.		There is a shopping mall and other commercial facilities within 30 minutes of the industrial park.	
			Specialist business support	Provision of specialist services, such as lawyers, public notaries, tax accountants, and patent attorneys, that are available in Japanese.	No information is maintained.		A list of specialist services is maintained.		A list of specialist services is maintained and well-used.	
		Interaction of Japanese people	Interaction of Japanese companies	Frequency and organization of interaction with the Japanese companies.	There are no specific associations and the only interaction is independent between companies.	There are no specific associations but the industrial park will introduce companies when necessary.	There are no specific associations but the industrial park hosts gatherings several times per year.	There are exchange associations for Japanese companies within the industrial park. Gatherings are held several times per year.	There are exchange associations for Japanese companies within the industrial park. They are proactive and they are influential for industrial park improvement and company interaction.	
	Cost of industrial parks	Initial fee	Site price	Site price per unit of area (prerequisite cost for land grading).	More than five million baht/rai.	Less than five million baht/rai.	Less than four million baht/rai.	Less than three million baht/rai.	Less than two million baht/rai.	
		Maintenance cost	Maintenance fee	Maintenance fee per unit of area (utilities are not included).	More than 1,000 baht/rai per month.	Less than 1,000 baht/rai per month.	Less than 800 baht/rai per month.	Less than 600 baht/rai per month.	Less than 400 baht/rai per month.	
		Factory rental fee	Factory rental	Rent per unit of area (maintenance fee is not included).	More than 400 baht per m2 per month.	Less than 400 baht per m2 per month.	Less than 300 baht per m2 per month.	Less than 200 baht per m2 per month.	Less than 100 baht per m2 per month.	
	Delivery of industrial parks	Time until occupation		Time, including vacancy status and application procedures, until operation begins.	No vacancies are currently available and it will take more than six months to secure land.	No vacancies are currently available and land can be secured in less than six months.	There are vacancies available but it will take more than a year at the earliest, including application procedures, before operation can begin.	There are vacancies available and operation can begin in less than a year, including application procedures.	There are vacancies available and, with the support of the industrial park, operation can begin in less than six months, including application procedures.	
	Other items	Finances	Funds trust	Availability of information, such as annual reports.	No information available.				Information available.	Industrial Estate Corporation Law

Annexure II Seminar participants list

"Introduction to THAICOBAN: A Strategic Tool to Improve the Competitiveness of Industrial Estate/ Parks"

No.	Country	Organization	Name	Position
1	Thailand	Ministry of Industry, Department of Industrial Promotion, Bureau of Supporting Industries Development	Mr.Passakorn Chairat	Director
2			Mr. Panuwat Triyangkulsri	Director
3			Mr. Visith Riwsoontorn	Officer
4		Thai Industrial Estate and Strategic Partner Association (TISA)	Mrs.Anchalee Chavanich	President
5			Ms.Woranuch Warnsanit	Secretary of President
6		National Economic and Social Development Board (NESDB)	Mr.Daisuke Matsushima	Advisor
7			Ms. Natcharee Leusintigul	Secretary of JICA
8		Industrial Estate Authority of Thailand (IEAT)	Mrs. Suwatana Kmolwatananisa	Assistant to Governor
9			Mr. Pichai Junsangsri	Official 6
10			Ms. Rungnapa Chulasak	Scientist
11		Department of Labour Protection and Welfare (DLPW)	Mr.Suppachai Trisakchart	Officer
12			Ms. Nongluk Vatahong	Officer
13			Ms. Janejira Kuliva	Officer
14			Ms.Pakkaipuek Moonsart	Officer
15			Mr. Sakdisilpa Tuladhorn	Officer
16		Department of Intellectual Property (DIP)	Mr. Panuwat Triyangoluri	Director
17			Mr. Visith Chulasak	Senior Technician
18	Japan	Japan International Cooperation Agency (JICA)	Mr. Tomoyuki Kawabata	Senior Representative
19			Ms. Somsri Sukumpantanasan	Senior Program Officer
20			Mr. Katsuya Miyoshi	Representative
21			Ms. Rie Sato	Representative
22		Japan External Trade Organization (JETRO)	Mr. Takao Hayashi	Director
23		ISS	Mr. Yutaka Hirashima	CEO
24		Nikkei BP (OTAGAI Project)	Mr. Susumu Mori	Producer
25			Mr. Shigeru Segawa	Research Fellow
26		Japan Research Institute (THAICOBAN Project)	Mr. Masatoshi Suzuki	Research Director
27			Mr. Yasuhiro Yamano	Manager
28			Ms. Makiko Hashizume	Consultant
29			Ms. Yuri Madenokoji	Consultant
30		Nikken Sekkei Civil Engineering (THAICOBAN Project)	Mr. Takahiro Saito	Senior Planner
31		The Overseas Human Resources and Industry Development Association (THAICOBAN Project)	Mr. Hisashi Kanda	Senior Researcher

Annexure III

Introduction to THAICOBAN: A Strategic Tool to Improve the Competitiveness of Industrial Estate/ Parks

11Oct 2013

JICA Study Team

Contents

1. Background of THAICOBAN
2. Before/After THAICOBAN
3. ”THAICOBAN”, a strategic tool for SMEs
4. Characteristics of THAICOBAN
5. Conclusion

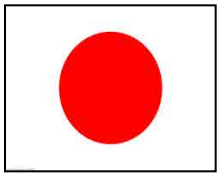
1. Background of THAICOBAN

1-1. Background of THAICOBAN

Policies for governments of Thailand, Japan and ASEAN countries

Thai government is changing policies for business in Thailand

Policies of ASEAN countries to invite foreign investment



Japanese government is encouraging economy with Abenomics policy

- Increase the number of new companies from 100,000 (now) to 250,000.
- Establish additional 10,000 Japanese companies abroad in 5 years.
- 5 trillion yen for exporting infrastructure (policy).

1-1. Background of THAICOBAN

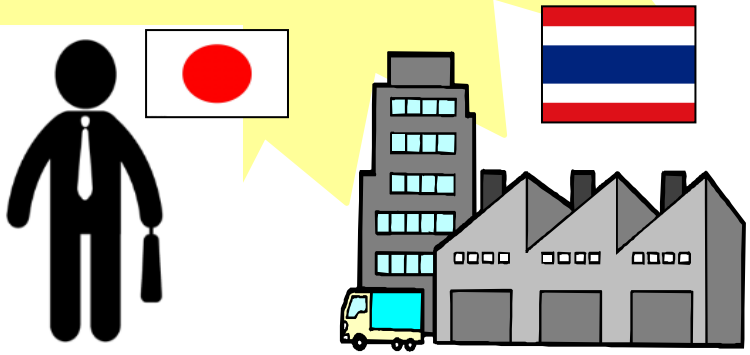
Situation surrounding Japanese SMEs and industrial estate/ parks in Thailand

Increase of Japanese SMEs which intend to enter Thailand market

Japanese SMEs select an industrial estate/ park with their own decision

Lack of suitable industrial estate/ parks for Japanese SMEs

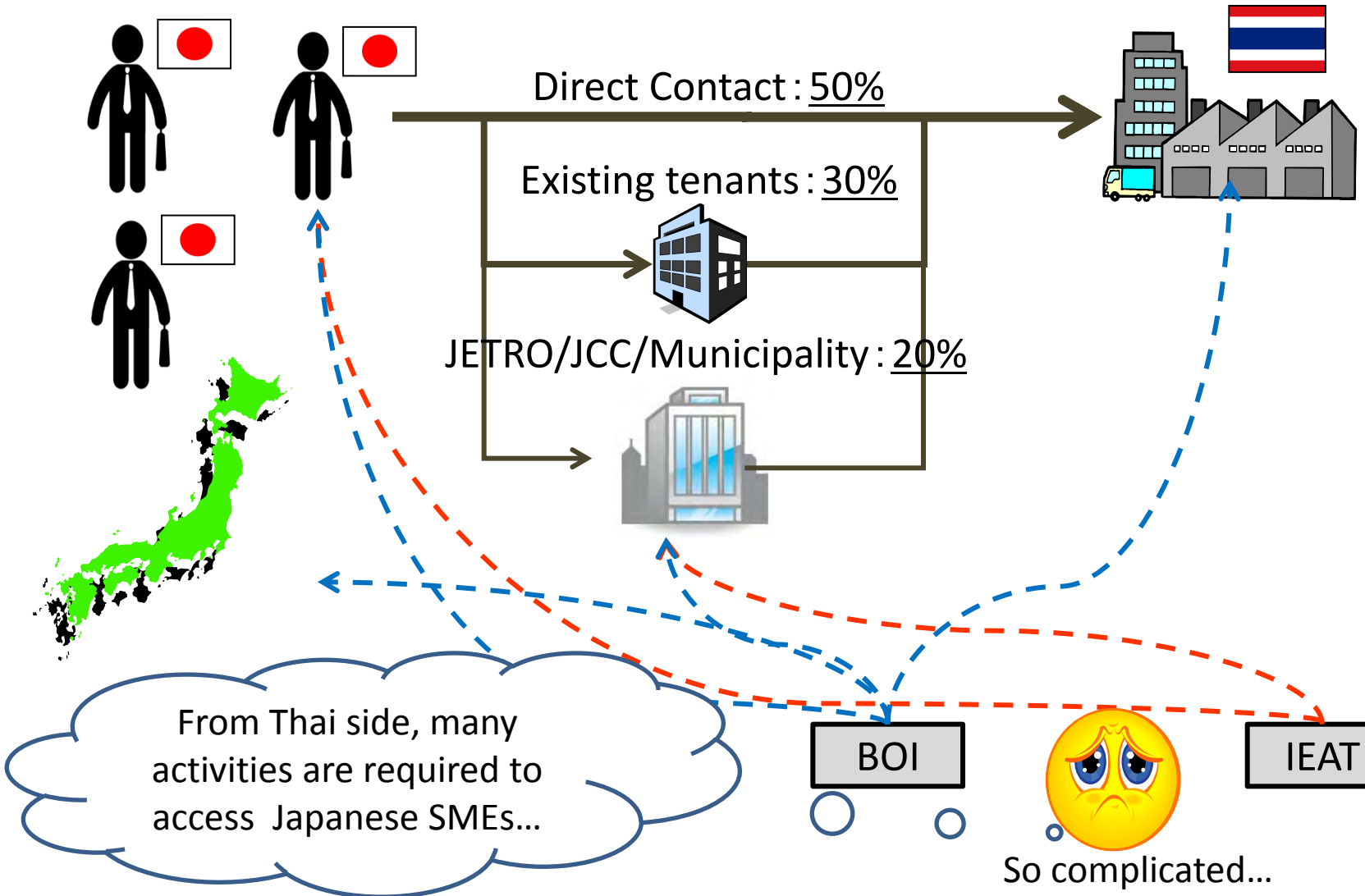
Lots of changes

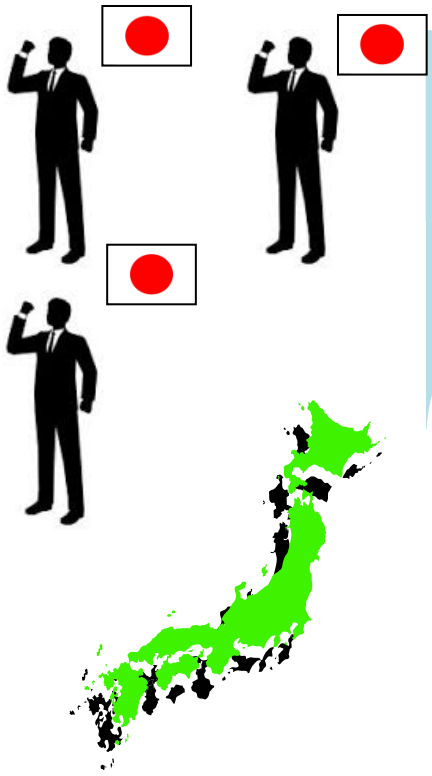


1-1. Background of THAICOBAN

Given all the changes explained above,
a strategic tool is needed for promoting Japanese SMEs to invest in Thailand continuously.

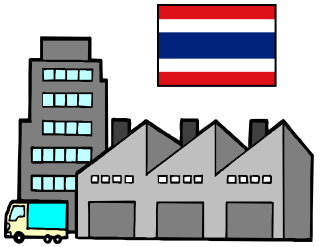
2. Before/After THAICOBAN


Direct Contact : 50%
Existing tenants : 30%
JETRO/JCC/Municipality : 20%
From Thai side, many activities are required to access Japanese SMEs…
BOI
IEAT
So complicated…



Operating Companies

JETRO/JCC/ municipality



BOI/ IEAT

Share information on
incentive scheme through THAICOBAN

It gets easy to share information with Japanese SMEs via THAICOBAN

2-2. Before THAICOBAN for Japanese SMEs

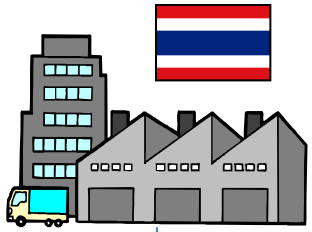
It’s difficult to collect information, read it in English, and decide which industrial estate/parks to operate in.

But with THAICOBAN…!

Japanese SMEs have access to information on industrial estate/parks in Japanese.

2-2. Before THAICOBAN for industrial estate/parks

There are two types of industrial estate/parks: one with Japanese companies and the other without Japanese companies.



industrial estate/parks **with** many Japanese companies already.

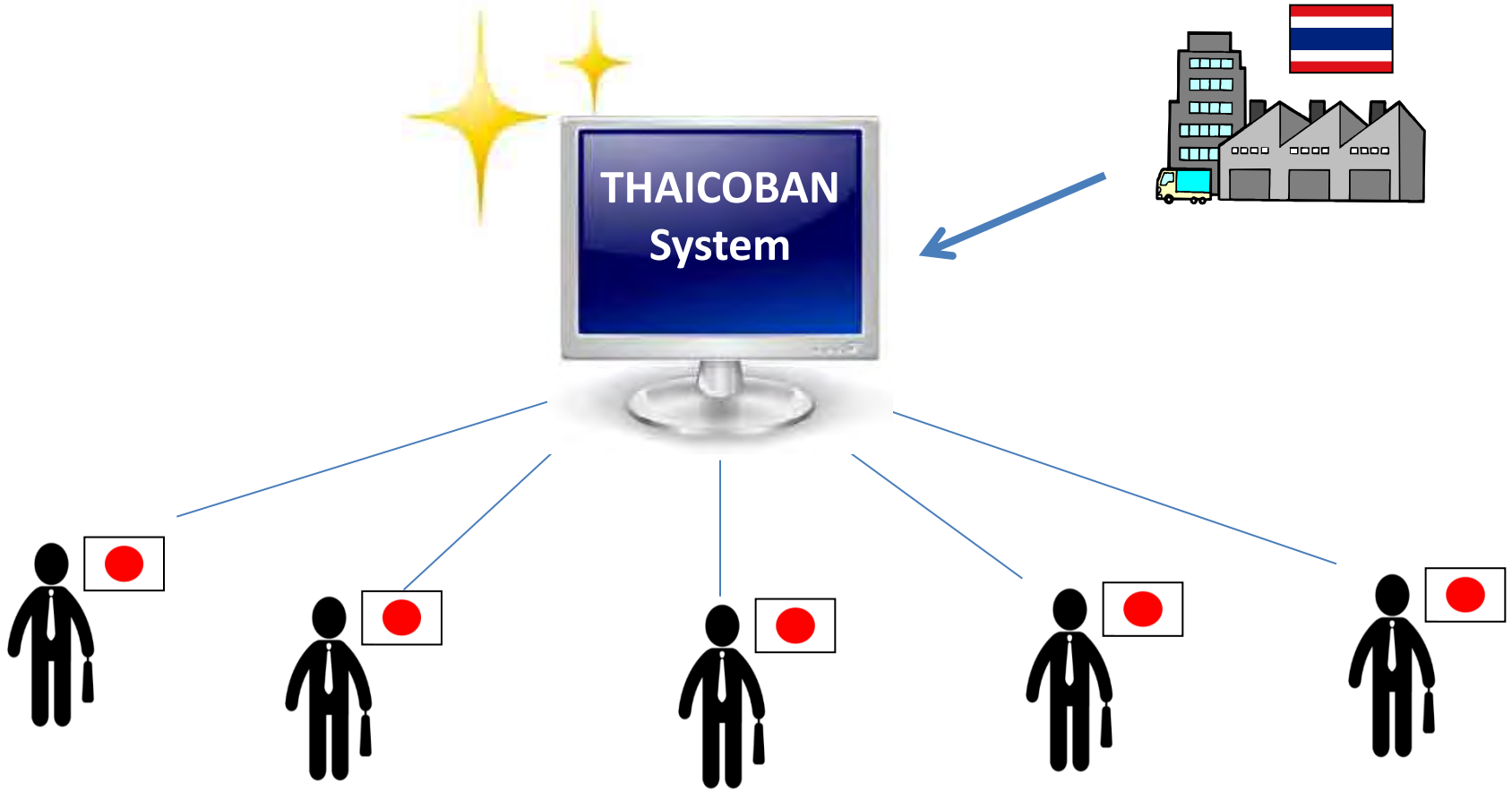
industrial estate/parks **with few** Japanese companies

Japanese SMEs are/will be big potential Customers, so targeting these SMEs is Key to attract more investment.

OH MY! How do I approach Japanese SMEs!?

But with THAICOBAN…!

Industrial estate/parks have access to many Japanese SMEs all at once. And automatically.

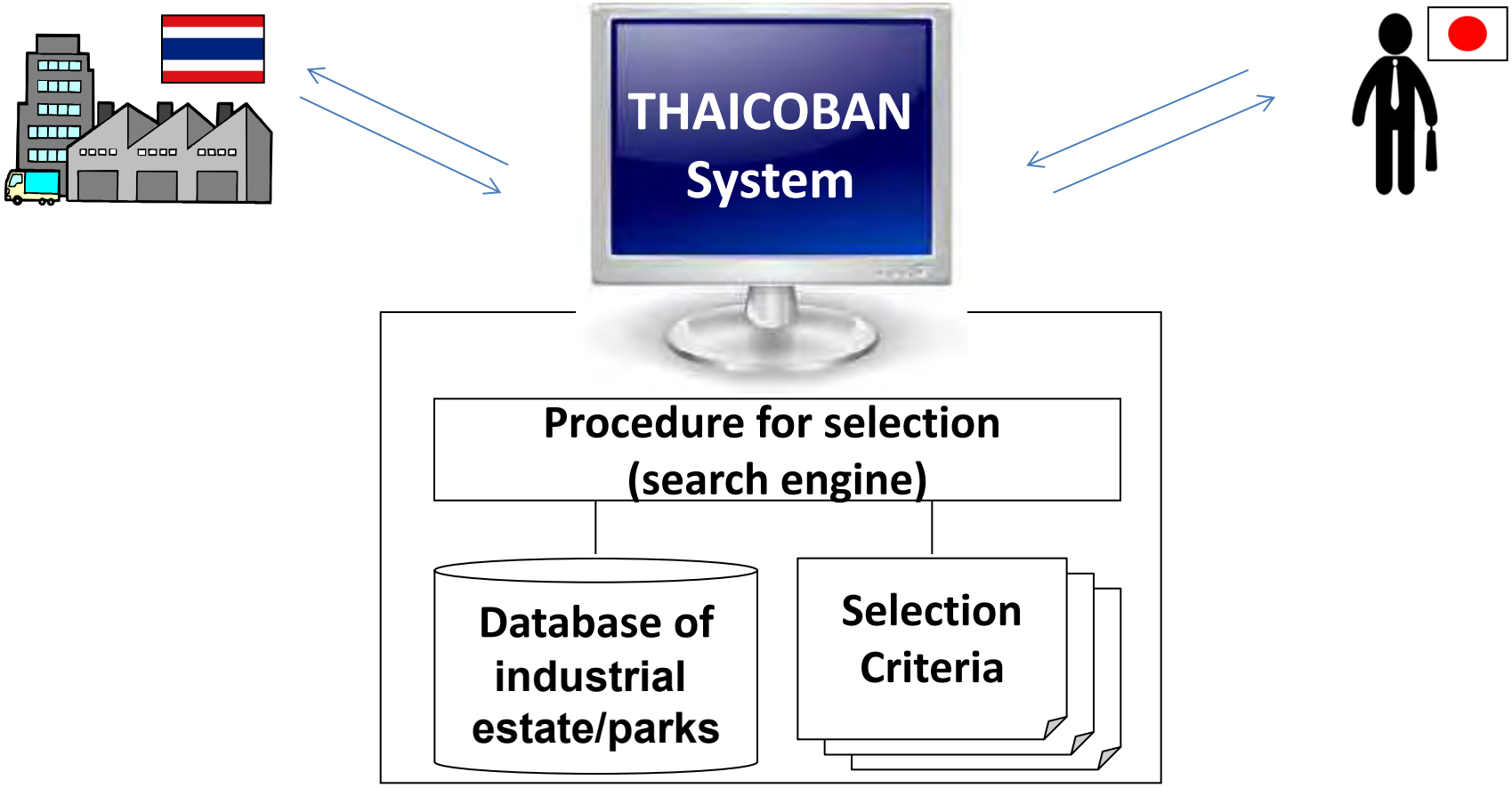


These are potential customers and more business opportunities!

3. ”THAICOBAN,” a strategic tool for SMEs

3-1. Structure of ”THAICOBAN,”

THAICOBAN is a **“Best-matching”** tool between Japanese SMEs and Industrial parks/estates.



THAICOBAN=THAI Cluster Oriented Business Association Network

●

■ Outline of THAICOBAN for three areas (environment, safety & reliability, and industrial upgrading) from tenants' aspect

ASPECT			ENVIRONMENT	SAFETY & RELIABILITY	INDUSTRIAL UPGRADING
Internal environment	Main activity	Purchasing procedure Shipping procurement	1.1 Green logistics	2.1 Stable logistics system	3.1 IT procurement 3.2 Import- export management (customs etc)
		Manufacturing operation	1.2 Energy efficiency 1.3 Waste management and monitoring 1.4 Resource recycling	2.2 Stable and safe water supply 2.3 Stable power supply 2.4 Stable telecommunication supply	3.3 Automation
		Marketing and sales (after-sales service)	1.5 Product recycling	2.5 Stable sales channel 2.6 Credit reports & scores on clients	3.4 Business development
	Support	Human Resources Management	1.6 Environmental management training	2.7 Safety and health management	3.5 Recruitment (workers, staff, engineers) 3.6 Retention rate of employees (including labor management) 3.7 Training
		Research and development (R&D)	1.7 Eco production process system	2.8 Product liability 2.9 Machinery safety	3.8 R&D environment
		Procurement process	1.8 Green purchasing	2.10 Credit reports & scores on procurement provider	3.9 Local supplier development
		Other management aspects	1.9 Environmental stewardship activities 1.10 Landscape management	2.11 Privacy management 2.12 Disaster management 2.13 Manmade disaster management	3.10 Information system 3.11 Funding sources 3.12 Intellectual property management
External environment		PEST Analysis (Policy economy, society, technology)	1.11 Law and regulation 1.12 Subsidies 1.13 Environmental awareness	2.14 Political stability 2.15 Difference in business practice	3.13 Incentive system (incentives, restriction) 3.14 International trade, FTA 3.15 Japanese community 3.16 Community building
		Competitive environment			3.17 Industry clusters
QCD (Quality, Cost, Delivery) of industrial parks		Quality of service in industrial parks	・Conditions of factory rentals ・Land area ・Additional service for Japanese companies ・Management service within industrial parks ・Interactions between Japanese companies ・One-stop service ・Customer care for Japanese clients ・Landscape management ・Safety of industrial park		
		Cost			
		Deli			

Approaches for analysis		Evaluation Items	Evaluation Criteria	Explanations of evaluation criteria	Level 1
Pri	Inbound/Outbound Logistics	Logistics Soft Infrastructure	Logistics Soft Infrastructure	Existence of inter-companies logistics service provider	Existance of inter-companies logistics service provider (Efficient logistics)	Need to do own logistics operations by themselves because there is no logistics service provider around their possible service

COBAN (Environment and Eco)

THAICOBAN (SAFETY)

				・Average amount of time it takes to reach to				
				・Average amount of time it takes to reach to				
				・Average amount of time it takes to reach to				
				・Standard of the road that directly connects to ・Surface condition of the road that directly				
				・Existence of logistics system ・Tenant assistance by industrial parks				
				・Water shortages due to equipment failure				
				・Standards of target water supply quality ・Compliance status of target water quality.				
				・Power shortages due to equipment failure. ・Occurrence of voltage fluctuation.				
				・Tenant assistance by industrial parks for				

Please look at the handouts.

Our Steps to set the THAICOBAN Criteria

THAICOBAN is closely designed with corporate activity and key area of infrastructure of Industrial parks/estates.

Step 1

- Top categories based on the Value Chain concepts by Tenants in order to ensure complete coverage

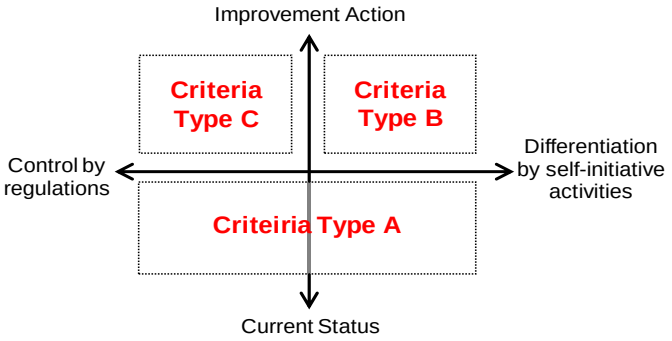
Primary Activities	Inbound/Outbound Logistics
	Operations (Manufacturing)
	Marketing and Sales
Supporting Activities	Human Resources Management
	Technology Development
	Procurement
	Infrastructure (other management aspects)

Step 2

- Criteria by extracting factors from the Step 1, corresponding to the 3 areas such as Environment & Eco, Safety, and Industry Upgrading
- Items common to the above 3 areas such as Quality, Cost, and Delivery categorized as the QCD of Industrial Estate/Park

Environment & Eco	Evaluates how the environment and eco activities/factors by/of Industrial Estates/Parks can create benefits to the tenants
Safety	Evaluate the activities/factors by/of the Industrial Estates/Parks to secure the safety for the tenants' activities
Industry Upgrading	Evaluate the activities/factors by/of the Industrial Estates/parks to upgrade the tenants' industrial strengths
QCD	Evaluate the Quality, Cost and Delivery of the Industrial Estate/Parks from various aspects

Basic Ideas for the criteria levels	
Level 5	With big merits for the tenants' operations
Level 4	With merits for the tenants' operations
Level 3	Level required normally (Thai average)
Level 2	With few merits for the tenants' operations
Level 1	With no merit for the tenants' operations



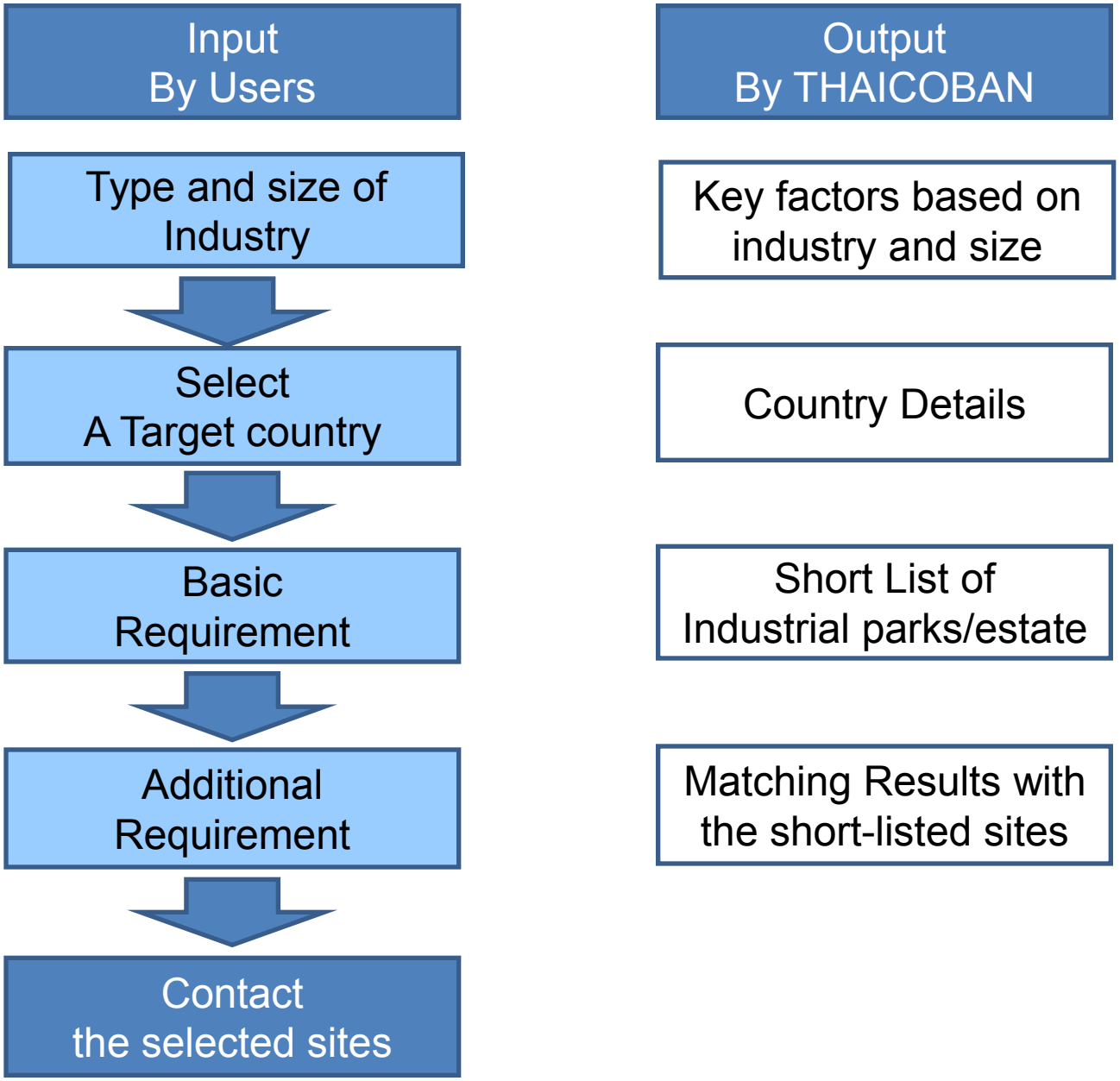
Criteria Type	Explanation of criteria type	Level 1	Level 2	Level 3	Level 4	Level 5
A	Explain the level of the location merits or current status of the Industrial Estates/Parks	Much Lower than the national average	A little lower than the national average	The national average	A little higher than the national average	Much higher than the national average
B	Evaluate the self-initiative activities by the Industrial Estate/Parks to differentiate from other Estates/Parks	Unable to use the services	Able to use the services which have problems (expensive or complicated)	Able to use the services without any problem	Able to use the services with advantages	Able to use the services with great advantages
C	Evalute the status or activities related to the criteria/standards set in a governmentl level	Minimum level of activities towards criteria/standards	Planning more self-initiative activities	Implementing the activities more than complying to the criteria/standards	Implementing the activities differentiated from othe Industrial Estate/Parks	Managing in a globally higher level

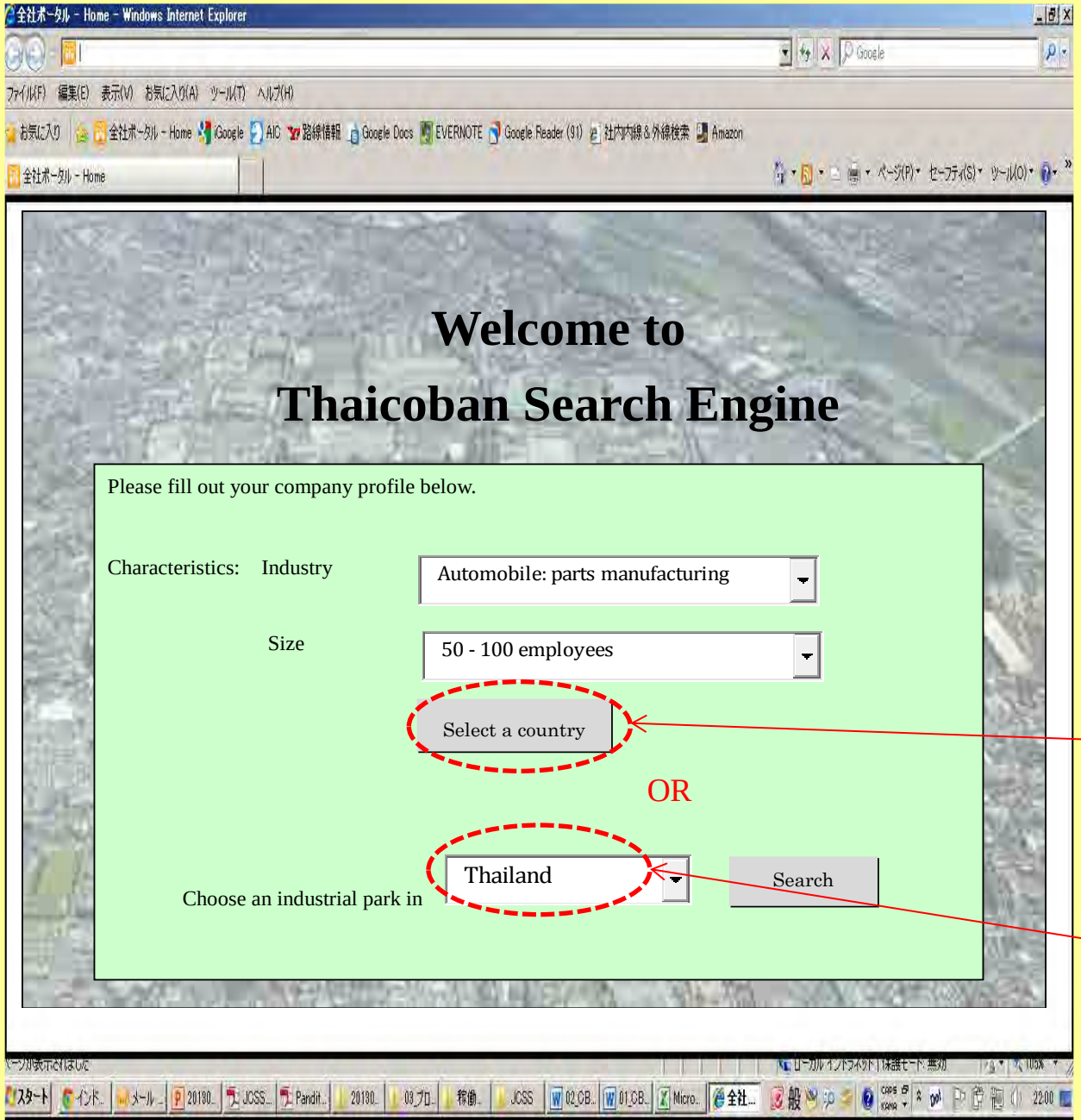
3-3. Database of Industrial estate/parks

Based on our criteria, sample data were collected for comparison purpose.

Approaches for analysis	Evaluation Items	A Industrial Park	B Industrial Estate	C Industrial Estate	D Industrial Park	E Industrial Estate	F Industrial Estate
Access to port	Required time to international port	**Level 1** Approx. 180km and 2 hours or more to Port of Laem Chabang	**Level 4** Approx. 50km and less than 1 hour to Port of Laem Chabang	**Level 4** Approx. 40km and less than 1 hour to Port of Laem Chabang	**Level 2** Approx. 130km and less than 2 hours to Port of Laem Chabang	**Level 3** Approx. 100km and less than 1.5 hours to Port of Laem Chabang	**Level 3** Approx. 100km and less than 1.5 hours to Port of Laem Chabang
Flooding	Is there flood risk and state of countermeasure implementation	**Level 3** In 2011, it was flooded, but a levee able to deal with 100 year return period flooding is completed.	**Level 4** It has been submerged by water collected from the drainage basin, but it has been discharged and a levee constructed.	**Level 5** Average elevation is high at 80m above sea level, so there is no danger of flooding.	**Level 5** Average elevation is high at 20m above sea level, so there is no danger of flooding.	**Level 5** Low risk duetoa big pump located in the airport nearby	**Level 4** 0 Elevation. Soil bank to be upgraded to concrete made
Quality of industrial park services Rental factory	Form of possession	**Level 5** There are. Some are available. Operated by a group company.	**Level 2** There are. None are now available. We are waiting our turn. Operated by a group company.	**Level 5** There are. There are always vacancies.	**Level 2** There are. None now available. Now preparing to construct 20 new buildings.	**Level 2** There are. No Vacancy at present	**Level 2** There are. No Vacancy at present

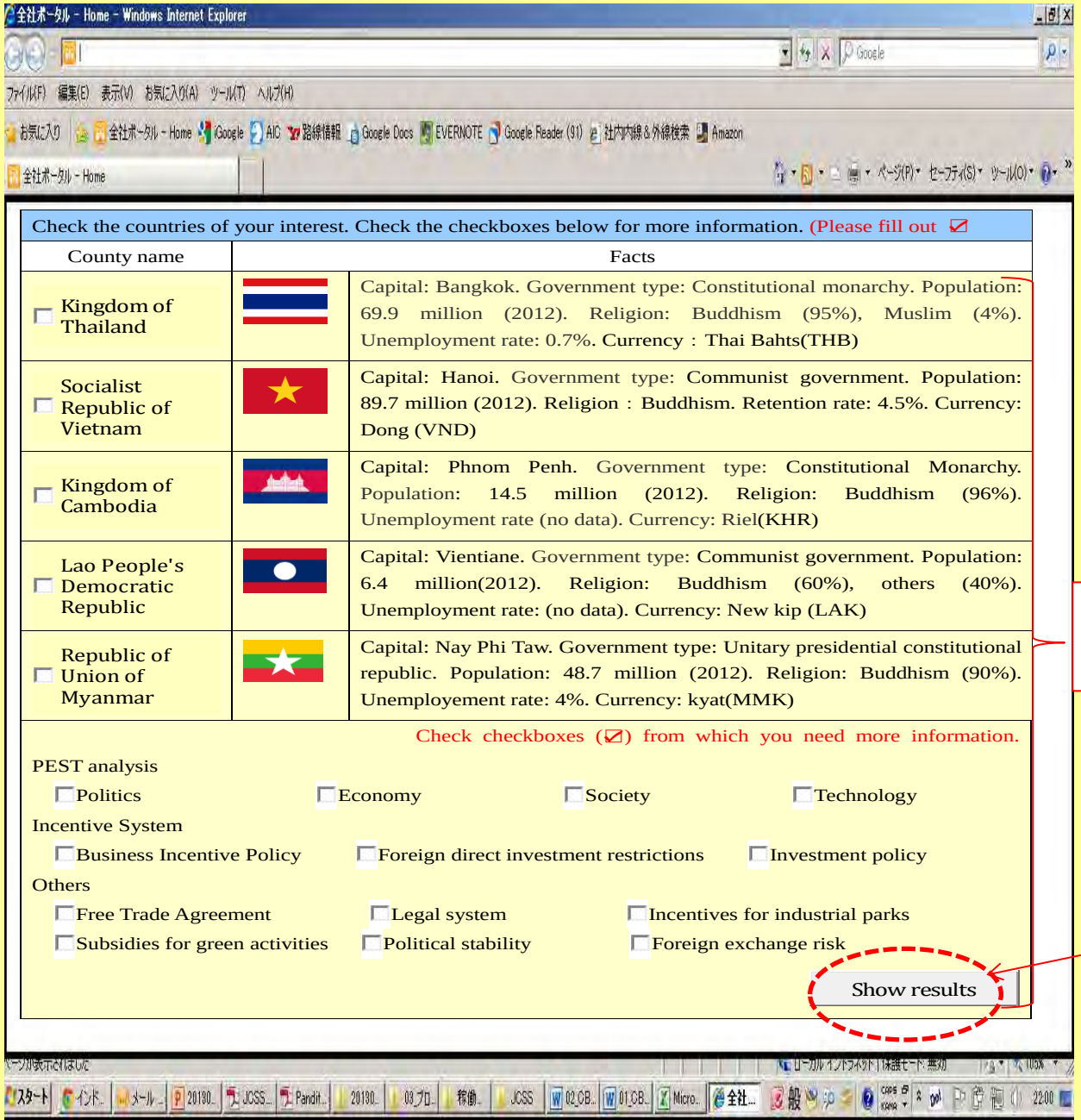
3-4. Procedure for selection (Search Engine)





Users click on this button when they do not know which country to start operation.

If users already know which country to go to, they can select the country and click on "search" button.



Check the countries of your interest. Check the checkboxes below for more information. (Please fill out ☑)

County name	Facts
☐ Kingdom of Thailand	Capital: Bangkok. Government type: Constitutional monarchy. Population: 69.9 million (2012). Religion: Buddhism (95%), Muslim (4%). Unemployment rate: 0.7%. Currency : Thai Bahts(THB)
☐ Socialist Republic of Vietnam	Capital: Hanoi. Government type: Communist government. Population: 89.7 million (2012). Religion : Buddhism. Retention rate: 4.5%. Currency: Dong (VND)
☐ Kingdom of Cambodia	Capital: Phnom Penh. Government type: Constitutional Monarchy. Population: 14.5 million (2012). Religion: Buddhism (96%). Unemployment rate (no data). Currency: Riel(KHR)
☐ Lao People's Democratic Republic	Capital: Vientiane. Government type: Communist government. Population: 6.4 million(2012). Religion: Buddhism (60%), others (40%). Unemployment rate: (no data). Currency: New kip (LAK)
☐ Republic of Union of Myanmar	Capital: Nay Phi Taw. Government type: Unitary presidential constitutional republic. Population: 48.7 million (2012). Religion: Buddhism (90%). Unemployement rate: 4%. Currency: kyat(MMK)

Check checkboxes (☑) from which you need more information.

PEST analysis
- ☐ Politics ☐ Economy ☐ Society ☐ Technology

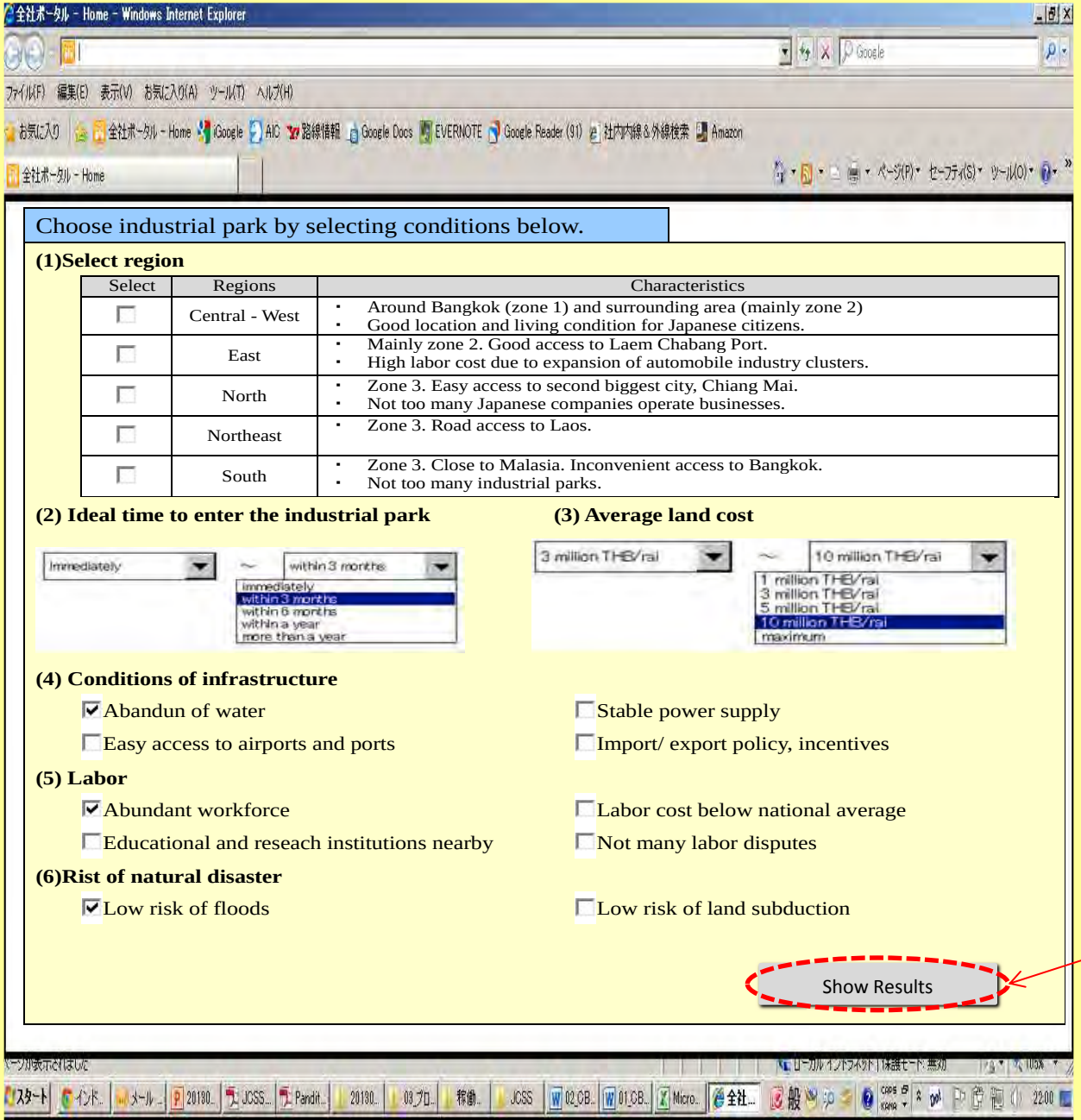
Incentive System
- ☐ Business Incentive Policy ☐ Foreign direct investment restrictions ☐ Investment policy

Others
- ☐ Free Trade Agreement ☐ Legal system ☐ Incentives for industrial parks
- ☐ Subsidies for green activities ☐ Political stability ☐ Foreign exchange risk

Show results

Basic country information

This button shows a detailed comparison of countries after users check checkboxes of their choice above.



全社ポータル - Home - Windows Internet Explorer

Choose industrial park by selecting conditions below.

(1)Select region

Select	Regions	Characteristics
☐	Central - West	・ Around Bangkok (zone 1) and surrounding area (mainly zone 2) ・ Good location and living condition for Japanese citizens.
☐	East	・ Mainly zone 2. Good access to Laem Chabang Port. ・ High labor cost due to expansion of automobile industry clusters.
☐	North	・ Zone 3. Easy access to second biggest city, Chiang Mai. ・ Not too many Japanese companies operate businesses.
☐	Northeast	・ Zone 3. Road access to Laos.
☐	South	・ Zone 3. Close to Malasia. Inconvenient access to Bangkok. ・ Not too many industrial parks.

(2) Ideal time to enter the industrial park

Immediately ～ within 3 months

immediately
within 3 months
within 6 months
within a year
more than a year

(3) Average land cost

3 million THB/rai ～ 10 million THB/rai

1 million THB/rai
3 million THB/rai
5 million THB/rai
10 million THB/rai
maximum

(4) Conditions of infrastructure

- ☑ Abandun of water
- ☐ Easy access to airports and ports
- ☐ Stable power supply
- ☐ Import/ export policy, incentives

(5) Labor

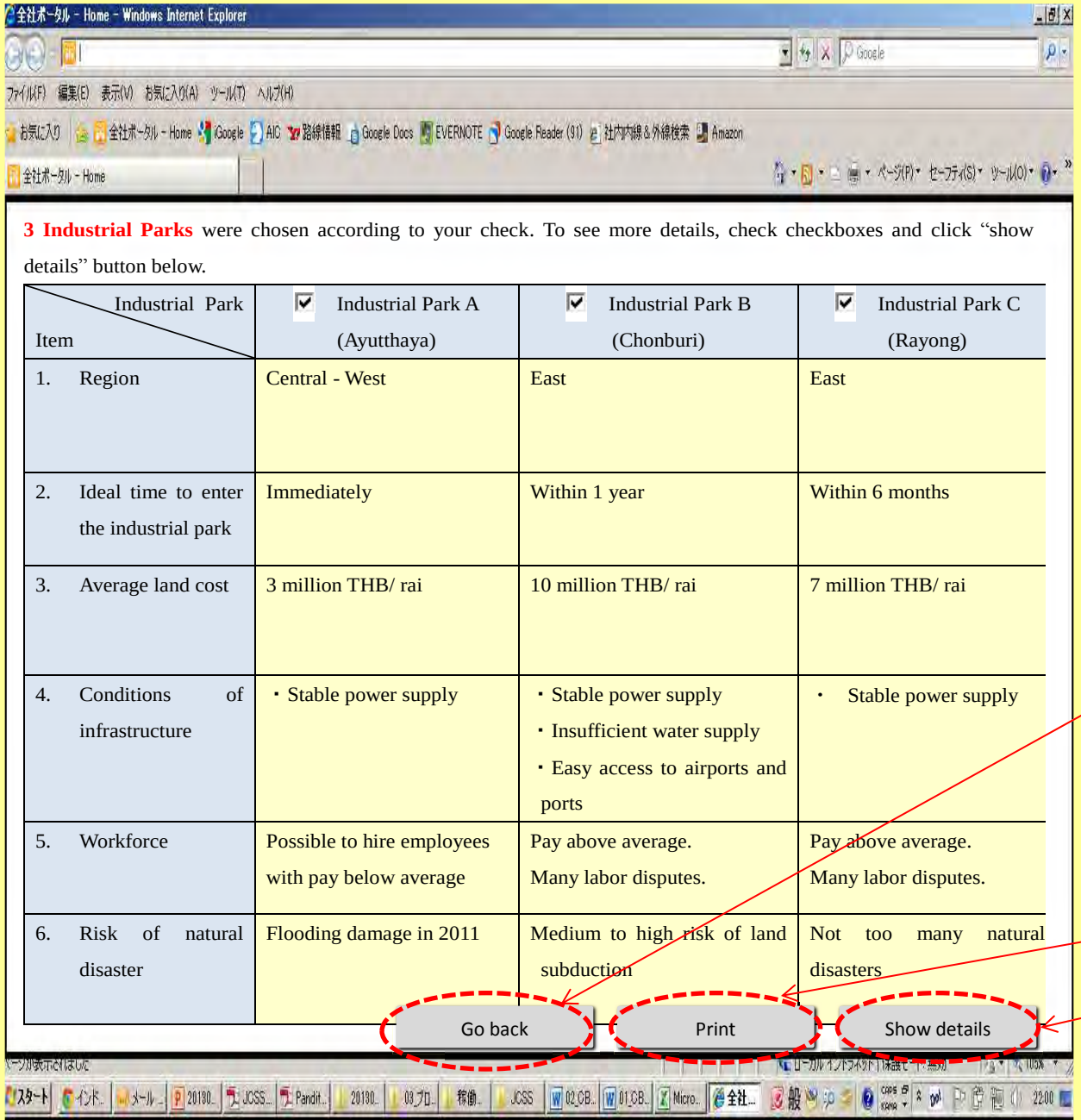
- ☑ Abundant workforce
- ☐ Educational and reseach institutions nearby
- ☐ Labor cost below national average
- ☐ Not many labor disputes

(6)Rist of natural disaster

- ☑ Low risk of floods
- ☐ Low risk of land subduction

Show Results

This button shows a detailed comparison of industrial parks after users check checkboxes of their choice above.



3 Industrial Parks were chosen according to your check. To see more details, check checkboxes and click "show details" button below.

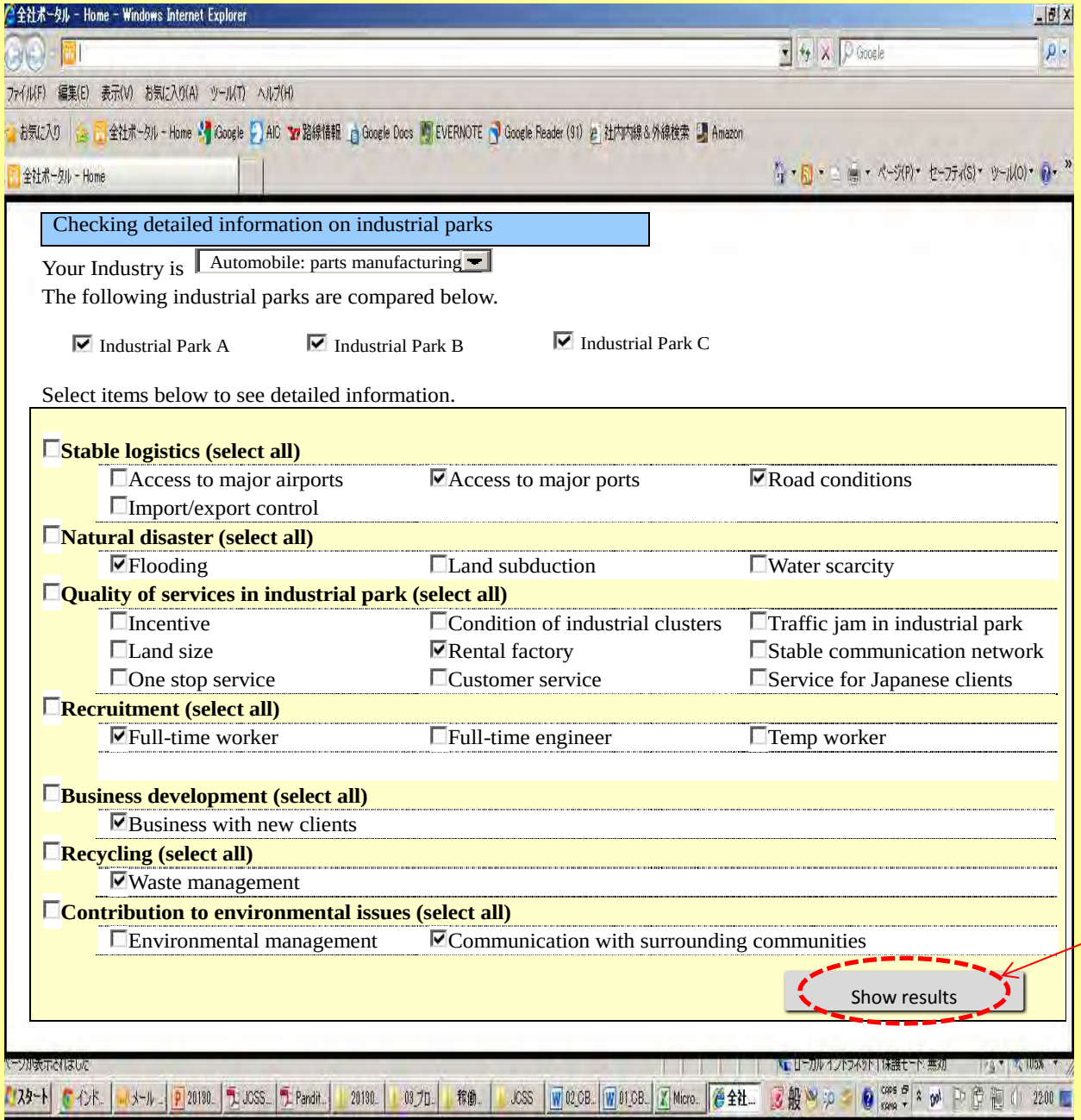
Item \ Industrial Park	☑ Industrial Park A (Ayutthaya)	☑ Industrial Park B (Chonburi)	☑ Industrial Park C (Rayong)
1. Region	Central - West	East	East
2. Ideal time to enter the industrial park	Immediately	Within 1 year	Within 6 months
3. Average land cost	3 million THB/ rai	10 million THB/ rai	7 million THB/ rai
4. Conditions of infrastructure	・Stable power supply	・Stable power supply ・Insufficient water supply ・Easy access to airports and ports	・Stable power supply
5. Workforce	Possible to hire employees with pay below average	Pay above average. Many labor disputes.	Pay above average. Many labor disputes.
6. Risk of natural disaster	Flooding damage in 2011	Medium to high risk of land subduction	Not too many natural disasters

If necessary, users can go back to modify their checkbox choices.

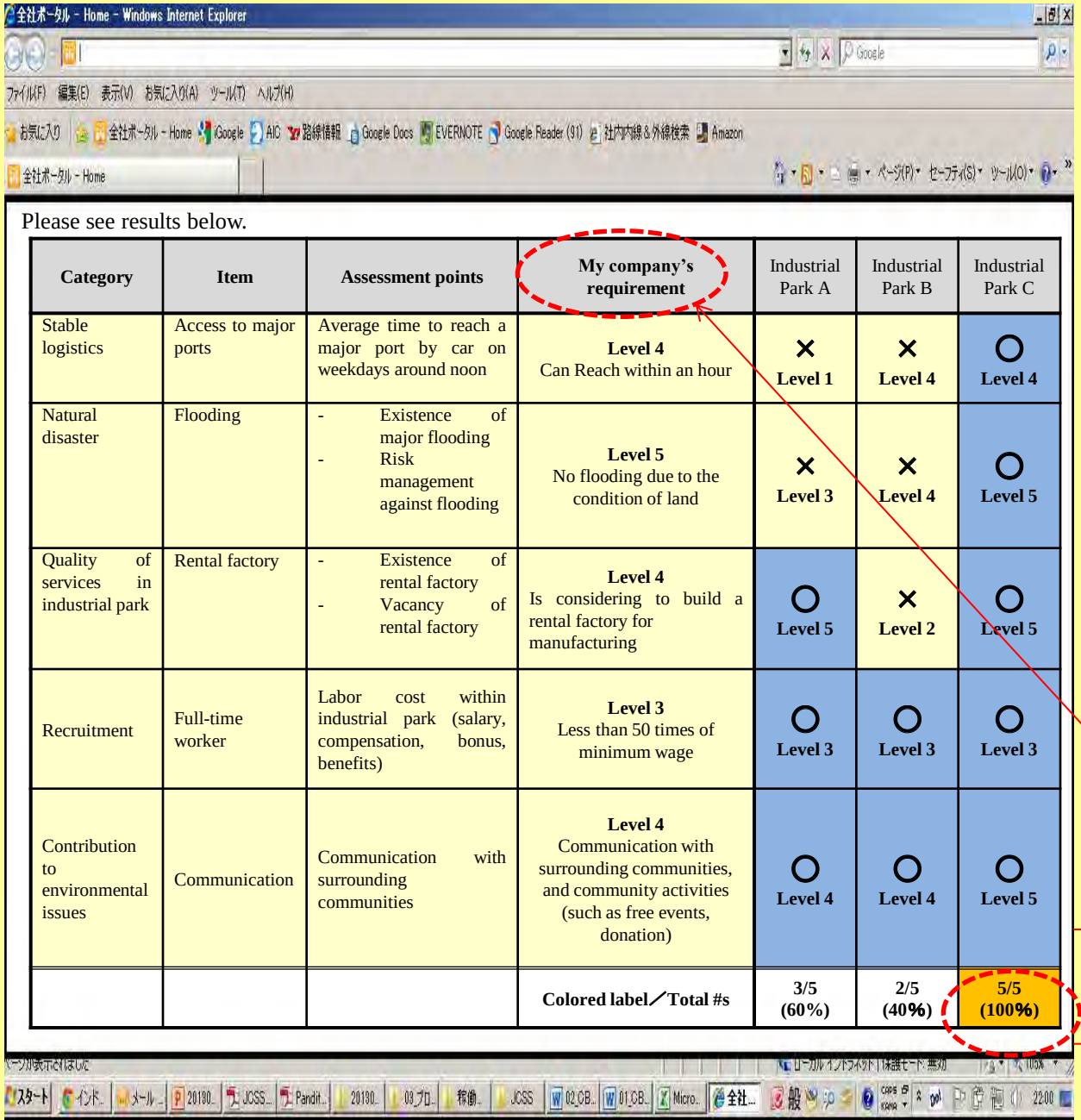
Users can print out results for the record.

Users click this button to learn about these industrial parks in details.

Search Engine



This button shows a detailed comparison of industrial parks after users check checkboxes of their choice.



Please see results below.

Category	Item	Assessment points	My company's requirement	Industrial Park A	Industrial Park B	Industrial Park C
Stable logistics	Access to major ports	Average time to reach a major port by car on weekdays around noon	**Level 4** Can Reach within an hour	× **Level 1**	× **Level 4**	○ **Level 4**
Natural disaster	Flooding	- Existence of major flooding - Risk management against flooding	**Level 5** No flooding due to the condition of land	× **Level 3**	× **Level 4**	○ **Level 5**
Quality of services in industrial park	Rental factory	- Existence of rental factory - Vacancy of rental factory	**Level 4** Is considering to build a rental factory for manufacturing	○ **Level 5**	× **Level 2**	○ **Level 5**
Recruitment	Full-time worker	Labor cost within industrial park (salary, compensation, bonus, benefits)	**Level 3** Less than 50 times of minimum wage	○ **Level 3**	○ **Level 3**	○ **Level 3**
Contribution to environmental issues	Communication	Communication with surrounding communities	**Level 4** Communication with surrounding communities, and community activities (such as free events, donation)	○ **Level 4**	○ **Level 4**	○ **Level 5**
			Colored label／Total #s	**3/5 (60%)**	**2/5 (40%)**	**5/5 (100%)**

Users can set their requirement level.

Blue highlighted part corresponds to the "my company's requirement"

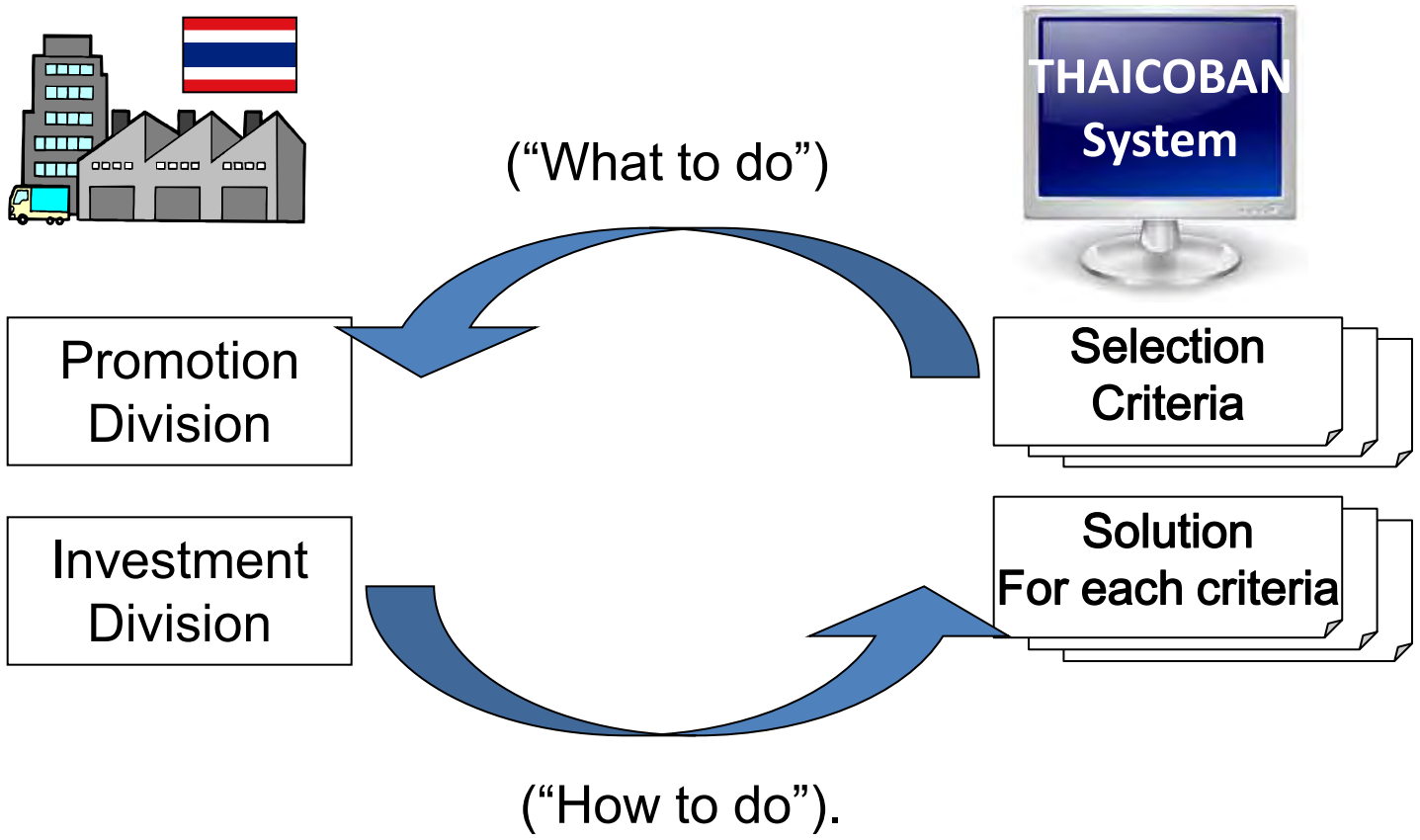
Best result

Search Engine

4. Characteristics of THAICOBAN

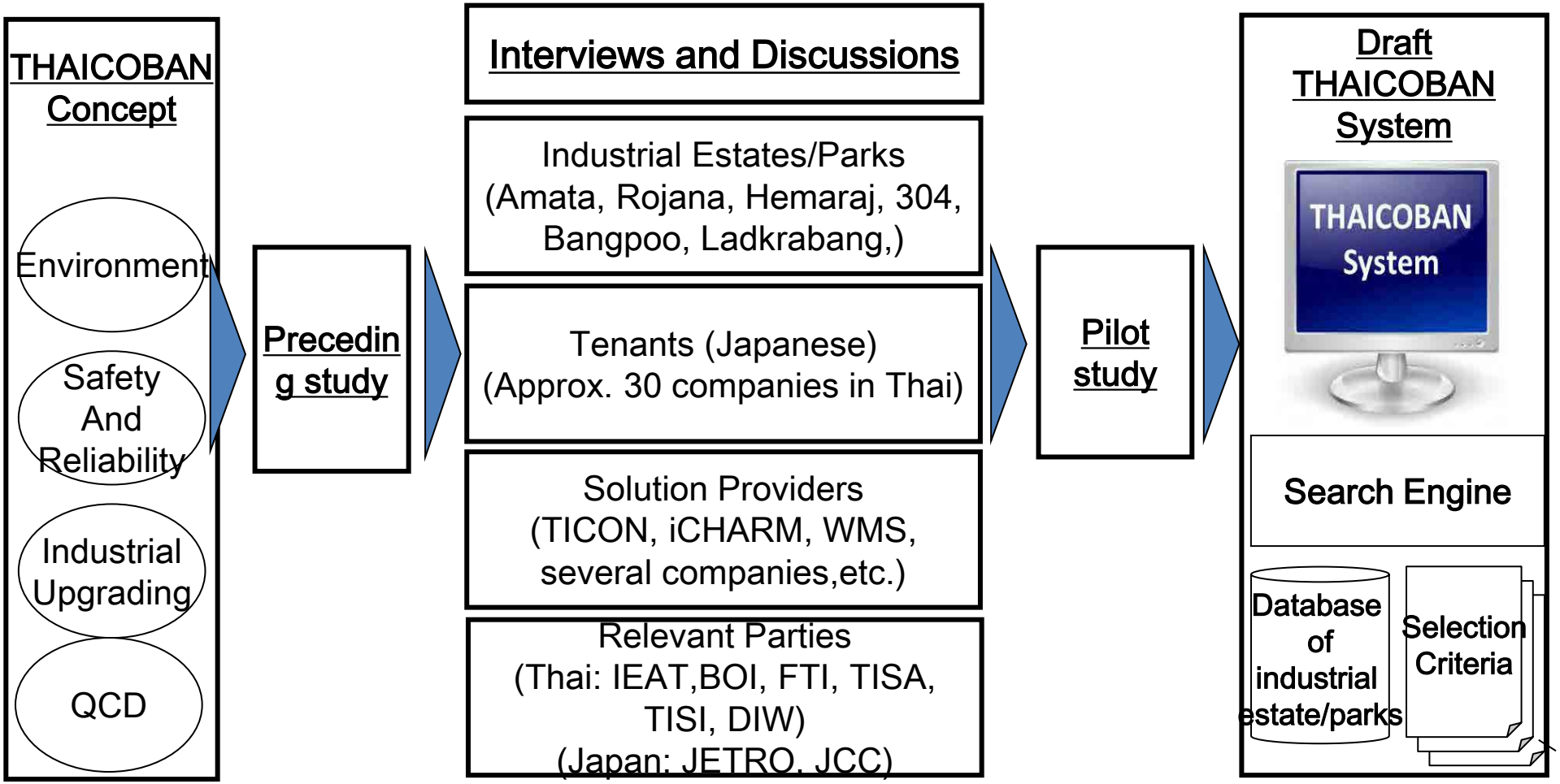
4-1. Characteristics: Criteria with Solution

THAICOBAN shows Industrial Estates/Parks with not only Criteria (“What to do”) but Solution (“How to do”).



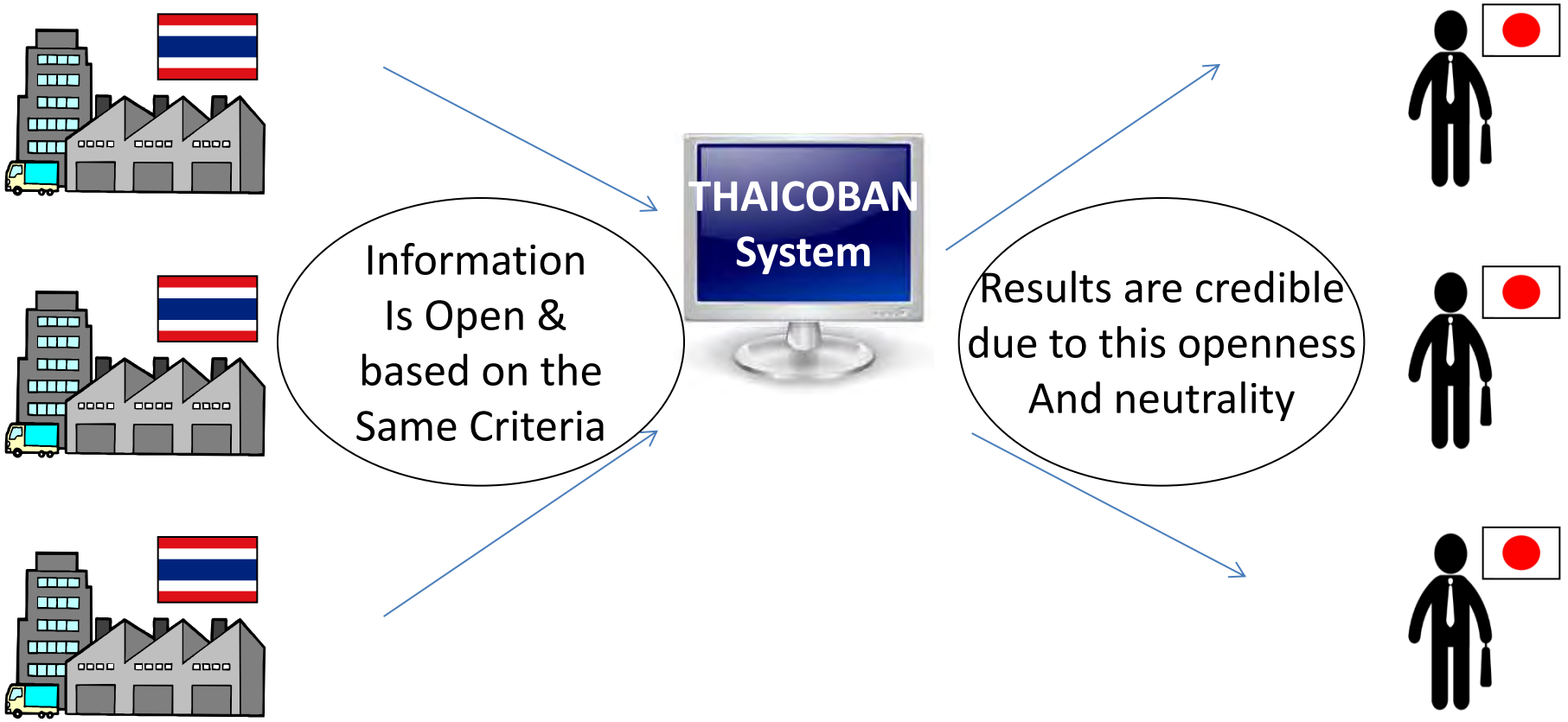
4-2. Characteristics:
Made based on Actual comments

THAICOBAN has been created through preliminary study and comprehensive interviews with relevant parties.

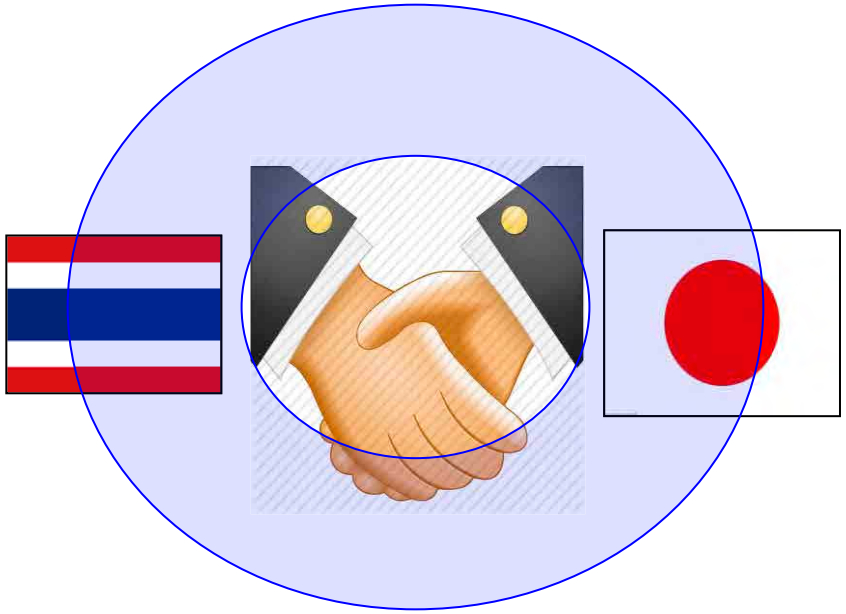


4-3. Characteristics: Openness and Neutrality

THAICOBAN secures openness of information and shows results based on requirement.



or getting the perfect score but searching “best matching”.



5. Conclusion

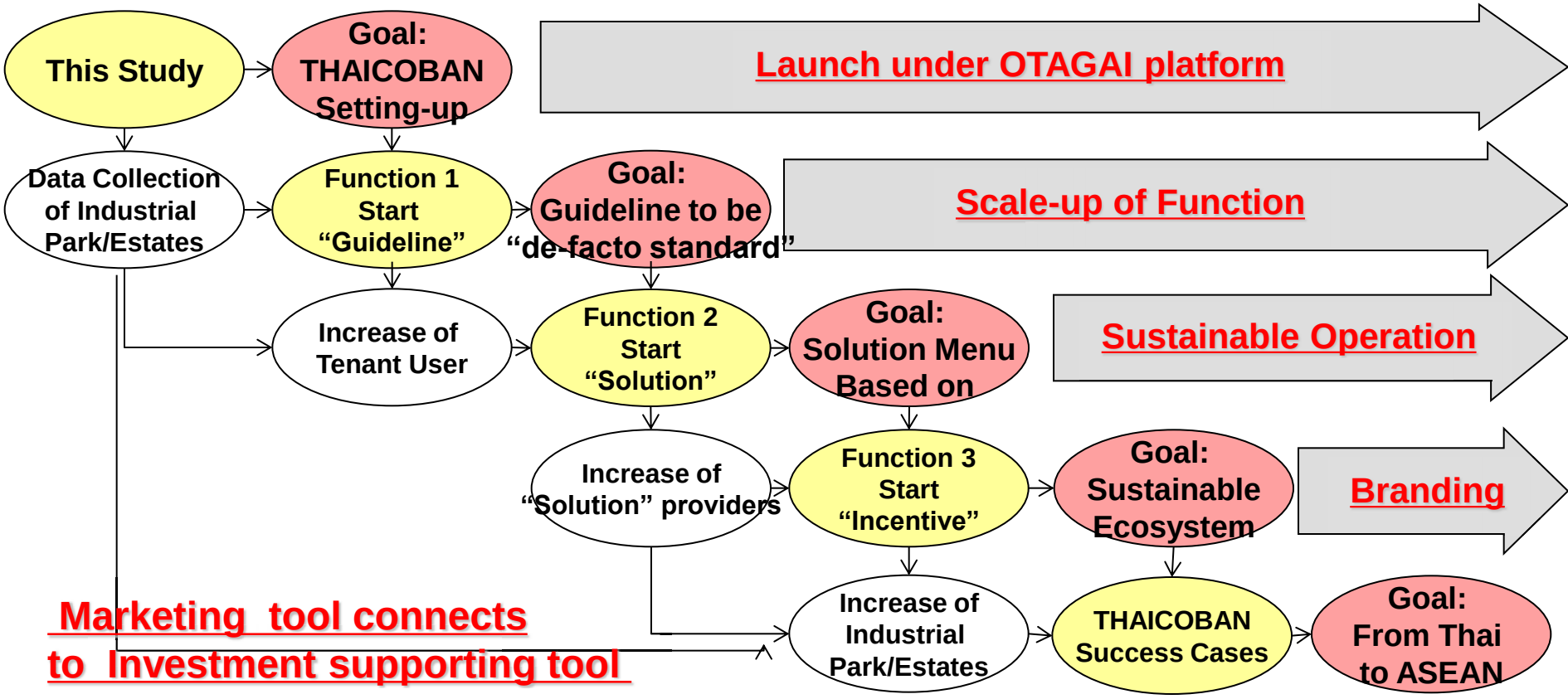
5-1. Fruits…

- For Thai industrial estates/parks, THAICOBAN supports (i) marketing promotion & (ii) infrastructure improvement, thereby more tenants can be attracted.

- For Japanese SMEs, THAICOBAN encourages decision making for selection of industrial estates/parks in Thailand.

- For both Governments, THAICOBAN supports implementation of current Governmental policies:
  - Thai: Eco-industrial park standard, PRTR, New incentive scheme, Industrial Up-gradation
  - Japan: “Abenomics” (Promotion of SMEs and External Trade)

Dec 9 2013 : 4th Otagai Conclave in Yamanashi pref.
Dec 13-15 2013: The 40th anniversary of ASEAN-Japan Dialogue summit in Tokyo



Let’s spread “THAI-Brand” to ASEAN countries !

THANK YOU.