No.

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

DEPARTMENT OF INDUSTRIAL PROMOTION
MINISTRY OF INDUSTRY
THE KINGDOM OF THAILAND

THE STUDY
ON
DEVELOPMENT OF CONSULTING SERVICES
TO PROMOTE SME CLUSTER
AND REGIONAL DEVELOPMENT
IN
THE KINGDOM OF THAILAND

OCTOBER 2005

UNICO INTERNATIONAL CORPORATION
INTERNATIONAL DEVELOPMENT CENTER OF JAPAN

TOKYO, JAPAN

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Mr. Tadashi IZAWA
Vice-President
Japan International Cooperation Agency
Tokyo, Japan

Letter of Transmission

We are pleased to submit a final report on the "Study on Development of Consulting Services to Promote SME Cluster and Regional Development in the Kingdom of Thailand" (hereinafter referred to as "the Study") upon completion of the Study. The report contains 1) selection of three model clusters and diagnosis of them, 2) formulation of a master plan and an action plan for each model cluster, 3) design of a pilot project for each model cluster and execution of them, and 4) a proposed plan for nationwide evolvement of cluster activation activities.

The cluster approach has been recognized in Thailand to be one of important development measures for SME development. However, there were a wide variety of understandings on "cluster development" among persons concerned, and therefore it was necessary for them to have a close consensus on the definition of industrial cluster and cluster development approach. In implementation of the Study, the JICA study team in cooperation with the counterpart, Department of Industrial Promotion (DIP) of Ministry of Industry Thailand, employed a methodology to strongly involve regional people who are living and working in the three model cluster areas. This development procedure produced good results in formulating a common understanding for effectiveness of both the cluster approach and the participatory approach employed for the Study at the time when the pilot projects were completed in three areas.

DIP decided to evolve the cluster activation activities to the whole country for SME development in accordance with recommendations and proposals made in the final report and it was reported that a budget of the government was already provided for the first year. We sincerely hope that output of the Study will greatly contribute to SME promotion in Thailand through the cluster development approach that was developed in the Study.

On behalf of the study team, I would like to express gratitude to your agency, the Ministry of Foreign Affairs, the Ministry of Economy, Trade and Industry, and the Japanese embassy in Thailand for valuable support and guidance extended in the course of the Study. At the same time, we are very grateful to DIP and member organizations of the Steering Committee for the Study, as well as regional organizations covering the three model clusters such as Industrial Promotion Centers (IPC) under DIP, governor's

offices, Business Development Service (BDS) providers including academies and training institutions, and private enterprises and individuals participated in the pilot projects.

Respectfully submitted

Shozo INAKAZU

UNICO International Corporation
Team Leader,
Study on Development of Consulting Services to Promote SME Cluster and Regional Development in the Kingdom of Thailand

Preface

In response to a request from the Government of the Kingdom of Thailand, the Government of Japan decided to conduct and entrusted the Study on the Study on Development of Consulting Services to Promote SME Cluster and Regional Development to Japan International Cooperation Agency (JICA).

JICA sent a study team led by Mr. Shozo INAKAZU of UNICO International Co. Ltd. and organized by UNICO International Co., Ltd. and International Development Center Japan Ltd. to Thailand 8 times from February 2004 to October 2005.

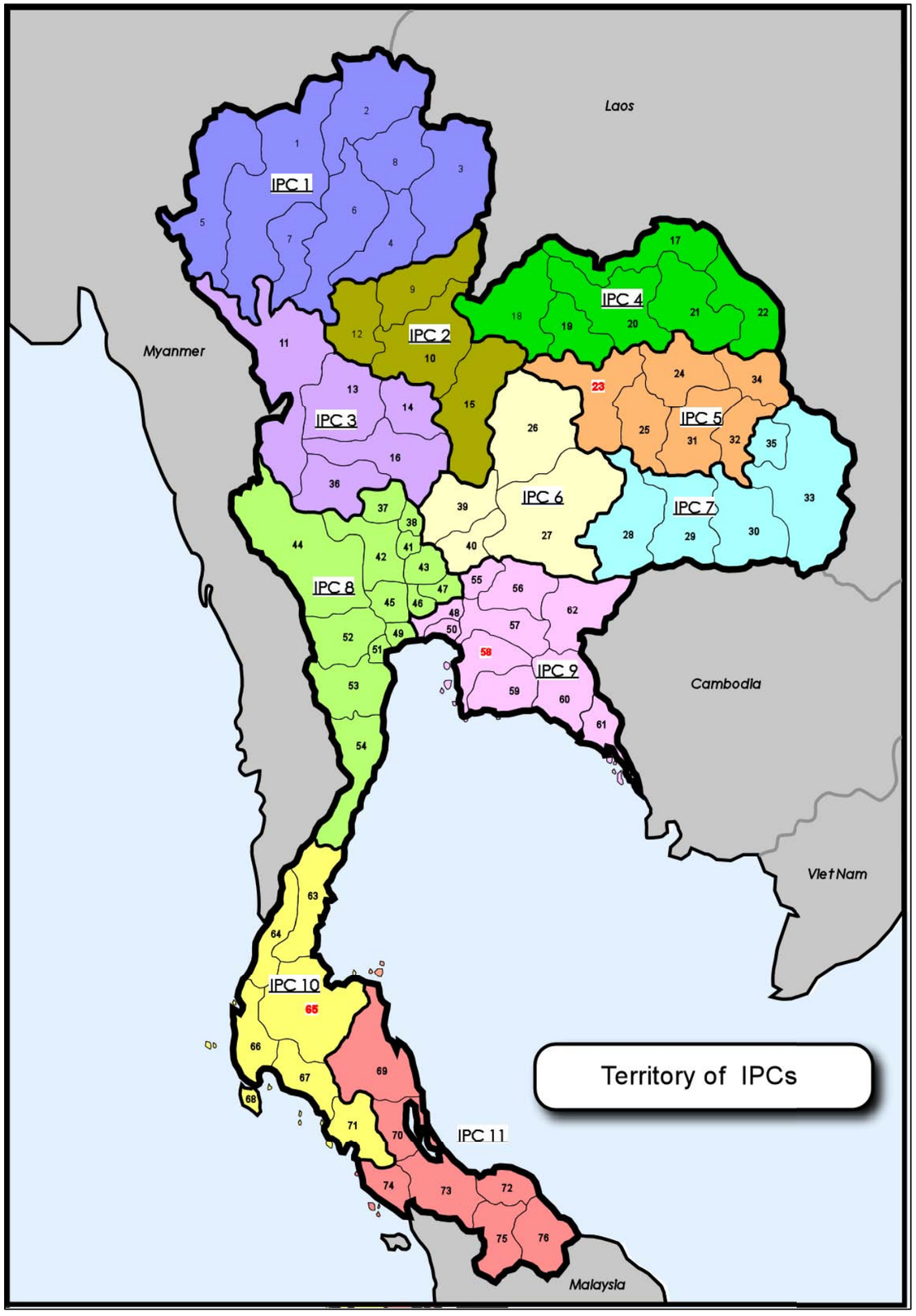
The study team held discussions with the officials concerned of the Government of the Kingdom of Thailand and conducted related field surveys. After returning to Japan, the study team carried out further studies and compiled the final results in this report.

I hope this report will contribute for the SME Cluster Development Activities in Thailand and to the promotion of amity between our two countries.

I also express my sincere appreciation to the officials concerned of the Government of the Kingdom of Thailand for their close cooperation throughout the study.

October 2005

Tadashi IZAWA
Vice President
Japan International Cooperation Agency
Tokyo, Japan



Eleven Industrial Promotion Centers (IPCs)

IPC 1 (7 provinces)

1.	Chiang Mai	チェンマイ
2.	Chiang Rai	チェンライ
3.	Nan	ナーン
4.	Phrae	プレー
5.	Mae Hong Son	メーホーンソン
6.	Lampang	ランパーン
7.	Lamphun	ランプン
8.	Phayao	パヤオ

IPC 2 (4 provinces)

9.	Uttaradit	ウタラディット
10.	Phitsanulok	ピサヌロク
12.	Sukhothai	スコータイ
15.	Phetchabun	ペチャブン

IPC 3 (5 provinces)

11.	Tak	タック
13.	Kamphaeng Phet	カンペーンペット
14.	Phichit	ピチット
16.	Nakhon Sawan	ナコンサワン
36.	Uthai Thani	ウタイタニ

IPC4 (6 provinces)

17.	Nong Khai	ノーンカイ
18.	Loei	ルーイ
19.	Nong Bua Lamphu	ノーンブアランプー
20.	Udon Thani	ウドンタニ
21.	Sakon Nakhon	サコンナコン
22.	Nakhon Phanom	ナコンパノム

IPC 5 (6 provinces)

23.	**Khon Kaen**	**コンケン**
24.	Kalasin	カラシン
25.	Maha Sarakham	マハーサラカム
31.	Roi Et	ロイエット
32.	Yasothon	ヤソトン
34.	Mukdahan	ムクダハン

IPC 6 (4 provinces)

26.	Chaiyaphum	チャイヤプム
27.	Nakhon Ratchasima	ナコンラチャシマ
39.	Lopburi	ロッブリ
40.	Saraburi	サラブリ

IPC 7 (5 provinces)

28.	Buri Ram	ブリラム
29.	Surin	スリン
30.	Si Sa Ket	シーサケット
33.	Ubon Ratchathani	ウボンラチャタニ
35.	Amnat Charoen	アムナートチャルン

IPC 8 (14 provinces)

37.	Chainat	チャイナート
38.	Sing Buri	シンブリ
41.	Ang Thong	アーントーン
42.	Suphanburi	スパンブリ
43.	Ayutthaya	アユタヤ
44.	Kanchanaburi	カンチャナブリ
45.	Nakhon Pathom	ナコンパトム
46.	Nonthaburi	ノンタブリ
47.	Pathum Thani	パトゥムタニ
49.	Samut Sakhon	サムットサコン
51.	Samut Songhram	サムットソンクラム
52.	Ratchaburi	ラチャブリ
53.	Petchaburi	ペチャブリ
54.	Prachuap Khiri Khan	プラチュアップキリカン

IPC 9 (10 provinces)

48.	Phra Nakhon (県都Krung Thep=Bangkok)	プラナコン
50.	Samut Prakan	サムットプラカン
55.	Nakhon Nayok	ナコンナヨーク
56.	Phrachin Buri	プラチンブリ
57.	Chachoengsao	チャチェンサオ
58.	**Chon Buri**	**チョンブリ**
59.	Rayong	ラヨーン
60.	Chanthaburi	チャンタブリ
61.	Trat	トラート
62.	Sa Kaeo	サケオ

IPC 10 (7 provinces)

63.	Chumphon	チュムポン
64.	Ranong	ラノーン
65.	**Surat Thani**	**スラタニ**
66.	Phangnga	パンガー
67.	Krabi	クラビ
68.	Phuket	プーケット
71.	Trang	トラン

IPC 11 (7 provinces)

69.	Nakhon Si Thammarat	ナコンシタマラート
70.	Patthalung	パッタルーン
72.	Pattani	パッタニ
73.	Songkhla	ソンクラー
74.	Satun	サトゥン
75.	Yala	ヤラー
76.	Narathiwat	ナラティワート

LIST OF ABBREVIATION（略語表）

Abbreviation	English	Japanese
A/P	Action Plan	アクションプラン（活動計画、実施計画）
ADB	Asian Development Bank	アジア開発銀行
APCB	Auto-parts Chon Buri	チョンブリ自動車部品クラスター（CAMCの前身）
APEC	Asia-Pacific Economic Cooperation	アジア太平洋経済協力会議
ASEAN	Association of South East Asian Nations	アセアン、東南アジア諸国連合
ATSME	Association for the Promotion of Thai Small and Medium Entrepreneurs	タイ中小企業振興協会
BAAC	Bank for Agriculture and Agriculture cooperatives	農業および農業協同組合銀行
BCHID	Bureau of Cottage and Handicraft Industries Development	家内手工業振興部、工業省
BDS	Business Development Services	ビジネス開発サービス、中小企業の経営資源強化支援
BEED	Bureau of Entrepreneur and Enterprise Development, MOI	起業家および企業開発部、工業省
BISD	Bureau of Industrial Sectors Development, MOI	産業部門開発部、工業省
BOI	Board of Investment, MOI	投資委員会、工業省
BSID	Bureau of Supporting Industries Development, MOI	サポーティングインダストリー開発部、工業省
BU	Burapa University	ブラパ大学
CAMC	Chon Buri Auto- and Machinery-parts Cluster	チョンブリ自動車/機械部品クラスター
CC	Chamber of Commerce	商工会議所
CDA	Cluster Development Agent	クラスター開発エージェント
CEFE	Competency-based Economy Through Formation of Enterprise	企業形成による能力主義経済
CEO	Chief Executive Officer	最高経営責任者（タイでは県知事もCEOと呼ぶことがある）
CF	Consultancy Fund	コンサルタント基金
COC	Chain of Custody (Certification)	経路管理（認証）
CRISD	Chonburi Regional Institute for Skill Development	チョンブリ地域職業訓練校
CSCD	Study on Development of Consulting Services to Promote SME Cluster and Regional Development in the Kingdom of Thailand	中小企業クラスターおよび中小企業開発に資するコンサルティング・サービスの開発
DAC	Development Assistance Committee	開発援助委員会
DBD	Department of Business Development, MOC	事業開発局、商務省
DEP	Department of Export Promotion, MOC	輸出振興局、商務省
DIP	Department of Industrial Promotion, MOI	工業振興局、工業省

Abbreviation	English	Japanese
DIW	Department of Industrial Works, MOI	産業工場局、工業省
DOVE	Department of Vocational Education, MLSW	職業訓練局、労働福祉省
DSD	Department of Skill Development, MLSW	技能開発局、労働福祉省
EEI	Electrical and Electronics Institute	電気電子インスティチュート
E-TEC	Eastern College of Technology	東部技術短期大学
FSC	Forest Stewardship Council	森林管理協議会
FTI	The Federation of Thai Industries	タイ工業連合
GDP	Gross Domestic Product	国内総生産
GPP	Gross Provincial Product	県総生産
GRP	Gross Regional Product	地域総生産
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit GmbH (German Agency for Technical Coporation)	ドイツ技術協力公社
ICEC	Khon Kaen Industrial and Community Education College	コンケン産業・社会教育短大
IFCT	the Industrial Finance Corporation of Thailand	タイ産業金融公社
IPC	Industrial Promotion Center	産業振興センター
IRP	Industrial Restructuring Plan	産業構造調整計画
ISMED	Institute for Small and Medium Enterprises Development	中小企業開発インスティチュート
ITB	Invigorating Thai Business	タイ国企業活性化プロジェクト
JBIC	Japan Bank for International Cooperation	国際協力銀行
JICA	Japan International Cooperation Agency	独立行政法人国際協力機構
JSAE	Japanese Society of Automotive Engineers	日本自動車技術者協会
KTB	Krung Thai Bank	クルンタイ銀行
MEs	Micro Enterprises	零細企業
M/P	Master Plan	総合計画
MLSW	Ministry of Labor and Social Welfare	労働社会福祉省
MOAC	Ministry of Agriculture and Cooperatives	農業･農業協同組合省

Abbreviation	English	Japanese
MOC	Ministry of Commerce	商務省
MOE	Ministry of Education	教育省
MOF	Ministry of Finance	財務省
MOI	Ministry of Industry	工業省
MOIT	Ministry of Interior	内務省
MOSTE	Ministry of Science, Technology and Environment	科学技術環境省
MOU	Memorandum of Understanding	覚書
NCC	National Committee on Competitive Advantage	国家競争力向上委員会
NEC	New Entrepreneur Creation Program	起業家創成プログラム
NESDB	National Economic and Social Development Board	国家経済社会開発庁
NGO	Non-governmental Organization	非政府組織
NOAC	National OTOP Administrative Committee	全国OTOP監理委員会
NPO	Nonprofit Organization	非営利組織
NSTDA	National Science and Technology Development Agency	国家科学技術開発庁
OEM	Original Equipment Manufacturing	純正部品製造、相手先商標製品製造
OIE	Office of Industrial Economics, MOI	産業経済局、工業省
OJT	On-the-JOB Training	実地訓練
ORRAF	Office of the Rubber Replanting AID Fund	ゴムの木植え替え支援基金事務所
OSMEP	Office of SME Promotion	中小企業振興ｵﾌｨｽ
OTOP	One Tambon One Product	一村一品
PAO	Provincial AgriculturalOffice, MOAC	県農業局、農業・農業協同組合省
PCM	Project Cycle management	プロジェクトサイクルマネジメント
PCO	Provincial Commerce Office, MOC	県商業事務所、商務省
PDM	Project Design Matrix	プロジェクトデザインマトリクス
PGO	Provincial Governor's Office	県知事事務所
PIO	Provincial Industrial Office, MOI	県産業事務所、工業省
PP	Pilot Project	パイロットプロジェクト
PSCD	Provincial Center for Skill Development, MLSW	県技能開発センター、労働福祉省

Abbreviation	English	Japanese
REM	Replacement Equipment Manufacturing	修理用製品製造
RISD	Regional Institute for Skill Development	地域職業訓練校
Sala Mai Thai	Thai Silk Exhibition Hall	タイシルク展示ホール
SDB	Skill Development Bureau, MLSW	技能開発部、労働福祉省
SICGC	Small Industry Credit Guarantee Corporation	中小企業信用保証公社
SISD 11	Surat Thani Institute for Skill Development Region 11	スラタニ職業訓練校（第11地区）
SMEDB	Small and Medium Enterprise Development Bank of Thailand	タイ中小企業開発銀行
SMEs	Small and Medium-sized Enterprises	中小企業
SSIPP	Small-Scale Industry Promotion Project	小規模産業振興プロジェクト
SWOT	Strength, Weakness, Opportunity and Threat	強み、弱み、機会、脅威
TAI	Thai Automotive Institute	タイ自動車
TAPMA	Thai Auto-Parts Manufacturers Association	タイ自動車部品製造者協会
TCC	Thai Chamber of Commerce	タイ商工会議所
TF	Training Fund	訓練基金
TGI	Thai-German Institute	タイ-ドイツ・インスティチュート
TMB	Thai Military Bank	タイ軍人銀行 （TMB Bank)
TPA	Technological Promotion Association (Thai-Japan)	技術振興協会（日泰）
TPA	Thai Parawood Association	タイパラウッド協会
TPM	Total Production Maintenance	トータル・プロダクション・マネージメント、全員参加の生産保全
TSAE	Thai Society of Automotive Engineers	タイ自動車技術者協会
UNIDO	UN Industrial Development Organization	国連工業開発機構
USAID	US Agency for International Development	米国国際開発庁
WB	World Bank	世界銀行
WBS	Work Breakdown Structure	ワーク･ブレークダウン･ストラクチャー、業務分解階層表

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Chapter 3 Selection of Three Model Clusters

Chapter 4 Model Cluster Master Plans and Action Plans

Chapter 1 Introduction

Chapter 1 Introduction

1.1 Background of the Project

This project was originally designed by the Thai government for application to the Japanese government to find ways to train and use Thai consultants effectively for the purpose of diagnosis in the field of industrial accumulation or industrial cluster. Utilization of SME consultants or Shindanshi trained under assistance of Japanese government was one of items to be studied. On the other hand, the interest of the Thai government gradually moved to the SME cluster development itself in addition to development of consulting services for it, considering movements of "Cluster Approach" inside and outside the country. Under such circumstances, the Thai government finally decided to request the Japanese government for technical assistance to be provided by Japan International Cooperation Agency (JICA). In response, the Japanese government decided to send a JICA mission as a policy assistance project and the project was started in February 2004.

Thus, the content of the project was finally emphasized on development of a cluster reinvigoration method and implementation of the pilot project, in which development of consulting service was studied as a tool for cluster development. Note that DIP refers to the project by an acronym "CSCD" on the basis of the formal project name, "the Study on Development of Consulting Services to Promote SME Cluster and Regional Development in the Kingdom of Thailand.

1.2 Objective of the Project

(1) To select three model clusters and formulate a master plan and an action plan for development of each industrial cluster;
(2) To select a pilot project from projects proposed in each action plan, formulate its implementation plan, and carry it out; and
(3) To propose a method for nationwide deployment of SME promotion measures under the industrial cluster approach, on the basis of the results of the activities in (1) and (2).

1.3 Results Expected

(1) DIP masters the methodology and techniques relating to the cluster approach and becomes capable of promoting industrial cluster development by itself (including technology transfer to SME consultants, relating to the method for formulating the master plan and the action plan).

(2) In the three model clusters, industrial cluster development activities led by SMEs become activated and pilot projects are implemented in a sustainable and expandable way.

(3) Related organizations agree on a unified definition and interpretation of the "cluster" that now takes diverse forms, which allows DIP to set forth a unified policy and strategic direction for industrial cluster development programs.

1.4 Members of Thai Party

The counterpart of Thai side for CSCD is Department of Industrial Promotion (DIP) of Ministry of Industry (MOI). Bureau of Entrepreneur and Enterprise Development (BEED) takes responsibility for managing CSCD in the head quarters of DIP. DIP divides the nation into 11 territories and locates an Industrial Promotion Center (IPC) in a territory. IPCs in the three model clusters practically worked as a regional counterpart during implementation of the pilot projects.

Members of Steering Committee and Working Group were also assigned as follows:

- COUNTERPART:

  BEED/DIP/MOI

- STEERING COMMITTEE:

1) DIP, MOI (Secretariat)	2) OIE, MOI	3) OSMEP	4) DEP, MOC
5) DBD, MOC	6) SMEDB	7) TPA	8) IFCT
9) NESDB	10) FTI	11) TCC	12) ATSME
13) TAI			

- WORKING GROUP:

1) BEED, DIP (Secretariat)	2) BSID, DIP	3) BISD, DIP
4) IPCs, DIP	5) SMEDB	6) TPA
7) FTI	8) TCC	9) BDS Providers

1.5 Scope of the Project

Phase 1: Selection of the model clusters, formulation of the master plans, and finalization of pilot projects and their contents

(1) To select three model clusters out of 11 candidates proposed by five IPCs;
(2) To conduct diagnosis on the three model clusters and formulate a master plan and an action plan for development of each cluster; and
(3) To select one project from those proposed in each action plan as a pilot project for each of the three model clusters.

Phase 2: Implementation of the pilot projects and evaluation upon their completion

(1) To formulate a detailed implementation plan for a pilot project in each of the three cluster areas;
(2) To implement the pilot projects under collaboration with local governments, industries and academics concerned; and
(3) To conduct terminal evaluation on the pilot projects upon completion of the JICA mission's support.

Phase 3: Formulation and announcement of an implementation plan for nationwide deployment of cluster development

(1) To propose a unified definition of the cluster, and its development organization and budget for nationwide deployment; and
(2) To present the above to related parties in order to promote a wider understanding of cluster development.

1.6 Reports Submitted as Deliverables

The JICA mission has submitted the following reports throughout the project period.

February 2004:	Inception Report
March 2004:	Progress Report (I)
August 2004:	Interim Report
March 2005:	Progress Report (II)
July 2005:	Draft Final Report
October 2005:	Final Report
October 2005:	Pilot Project Report

In addition to the above reports that are mandated under the scope of study, the following two reports were submitted as deliverables of the pilot projects.

May 2005: Study on loss reduction in the parawood sawing process (Surat Thani)

May 2005: The training manual for coordinators in product development (Khon Kaen textile)

1.7 Project Area

DIP places an Industrial Promotion center (IPC) each in eleven DIP regions over the country. (See the map at the beginning of this report.) The first field survey conducted in Phase 1 covered five IPC areas, namely IPC1, IPC5, IPC8, IPC9, and IPC10. Then, from the second field survey in Phase 1 to activities in Phase II, three IPC areas (IPC5, IPC9 and IPC10) were selected as the model customers to form the project area, as follows.

IPC5: Textile industry in Khon Kaen

IPC9: Automobile and machinery parts industry in Chon Buri

IPC10: Parawood processing industry in Surat Thani

In Phase III, nationwide deployment of the cluster development plan was proposed to cover the entire country.

1.8 Study Schedule and the members of JICA Mission

Figure 1-1 shows the entire time frame allocated for the study that contained eight-time field surveys in Thailand. The study took a total of 22 months from submission of the inception report to that of the final report.

The members of JICA mission are listed as follows. The mission made field surveys eight times.

1) Shozo INAKAZU Team Leader
2) Kazunori HORIGUCHI (Sub-team Leader) Policy and System
3) Yukihiro TERADA Regional Economic Development (Participated in first and second field surveys only)
4) Satoru ARAI Consulting Service System 1 (Second and third field surveys only)

5)	Yuzo ARAI	Consulting Service System 2 (Second half of the study; also in charge of Consulting Service System 1)
6)	Hiroshi HASEGAWA	Business Development Services (First and second field surveys only)
7)	Tamon NAGAI	Human Resources Development (First through seventh field surveys)
8)	Kunio OTSUKA	Cluster Analysis-1 (Second half of the study; also served as sub-team leader)
9)	Takeshi ODAWARA	Cluster Analysis-2 (First through seventh field surveys)
10)	Susumu OKATA	Cluster Analysis-3 (First field survey only)
11)	Fumio SHIMIZU	Cluster Analysis-3 (Second through seventh field surveys)
12)	Minoru KOMAZAKI	Project Coordinator (First field survey only)
13)	Mari WATANABE	Project Coordinator (Second, seventh and eighth field surveys)

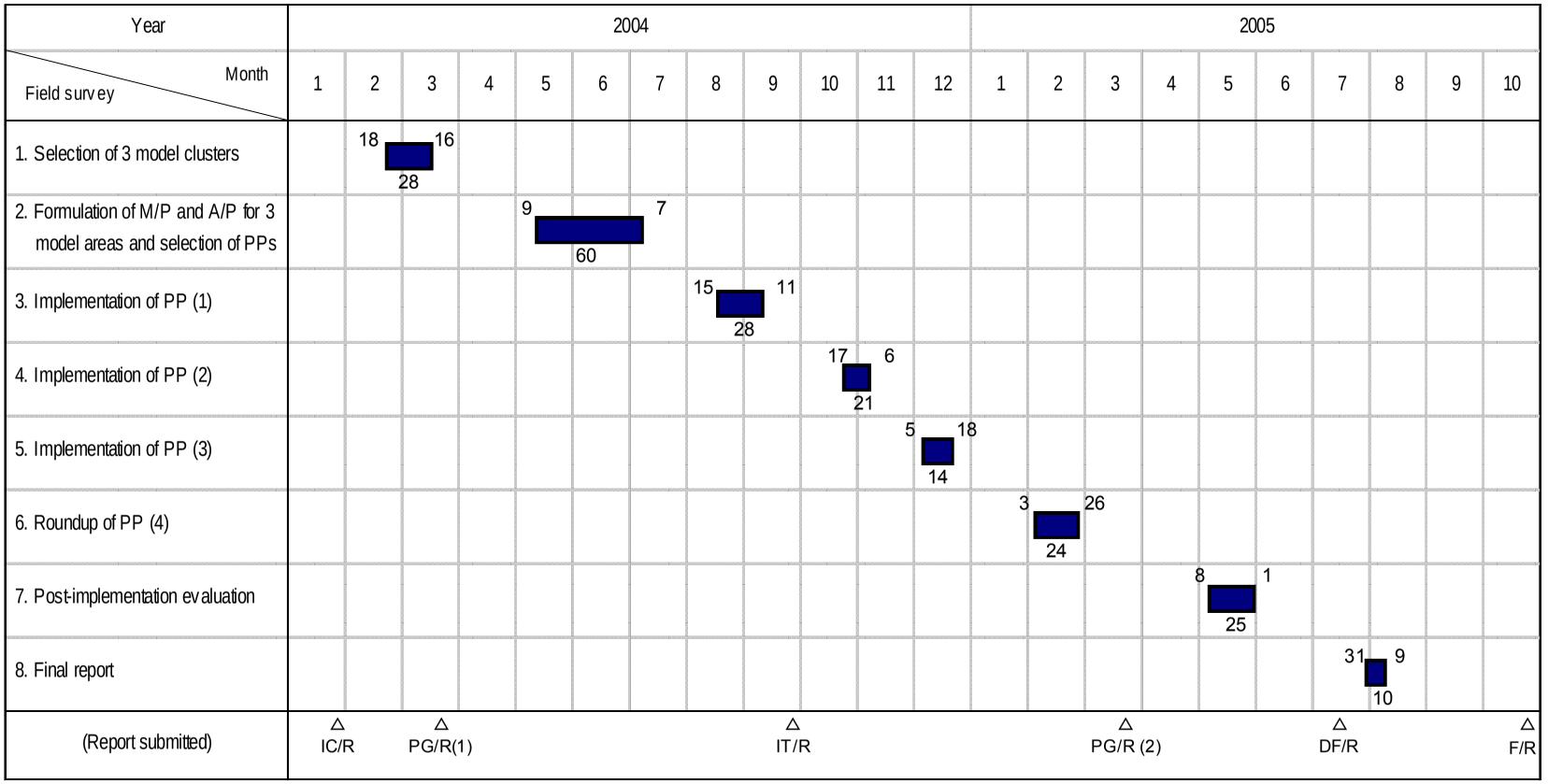

Figure 1-1 CSCD Project and Field Survey Schedule

Chapter 2 Present Status of Cluster Development in Thailand (As of May 2004)

Chapter 2 Present Status of Cluster Development in Thailand (As of May 2004)

In Thailand, several kinds of the programs intended for cluster development are planned or actually implemented. The definition of "cluster" is so varied that each organization has its own understanding and interpretation. At this stage, it seems that, in many cases, cluster development means to strengthen cooperation among SMEs in the same industries or regions. A lot of organizations have been trying to develop their concrete activities for cluster development. This chapter introduces 13 agencies and organizations involved with cluster development. It should be noted that this chapter was mostly prepared using data and information available as of May 2004. Refer to 6.6 of Chapter 6 on activities of cluster promotion under National Committee on Competitive Advantage (NCC).

2.1 Outline of 13 Agencies/Organizations involved with Cluster Development

2.1.1 DIP of MOI

2.1.1.1 BSID

BSID (Bureau of Supporting Industries Development) is a bureau of DIP (the Department of Industrial Promotion). BSID has been acting as a core agency in developing the manufacturing capability of domestic supporting industries and in promoting subcontracting businesses from large enterprises to SMEs.

(1) Programs related to Cluster Development

BSID has been implementing the development program on 4 clusters since May 2003. These four clusters are two for food processing, one for automotive parts, and one for textile. Those 4 clusters are selected from among more than 20 candidates by the three criteria of priority in industrial policy, impact on the national economy, and growth potential.

The following shows the number of participating enterprises by a matrix of industries and IPC regions.

	Food (snack, etc.)	Food (sweets)	Auto-parts	Textile
IPC 1	1	0	0	0
IPC 2	0	1	1	0
IPC 3	1	0	0	0
IPC 6	2	0	0	21
IPC 8	20	9	5	0
IPC 9	17	7	23	0
BKK	42	50	24	0
Total	83	67	53	21

Note: 1. The above data are based on the materials obtained from BSID in February, 2004.
2. IPC 9 does not include BKK (the Phra Nakhon Province).

A total of 224 enterprises have participated in the BSID program. Among these 224 enterprises, 116 enterprises are located in BKK (Phra Nakhon), accounting for 52% of the total. The two food processing clusters have higher ratios of location in BKK, while in the automotive parts cluster most of the enterprises are located in the IPC 9 region including BKK. By contrast, in the textile cluster, all 21 enterprises are located in the Chaiyaphum Province in the IPC 6 region.

The following summarizes each cluster in this program.

1) Food processing cluster centering in the central region (IPC 6, 8, 9)

   It targets medium scale enterprises with over 1,000 rais of site area, located mainly in IPC6, IPC8, or IPC 9. The manufactured items are snacks, vegetable/fruits, fish/meat cans, etc. Suppliers of packaging and food processing machinery are also included. Initially 50 enterprises participated in this cluster. Their number increased to 83.

2) Food processing cluster centering in the Bangkok area

   It targets small scale manufacturers of Thai sweets. Initially 50 enterprises participated in this cluster. The number increased to 67.

3) Automotive parts cluster centering in the Bangkok area and its vicinity

   It targets automotive parts manufacturers mainly located in IPC 8, or IPC 9. Fifty-three manufacturers participated in this cluster as of January 2004.

4) Textile cluster in the Chaiyaphum Province

   It targets textile manufacturers located in the Chaiyaphum Province. Twenty-one enterprises participated in this cluster as of January 2004.

The implementation of this program is entrusted to Cluster Development Agency (CDAs). CDAs are positioned mainly as BDS facilitators in this program. The CDA for food processing clusters are Kingmongkut University. And the CDA for the textile cluster is Chulalongkhon University. The automotive parts cluster has designated TPA as its CDA. The commission contracts are made each fiscal year. Each of CDAs is obliged to submit an activity report to BSID every year.

At present (as of May, 2004), the two food processing clusters are integrated into one large cluster which is participated by 150 enterprises located in IPC 1, IPC 2, IPC 3, IPC 6, IPC 8, and IPC 9 regions. In this integrated food processing cluster, duck meat cans are reportedly commercialized in tie-up of a duck meat processing enterprise and a can manufacturing enterprise.

In addition, the motorcycle cluster newly participates in the BSID program. The motorcycle cluster started preparations for joining the program in October, 2003 and is expected to start its activities for cluster development from July, 2004. This cluster includes more than 10 enterprises. At present, 7 manufacturers of chains, sprockets, shock absorbers, clutches, gaskets, etc. are formulating a joint program for product development, marketing, and R&D. TAI (the Thai Automotive Institute) is involved in the cluster development of motorcycles as CDA.

Thus BSID is now carrying out a cluster development program targeting these four kinds of clusters of food, textile, automotive parts, and motorcycles. The annual budget for this program is Bt.19 mil. for FY 2003 (Bt.14 mil. was actually consumed) and Bt.15 mil. for FY 2004. This program is expected to be continued.

(2) Organizations for Cluster Development

BSID is composed of the 4 divisions of metalworking, parts, packaging, and linkage. The parts division has the 3 sections of cluster development, technology, and resource study. The cluster development section is staffed by 4 officers including a section chief. Among them, 3 officers are now engaged in this cluster development program (another one officer takes charge of GTZ programs).

DIP was assigned as “the key person” in implementation of Cluster Activation Program by Memorandum of Understanding (MOU) of 10 June 2004 in a framework of National Committee on Competitive Advantage (NCC). BEED of DIP that is the counterpart of the JKA mission will play a key role for cluster activation

from now on. Budget for the cluster activation will be allocated through BEED to BSID that is party working for a cluster activation program under DIP.

2.1.1.2 Assistance of GTZ (Deutsche Gesellshaft fur Technische Zusammenarbeit) for DIP

GTZ is a German government agency in charge of its ODA programs.

(1) Programs related to Cluster Development

GTZ and DIP implemented the SSIPP (Small-Scale Industry Promotion Project) in 1997 to 2000 (Phase 1) and 2001 to 2003 (Phase 2) targeting Bangkok, Chiang Mai, and Nakhon Ratchasima. The total budget was DM 726 million (US$416 million).

The SSIPP aims to establish and develop the supplying system of BDS with a view to fostering small-scale enterprises in the regions. The target industries are food processing, textiles, construction materials, metal processing, ceramics, sundries, woodwork, etc. In its second phase, this project implemented pilot projects in the northern region (Chiang Mai) and the northeastern region (Nakhon Ratchasima) for two years. These pilot projects emphasized the supply of client-oriented BDS and the support to women entrepreneurs.

Major activities throughout the first phase and the second phase include:

1) Construction and strengthening of the BDS network

   The BDS network in each region covers the governor's office, IPC(including the BOI branch), the branch of MOC, the branches of TCC, FTI, SIFC, and banks, as well as unions, universities and colleges, research institutes in the region.

2) Implementation of the small-scale entrepreneurship training courses based on the CEFE (Competency-based Economies through Formation of Enterprises) concept of GTZ

   They were planned and carried out jointly with ISMED. Half of the participants were women.

3) Information services and advice

   IPCs and the branch offices of MOC offered such services and advice in cooperation with the branch offices of TCC, FTI, banks, etc.

4) Capacity building of IPCs

   GTZ experts gave the IPC staffs OJT in organizational capacity building.

As suggested in the above activities, the SSIPP gave higher priority to the construction and development of the BDS network with a facilitating function of BDS within the regions (including the linkages with the Bangkok area) rather than the development of BDS providers which would provide their services for pay, because this project targeted small-scale enterprises.

(2) Organizations for Cluster Development

The SSIPP was carried out by the 6 bureaus of DIP (Bureau of Industrial Policy and Planning, Bureau of Industrial Promotion Administration, Bureau of Industrial Enterprise Development, Bureau of Cottage and Handicraft Industries, Bureau of Industrial Sector Development, and Bureau of Supporting Industries Development) and the 11 IPCs. GTZ dispatched 4 long-term experts and several short-term experts throughout this project. The names of the above organizations were those when the program started, and some of them were now changed.

2.1.2 OIE (the Office of Industrial Economics, MOI)

OIE belongs to the Ministry of Industry. OIE is in charge of recommending and formulating the nation's industrial policy at macro levels and sectoral industrial policy.

(1) Programs related to Cluster Development

At present, OIE is carrying out a study program on the ceramic clusters in seven provinces including Chiang Mai, Lampang, Nakhon Ratchasima, Saraburi, Samut Sakhon, Ratchaburi, and Nonthaburi. It started in October 2003 and is expected to finish in October 2004. This study aims to clarify the development directions for cluster development in Thailand. It also includes a comparative analysis with industrial clusters developed in Italy and Spain. The budget for this study program is Bt.3 mil. OIE entrusts the implementation of this study program to Chiang Mai University. OIE also plans to investigate into fashion-related clusters (including textiles, leather, and jewelry).

OIE has formulated the Action Plan of Regional Industrial Development. The following outlines this action plan. This plan listed the eight industrial sectors where it will be possible to form and develop clusters.

1) Electronics industry
2) Automotive and parts industry

3) Food processing industry
4) Plastic industry
5) Leather industry
6) Ceramic industry
7) Gem industry
8) Wood industry

The plan also mentioned the four industries with regional production bases by SMEs.

1) Food industry
2) Garment industry
3) Wood industry
4) Electronic and appliance industry

The plan aims to attain the three objectives by developing regional industries and industrial clusters.

1) to strengthen industrial potential by taking advantage of the existing resources
2) to strengthen linkage between each region and border trade areas
3) to make the most of the existing infrastructure like industrial estates

In order to accomplish the above objectives, the plan comes up with the following strategies.

1) Promotion of restructuring in production
2) Promotion of SMEs and Community businesses
3) Effective mobilization of human resources
4) Improvement of productivity
5) Development of marketing channels in regions, neighboring countries, and international markets
6) Construction of supply chains within industrial groups
7) Development of value chains from downstream to upstream
8) Improvement of product quality and acquisition of international standards

The plan divides all provinces into 5 regions of north, northeast, central, east, and south. In each of the 5 regions it designates target industries and provinces.

As for the provinces and industries related to this JICA program, in the northeastern region, Khon Kaen is designated as one of the target provinces for varying industrial sectors, but it is not designated as a target

province for the textile industry. On the other hand, Khon Kaen is designated as a target province for the household and handicraft industry. In the eastern region Chonburi is designated as a target province for developing the automotive and parts industry. In the southern region Suratthani is designated as a target province for developing the wood and furniture industry.

(2) Organizations for Cluster Development

OIE has 6 departments. Among them the Sectoral Industrial Policy Bureau 2 takes charge of planning and managing the above study program on ceramic clusters. Cluster promotion is positioned as a policy area to industrial sectors. Major duties of the Sectoral Industrial Policy Bureau 2 are information gathering, study and analysis, monitoring, and evaluation about industrial sectors. This bureau has some 20 staffs.

2.1.3 NESDB (National Economic and Social Development Board)

NESDB is the government agency in charge of formulating the national economic and social development programs.

(1) Programs related to Cluster Development

At present NESDB is making a handbook on clusters. The role of CDA (Cluster Development Agency) is emphasized in this handbook. NESDB is also making a nationwide cluster map with support from IFCT. It is expected to complete in September 2005. NESDB plans to hold workshops on this cluster mapping in the 4 regions of north, northeast, south, and central.

(2) Organizations for Cluster Development

With regard to cluster development, NESDB used to be positioned as the government agency in charge. But nowadays the government has adopted the policy that all government agencies (including DIP) should be jointly and severally responsible for cluster development. There are no sections in charge of cluster development. NESDB was assigned to the secretariat of National Committee on Competitive Advantage (NCC) (presided by Mr. Thaksin, prime minister) and the core organization at a policy level for the cluster activation program under NCC.

2.1.4 OSMEP (Office of Small and Medium Enterprise Promotion)

OSMEP is an autonomous public agency which was established in 2001 on the basis of the SME Promotion Act. OSMEP is expected to play a central role of planning and coordinating in SME promotion.

(1) Programs related to Cluster Development

OSMEP answered to the JICA mission's interview that OSMEP had not started activities for cluster promotion yet and remained at the stage of a study. The following activities of OSMEP may relate to the cluster promotion.

Based on the master plan of Thailand's small and medium enterprises (SMEs) promotion 2002-2006, OSMEP is now formulating some 190 action programs. In relation to cluster development, OSMEP plans to formulate action programs such as an incubation promoting program, a mentor system development program, and a construction program of the industrial estate for food processing in the southern region. OSMEP established a SME fund with Bt. 220 mil. The SME fund is much smaller in size compared to its venture capital fund with Bt. 5,000 mil. OSMEP has managed the Shindan Projects which are implemented by DIP.

(2) Organizations for Cluster Development

OSMEP has some 170 staffs and 11 departments including policy & planning, fund management, business promotion & development, follow-up & evaluation, SMEs information center. The OTOP project is taken charge of by the follow-up & evaluation department.

2.1.5 DBD/MOC (Department of Business Development, Ministry of Commerce)

DBD is the domestic business solution unit of the Ministry of Commerce. DBD, formerly the Department of Commercial Registration, was established with a new mission to empower local business, SMEs and entrepreneurs for better business practices and to sharpen their competitiveness.

(1) Programs related to Cluster Development

DBD/MOC has not planned yet any projects related to cluster development in the areas of commerce. DBD/MOC has assisted 30 printing unions in strengthening their linkages.

(2) Organizations for Cluster Development

DBD/MOC takes charge of registration and control of commercial enterprises. It has 75 provincial branches and 7 branches in the Bangkok area DBD/MOC has developed cooperative relations with about 500 commercial or manufacturing associations/unions all over Thailand, through its registration and control work. Since DBD/MOC has no programs related to cluster development, it has no sections in charge of cluster development. In case of planning and implementing such programs, the bureau of business promotion & development will be responsible for them. This bureau has some 40 staffs including 4 officers engaged in the OTOP project.

2.1.6 DEP/MOC (Department of Export Promotion, Ministry of Commerce)

DEP is a department of the Ministry of Commerce in charge of developing and expanding the export markets for Thai products through various kinds of support to the improvement of their competitiveness.

(1) Programs related to Cluster Development

DEP/MOC has not planned yet any projects related to cluster development in the areas of commerce. DEP/MOC intends to cooperate with the MOI to enhance cluster development.

(2) Organizations for Cluster Development

Now that DEP/MOC has no programs related to cluster development, it has no sections in charge of cluster development. In case of planning and implementing such programs, the office of export services will be responsible for them. This bureau has some 40 staffs. It has 4 divisions of food, textiles, industrial goods, and furniture/toys/accessories.

For the OTOP project, DEP/MOC has formed a task force unit. In this unit, 7 to 8 officers have given support on selection of products, holding of product/design competitions and exhibitions, etc. DEP/MOC has set up the export promotion centers in the five provinces of Chiang Mai, Khon Kaen, Chanthaburi, Suratthani, and Songkhla.

2.1.7 SMEDB (Small and Medium Enterprise Development Bank of Thailand)

SMEDB is a state financial institution whose specific purpose is to provide financial services for the promotion and development of SMEs. It was established in December 2002, capitalized at Bt.10 billion.

(1) Programs related to Cluster Development

SMEDB has not been directly involved yet in any programs related to cluster development. SMEDB has provided SMEs with counseling services and training for human resource development.

(2) Organizations for Cluster Development

SMEDB has 7 departments of food, fashion, automotive parts, tourism, supporting industries (including IT and distribution), other manufacturing, and other services. Each department is engaged in data collection and credit analysis on the concerned industries and enterprises. SMEDB points out higher needs for cluster development in the fields of production management technology (including safety and hygiene) in the food industries. In addition to those 7 departments, SMEDB has a section of SME development group in charge of the above counseling services and training for human resource development.

2.1.8 Former IFCT (the Industrial Finance Corporation of Thailand) --- Current TMB Bank

IFCT was established in 1959 aiming to promote the country's economic and social development. IFCT' s main activities were to assist in the establishment, expansion and modernization of industrial enterprises in the private sector, and to encourage and bring about the participation of internal/external private capital in such private industrial enterprises. It should be noted that Thai Military Bank, a commercial bank, integrated IFCT and DBS Thai Danu Bank (DTDB) dated 1 September 2004 and changed the English name to TMB Bank from 9 May 2005.

(1) Programs related to Cluster Development

IFCT has been financing the ceramic cluster project in Lampang. This program is a model project by UNIDO aiming to promote cluster development. It is a three-year development program which will finish in this fiscal year. The total amount of financing is Bt. 15 million. Initially, IFCT financed up to 70% of the necessary funds. Local SMEs and unions have been actively involved in this project. IFCT evaluates that entrepreneurship for cluster development has been fostered through the implementation of

the project. IFCT has been assisting NESDB in making a nationwide cluster map. IFCT has also involved itself in the Shindan projects. The above description was written in May 2004. The JICA mission does not have information whether TMB Bank will continue those activities as a commercial bank as of May 2005.

(2) Organizations for Cluster Development

The research department of IFCT has managed the ceramic cluster project in Lampang. This department has 24 staffs. IFCT has 35 provincial branch offices.

2.1.9 TPA (Technology Promotion Association)

TPA was legally established in January 1973 with an aim to promote and transfer knowledge and new technology to Thai personnel.

(1) Programs related to Cluster Development

At present TPA has been working as the Cluster Development Agent (CDA) for the automotive parts cluster in the development program on 4 clusters by BSID. Fifty-three enterprises (mostly primary and secondary parts suppliers) have participated in this automotive parts cluster. TPA has held seminars and workshops for facilitating information exchange and joint activities. TPA has reported the contents of these activities and their results to BSID.

(2) Organizations for Cluster Development

The enterprise diagnosis and consultation (Shindan) department has taken charge of the above automotive cluster development project by BSID. TPA has diagnosed a lot of manufacturing enterprises and factories (particularly in the food industry and the automotive part industry) for the past 4 years. During this period, TPA has trained some 400 Thai Shindanshi (probationary Shindanshi).

2.1.10 ATSME (Association for the promotion of Thai Small and Medium Entrepreneurs)

ATSME is a non-profit and non-governmental organization founded by entrepreneurs for the purpose of promoting and supporting their small and medium enterprises. Members come from industry, trade, and service sectors all over the country. ATSME has given its member entrepreneurs support in information gathering, technical improvement, market development, and human resource development.

(1) Programs related to Cluster Development

ATSME has not been directly involved yet in any programs related to cluster development. ATSME implemented a productivity improvement program for 30 SMEs in the ITB project. In this program ATSME dispatched local consultants to those SMEs. In the OTOP project ATSME dispatched 2 local consultants to each of 20 villages to give technical guidance in corporate management, marketing, and bookkeeping.

(2) Organizations for Cluster Development

There are no sections for cluster development. ATSME has 6 staffs and its president is elected from among some 3,500 membership entrepreneurs. It has 40 provincial chapters. ATSME has about 100 local consultants outside. It employs those consultants on a project basis to carry out each program.

2.1.11 TCC (the Thai Chamber of Commerce)

TCC is a non-profit institute that was established to promote trade, agriculture, industry, finance, and other economic activities.

(1) Programs related to Cluster Development

TCC has not been directly involved yet in any programs related to cluster development. For the OTOP project, TCC plans to open a showroom for Thai products in its headquarters on March 2004. TCC has provided its member corporations and individuals with lectures and training on corporate management, taxation/accounting, legislation, trade procedures, and international standards, etc.

(2) Organizations for Cluster Development

TCC has no sections for cluster development. TCC has a branch office in each province. For the purpose of developing regional industries, the TCC headquarters has been strengthening linkages with its provincial chapters.

2.1.12 FTI (the Federation of Thai Industries)

FTI was established in 1967 and has since acted as the core liaison for developing good relationships between the various clubs of industrialists together with other entrepreneurs and consumers. FTI has also coordinated activities between the government and private sectors at home and abroad.

(1) Programs related to Cluster Development

At present FTI is formulating a master plan for cluster development in line with the guideline of Thaksin Administration of developing priority 9 industries. In October 2003, FTI formed an internal organization composed of the 9 clusters as follows

1) Food
2) Automotive parts
3) Fashion
4) Air conditioners and other electrical equipment
5) Construction materials
6) Petroleum products
7) Metal products
8) Paper & printing
9) Supporting industries (including woodwork & furniture, handicraft, ceramics, and target products by the OTOP project)

FTI has found that the development of industrial clusters needs the three factors of funding (in general), packaging (especially for food clusters and handicraft clusters), and marketing (especially for automotive parts clusters). The Thaksin government has worked out the economic cooperation strategy (ECS) to strengthen the economic linkages with Myanmar, Vietnam, and Laos. FTI has recognized the significance of cluster development in due consideration of this national strategy.

(2) Organizations for Cluster Development

FTI has some 6,000 member enterprises, 80% of which are SMEs. FTI has set up a branch office in each of the central, north, northeast, east, and south regions. In the recent years FTI has been laying more stress on developing the capabilities of those branch offices.

2.2 Present Status of Cluster Development in the Regions

Since the activities of local government agencies in Thailand have been controlled by their central government agencies, the local government agencies are not in a position to take initiative in developing clusters in the regions. As the central government and industries have taken an increasing interest in cluster development, the central government agencies including MOI have been organizing their systems for supporting cluster development in the regions, centering on IPCs (the Industrial Promotion Centers) under the control of DIP of MOI.

In this Study, an interview survey was conducted with IPCs and PIOs (the Provincial Industrial Offices) in the three regions of Kohn Kaen, Chonburi, and Suratthani which were selected as model clusters. The following summarizes the current status of these local government agencies under MOI. PIOs are located in 75 provinces except Bangkok area as a local branch of Office of the Permanent Secretary of MOI. It is supposed that IPCs and PIOs in other regions have performed similar activities although they may be rather different according to the size of their offices or the location of major industries.

2.2.1 System, Activity and Budget of IPCs

IPC is composed of 4 sections of Administration, Industrial Enterprise Development, Cottage and Handicraft Industries Development and Technology.

The three IPCs surveyed this time have 50 to 80 employees. They are divided into industrial officers dispatched from MOI, regular workers employed in each region (including trainers, clerks, drivers), and temporary workers employed on a project basis.

The Cottage and Handicraft Industries Development Section has more employees than other sections. Its employees account for some 40% of the total employees, indicating that the support activities of IPCs have centered on the cottage industries. The Industrial Enterprise Development Section accounts for some 20% in total employment and the Technology Section employees only a few persons. The Cottage and Handicraft Industries Development Section has regular workers (most of them are technical/managerial trainers) as many as industrial officers. In the other divisions, most of the employees are industrial officers and there are a few technical/managerial trainers.

As for the One Tambon One Product (OTOP) project, the Cottage and Handicraft Industries Development Section has assisted in the work of grouping of producers (enterprise organization), design development, introduction of new technologies, quality control, standardization, packaging improvement, production control and so on, in cooperation with BCHID (the Bureau of Cottage and Handicraft Industries Development) of DIP. For the purpose of helping improve indigenous manufacturing technology, the Technology Section has given OJT at the request of producers.

In order to support SMEs (Small- and Medium-Scale Enterprises) and MEs (Micro Enterprises), the Enterprise Promotion Division has often dispatched experts from large enterprises, universities, and research institutes to give them technical guidance. The division has found less support needs from these producers because it has no concrete projects like the OTOP project. In principle, such consulting services and OJT have been offered free of charge to cottage industries and SMEs & MEs.

At present, the OTOP project has entered the third year after commencement. A lot of local products have been listed as promising ones, giving rise to fierce competition among similar products in the domestic market. Since the second half of 2003 the central government has taken a new direction of developing the export market for those OTOP products by carefully selecting more promising local products, improving their product quality, and reducing their production cost. As a result, MOI is expected to get more involved in the OTOP project because the OTOP products need to be further improved in terms of quality/standards, production technology, and cost management. Through the active involvement with the OTOP project, MOI intends to enhance enterprise development on the scale of villages (Tambon or Mubahn) to develop part of the cottage industries into MEs or SMEs. Accordingly, it is expected that the role of IPCs will be more important in regional industrial development.

IPC is equipped with 1) library and data center, 2) seminar/conference rooms, 3) an exhibition hall, in its office building, and 4) incubation rooms, 5) accommodation facilities for seminars, etc. within its site. Some IPCs like IPC 9 are equipped with common production facilities (welding machines, lathes, etc.) in their incubation rooms.
The IPC has utilized these facilities to offer the following services to local industries.

1) Information (enterprises, products, markets, machinery, etc.) and consultation
2) Display and introduction of local products and indigenous production technology

3) Technical guidance (training in IPC and OJT)
4) Management education program (the mini MBA program)
5) Seminars/workshops
6) Use of Incubation facilities
7) Skill training using incubation facilities
8) Use of common production facilities

The ordinary annual budget (wages, facilities, utilities, etc) in the three IPCs is estimated at some 60 million baths. In addition to the ordinary budget, it has a special budget based on the government agenda (for OTOP, NEC, CEO, etc.) and the total amount of such special budget items sometimes exceeds the total ordinary budget.

2.2.2 Functions of IPCs and PIOs, and their Relations with the Governor Offices

In the areas of industrial promotion in the regions, IPCs have played a central role both in offering ordinary services (information, seminars/workshops, technology/management guidance, etc.) and in implementing any projects with a special budget.

PIO (Provincial Industrial Office), on the other hand, has played a role of supporting, coordinating, and managing such IPC's work in its province. PIO takes charge mainly of registration/control of factories and information services on the registered factories. It has a few industrial officers in charge of industrial promotion. PIO of the Chonburi Province or the Suratthani Province is staffed by about 20 regular employees, but it has only two or three officers in charge of industrial promotion. In addition, the work of those industrial promotion officers has given priority to the cottage industries rather than SMEs and MEs.

As far as technical or managerial guidance to SMEs and MEs is concerned, IPC has carried out independently at the request of local enterprises. Such technical or managerial guidance has both cases where it is given in the incubation facilities of IPC and it is given OJT by IPC' s staff or outside experts. SMEs and MEs tend to prefer to receive OJT at their factories. In a province where IPC is not placed, PIO in each province has worked as a middleman between local enterprises located in the province and IPC in charge of the province.

IPC has collected information on SMEs and MEs via PIO or in its ordinary work by itself. Information related to SMEs and machinery dealers are entered into computers to be accessed at its library or data center. Users can also access to the IPC database via PIO.

The governor office has gathered and controlled information on industry, commerce, and agriculture (the registration situation of factories and establishments including cottage industries) through PIO, PCO (the Provincial Commercial Office, MOC), and PAO (the Provincial Agricultural Office, MOAC) placed in each province. In the cases of implementing a project related to industrial promotion on a special budget, the governor office has requested IPC via PIO in the province to participate in the project and to work together.

2.2.3 Supply of BDS

At present, besides IPCs and PIOs of MOI, the government agencies such as the regional centers of BOI (the Board of Investment), PCOs and the regional export promotion centers of the ministry of commerce, the skill training centers of the ministry of labor, the regional research centers of the ministry of agriculture & cooperatives, and the community development offices of the governor office are supplying information on investment and marketing, skill training, R&D for materials and usages, and micro-financing, etc. In addition to these government agencies, local national universities/technical colleges, the local branches of financial institutions (SMEDB, IFCT, SICGC, BAAC, KTB, etc.), the local chapters of industrial associations (FTI, TCC, ATSME, etc.), local producer unions, and support organizations by private investment are regarded as BDS providers in the regions.

Chapter 3 Selection of Three Model Clusters

Chapter 3 Selection of Three Model Clusters

As mentioned earlier, DIP (Department of Industrial Promotion) of MOI is operating 11 Industrial Promotion Centers (IPCs) over the country dividing the country into 11 regions for the regional industrial development. Prior to JICA mission's 1st field survey to Thailand, DIP identified five IPC areas together with priority sub-sectors of the manufacturing sector. From the five IPC areas, members of the JICA mission and a working group comprised of BEED officers selected three model clusters for the Project, at the 1st field survey.

3.1 Candidate Clusters Identified by DIP

DIP inquired of her all 11 IPCs whether or not the IPC has interest to apply to the Project as a candidate of model clusters in the IPC region. Seven IPCs showed interest in participating in the Project and submitted DIP the applications, i.e. IPCs 1, 3, 4, 5, 8, 9 and 10.

(1) Selection criteria of DIP

DIP screened seven IPCs' applications into five using following criteria:

1) Enthusiasm and capability of IPC to join the Project (by organization size and availability of manpower …etc),
2) Availability of BDS providers in the IPC region,
3) Accumulation of enterprises and growth potentials of the proposed sub-sectors, and
4) Consistency of proposed sub-sectors to the policies and strategies of the Government (policy and priority of the developments).

(2) Five IPCs and 11 candidate clusters selected

DIP made surveys on the seven IPCs and the proposed industrial sub-sectors. Finally IPC 3 that proposed rice mills, agriculture machines and concrete product producers in Phichit province and IPC 4 that offered garments and iron castings in Udon Thani were removed from the candidates for the Project mainly because of insufficient accumulation of enterprises of the same trade and small impact to the regional economy

At the kick-off meeting of February 19, 2004 held between DIP and the JICA mission (the both parties), DIP presented 10 candidate clusters for five IPC areas. The JICA mission suggested that “any products derived from parawood" in Surat Thani be “wood-working and furniture based on parawood”. DIP offered to add “rubber products" in Rayong. Thus, both parties agreed to select three model clusters from the following 11 candidate clusters of five IPCs through pre-diagnosis of candidate clusters.

Table 3.1-1 Eleven (11) Candidate Clusters from Five(5) IPCs

IPC	Industrial sub-sector	Province
IPC 1	1. Food processing	Chiang Mai
	2. Textile (Cotton)	Chiang Mai
IPC 5	3. Textile (Silk)	Khon Kaen
	4. Garments	Khon Kaen
IPC 8	5. Rice mill	Suphan Buri
	6. Electrics and Electronic Parts	Pathum Thani
IPC 9	7. Automobile Parts/Components	Chachoengsao
	8. Automobile Parts/Components	Chon Buri
	9. Rubber Products	Rayong
IPC 10	10. Palm Oil	Surat Thani
	11. Woodworking/Furniture of Parawood	Surat Thani

(Note) IPC: Industrial Promotion Center under DIP, MOI

3.2 Methodology of Model Clusters Selection

(1) Selection criteria of the JICA mission

In view of a nature of model clusters in the CSCD project, the both parties agreed, as a base, to use the following selection criteria.

1) Three model clusters shall be chosen from different IPC areas.
2) Three model clusters shall be chosen from different Industrial sub-sectors.

(2) Evaluation method

The JICA mission together with the Thai working group consisting of BEED and IPC under DIP visited 11-candidates for pre-diagnosis spending four to six working days to each IPC areas. Table 3.2-1 shows the timetable of the field surveys to five IPCs with names of group members. In the course of the pre-diagnosis, the JICA mission evaluated 11-candidates jointly with Thai side in view of appropriateness as model clusters for the project, using a scoring sheet attached as Table 3.2-2, and gave the Thai working group technical transfers. Table 3.2-3 shows the results of scores in a full mark of 100 multiplying figures of the table 3.2-3 in a full mark of 20 by 5. These scores will be used as a reference for comparison of candidate clusters.

The item of “A. Core industry” in Table 3.2-2 intends to give priority to highly accumulated clusters and to high potential clusters in competitiveness. Nevertheless, since the measure of “A.1 Accumulation” may vary country by country, it should be carefully examined accordingly so as to meet situation of the country. The second item of “B. Growth Potential of the Cluster” intends to simply evaluate four factors of Prof. Michael E. Porter’s diamond. The third item of “C. Availability of the BDS providers” is designed to give higher points to higher availability of BDS providers in the area. The last item of “D. Interest and Volition of the Area’s Related People” also is an important factor which was proved in the pilot projects in this CSCD project.

As recognized from the above, The CSCD project employed a basic idea that higher potential cluster shall be activated by giving priority in view of the cost/ benefit efficiency in SME promotion of the country.

Table 3.2-1 Field Surveys of 11 Candidate Clusters in Five IPCs

		IPC 1	IPC 5	IPC 8	IPC 9	IPC10
		(Food, Textile-Cotton)	(Garments, Textile-Silk)	(Rice Mill, E-ric&E-tro parts)	(Auto Parts, Rubber)	(Palm Oil, Parawood Working)
JICA mission member		Horiguchi, Ohkata	Nagai, Terada	Horiguchi, Seno, Arai(Y)	Inakazu, Nagai, Komazaki	Arai (Y), Odawara, Komazaki
DIP staff		Patcharin, Pasakorn, Suwimol	Yuparat, Prapat, Natapol	Patcharin, Suwimol, Nathaphol	Sarawanee, Pasakorn, Prapat	Sarawanee, Thichaporn
Feb. 25	wed	-	-	Suphanburi (Rice Mill)	Chombri (IPC 9, Auto Parts)	-
Feb. 26	thu	-	-	Pathumthani (E&E parts)	Chombri (Auto Parts)	-
Feb. 27	fri	-	-	Pathumthani (IPC8)	Chachoensao(Auto Parts)	-
Feb. 28	sat	-	-	-	-	-
Feb. 29	sun	-	-	-	**Inakazu, Ohtsuka**	-
Mar.01	mon	Chiang Mai (Textile-Cotton)	-	-	Rayong (Rubber Prod.)	Suratthani(Travelling)
Mar.02	tue	Chiang Mai (IPC1)	Khon Kean (Garments)	**Inakazu, Ohtsuka**	Rayong (Rubber Prod.)	Suratthani (IPC10)
Mar.03	wed	Chiang Mai (Food Processing.)	Khon Kean (Textile-Silk)	Pathumthani (E&E Parts)		Suratthani (Wood Working)
Mar.04	thu	Chiang Mai (Textile-Cotton)	Khon Kean (Textile-Silk, PIO)	-	-	Suratthani (Palm Oil)
Mar.05	fri	-	-	-	-	-
Mar.06	sat	-	-	-	-	-
Mar.07	sun	-	-	-	-	-
Mar.08	mon	Chiang Mai (Food Processing)	Khon Kean (Garments)	-	-	Suratthani (Wood Working)
Mar.09	tue	Chiang Mai (Food Processing)	Khon Kean (Garments, PIO)	-	-	Suratthani (Wood Working)

Numbers of enterprises visited;	Chiang Mai (Textile-Cotton): 3	Suphanburi (Rice Mill): 1	Chombri (Auto Parts):3	Suratthani (Palm Oil): 2
	Chiang Mai (Food Processing.): 3	Pathumthani (E&E parts): 4	Chachoensao(Auto Parts): 2	Suratthani (Parawood Working): 6
	Khon Kean (Garment): 4		Rayong (Rubber Prod.): 3	
	Khon Kean (Textile-Silk): 5			

Table 3.2-1 Check Sheet for Preliminary Diagnosis of Cluster Candidates

(5Level Evaluations, 2 point and 4 point is in middle point of 1, 3, 5)

IPC No. ( )	Province Name / No.	( )	Place Name	
Core Industrial Sector		Evaluator		Date (Y, M, D)

Evaluation Items		Evaluation Points and Methods	Point	Average
A. Core Industry	A1: Accumulation	1) No. of Company ( ), 2) Area ( ) 100km^2, 3) Accumulation 1)÷2) ( ) (5) 30 — (4) 20 — (3) 10 — (2) 5 — (1) 1		
	A2: Competitive Level	Do core subsectors hold competitiveness which is suitable for the cluster development and promotion? Family Industry level: (1) Competitive at Domestic Market (Thailand): (3) Competitive at Oversea and Export Markets: (5)		
B. Growth Potential of the Cluster	Using each of the 3 evaluation items, evaluate current "condition of the area" by 5 level evaluation, and then find the average and write down on the right columns. If informations are unavailable or unknown, delete evaluation items and then average it. This area is in the best condition as described in the descriptions: (5) This area is in the average condition: (3) This area is not in the good condition: (1) Not Existing at all: (0)			
	B1: Condition of the Element (Resources Input)	1) Major Raw Materials can be procured in the region. 2) High skilled labors can be employed easily (Availability). 3) Logistical infrastructures (road and others) are well prepared.		
	B2: Related Industries, Supporting Industries	1) Local supplier's ability is high. 2) There are gathering between core companies and supporting companies. 3) There are cooperative work experiences among core companies, universities, and local governments.		
	B3: Demand Condition	1) Local customers always require high level products. 2) Name of this area is famous for a producer of such products. 3) There are opening of trade fairs at the area before.		
	B4: Company Strategy, and Competitive Environment	1) There are stiff competitions among the companies of the same industry. 2) Investing environment is excellent for new comers. 3) Informations on technology, market, etc. can be easily sourced in the area.		
C. Availability of the BDS Providers	If there are following BDS Providers already existing in the area, give 1 point for 1 BDS provider. Evaluate it only by "Existing" or "Not Existing".			
	C1: Agencies, Institutes, etc.	1) SME Promotion Government Organization 2) Chamber of Commerce and Industry 3) Same Industries' Association or Union 4) Cooperative Organization 5) Business or Trade mediation organization		
	C2: Human Resources Dev., Consulting, etc.	1) Manager/Owner Training 2) Engineer/Technician Training 3) Skilled Labor Training 4) Entrepreneur Support 5) Business/Technical Consulting		
	C3: Technical Support, etc.	1) University (Institute of Technology, or Engineering Dep.) 2) Technical High School 3) Research Institute 4) Technology Center 5) Repair and Maintenance Businesses (Shops)		
	C4: Administration Services, etc.	1) Information Services 2) Accounting Services 3) Logistics Services (Transport Services) 4) Product Design Services 5) Market Research		
D. Interest and Volition of the Area's Related People	This is for the simplifying the evaluation of candidate cluster. Evaluate concerned interviewed personnel's interest to Cluster Development, and possibility of supporting positively for the execution of the project. Almost all are interested in this project and can expect full support for the execution of Pilot Project: (5) There seems some of them are puzzled, but execution of the project at the area may not to be any problem.: (3) Seems all of them are cold and/or indifferent. Some difficulty can be anticipated for executing project at this area.: (1) (Concerned Personnel) Local Government, IPC Staff, Private Organization, University/Research Institute, Industrial Leading Companies, etc.			
			Total Point (20 point Max)	

Table 3.2-3 Results of Pre-Diagnosis for Eleven (11) Candidate Cluster (Full mark of Total = 100)

IPC	Industrial sub-sector	Province	A. Accumul.	B. Condition	C. BDS	D. Climate	Total (A-D)
IPC 1	1. Food processing	Chiang Mai	19.6	20.6	17.5	16.7	**74.3**
	2. Textile (Cotton)	Chiang Mai	22.5	20.2	17.5	15.0	**75.2**
IPC 5	3. Textile (Silk)	Khon Kaen	20.8	17.7	19.0	20.8	**78.3**
	4. Garments	Khon Kaen	9.6	12.4	18.8	20.8	**61.6**
IPC 8	5. Rice mill	Suphan Buri	16.3	17.8	12.9	22.5	**69.5**
	6.Electrics/Electronic Parts	Pathum Thani	22.5	15.1	13.8	17.5	**68.9**
IPC 9	7. Automobile Parts	Chachoengsao	18.0	18.6	18.4	16.3	**71.2**
	8. Automobile Parts	Chon Buri	20.6	20.0	20.5	20.4	**81.4**
	9. Rubber Products	Rayong	12.5	15.1	17.5	12.5	**57.6**
IPC 10	10. Palm Oil	Surat Thani	10.4	14.1	12.9	21.7	**59.1**
	11. Parawood-working	Surat Thani	21.3	16.6	15.0	22.5	**75.3**

A. Accuml. – Accumulation of same- trade enterprises in a certain area (25 points).

B. Condition – Conditions for competitiveness (25 points)

C. BDS – Availability of Business Development Services (25 points)

D. Climate – Understandings of "cluster" and sense of participation to cluster development in the region (25 points).

Total (A-D) – (A+B+C+D)

3.3 Circumstances and Conclusion of Model Cluster Selection

3.3.1 Selection of one cluster for one IPC

IPC-1

Food processing - Chiang Mai

Textile (Cotton) - Chiang Mai

The sub-sector of the food processing visited in Chiang Mai is mainly engaged in processing local agriculture products for export by large-scale enterprises. Networking with other sectors is not so expected from this type of businesses. It is similar to production on commission for big foreign importers. There seem little requirements for Business Development Services as far as six enterprises visited. More information is necessary for evaluation of domestic-market-oriented SMEs of food processing in Chiang Mai which the working group could not visited at time of 1st field survey period.

The sub-sector of textile (Cotton) had high accumulation of SMEs in the region having advantage in availability of raw materials in this area. Both sub-sectors were evaluated as almost same level of appropriateness. However, the sub-sector of **Textile（Cotton) in Chiang Mai** is selected because of a slightly high score.

IPC-5

Textile (Silk) - Khon Kaen

Garments - Khon Kaen

The textile (Silk) has source of raw materials in adjoining province Phetchabun and some from imports for weft yarns (vertical yarns), and Khon Kaen's local raw materials for warp yarns (horizontal yarns) (However, for expensive and high-grade silk product, even warp (horizontal) yarns are from Phetchabun and from imports). Chonnabot District in The Khon Kaen is well-known silk producing area. With proper way of development, there will be growth potentials for marketing of silk products and possibility of higher achievements in the regional development.

The sub-sector of garments in the region has less accumulation of the same-trade enterprises for cluster development. In addition, the garments industry in the region has less Industrial extent and linkage with

other sectors because their operations are similar to processing on commission of big companies in Bangkok area. The local government of Khon Kaen has keen interests in development of the silk-based industry. Thus, the sub-sector of **Textile (Silk) in Khon Kaen** is concluded to be more appropriate for model cluster than garments.

IPC-8

Rice mill - Suphan Buri

Electrics & Electronic parts - Pathum Thani

The sub-sector of rice mills has high accumulation when those mills having less than 50 employees and less than 50 HP of energy consumption are included in the number of enterprises. Persons related to rice mills in the region has a clear interest in clustering themselves: that is export promotion of milled rice using cooperative activities. The sub-sector, however, has less extent to and linkage with other sectors, and is much close to agriculture or agro-industry sector rather than industry or manufacturing sector. That will be a weakness in selecting model clusters, which focuses the manufacturing sector.

As for the sub-sector of electrics & electronic in the region, the score of accumulation ratio marked highest among all. The accumulation, however, is mainly caused by foreign investment in some Industrial estates in the region. It will be hard for clustering Thai capital enterprises widely scattered in the region. Thus, **Rice mill in Suphan Buri** represents IPC-8.

IPC-9

Automobile parts - Chon Buri

Automobile parts - Chachoengsao

Rubber products - Rayong

The sub-sector of rubber products has lowest points among three sub-sectors above mainly because of less accumulation of the same-trade enterprises in the region though the sub-sector has strength in easy access to raw materials and for avoiding stiff raw material purchasing competitions. In comparison of two regions for automobile parts, Chon Buri seems to be more appropriate than Chachoengsao as a model cluster in the CSCD project because of advantages in access to various automobile assemblers,

accumulation of the same-trade enterprises and easy access to Business Development Services. Thus, the cluster of **Automobile parts in Chon Buri** represents IPC-9.

IPC-10

Palm oil - Surat Thani

Parawood woodworking - Surat Thani

Palm oil enterprises do a squeezing process in the region and then the raw oil is sent to Bangkok area for refining and subsequent processes companies (large retail companies). Therefore, industrial extent and linkage from the sub-sector of oil palm is not expected for the time being in the region. The sub-sector of parawood working has strength in easy acquisition of raw materials in the region as same as that of palm oil. In addition, a certain accumulation of same-trade enterprises is recognized in the region and growth potentials are marked high as relatively young industry. Thus**, Parawood woodworking in Surat Thani** is regarded more appropriate as an SME Industrial cluster.

3.3.2 Conclusion

Since two candidates were chosen from the sub-sector of textile, a higher score of Textile (Silk) in Khon Kaen is to be selected. And the lowest score among the rest three candidates is removed, that is Rice mill in Suphan Buri. As the result, both parties agreed to select the following three clusters as model clusters for the CSCD project.

1) IPC-5: Textile (Silk) - Khon Kaen
2) IPC-9: Automobile parts - Chon Buri
3) IPC-10: Parawood working- Surat Thani

3.4 Observations on Candidate Clusters in Five IPCs

3.4.1 Prerequisite: Accumulation of enterprises of the same trade

An industrial cluster requires some accumulation of enterprises of the same trade in a certain limited area though there are various interpretations or definitions about “industrial cluster". Indonesia defines 15 enterprises in an area of the radius of 5 kilometers that is equivalent to 19 enterprises per 100 Km^2. In case of Japan, a law of promotion of Industrial clusters introduced in 1997 defines 50 or more enterprises in 700Km^2 or 7 enterprises per 100Km^2. Actual accumulation of Industrial clusters in Japan, however, most of them have 300 to 1,000 or more enterprises of the same trade per 100km^2. It is said that there are more than 500 industrial clusters having such scale of accumulation in Japan.

In Thailand, administrative areas of IPCs or even provinces having 76 areas over the country respectively are too wide to measure accumulation of the same trade enterprises in a certain limited area. In this regard, 11 candidate sub-sectors nominated by DIP for five IPCs concerned were examined by district (Amphur) from the data of industry registration of the Department of Industrial Works (DIW), MOI. As shown in Table 3.4-1 there are only seven industrial clusters that have 10 or more density per 100km^2.

Table 3.4-1 Accumulation of Enterprises (Density: more than 10 per 100km^2)

IPC	Province	District (Amphur)	Sub-sector	Density
1	Chiang Mai	Muang Chiangmai	Food processing	28.2
1	Chiang Mai	Saraphi	Food processing	16.4
8	Pathum Thani	Muang Pathum Thani	Electrical machinery and supplies	33.3
8	Pathum Thani	Khlong Luang	Electrical machinery and supplies	21.1
9	Chachoengsao	Bang Pakong	Vehicles and motor cycles	12.4
9	Chon Buri	Muang Chon Buri	Vehicles and motor cycles	19.7
10	Surat Thani	Muang Surat Thani	Wood and wood products	23.9

However, it should be noticed that small manufactures having less than 50 employees and/or 50 HP are almost excluded from the database of DIW. Therefore local survey is a must to identify whether industrial clusters exist or not in the region. Especially, sub-sectors of garments, textile and food processing have a large number of small enterprises.

3.4.2 Chiang Mai (IPC-1)

(1) Outline of the province

IPC-1 covers eight provinces in the northern region. Chiang Mai is the largest province in terms of land area and population and accommodates IPC-1's office. In the area of IPC-1, The province is at more or less the same level of industrialization as Lamphun. It contains 22 districts (amphurs) and 2 minor districts. Chiang Mai, the provincial capital, serves as the region's commercial and industrial center. As for land use pattern in the province, forestland accounts for approximately 70%, cultivated land 13%, and residential land 17%. Key indicators are summarized as follows.

- Land area (2002): 20,110km^2
- Population (2002): 1,596,000
- Per capita GPP (2000): 55,850Bt
- Working population (2002): 815,000
  Manufacturing sector's share – 12.6%
  Agricultural sector's share – 37.4%

The following table is a selected list of major industries in the manufacturing sector, each of which has 100 or more enterprises in the province (as of 2001). Note that the figures in parenthesis show ranks in the entire country in case that the industry is ranked at 15th or higher.

Basic agro-industry:	940 enterprises (14th)
Food:	255 (7th)
Wood and wood products:	192 (3rd)
Furniture and fixture:	104 (5th)
Non-metal products:	132 (14th)
Transport equipment:	275 (8th)
Other manufacturing:	228 (4th)

(2) Food processing industry in Chiang Mai

1) According to an industrial source from field survey, there are 228 food processing enterprises in the province (thus somewhat different from the above figure depending on information sources), of which 32 enterprises are in the process of organizing themselves into a group as part of an initiative

called “clustering activity.” The clustering activity is led by IPC, FTI and CC (chamber of commerce). Details of the clustering project are not well elaborated yet.

2) Raw materials for the food processing industry available in the province are a variety of agricultural products, which are often grown on a contract basis and purchased in quantities by large enterprises. In fact, the food processing industry in Chiang Mai is polarized into two segments, namely large enterprises that make volume production and are specialized in export, and smaller enterprises serving the domestic market. The former purchases vegetables, fruits and other products from contract farms and process them into foodstuffs in a factory-like line for export to foreign buyers (especially Japanese trading companies) under a long-term contract. This is a volume business with low margin. On the other hand, the latter is primarily specialized in production of seasonings and nonessential foods mainly by SME food processing companies for domestic market.

- Canned and frozen foods: Mass produced products with a long shelf life supplied by large, export-oriented enterprises
- Seasonings and spices: Seasoned powders combining traditional Thai flavors, sauces, and traditional foods
- Nonessential foods: Tea, coffee, wine, and herb

3) As part of its efforts to promote SMEs, the province actively promotes the OTOP (one tambon one product) movement, and food industries play an important role in OTOP activities. As for the linkage with the clustering activity mentioned earlier, it has still to be discussed although some synergetic effects between movements of OTOP and the cluster promotion are expected.

Observation

The food industry is one of the key industries in the province as it can enjoy a great advantage based on availability of agricultural products in the region. Note that the food processing industry introduced to the joint survey team of the JICA mission and BEED refers to the sector primarily made up of large enterprises that are specialized in mass production and export oriented. The cluster development activity of the industry, at this moment, seems to remain at a level where different enterprises gather and exchange their views, rather than having a common goal such as a cooperative project and regional development. While the food processing industry is considered as an important candidate for a model cluster, the textile (cotton) industry is rated slightly higher than the food industry because the former has set a clear objective of developing the cluster.

(3) Textile (cotton) industry in Chiang Mai

1) The textile industry in the province has been developing on the strength of locally available cotton. Today, it also uses imported cotton (via Bangkok) due to the limitation of the local supply capacity. Textile products are mainly exported to foreign countries (Japan is the largest importer, and Europe also imports major volumes). The industry faces intensive price competition from China and India. According to our surveys, a total of 50 textile manufacturers are operating in the province, consisting of 30 manufacturers using handlooms and 20 with automated weaving machinery. (Many of them are small in scale and are not registered with the MOI.) Around five enterprises are relatively large.
2) The clustering activity has recently started on the period of 1st field survey and there is a plan to organize 20 enterprises into a group for the purpose of joint sales (export) promotion. Under the support of Department of Export Promotion (DEP) of the MOC, a trade fair is scheduled to be held in April, 2004, under participation of the 20 enterprises.
3) Quality of textile products is governed by workmanship in the case of hand looming and by the precision of a loom and the degree of maintenance in the case of line production. Handloom manufacturers train workers within their establishments. Nevertheless, key factors for improving international competitiveness for the future are the ability to differentiate products in terms of design and/or dying technique, as well as effective promotion and marketing activities.

Observation

The textile (cotton) industry is characterized as the province's traditional industry founded upon local resources. It is export oriented and thus faces intensive competition. It has a high interest in the clustering activity and the grouping of some enterprises has started. In future, the industry requires invigoration by a network of relative industries and the BDS mechanism. There are a number of candidate organizations qualified to provide such service, including IPC, PIO, PCO, FTI, SMEDB, NNSPSME, NORMEX, University of Chiang Mai, and Rajamangala Institute of Technology.

3.4.3 Khon Kaen (IPC-5)

(1) Outline of the province

IPC-5 covers six provinces in the northeast region of the country. Among them, Khon Kaen is largest in terms of land area, population and GPP (Gross Provincial Product) and is positioned as the center of the region. The province consists of 20 districts and 5 minor districts. Key indicators are shown below and agriculture is the economic base of the province.

- Land area (2002): 10,890km^2
- Population (2002): 1,768,000
- Per capita GPP (2000): 40,580Bt
- Working population (2002): 894,000
  Manufacturing sector's share: 11.0%
  Agricultural sector's share: 51.3%

The following table is a selected list of major industries in the manufacturing sector, each of which has 100 or more enterprises in the province (as of 2001). Note that the figures in parenthesis show ranks in the entire country in case that the industry is ranked at 15th or higher.

Basic agro-industry:	3,307 enterprises (2nd)
Food:	149 (11th)
Non-metal products:	232 (6th)
Fabricated products:	178 (8th)
Machinery:	159 (7th)
Transport equipment:	250 (10th)

IPC-5 recommends the textile (silk) and garment industries in the province as model clusters. Official statistics, which indicate 52 textile companies and 20 garment companies, do not include small enterprises. These industries seem to be recommended for the following two reasons (as gleaned from our field surveys).

1) The traditional textile (silk) industry still stagnates since the economic crisis and needs to be revitalized.
2) As investment by the garment industry increases in the province recently and it is desirable to develop it to one of core industries in Khon Kaen.

(2) Textile (silk) industry in Khon Kaen

1) In Thailand, there are three well-known areas for silk products and one of them is Chonnabot in Khon Kaen. Others are Pak Thong Chai in Nakhon Ratchasima and Bang Kweo in Chaiyaphum. While the three provinces are adjacent to one another, two provinces except Khon Kaen belong to IPC-6. Chonnabot is especially famous of Mudmee dyeing techniques and San-takon weaving techniques for their silk production. The textile industry in Chonnabot uses weft yarns from Phetchabum's Jun (adjacent to Khon Kaen), imports from various countries including China, Vietnam and Russia, and warp yarns from local Khon Kaen household made. (However, for expensive and high-grade silk products, even warp (horizontal) yarns are from Phetchabun's Jun and from imports).
2) Silk textile production systems in the area can be classified into the following three types: (1) Individual farms where women weave silk textiles using handlooms, which are collected and sold by a cooperative that is established in each village; (2) small manufacturers employing 2 – 30 workers, which have their own factories, sales networks and outlets; and (3) large manufacturers that supply products under their own brands to Bangkok and export markets.
3) As the silk textile industry in Khon Kaen is dominated by small enterprises as well as family enterprises, any significant industrial concentration can not be identified in statistics. In Chonnabot, however, there are 50 sales companies within a 1km^2 area, of which 30 have their own factories. In addition, there are approximately 60 cooperatives or female silk producer's groups in and around the area, indicating a fairly high level of concentrations, which do not show on statistical data.

Observation

Since the economic crisis in 1997, consumption of silk textiles has been declining with a general decline in national consumption. Although the national economy has recovered, the industry continues to stagnate. Today, the silk textile industry in Thailand is viewed as a traditional but declining industry, partly due to the decrease in demand (such as silk-made formal wear) and partly due to the change in lifestyle that has led to reduced silk consumption. Furthermore, the industry is left behind the economic recovery because it lacks the ability to develop a product that meets the changing needs of markets as well as design and marketing capabilities. In the province, there are several candidate organizations for BDS including Sala Mai Thai (inside of Khon Kaen Industrial

and Community Education College). Also, local people have a strong desire to develop a competitive textile industry.

(3) Garments industry in Khon Kaen

1) Again, official statistics do not include small-scale enterprises in the number of garment companies in the province. While small enterprises, which are not required to register with the MOI, dominate the industry, as much as 20 enterprises are registered (differing according to data sources) and there is only one large enterprise that has more than 1,000 employees. In the city of Khon Kaen, the provincial capital, approximately 20 small garment manufacturers are said to operate, while there is no geographical concentration.
2) The industry in Khon Kaen obtains raw materials from Bangkok and thus does not rely on local resources. As for market, small enterprises serve Khon Kaen and its surrounding areas, while relatively large enterprises make products for exporters in Bangkok on a contract basis (including OEMs under foreign brands). In fact, an increasing number of garment factories relocate from Bangkok to Northeast (ISAN area) including Khon Kaen. This suggests that the region offers an advantage in low cost, high quality, and hard working labor force.
3) Garment manufacturers that export their products on a contract basis are exposed to a strong price pressure from competitors in China. Clearly, they have to upgrade their own design capabilities. In the area of BDS, IPC5 and Engineering Department of Khon Kaen University provides consulting service partially. Other candidate BDS providers exist including government organizations, financial institutions, and ISMED.

Observation

The garment industry in Khon Kaen was compared with the textile (silk) industry to select a candidate model industrial cluster, and the latter was rated higher in terms of appropriateness for a model cluster. The textile industry was considered to have a higher possibility of improving competitiveness in terms of the level of concentration, the form of production (the garment industry is primarily engaged in contract manufacturing), proximity to sources of raw materials, and the level of market recognition as a local brand. Thus, it has been decided to select the textile (silk) industry as the candidate model cluster in Khon Kaen.

3.4.4 Pathum Thani (IPC-8)

(1) Outline of the province

IPC-8 covers 14 provinces in the western region. Pathum Thani is located in the eastern part of IPC-8 and is adjacent to the northern part of Bangkok. Its per capita GPP ranks second among all the IPC-8 provinces and is 3.2 times the national average. Partly because it has the Navanakorn industrial estate, the first one developed in the country, it accommodates many Japanese manufacturers and boasts brisk industrial activities. The province contains 7 cities including Pathum Thani, which is the provincial capital. Key indicators are summarized as follows.

- Land area (2002): 1,530km^2
- Population (2002): 709,000
- Per capita GPP (2000): 207,510Bt
- Working population (2002): 326,000
  Manufacturing sector's share: 36.5%
  Agricultural sector's share: 10.7%

Major manufacturing industries having 100 or more enterprises each in the province (as of 2001) are summarized below. Note that the figures in parenthesis show ranks in the entire country in case that the industry is ranked at 15th or higher.

Basic agro-industry:	108 enterprises (-)
Food:	108 (-)
Wood and wood products:	181 (6th)
Chemical & chemical products:	150 (4th)
Plastics products:	150 (5th)
Non-metal products:	153 (12th)
Fabricated products:	259 (4th)
Machinery:	127 (3rd)
Electrical machinery & supplies:	127 (3rd)
Transport equipment:	200 (15th)
Other manufacturing:	185 (6th)

IPC-8 recommended electric/electronics parts in Pathum Thani and rice mills in Suphan Buri as candidate model clusters. Ministry of Industry selected the electric/electronics parts industry in Pathum Thani as a candidate model cluster for the following reasons.

1) DIP strongly suggested though previously IPC-8 was not interested on recommending electrical/electronics parts manufacturers.
2) PIO intends to link the OTOP initiative with the clustering project (to incorporate electronics parts into OTOP-initiated products) and wished to study and develop ways to promote such linkages.

(2) Electric/electronics parts in Pathum Thani

1) According to ISMED, there are 127 electric/electronics parts manufacturers in Pathum Thai, most of which are foreign companies and operate in approximately 10 industrial estates of varying sizes.
2) The JICA mission together with people from DIP and IPC-8 visited two Japanese companies (transistors and diodes and telephones, facsimiles and cellular phones) and two Thai companies (PCB mounting and electric rice cookers).
3) The Japanese companies operated under direction of headquarters in Japan, including procurement and production, and had little knowledge or understanding on the cluster development policy.
4) The Thai companies were not located in an industrial estate. They operated in an area where other factories were located nearby, but accumulation of enterprises in the same sector was not seen.
5) The PCB mounting factory supplies 30% of its products to Japanese manufacturers operating in Thailand and export the remaining 70%. It assembles PCB supplied by customers on a contract basis. The JICA mission asked the management about the cluster development project. They wanted to see its details for participating.
6) The electric rice cooker company develops its own products and makes most of parts for assembly. Products are sold in the domestic market only. As for cluster development, the company wishes the development of parts supply sources near the factory.

Observation

Neither IPC nor PIO showed much interest in the clustering of electric/electronics parts manufacturers. The majority of the manufacturers are foreign companies and their procurement and production activities are controlled by their foreign head offices, so that they feel little need or

incentive for cluster activation such as collective purchase or other cooperation. Also, electric/electronics parts are produced in great varieties and it is therefore difficult to find a common goal or merit for clustering their operations.

3.4.5 Suphan Buri (IPC-8)

(1) Outline of the province

Suphan Buri is located in north central part of the region IPC-8. It has the largest population in the region, but its population density is relatively small. Its economic base is agriculture (e.g., rice) and related industries (rice mills). The province contains 10 districts and the provincial capital is Suphan Buri. Key indicators of Suphan Buri are summarized as follows.

- Land area (2002): 5,360km^2
- Population (2002): 863,000
- Per capita GPP (2000): 49,540Bt
- Working population (2002): 489,000
  Manufacturing sector's share: 11.7%
  Agricultural sector's share: 56.0%

Major manufacturing industries having 100 or more enterprises each in the province (as of 2001) are summarized below. Note that the figures in parenthesis show ranks in the entire country in case that the industry is ranked at 15th or higher.

Basic agro-industry:	400 enterprises (-)
Food:	125 (14th)
Machinery:	184 (6th)
Transport equipment:	204 (14th)

As mentioned earlier, IPC-8 recommended electric/electronics parts in Pathum Thani and rice mills in Suphan Buri as the candidate model clusters. The latter was selected for the following reasons.

1) Suphan Buri is ranked first in the country in terms of the volume of rice shipments to the local market as well as the volume of rice exports. Thus, the rice-related industries play an important role in the local economy.

2) At present, rice is exported through Bangkok's exporters, creating small profits for rice producers and distributors in the province. As the development of direct export channels will contribute greatly to the local economy, a pilot project to promote such goal is desirable.

(2) Rice mills in Suphan Buri

1) Suphan Buri is known as a major rice producing area, together with concentration of rice mills. There are 187 rice mills operating in the province, of which 113 form a cooperative. They constitute a major industry in the province and influence greatly to local economic conditions.
2) The province accounts for the highest share of rice produced and distributed in the country. Moreover, it represents 80% of rice exports. A combined total capacity of the 187 rice mills is 22,000 tons per day and many of them have capacity over 100 tons per day. Their requirements are fully satisfied by production in the province and surrounding areas.
3) For rice exports, they have to rely on exporters in Bangkok, which take up most profits. To develop their own export channels, they are in the process of establishing a joint venture as their own cluster activities.
4) Physical distribution of rice in the local and export markets is carried out smoothly and there is no infrastructure bottleneck.

Observation

In the province, direct exports of rice are the major concern and government organizations responsible for SME promotion provide support, while the trade association sponsors seminars and training programs. Once a joint venture is established and export channels are developed, their cluster development target is considered to be achieved.

Almost all of persons interviewed by the study team expressed interest in implementation of the pilot project and expected that they would be selected as a model cluster. It should be noted, however, that most rice mills expected the pilot project to provide effective support for them including marketing relating to rice export promotion (development of distribution channels and the identification of customers) as well as training in Japan. Nevertheless, rice mills do not have a broad linkage to other industrial sectors and are not highly rated in terms of appropriateness for the model cluster development project.

3.4.6 Rayon (IPC-9)

(1) Outline of the province

IPC-9 includes Bangkok and covers 10 provinces located in the central region. Rayon is located in the southern part of the IPC-9 region. It faces the Thailand Bay and has an international port in Map Ta Phut. The heavy chemical industry is the largest industry in the province, followed by the rubber industry. Per capita GPP (Gross Provincial Product) is 520,000Bt, highest in the country and more than twice that of Chon Buri (240,000Bt), due to concentration of heavy industries such as gas, petroleum, and petrochemical plants.

The province has 6 cities and 2 municipalities. The provincial capital is Rayon City. Key indicators are summarized as follows.

- Land area (2002): 3,550km^2
- Population (2002): 547,000
- Per capita GPP (2000): 523,220Bt
- Working population (2002): 300,000
  Manufacturing sector's share – 22.0%
  Agricultural sector's share – 35.3%

Major manufacturing industries having 100 or more enterprises each in the province (as of 2001) are summarized below. Note that the figures in parenthesis show ranks in the entire country in case that the industry is ranked at 15th or higher.

Basic agro-industry:	346 enterprises (-)
Food:	122 (-)
Wood & wood products:	170 (10th)
Fabricated products:	126 (12th)
Other manufacturing industry:	114 (-)

IPC-9 recommended rubber products in Rayon and automotive parts in Chon Buri and Chachoengsao as the candidate model clusters.

Promotion of a rubber manufacturer cluster is recommended for the following reasons.

1) The rubber and related industries play an important role in the Thai economy. The industry wishes to develop and sell value added products more than natural rubber latex itself.
2) In fact, the rubber and related industries are a major industry in other provinces not only in IPC-9, but in IPC-8, IPC-10, and IPC-11 as well. Successful implementation of the pilot project will therefore help promote and propagate the cluster development initiative to other provinces.

On the other hand, the automotive parts industries were recommended with a view to developing Chon Buri to a major auto parts supplier base, which have already some degree of concentration and presence of assembly manufacturers in close proximity.

(2) Rubber products in Rayon

1) Rubber plantations in the province are cultivated in a scattered manner. Rubber plantations, previously found extensively in Malaysia, are now distributed in southern and central parts of Thailand.
2) In Rayon, there are 63 rubber product factories (of which 60 are not located in an industrial estate), including large manufacturers such as Michelin, Yokohama Rubber, and Bridgestone (third factory).
3) These factories export a high percentage of their products and report good operating results.
4) Rubber product factories have selected the area because of its proximity to rubber plantations and there is no problem relating to availability of raw materials.

Observation

While rubber plantations in Malaysia are on the declining trend, those in the southern and central parts of Thailand close to the border with Malaysia have been expanding. Further expansion is expected and the rubber and related industries are increasing their importance in the Thai economy. It should be noted, however, that rubber plantations in Rayon are not concentrated in a certain area. Accordingly, rubber factories that are located near plantations are fairly scattered. In considering the possibility of improving the industry's competitiveness, availability of raw materials is a major advantage. Yet, the industry is not rated very highly in terms of other requirements for improvement of competitiveness, the intent of individual companies to promote the cluster development project, and availability of potential BDS providers.

3.4.7 Chon Buri (IPC-9)

(1) Outline of the province

IPC-9 includes Bangkok and covers 10 provinces located in the central region. Chon Buri is located in the southwestern part of the IPC-9 region and faces the Thailand Bay (east part), having the Laemchabang international port. The province has 10 districts and a minor district. Chon Buri City, provincial capital, is located in the northern part of the province (approx.70km from Bangkok) and serves as a commercial and industrial center. In the southern part of the province is a renowned resort area, Pattaya. The province's key indicators are summarized as follows.

- Land area (2002): 4,360km^2
- Population (2002): 1,130,000
- Per capita GPP (2000): 243,500Bt
- Working population (2002): 577,000
  Manufacturing sector's share – 27.6%
  Agricultural sector's share – 13.3%

The following table is a selected list of major industries in the manufacturing sector, each of which has 100 or more enterprises in the province (as of 2001). Note that the figures in parenthesis show ranks in the entire country in case that the industry is ranked at 15th or higher.

Basic agro-industry:	426 enterprises (-)
Food:	261 (5th)
Wood and wood products:	165 (12th)
Plastics products:	100 (9th)
Non-metal products:	190 (8th)
Fabricated products:	208 (6th)
Machinery:	143 (10th)
Transport equipment:	238 (13th)
Other manufacturing:	149 (12th)

IPC-9 recommended rubber products in Rayon and automotive parts in Chon Buri and Chachoengsao as the candidate model clusters. Main reasons for promoting the clustering of automotive parts suppliers

are as follows (commonly applied to promotion of the automotive parts industry in IPC-9, including Chon Buri and Chachoengsao).

1) Most automakers operating in the country are located within a 60km radius from Chon Buri City. As development of the automobile and related industries is the key to regional development, the pilot project proposes promotion of Chon Buri as a major cluster of automotive parts suppliers.
2) The Thai government has designated the automotive parts industry as one of the five "target industries." Thus, promotion of the industry is a national priority.
3) At meetings with IPC-9, PIO and FTI, all members have expressed interest in the cluster approach. Thus, sufficient support for the pilot project can be expected.

(2) Automotive parts in Chon Buri

1) As pointed out earlier, most foreign automakers are located within a 60km radius from Chon Buri. That means Chon Buri is located in an approximate center of the existing clusters of assembly manufacturers in Bangkok, Rayong and Chachoengsao, and the clusters of parts suppliers in Bangkok, Pathum Thani, Samut Prakan, and Rayong.
2) There are approximately 100 automotive parts manufacturers, most of them are Japanese companies and are located in industrial estates. They form the first-tier supplier base. On the other hand, local automotive parts manufacturers constitute the second-tier or third-tier suppliers, and many of them are located outside the industrial estates.
3) All foreign automakers (Japanese, European and U.S.) have strategy to focus on Thailand as their Asian production bases. Car production and sales in the country, which plummeted to nearly one third the peak level after the economic crisis, have recovered to the previous level due to exports.
4) For metalworking companies in the automotive parts industry, procurement of steel materials have been difficult in terms of price and volume because China has changed from an exporter to an importer, thereby causing a major concern.

Observation

IPC-9 is enthusiastic about the automotive parts cluster development concept and TAI has announced its willingness to cooperate. As the automotive parts industry is designated as one of the target industries in the country, DIP's support can be assured. In addition, Chon Buri has an accumulation of auto parts industry at a certain level. Thus, the industry meets requirements for the candidate model cluster. At the same time, however, the automotive parts industry in

Chachoengsao is also recommended. As both of them cannot be selected, the two provinces need to be compared and evaluated.

3.4.8 Chachoengsao (IPC-9)

(1) Outline of the province

Chachoengsao is located in the central part of IPC-9 and has 11 cities. Its provincial capital, Chachoengsao, is situated approximately 100km east of Bangkok. It is an old city developed during the Ayutthaya period, through which the Bang Pakong River flows. The province's key indicators are summarized as follows.

- Land area (2002): 5,360km^2
- Population (2002): 650,000
- Per capita GPP (2000): 89,750Bt
- Working population (2002): 348,000
  - Manufacturing sector's share – 26.1%
  - Agricultural sector's share – 36.5%

The following table is a selected list of major industries in the manufacturing sector, each of which has 100 or more enterprises in the province (as of 2001). Note that the figures in parenthesis show ranks in the entire country in case that the industry is ranked at 15th or higher.

Basic agro-industry:	336 enterprises (-)
Food:	105 (-)
Fabricated products:	126 (11th)
Transport equipment:	111 (-)

IPC-9 recommended rubber products in Rayon and automotive parts in Chon Buri and Chachoengsao as the candidate model clusters.

The ideas behind the cluster promotion for the automotive parts industry have been already discussed previously. (Please refer to 2.4.7 Chon Buri (IPC-9).)

(2) Automotive parts in Chachoengsao

1) In Chachoengsao, there are approximately 60 automotive parts manufacturers, many of which are Japanese companies. As for automakers, Toyota and Isuzu are operating in the Gateway industrial estate. Geographically, Chachoengsao is located far from the automotive industry cluster in Rayong.
2) The current status of the automobile and automotive parts industries in the province is more or less the same as that in Chon Buri.

Observation

The current state of the automotive parts industry in Chachoengsao is substantially same as that in Chon Buri, but the former is less intensive in terms of geographical concentration. Chon Buri is also at a higher level of industrial development (GDP per capita is 2.5 times that in Chachoengsao) with better infrastructure. If accessibility to the automotive industry cluster in Rayong is also taken into account, Chon Buri appears to be more viable as the model cluster.

As only one province should be selected as the site for the cluster development project for the automotive parts industry, comparison was made and revealed that Chon Buri was considered favorable over Chachoengsao in terms of level of concentration.

3.4.9 Surat Thani (IPC-10)

(1) Outline of the province

IPC-10 covers 7 provinces in the southern region, including the Phuket Island. Surat Thani is located in the central part of the region and ranks first in terms of both land area and population. The province has 18 districts and a minor district. Surat Thani City, provincial capital, serves as a commercial and industrial center. FTI is organized (48 members) and operates in close cooperation with government, among other things, making recommendation for industrial development in the province. Key indicators are summarized as follows.

- Land area (2002): 12,640km^2
- Population (2002): 920,000
- Per capita GPP (2000): 58,490Bt
- Working population (2002): 461,000

Manufacturing sector's share – 6.5%
Agricultural sector's share – 52.7%

The following table is a selected list of major industries in the manufacturing sector, each of which has 100 or more enterprises in the province (as of 2001). Note that the figures in parenthesis show ranks in the entire country in case that the industry is ranked at 15th or higher.

Food:	173 (10th)
Wood and wood products:	176 (7th)
Non-metal products:	123 (-)
Machinery:	103 (15th)
Transport equipment:	104 (-)
Other manufacturing:	143 (13th)

IPC-10 recommended the palm oil and parawood working industries in Surat Thani as the candidate model clusters. Major objectives of promoting the clustering of these industries by IPC-10 at the time of 1st field survey are summarized as follows.

1) To reinforce their competitiveness with increased value added by developing strategic plans for industrial clustering under support of consulting firms and universities at the budget of 1.5 million bahts for each of the two industries.
2) To increase the value added at an annual 3% through managers' training, TQM training, the tour of advanced factories in foreign countries, and field guidance for industrial clustering.

(2) Palm oil in Surat Thani

1) In Thailand, there are 35 palm oil pressing plants in the country, 34 of which are located in IPC-10 to reflect abundant presence of palm plantations. In Surat Thani, 17 plants are located and seven plants in Praseng City. The plants press palms purchased from local plantations and sell crude palm oil to refiners in Bangkok. Refined palm oil is primarily used as vegetable oil and fat and is sold to the domestic market.
2) At present, the industry faces the shortage of the raw material, or palm and therefore the processing plants in the province are said to be operated at around 55% of capacity. A plant the study team visited operated for half day.

3) The total area of palm plantation is currently 1.8 million Rai (2,880km^2). The government has announced plans to increase supply by expanding palm plantations by 1.7 million Rai to 3.5 million Rai by year 2008.

Observation

The palm oil industry is one of major industries in the country using local materials. However, the industry in the southern region, including Surat Thani, is confined to primary processing (pressing) of palm and has not extended to the downstream segment with a higher value added. The major problem facing the industry is the shortage of palm supply and needs to be solved in the context of promoting the primary industry or plantation. People in and related to the industry have expressed a clear intent and policy for increasing of palm supply. However, coupled with the fact that the industry consists of a relatively small number of enterprises, accumulation ratio as a cluster, influence to other sub-sector, and industry as an agro-industry…etc, the industry's eligibility as the model cluster under the project is not very high.

(3) Parawood woodworking in Surat Thani

1) Raw woods for woodworking of parawood are waste rubber-producing trees, which were previously abundant and/or burned, but currently are considered as a recyclable wood resource which exploitation does not involve destruction of the natural environment. In Thailand, there are 1,230 million Rai of rubber plantations, which are mainly located in the southern and eastern regions, plus the northeastern region (ISAN areas) in recent years. Thus, supply of raw materials is abundant and quality becomes a major concern.
2) According to industrial sources from field survey, there are 542 factories processing parawood (sawing, drying, furniture making, woodworking) in the southern part of Thailand. In Surat Thani, there are 105 factories (79 sawing mills/drying shops/charcoal factories; and 26 furniture and woodworking shops). One half of them are located in two cities adjacent to Surat Thani, within a 20km radius.
3) The parawood-related industries in Surat Thani are largely engaged in sawing and drying and supply simply processed products. Recently, however, some manufacturers have diversified and intend to diversify into furniture and others aim to develop original products. Furthermore, some companies hold regular meetings every other month and seem to have a strong intent to promote the industrial cluster.

Observation

Parawood that is small-diameter has traditionally been used for timber scaffolds and packaging and pallet materials in the form of board. Its use as interior fittings and furniture has started only recently. Thus the industry is considered to be very young.

In Surat Thani, parawood (lumber) is supplied to the market after the primary processing (sawing and drying), as seen in other areas of the southern region. However, if pilot project be executed at Surat Thani, skill to produce more value added products such as furniture be transferred, and/or technology to improve current process for loss reduction of saw mills will be studied and be opened to local enterprises and to local peoples. Thus industry can be eligible as the model cluster as it is feasible to increase the level of local processing, thereby to increase the value added and employment. Also successful implementation of pilot project will therefore help promote and propagate the cluster development initiative to other provinces by Thai Ministry of Industry as a core organization.

People in and related to the industry, including local producers, have a strong desire to promote the industry's further development, which is highly rated in the evaluation of the candidate model cluster by both Ministry of Industry and by the JICA mission.

Chapter 4 Model Cluster Master Plans and Action Plans

Chapter 4 Model Cluster Master Plans and Action Plans

4.1 Process of Making Model Cluster Promotional Plans

This section refers to establishing master plans and action plans for promoting the three model clusters:

(1) Khon Kaen silk textile industries (IPC5)

(2) Chon Buri automotive parts industries (IPC9)

(3) Surat Thani Parawood industries (IPC10)

The following policies have been established to ensure continuation of the cluster promotional activities after the completion of the projects in the three areas:

(1) Technical transfer of cluster diagnostic and promotion planning techniques to the Thai consultants for medium and small businesses

(2) Making promotional plans with as many local cluster representatives as possible

It was also decided that the plans would be made according to the following schedule:

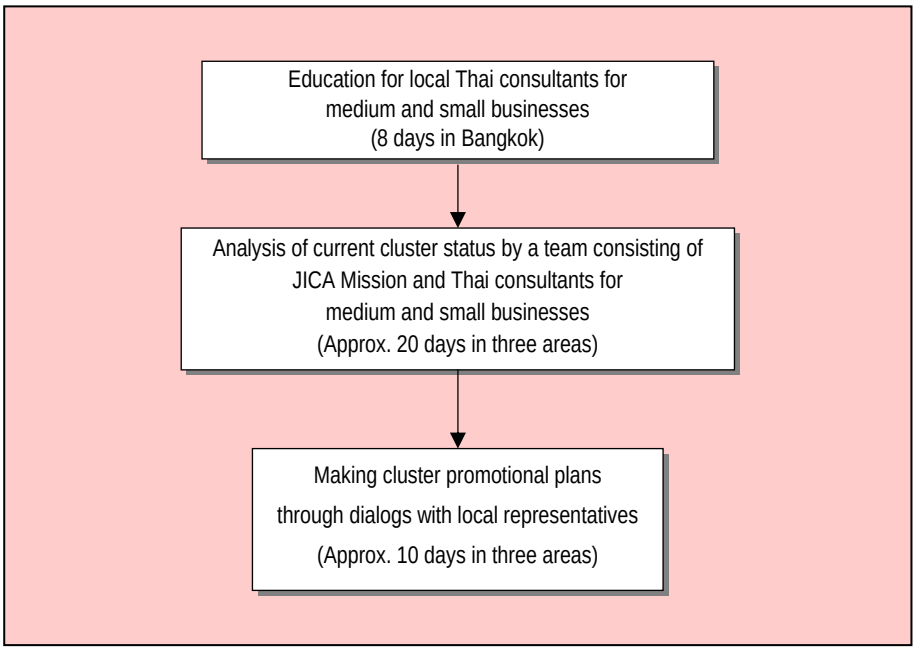

Figure 4.1-1 Flow Chart of Planning of Cluster Promotion Aiming at Sustainability

4.1.1 Use of Local Thai Consultants for Medium and Small Businesses

Thailand has a training program for medium and small business consultants (called "Shindanshi" in Japanese) modeled after the Medium and Small Enterprise Management Consultant System in Japan. The training program in Thailand is a full-time educational course, lasting approximately 10 months, after which the successful trainees would become medium and small business management consultants. A total of 335 trainees (called "Assistant Shindanshi") have successfully completed the course during the last four curriculum periods. Some of them are already operating as independent consultants. JICA Mission decided to select a certain number of assistant consultants and transfer necessary business management techniques to them so that they will play a central role in the future.

Toward that goal, the 8-day training program was conducted by the JICA experts acting as lecturers. Upon completion of the program, the trainees were assigned to one of the model clusters in three areas for OJT of cluster management consultation (diagnosis) for a month with the JICA experts. The participants in the 2004 program consisted of 19 Shindanshi, 2 to 3 persons each from IPC5, IPC9 and IPC10, and some from DIP.

4.1.2 Method of Industrial Cluster Diagnosis

A group of consultants, consisting of 2 to 3 JICA experts and 6 to 7 Shindanshi that had completed the training program, was assigned to each of the three model clusters. The local IPC directors and staff members provided full support as the local counterpart. Each cluster team (working group) consisted of the following members.

Management consultation (diagnosis) of the three model clusters started immediately upon completion of the Shindanshi training. One month (22 working days) was spent, as shown below, for analyzing the current status and making master plans based on the analytical findings.

Table 4.1-1 Timetable of Training Course in 2004 (8 working days)

Date	Morning	Afternoon
(1) 13 Thu	● Opening address by DIP ● Outline of and expectation to CSCD (BEED, DIP) ● Presentation of Progress Report (1) (Inakazu)	● Lumpang Ceramics Clustering (IFCT) ● Industrial Clustering Project (BSID, DIP) ● Cases in Japan(Arai Y.) 1) Types of clusters, development policies etc. 2) Different points of views in Japan and Thailand
(2) 14 Fri	● Cluster approach for SME development (Inakazu) 1) Definition and concept, Similar approaches 2) BDS, Theory and practice	● Selected 3-MCs (Horiguchi) 1) Methodology for selection of MCs 2) Analysis and conclusion
(3) 15 Sat	● Formulation and invigoration of clusters (Arai Y.) 1) Factors to formulate industrial clusters 2) Factors to invigorate Industrial clusters	● Method of industrial cluster diagnosis I (Arai Y.) 1) Important notices in industrial cluster diagnosis
16 Sun	○Holiday	
(4) 17 Mon	● Method of industrial cluster diagnosis II (Arai Y.) 2) System and procedure of cluster diagnosis	● Method of industrial cluster diagnosis III (Arai Y.) 3) Investigation items and view points for diagnosis 4) Elaboration of a vision for development of the cluster
(5) 18 Tue	● Project Cycle Management method I (Terada) 1) Problem analysis 2) Setting up Development Approaches (Strategies)	● Project Cycle Management method II (Terada) 3) Practice of 1) and 2) 4) Preparation of PDM, M/P and A/P
(6) 19 Wed	● Project Cycle Management method III (Terada) 5) Finalization of M/P framework	● Pre-study on the model clusters (3-MC supervisors) 1) Industrial characteristics of 3-MCs 2) Results of pre-questionnaire survey
(7) 20 Thu	● Local survey Design–practice I (3-MC supervisors) 1) Design of questionnaire to SMEs 2) Design of questionnaire to BDS, institutions etc.	● Local survey Design–practice II (3-MC supervisors) 3) Discussion and adjustment on the questionnaires
(8) 21 Fri	● Preparation of a diagnosis report (Arai Y.) 1) Contents of a cluster diagnosis report 2) Remarks for Pilot Projects	● Remark on commencement of diagnosis (DIP) 1) List of related organizations to be interviewed 2) Partners and working groups in model clusters 3) Transportation, accommodation etc.
May 22 Sat	○ Holiday Experts arriving (Shimizu, Otsuka, Odawara)	
May 23 Sun	○ Traveling day for model clusters	

Table 4.1-2 Assignment of Working Group

(Unit: persons)

	Khon Kaen	Chon Buri	Surat Thani
JICA Mission Expert	3	2	2
Thai Shindanshi	6	7	6

Table 4.1-3 Timetable of MC Diagnosis in 2004 (22 Days for One Cluster)

	Date	Activities
(1)	May 24 Mon	●Meeting with IPC, etc. Office preparation
(2)	May 25 Tue	●Regional data collection
(3)	May 26 Wed	●Preparation of questionnaire sheets
(4)	May 27 Thu	●Interview surveys (1)
(5)	May 28 Fri	●Interview surveys (2)
	May 29 Sat/ 30 Sun	○Holiday
(6)	May 31 Mon	●Interview surveys (3)
(7)	June 01 Tue	●**Opening of Initial Workshop (Chonburi, Suratthani)**
(10)	June 02 Wed-04 Fri	●Interview surveys (4), (5), (6)
	June 05 Sat/ 06 Sun	○Holiday
(11)	June 07 Mon	●**PCM (Problem analysis)**
(12)	June 08 Tue	●**PCM (Master Plan PDM, Vision and Strategies)**
(13)	June 09 Wed	●Planning of Projects and programs
(14)	June 10 Thu	●Planning of Projects and programs (Narrative PDM)
(15)	June 11 Fri	●Formulation of action plan, Discussion on Pilot projects
	June 12 Sat/ 13 Sun	○Holiday
(16)	June 14 Mon	●Supplemental interview survey (1)
(17)	June 15 Tue	●Supplemental interview survey (2)
(18) (20)	June 16 Wed June 18 Fri	●Report preparation (3 days)
	June 19 Sat/ 20 Sun	○Holiday, Experts leaving on Sunday (Shimizu, Otsuka, Odawara)
(21)	June 21 Mon	●Preparation of workshop (Report, Logistics, Exercise of presentation)
(22)	June 22 Tue	●**Opening of Final Workshop**

(Note) Actual performance of workshops in Khon Kaen was slightly different from the above. See "Summary of Cluster Report".

4.1.3 Method of Current Status Survey

Current status surveys were conducted in three different styles, as shown below, to identify the current situations of the model clusters.

(1) Questionnaire surveys with the relevant enterprises that form the specific cluster

A questionnaire survey (direct interview) was conducted by a local research company at 50 companies per cluster. The Working Group visited several medium and small companies chosen from among the 50 companies based on the result of the questionnaire survey.

(2) BDS interview surveys

A survey team in each area conducted a direct interview survey with the BDS in that area.

(3) Interview surveys with Thai government offices

Interview surveys were conducted with the central government offices in Bangkok regarding industrial cluster promotion and with local government offices in the model cluster areas regarding industrial cluster promotion at the local level.

4.1.4 Method of Cooperation with the Local People

Industrial cluster promotion should ideally be developed by the local people, including enterprises belonging to the same trades, related industries, BDS, and government offices including local governments. From this point of view, maximum efforts were made by the Working Group (JICA Mission, Shindanshi, and IPC) to organize a system of cooperation with the local people toward the project.

To be more precise, the Working Group held three workshops during the month of cluster diagnosis. More details can be found in the following clause 4.2 onward.

(1) Initial workshop

The project (CSCD) briefing to the local representatives and requests for their cooperation

(2) PCM workshop

Problem analysis of the specific industrial cluster in the presence of the local representatives. Basic discussion for making master plans for promoting the specific clusters.

(3) Final workshop

Announcement of the master plans (framework) for promoting the specific clusters to the local representatives to acquire their consensus. Proposing the pilot projects and requesting their cooperation.

4.2 Silk Textile Industry in Khon Kaen

This section describes the results of the current status analysis of the model cluster in Khon Kaen and summarizes the master and action plans targeting it. For more details, see a report that has been prepared separately.

4.2.1 Cluster Diagnosis Survey in Khon Kaen

4.2.1.1 Organization of the Cluster Diagnosis Survey Team

Cluster Diagnosis at IPC5 (Khon Kaen province) were performed by a survey team consist of 3 JICA Japanese mission experts and 6 Thai Shindanshi, and one interpreter totaling 10 persons as listed in Table 4.2-1.

Table 4.2-1 Cluster Diagnosis Survey Team in Khon Kaen

Main Role	Post/Position	Name
1) Supervisor	JICA mission (1	Mr. Kazunori HORIGUCHI
2) Expert in the sub-sector	JICA mission (2	Mr. Humio SHIMIZU
3) Assistance/Coordinator	JICA mission (3	Mr. Tamon NAGAI
4) SME Consultant (Leader)	Thai Consultant (1	Ms. Chana Sangtongjee
5) SME Consultant (Sub-leader)	Thai Consultant (2	Mr. Pisit Jungkanjana
6) SME Consultant	Thai Consultant (3	Mr. Pheeraphon Kateganyarat
7) SME Consultant	Thai Consultant (4	Mr. Phinyo Aekauruchaithep
8) SME Consultant	Thai Consultant (5	Mr. Witsawat Chaiworraporn
9) SME Consultant	Thai Consultant (6	Mrs. Paradee Chaiyapuek
10) Interpreter (Thai ⇔ Japanese)	Interpreter	Ms. Pamonrat Kasiolarn

For the execution of cluster diagnosis, Ministry of Industry gave full support. Department of Industrial Promotion（DIP）from Ministry of Industry Bangkok headquarters, and IPC5 in Khon Kaen supported the survey team as shown in the Table 4.2-2.

Table 4.2-2 DIP Members for Khon Kaen Silk Textile Cluster

Main Role	Post/Position	Name
1) BEED Officer (DIP, MOI)	BEED Staff	Mrs. Yuparat Satawiriya
2) BEED Officer (DIP, MOI)	BEED Staff	Mr. Passakorn Chairat
3) BEED Officer (DIP, MOI)	BEED Staff	Mr. Prapat Sripairojn
4) IPC 5 Officer (DIP, MOI)	IPC 5 Director	Mr. Veranant Neeladanuvongs
5) IPC 5 Officer (DIP, MOI)	IPC 5 Deputy Director	Mr. Surachai Klanghranotara
6) IPC 5 Officer (DIP, MOI)	IPC 5 Staff Member	Mr. Virat Ratanakum
7) IPC 5 Officer (DIP, MOI)	IPC 5 Staff Member	Mrs. Kitiya Suwanthada
8) IPC 5 Officer (DIP, MOI)	IPC 5 Staff Member	Mr. Wuthipong Dunsponlapom

Other than Ministry of Industry, following government organizations and institutes supported cluster diagnosis.

1) Khon Kaen Province Governor's Office
2) Chonnabot Community Development Office (in Chonnabot City Office)
3) Khon Kaen Industrial and Community Education Collage (Sala Mai Thai)

4.2.1.2 List of Organizations Visited by the Survey Team

At Cluster Diagnosis, following companies, BDS, educational institutes, government offices were visited by the survey team and by DIP staffs with many support and attendance of Chonnabot Community Development Office.

The JICA mission visited the following number of organizations and individuals by category. The names of them are enumerated in the ANNEX to 4.2 at the end of this section 4-2.

Government organizations	: 7	Educational Institutes & University (BDS)	: 4
NGOs & NPOs (BDS)	: 5	Financial Institutes (BDS)	: 3
SMEs (Manufacturers)	: 5	Silk Producer's Female Groups	: 15
Silk Workshop and networks…etc	: 4		

4.2.1.3 Questionnaire Survey

While the survey team conducted the cluster diagnosis, a questionnaire survey was conducted of silk textile manufacturers, both private enterprises and individuals by a local research firm.

As shown in the questionnaire attached to the report as an appendix, questions primarily concerned problems facing silk textile manufacturers in the province and their awareness of or interest in cluster development. 50 responses were obtained, with the following breakdown according to type of ownership:

SMEs engaged in production and/or sales of silk textile:	8
Individual producers working in production groups:	41 persons
Workshop:	1
	50

4.2.1.4 Workshops and Participants

The industrial cluster should be developed and promoted as an initiative under the participation of local enterprises concerned and under the leadership of BDS and related organizations. In this recognition, the project has been implemented in such way to provide as many opportunities as possible to discuss with related organizations and individuals in the areas concerned and to reflect, as far as possible, opinions and views of related parties in the development of the cluster development policy. In particular, three workshops were held during the one month period (22 working days). Participants at each workshop are summarized as shown in the Table 4.2-3.

Among the three workshops, the PCM workshop analyzed problems facing the target cluster and established strategic direction of cluster development an a general framework of the master plan through extensive discussions between the study team and local stakeholders. Needless to say, the results of the current status surveys were used as the basis of discussion.

Table 4.2-3 Workshops Held During One-month Cluster Diagnosis

workshops	Khon Kaen	
Initial Workshop	Awareness of CSCD to the related people in the area	
	May 31: participants	75
	- Enterprise/Producer	18
	- BDS	29
	- BEED/IPC	17
	- JICA/Shindanshi	11
PCM Workshop	Problem analysis of the target group by the working group and selected regional persons	
	June 7: participants	24
	- Enterprise/Producer	5
	- BDS	3
	- BEED/IPC	7
	- JICA/Shindanshi	9
Final Workshop	Presentation by the working group to the related people in the area	
	June 21: participants	66
	- Enterprise/Producer	19
	- BDS	26
	- BEED/IPC	11
	- JICA/Shindanshi	10

4.2.2 Results of Cluster Diagnosis in Khon Kaen and Conclusions

4.2.2.1 The History of Silk Industry in Khon Kaen

Emigrated from the kingdom of Lan Chang and settled down a city known as Khon Kaen, the people were called Tai Lao. The Kingdom consisted of Luang Pra Bang, Wieng Chan, and Chompasak. Population of Chompasak City was well known in the most famous of Mud Mee weaving. Weaving skill and art of Tai Lao were past on by example from one generation to the next. Later on, it becomes local intelligent that is a unique skill proven by the first Chonnabot Governor's silk fabric, Pa Phum/Pa Na Nang. This fabric is recognized as the Mud Mee model for all weavers.

Mud Mee silk of Amphur Chonnabot is claimed as the worthy handicraft forming from the experiences through tradition and culture. The process of weaving, patterning, yarn selecting, reeling, dyeing, and spinning including developing loom have been researched and experimented to inherit generation by generation for more than 100 years. It makes Mud Mee silk of Chonnabot colorful and self-unique that any other areas cannot copy.

The unique of Mud Mee silk of Amphur Chonnabot is as follows:

(1) Design

- Mee Kong: it is assumed as a traditional design of Mud Mee silk in Chonnabot
- Kun Mark Beng: some calls Chueng Tian or Kor Pra Thep which is the unique design of Chonnabot

(2) Color and Neatness

- the traditional color is purple, red, green, dark brown (tamarind seed). However, currently artificial dyeing collars are user mostly for more variety of collars, design valuations, and to display expressions…etc
- adapting imagination to create new design

(3) 3-shaft Weaving: it is a special technique in Chonnabot that make fabric thicker. Fore and back sheet have different color tone that is hard to imitate to.

(4) Pa Na Nang/Pa Phum: it is originated more than 200 years age in Chonnabot and receive a golden medal from national contest on August 12, 1993 organized by National Culture Committee Office.

(5) Weaver: most of Chonnabot's women (households) can weave silk textile. However, it is Chonnabot unique that many of good weavers are men. They weave conservative and traditional silk textile. The best weaver in Chonnabot is also man.

4.2.2.2 Position of Silk Industry in Thailand and Khon Kaen

(1) Silk industry in Thailand by GDP share

The GDP share of the silk industry in Thailand is estimated at less than 0.1% of the nation's GDP in spite that the Thai silk textile industry is internationally famous. As the GDP of the silk industry is not directly known by statistics, the JICA mission first estimated the value added of the sub-sector and then compared it with the nation's GDP that is available from statistics. Table 4.2-4 shows results and assumptions of the estimated the value added or GDP of the silk industry in Thailand. JICA mission estimated total silk textile produced in Thailand to be 1,200 ton to 1,500 ton annually. Thus using this number, estimation was made on three different assumptions by changing quantity of production and price and cost. Even in the case of the high value added in Table 4.2-4, the estimated GDP of the silk textile industry, including silk yarn industry, shares 0.09 % of the nation's CDP. JICA mission estimated as the value-added of the silk textile industry in Thailand will be $90 million in the high value-added case and $43.3 million in the low value-added case.

Table 4.2-4 Estimation of GDP Share of Silk Textile Industry

	Quantity (ton)	Average Price per ton ($)	Sales ($ Million)
Sales of Silk Textiles in 2002 (High Value-added Case)	1,500	77,000	116
Cost of Silk Yarn	1,500	17,000	26
Other cost of production	-	-	-
Value-added of Silk Textile Industry			90
Sales of Silk Textiles in 2002 (Middle Value-added Case)	1,500	54,000	81
Cost of Silk Yarn	1,500	19,000	29
Other cost of production	-	-	-
Value-added of Silk Textile Industry			53
Sales of Silk Textiles in 2002 (Low Value-added Case)	1,200	54,000	65
Cost of Silk Yarn	1,200	18,000	22
Other cost of production	-	-	-
Value-added of Silk Textile Industry			43

	GDP (Million Baht)	Exchange Rate (Baht→$)	GDP ($ Million)
Thailand's GDP (2002)	5,451,854	41.5	131,370

High Value-added Case	Silk Textile Industry / GDP	0.07%
	Silk Industry including Silk Yarn / GDP	0.09%
Middle Value-added Case	Silk Textile Industry / GDP	0.04%
	Silk Industry including Silk Yarn / GDP	0.06%
Low Value-added Case	Silk Textile Industry / GDP	0.03%
	Silk Industry including Silk Yarn / GDP	0.05%

Notes

The study team used the following assumptions:

- Silk textile production in 2002 is estimated to be between 1200~1500 tons in Thailand annually.
- The estimation is based on the information collected during the first and second study visits to Thailand.
- The average sales price of silk textiles per ton is estimated based on the export and import prices of silk textiles in Thailand.
- The average price of silk yarn per ton is estimated based on the import and export prices of silk yarn in Thailand.
- Costs of production other than the cost of silk yarn are considered to be negligible.
- The import value of silk yarn is almost equal to the export value of silk yarn.
- The currency exchange rate used is 41.5 Baht per US Dollar, which is the rate used by BISD.

Source: Interviews with the Thai Silk Association and other related institutions, data from BISD/DIP and data from NESDB.

(2) Share of Khon Kaen in the Thai silk industry

JICA mission estimated the share of silk textile produced in Khon Kaen province to be about 156 tons and Chonnabot district to be about 60 tons (Please refer to estimate calculations listed below). According to field survey, silk textile production area in Khon Kaen is southern half part of the province with Chonnabot district as a center. Around Chonnabot district, there are Mun Cha Kiri district, and Bangpai district, which also produce large volume of silk textiles and related products at the region's households. Also most of farmer's households located in southern part of Khon Kaen province starting from Chonnabot until southern province border of Nakhon Ratchasima, produce silk textiles on farming off-seasons. JICA mission estimated Khon Kaen province's total silk production volume by considering Chonnabot district's annual silk production volume as 100%, Mun Cha Kiri district as 40%, Bangpai district as 40%, and rest of the districts' total production volume as 80%, and totaling 250% or 156 ton.

This estimated volume of 156 ton would be about 10.4% of estimated total silk produced in Thailand of about 1,500 ton.

The production volume of silk textiles in Chonnabot district is estimated based on the following information.

Estimation Bases (by Calculation)

JICA mission estimated the number of silk textile weaver in the region as follows. SME (including workshop and micro industry) 375 person, production group and individual group members 2,541 person, part-time household weavers 2,147 person. Considering 4 yards silk textile as a unit, SME produce 19,500 units annually, production groups and individual groups produce 93,000 units annually, and part-time weavers produce 21,470 units. The total 4 yard silk textiles produced in Chonnabot district would be 133,970 units or 60.3 ton annually (estimating as weight of 450g for each 4 yard silk textile unit). Following are the calculation bases for estimation.

A) From JICA mission survey, there are 12 registered SMEs in Chonnabot producing silk textile. Other than those 12 companies, there are about 15 to 20 non-registered SMEs and workshops in the region. They are not registered due to the size of capitals, the number of workers, and the size of energy used…etc JICA mission estimated that there are 4 companies having 30 to 50 workers (weavers), 5 companies having 10 to 20 workers, and rest of companies having 3 to 10 workers (weavers) in their factories. For estimation purposes, those workers (weavers) were considered to work at the factory everyday except Saturday and Sunday.

Middle size companies hiring 30 to 50 workers (Average 40 workers):

4 companies × 40 workers = 160 person

Small size companies hiring 10 to 20 workers (Average 15 workers):

5 companies × 15 workers = 75 person

Micro and small size companies hiring 3 to 10 workers (Average 7 workers):

20 companies × 7 workers = 140 person

Total workers (weavers) in SMEs:

160 person + 75 person + 140 person = 375 person

B) There are 41 production groups exists in Chonnabot district. However, there are more than 41 groups existing in the district from local hearing by JICA mission's field survey. According to Thai OTOP (One Tambon One Product)'s Chonnabot group list, there are 38 production groups which average 42 members, and 35 individual groups which average 27 members exist in the Chonnabot amper (district). Those weavers are mostly farmers' wives, thus in this calculation, we considered that farming seasons would be 6 months and weaving period would be 6 months per year.

Production Groups:

38 groups × 42 members = 1,596 person

Individual Groups:

35 groups × 27 members = 945 person

Total groups' members

1,596 person + 945 person = 2,541 person

C) According to JICA mission's field survey, almost all the Chonnabot district's females age around 15 – 16 and

above can weave silk textile. Also in the district, some male weaver produce silk textile on part-time. Population of Chonnabot district (amper) is male 13,208 person and female 13,989 person. Of those female, age 15 to age 17 are 599 person, age 18 to age 49 are 7,379 person, age 50 to age 60 are 1,777 person and age above 60 are 1,747 person (data from the Office of Provincial Statistic, Khon Kaen Province). Of those female age above 15, person who are not member of production groups or worker of SMEs (including workshop), JICA mission estimate 1/4 of total female population involve part-time silk weaving. For calculation, JICA mission estimated those female age above 15 weaves Saturday and Sunday only, and average working day per year would be 50 day.

Female population of Chonnnabot age 15 and above

599 person + 7,379 person + 1,777 person + 1,747 person = 11,502 person

Total weavers in SMEs (including workshops), and production/individual groups

2,541 person + 375 person = 2,916 person

*Part-time (Saturday & Sunday) silk textile weavers in Chonnabot (Estimate)**

(11,502 person – 2,916 person) ÷ 1/4 = 2,147 person

**Conditions: To simplify the calculation, population of female age above 15 is used to find the estimate, even though there are male part-time weavers in the district. However, JICA mission consider that the number of male weavers are included in the estimate of 2,147 persons.*

D) The time it takes to dye and to weave to complete 4 yards of silk textile varies by weavers. Some weaves while they take care child or grand-child, and/or doing household matters. Others weave little by little by taking breaks and resting, depending on their body conditions. Others weave very intently for continuously. Most likely, person who are working at SMEs and workshops are tends to weave intently, and person who are working at production groups and individual groups are tends to weaving slowly. To weave 4 yards of plane silk textile with no design, it takes half-day to 3 days a most. To weave 4 yards of Mad-Mee silk textile with 2-shaft (step) weaving takes about 3 days to 6 days including time it takes to dye. To weave 4 yards of Mad-Mee silk textile with 3-shaft (step) weaving takes about 5 days to 10 days including time it takes to dye. For special Mad-Mee picture like silk textile with 3-shaft (step) weaving takes about 6 months to 1 year starting from concept designing till weaving for finishing. JICA mission estimated time it takes to weave average 4 yards silk textile to be 5 days including dyeing period and weaving period. Also 4 yards of silk textile's weight varies from 400 grams to 500 grams depending on 2-shaft (step) weaving, 3-shaft (step) weaving, width variations and length variations…etc. JICA mission estimated average 4 yards silk textile to be 450 grams for the calculation.

A person who weaves everyday for 1 years (4 yards as a roll (unit))

365 day/year ÷ 5 days/roll = 73 roll/year-person

Weavers in micros, SMEs, and workshops (exclude. Saturday & Sunday:260 day/yr.)

375 person × 260 day/year-person ÷ 5 days/roll = 19,500 roll/year

Weavers in production & individual groups (non-farming seasons 6 month: 183 day/yr.)

2,541 person × 183 day/year-person ÷5 days/roll = 93,000 roll/year-person

Part-time silk weaver (Saturday and Sunday only, 50 days/year maximum)

2,147 person × 50 day/year-person ÷ 5 days/roll = 21,470 roll/year

Silk Textile produced annually at Chonnabot district (ampur) (Estimate)

19,500 roll + 93,000 roll + 21,470 roll = 133,970 roll/year

133,970 roll × 0.45Kg/roll = 60,288 KG = 60.3 ton/year

Neighboring to Khon Kaen province, there are Nakhon Ratchasima province which produce most silk textile in Thailand. In Khon Kaen, Mud Mee (2 shaft and 3 shaft weavings) is the main silk textile produced, while Nakhon Ratchasima mainly produces plain silk textiles using 2 shaft hand-weavings and machine weavings. Although weaving of Mud Mee is time consuming, its price is tend to be higher than the plain silk textiles.

(3) GPP share of Khon Kaen silk textile industry

The share of the silk textile value-added in Khon Kaen GPP is less than 1%. However, silk textile industry give many benefits and incomes to province resident especially to farmers.

GPP of Khon Kaen in 2001 is Bt 44,574 million, which is equivalent to $1,008 million. In Khon Kaen, the manufacturing sector has been gradually increasing, and its relative share in GPP is 31% in 2001 (Table 4.2-5). In the manufacturing value-added of Khon Kaen Province, the share of the textiles is currently only 3% (Table 4.2-6). The textile sub sector includes silk as well as cotton textiles in general. However, the textile sub sector in Khon Kaen Province is considered to be concentrating on silk textiles and JICA mission roughly estimate to about 80% of them are silk textiles portion. If the textile industry in Khon Kaen Province consists 80% silk textiles, then the share of silk textiles in Khon Kaen GPP will be about 0.86%. Thus, it is less than 1%. In real world, however, silk industry gives many benefits to province residents, especially to the farmers. The farmers can earn profits by working to produce silk textile on off-farming seasons without moving the province. Those benefits do not show on data on data. Also, trade of silk textile tend to be done by individuals, peddlers, and micro enterprises…etc SMEs , middle men (peddler), production and individual groups also sells product directly to Bangkok's shops and retail stores. JICA mission believes that in this case, the statistics data about Khon Kaen GPP in silk industry sub-sector can not be reflected correctly. In any cases, JICA mission believes silk textile industry in Khon Kaen give many benefit to province residents.

Table 4.2-5 Share of Manufacturing Sector in Khon Kaen GPP

(Million Baht)

	1995	1996	1997	1998	1999	2000	2001P
Khon Kaen GPP	40,023	44,294	44,383	42,236	43,124	43,993	44,574
Manufacturing	9,361	11,536	12,156	11,651	13,195	13,818	13,810
Manufacturing / GPP(%)	23%	26%	27%	28%	31%	31%	31%

Source: NESDB.

Table 4.2-6 Share of Textiles in Khon Kaen Manufacturing Sector

(Million Baht)

	1995	1996	1997	1998	1999	2000	2001	2002P
Manufacturing Value-Added in Khon Kaen	7,081	7,826	13,000	11,288	14,111	13,964	12,745	13,976
Textiles	509	467	437	398	422	435	442	462
Wearing Apparel	834	847	858	532	452	423	403	388
Textiles / Manufacturing Value-Added (%)	7%	6%	3%	4%	3%	3%	3%	3%
Wearing Apparel / Manufacturing Value-Added (%)	12%	11%	7%	5%	3%	3%	3%	3%

Note: - Although the "manufacturing value-added in Khon Kaen" should be equal to the value indicated in the row of the "Manufacturing" in Table 3, the two rows show inconsistent values.

- NESDB does not have any explanation on this matter. However, this may be caused by the changes in the sub categories to be included in the manufacturing sector.

Source: NESDB

4.2.2.3 Results of Questionnaire and Interview Surveys

To understand the current state of the silk textile industry in the province and collect opinions of producers, questionnaire and interview surveys were conducted (latter was conducted by the working group). The questionnaire survey was conducted by a local research firm using a questionnaire prepared by the study team. A total of 50 producers responded to the survey. The interview survey was conducted by the working group consisting of the JICA study team members and Thai SME consultants, which visited 21 producers. While the survey asked questions similar to those in the questionnaire survey, it focused on the analysis of the silk textile industry as a whole, while assessing its future potential and trend. Survey populations and their breakdowns according to type of ownership are shown in the Table 4.2-7.

Table 4.2-7 Number of Manufacturers Surveyed

Type of Producer	Population	Questionnaire Survey	Interview Survey
SME	12	8	5
Production Group	Production group: 38 Individual group: 35	41 producers	14 producers
Workshop	5	1	2
Other producer	18	-	-
Total	73	50	21

The results of the questionnaire and interview surveys are analyzed in detail in a separate cluster-focused report. General conclusions are summarized as follows.

(1) Production

SMEs and Workshops purchase raw materials or silk yarns from outside the region of Chonnabot. Most of production groups consisting household producers produce weft yarns by themselves or purchase them in the region. The household producers purchase warp yarns from outside the region like Chul Mai Thai.

- Silk yarns produced in the region are unstable in quality. Therefore, it is necessary to buy expensive warp yarns from outside the region and it causes production cost to be higher. Moreover, they have to buy material by cash and they have to make to stock so the control of purchasing and stock are the important factor that can effect to the production cost and business cash flow.
- Mud Mee silk is woven by hands using a simple tool from the ancient time. Mud Mee weaving process by hand is hard to be replaced by machines to increase the efficiency.
- Mud Mee silk production is labor intensive one requiring high skills.
- The quality of the product largely depends on the skill level of each household because they do all the process from raising silkworms, spinning, dying and weaving.
- Most of the producers are using chemical dye which is dangerous to human health and environment.
- Most of people in Chonnabot can produce Mud Mee fabric because they have the culture of weaving fabric for their own usage from the ancient time until now.

(2) Market

- Most of the markets for the silk textile in Khon Kaen are mainly in domestic. There is very little export, which is not more than 1% of total sales amount. From the viewpoint of market in Bangkok, foreign customers prefer the natural dye delicated silk. This kind of silk is soft to the touch, thin and comfortable to wear. Most of foreign customers mainly buy silk for interior usage. Therefore, Khon Kaen silk does not meet requirements of foreign customer. Moreover the size of textile is too small to use as interior product. Khon Kaen silk is good for cutting formal suit in domestic market.
- There are very few shops selling Mud Mee in Bangkok, because Mud Mee is the most unselling product in the shops when comparing with the others silk products.

- Access to market information is limited mainly to traders and buyers, since marketing force of manufactures is insufficient. That means they do not know about market development so that they cannot have any idea how to do it. Moreover, top management's attitude for marketing activities seems rather passive. They have not had much experience of marketing activities, finding the information on the potential customers, meeting them, and maintaining the relation ship with customers.
- As persons who link between markets and producers are lacking, market information supply to the producer is not enough.

(3) Management and Fund Raising

- SMEs, Production groups and work shop have to buy the material by cash. Mostly are made to stock (SME 42% Production group 87% Work shop 85%). The lead time from buying material until they can get the money from selling the products is about 6 months. So they have the problem of cash flow.
- Most of production groups have the problem of cash flow and do not have the ability to raise fund

(4) Products

- Most of products are made by traditional designs. The color, design, size and characteristic of the fabric is suitable for cutting formal suit where the size of market is not big. Present market needs modern design or color and also variety of products that can be used in daily life.
- From the trend of preserving environment, the requirements for the products that are friendly to environment and human health have increased. The dyeing process of silk in Khon Kaen Province is using chemical dye so it is not fit this kind of need.

(5) Needs for BDS

A questionnaire survey was conducted to assess demand for BDS (Business Development Service). BDS is simply support service for producers and the survey asked them types of services they wanted to receive. Table 4.2-8 only lists types of services that are highly demanded. Note that the survey obtained responses from 8 SMEs and 41 producers in production groups, while the workshop was not included because it was only one in the category.

Table 4.2-8 (1/2) Needs for BDS

SMEs

Priority	Details
No.1 Services for supporting to expand and build new market (Marketing)	1. Service of develop the product / design (100%) 2. Service of doing export market (100%) 3. Arranging exhibition and business negotiation (100%) 4. Be the intermediate person to do business activity (100%) 5. Market Ability (88%) 6. Market Information (88%)
No.2 Services for supporting production technology (Technology)	1. Project Cooperate by the government and research organization (100%) 2. Service to support the ability of R&D (88%) 3. The teaching and consulting about technology in the company (88%) 4. Advisory to improve the machine (88%) 5. Technology Center (75%)
No.3 Services for financial support (Finance)	1. Financial mechanism for SMEs (88%) 2. Tool and machine rental system (88%) 3. Credit (75%) 4. Interest Support (75%) 5. Venture Capital (50%)
No.4 Services for supporting business administration (Management)	1. Management training (including young executive, successor) (100%) 2. New entrepreneur training course / Incubation project (100%) 3. Group to be organization between linking business. (co-operative project, cooperation) (88%) 4. Business management consulting (88%)
No.5 Services for supporting environment of business and network (Network)	1. Improve efficiency of distribution system (100%) 2. Develop industrial estate (company location) (100%) 3. Publish IT technology and Readiness of IT net work (100%) 4. Support to publish ISO system and promote to get ISO certify (100%) 5. Stimuli the working group of the same type of business (88%) 6. Readiness of basic structure (88%)

(Note: percentage in ( ) is the ratio of no. of answer persons / no. of total answer persons)

Table 4.2-8 (2/2) Needs for BDS

Production Groups

The Ranking Need Item	Detail
No.1 Services for financial support (Finance)	1. Financial mechanism for SMEs (92.7%) 2. Support of loan interest by the government (90.2%) 3. Fund Raising (85.4%) 4. Venture Capital (68.3%) 5. Credit (65.9%)
No. 2 Services for supporting to expand and build new market (Marketing)	1. Service of develop the product / design (100%) 2. Service of increasing the marketing ability (100%) 3. Arranging exhibition and business negotiation (100%) 4. Be the intermediate person to do business activity (100%) 5. Service of doing export market (100%)
No.3 Services for supporting production technology (Technology)	1. Cooperation Project by the government and research organisation (85.4%) 2. Service of supporting research ability (82.9%) 3. Technology Consulting (73.2%) 4. Technology Center (65.9%) 5. Machine Development (63.4%) 6. Advance Technology Training (63.4%)
No.4 Services for supporting human resource development (HRD)	1. Skill labor training and education (100%) 2. SMEs consultant training (97.6%) 3. Expansion of high technology education (90.2%) 4. Develop and train the adviser of technology service (78%) 5. Middle management training and Education (white collar) (65.9%)

4.2.3 Characteristics of the Target Cluster and SWOT analysis

4.2.3.1 Characteristics of the Target Cluster in Khon Kaen

Craft Item	Silk Textile
Province	Khon Kaen
No. of Tambon	8 Tambons
No. of Village	80 Villages
No. of population (Persons)	41,387 (Persons)
No. of workers in textile industry (Percentage)	2,502 (6.05%)*
No. of engagement in the silk textile industry	
1. SME	12
2. Production Group	38 Groups
3. Workshop	5
4. Skilled persons	1,021 persons (41% of the person who engage in production)
Average Income per one (semi-skilled)	3,650 Baht per month
Average Income per one (Skilled)	5,830 Baht per month

* Data from Amphur Chonnabot Community development. The total number of employees in SMEs and production group are those registered at OTOP.

In Thailand, including Khon Kaen, silk textile production is a traditional industry and is carried out by SMEs and production groups. The latter employs women of farms, who work in a local production group-organized like a cooperative- to earn supplemental income during the agricultural off-season. In addition, workshops are characterized as the third type of producer positioned between the other twos. The workshop is operated as a permanent production base for high-value added products by using traditional techniques that have been modified to meet the present needs.

Therefore, a cluster development program for the silk textile industry in the province should be planned by taking into account the current industrial structure consisting of three distinguished types of producers. Major characteristics of each type producer are summarized as follows.

(1) SME is:

- small and medium scaled producers that have more than 10 employees and 10 looms in the factory.

- registered with Factory Division or Commercial Division.
- managed not by family members.

(2) Production Group is:

- a group of households, i.e. women, farmers, trainees, etc.
- managed by a leader selected by members of the group
- having a money saving cooperation
- providing loan to the members to buy material
- producing individually and selling in a group. There are, however, few processes being done in-group such as a dyeing process.

(3) Workshop is:

- a cottage producer or a production unit
- an owner's shop specialized by his or her talent
- producing in a residential area, self-managed and, sometimes, having own outlet
- producing by own design and partly processing

Remarks: Community Development defines type of producers

Type 1 - Production Group which is a group of households having as above mentioned activities

Type 2 - SME which is an individual producer

The characteristics of the silk textile cluster in Khon Kaen are summarized below from the above surveys of present status of the cluster. The following gives a basic framework to formulate a promotion plan of the said cluster.

(1) The cluster has a long history of weaving and dyeing.
(2) The unique of the silk textile in the area, Mud Mee, comes from design, color and neatness, 3-shaft weaving, Pa Na Nang/Pa Phum, and skilled weavers.
(3) Silk textile products produced in the cluster were selected as 5 star product of OTOP
(4) The occupation of people in the cluster is full time and part time weavers.
(5) There are few SMEs in the cluster. Most of weavers are farmers of women. A certain number of farmers organize a production group. There is, however, no cooperation among those groups.

(6) The Royal Patronization has started from 1976 as Queen Sirikit “Bangkok Somkob Occupation Promotion project“, and as Princess Thepparatrachasuda “Baan Suphachai Occupation Promotion Project” near the cluster.

(7) There is a “Thai Silk Exhibition Hall” called Sala Mai Thai in the center of the cluster. It was established in 1993 to commemorate the 60th birthday anniversary of Her Majesty the Queen Sirikit.

4.2.3.2 SWOT Analysis

Based on the results of analyses, the SWOT analysis was performed. Table 4.2-6 presents its results, assessing the business environment surrounding silk textile in the province. While details vary among the three types of producers, general conclusions are summarized as follows.

Strength

An indigenous “Mad Mee” production technique, which has been fostered and maintained over a long period of time

Weakness

Lack of the ability to relate production of high value added silk textile to the market needs, and lack of business sense to supply products according to needs and wants of the market

Opportunity

Continued market perception to view silk as a high grade product, with a strong desire of central and local governments to promote the silk textile industry

Threat

Increased diversification of materials, which may lead to a steady decrease in the continued use of silk products, and a possible increase in inflow of low-cost products from neighboring countries (China and Vietnam)

Table 4.2-9 SWOT Analysis Silk Textile Cluster in Khon Kaen

	PRODUCTION	MARKET	MANAGEMENT & FINANCIAL	PRODUCTS
S-STRENGTH	1. Production cost is competitive. 2. Easy to recruit weavers.			1. Mud Mee silk is the hand made fabric, requiring high skill.
W-WEAKNESS	1. Unstable quality of products in color, density, etc. 2. Old technology with low efficiency is used. 3. Producers mainly use chemical dye which is not environment-friendly.	1. Less marketing activities, waiting for customers to come to the manufactures. 2. Lack of persons doing marketing effectively 3. Market is not aware of the value of Mud Mee.		1. Lack of persons who can do good designs 2. Designs do not meet the customer needs 3. Usage of the products is limited because of unchanged fabric size and texture.
O-OPPORTUNITY	1. There are a lot of support projects from the Government such as training in the region.	1. There are a lot of support projects from the Government such as OTOP.	1. The free trade zone will become effective in 2005.	1. Image of silk are luxury and elegant. 2. Campaign to use Thai fabric by the Government.
T-THREAT	1. Acquiring silk yarn is unstable in both quality and quantity in the region.	1. Competitors such as China and Vietnam are entering into the silk textile market. 2. The regular users of silk are limited.	1. Lack of information about supporting organizations. 2. The free trade zone will become effective in 2005.	1. Market wants the product which is friendly to environment 2. There are many types of fabric that customers can select instead of silk.

4.2.4 Master Plan for Cluster Development for Silk Textile Production in Khon Kaen

4.2.4.1 Vision, Mission, and Strategies

At the PCM workshop, participants agreed on the following points.

(1) Target group for industrial cluster development the traditional

Producers of silk textile and products (small articles) using the traditional "Mad Mee" production technique. They should include the following three types of producers, which have different styles of production.

- SMEs that are engaged in organized production and/or sales operations
- Individual producers (female farmers) who belong to a production group and weave silk textile on the farm's backyard during the off-season
- Workshops that are operated in the form of private enterprise but are specialized in high quality, expensive products

(2) Core problems and direct causes

The PCM workshop agreed on the following problem as a core problem facing the target group in the province:

"A declining trend in silk product sales"

Direct causes for the core problem were identified as follows.

- Marketing activities are lacking
- Chonnabot is not well branded
- Quality of products is not enough to sell in competitive markets
- The products are not new, attractive nor unique
- Price competitiveness is low in the market
- Consumers face difficulty to maintain silk products

(3) Vision, mission and strategies

Through the above discussions, a basic framework for the industrial cluster and its development was established under the agreement of related parties, as follows.

Vision: Catch-up Global

(Explanation) The industry, overly relying on and confidence in its traditional production technique, fails to keep abreast of the domestic and international market needs. The vision is to catch up with the global market trend.

Mission: Good selling of Silk Textile

(Explanation) As the core problem is a decline in sales of silk textile made in the province, the mission focuses on the improvement of sales and marketing methods to reverse the trend.

To accomplish the mission so established, the following five strategies were established on the basis of discussion at the PCM workshop and input of the study team.

Strategies:

Strategy 1: Development of good marketing ability

Strategy 2: Assurance of high quality products constantly

Strategy 3: Development of design and new products

Strategy 4: Changing of producers consciousness toward their future

Strategy 5: Laying the foundation of cluster development

4.2.4.2 Overall Image of the Master Plan

Figure 4.2-1 shows functional linkages among key elements of the master plan. The basic approach is to leverage the traditional, value added production technique for “Mud Mee” products, which represent the core sector of the target cluster. At the same time, as presented in the vision and the mission, establishing the linkage between the cluster and the market is recognized as a priority issue. Strategy 1 intends to promote the market linkage directly, while Strategies 2, 3 and 4 encourage innovations within the cluster in order to reinforce its competitiveness in the marketplace. Strategy 5 promotes the buildup of the BSD network, which is positioned as an infrastructure for cluster development.

To successfully implement the above strategies and accomplish the goals, concrete actions are essential. The master plan defines such actions as projects. Figure 4.2-1 lists projects that are designed and proposed by the study team on the basis of discussion at the PCM workshop. The figure represents an overall image of the master plan.

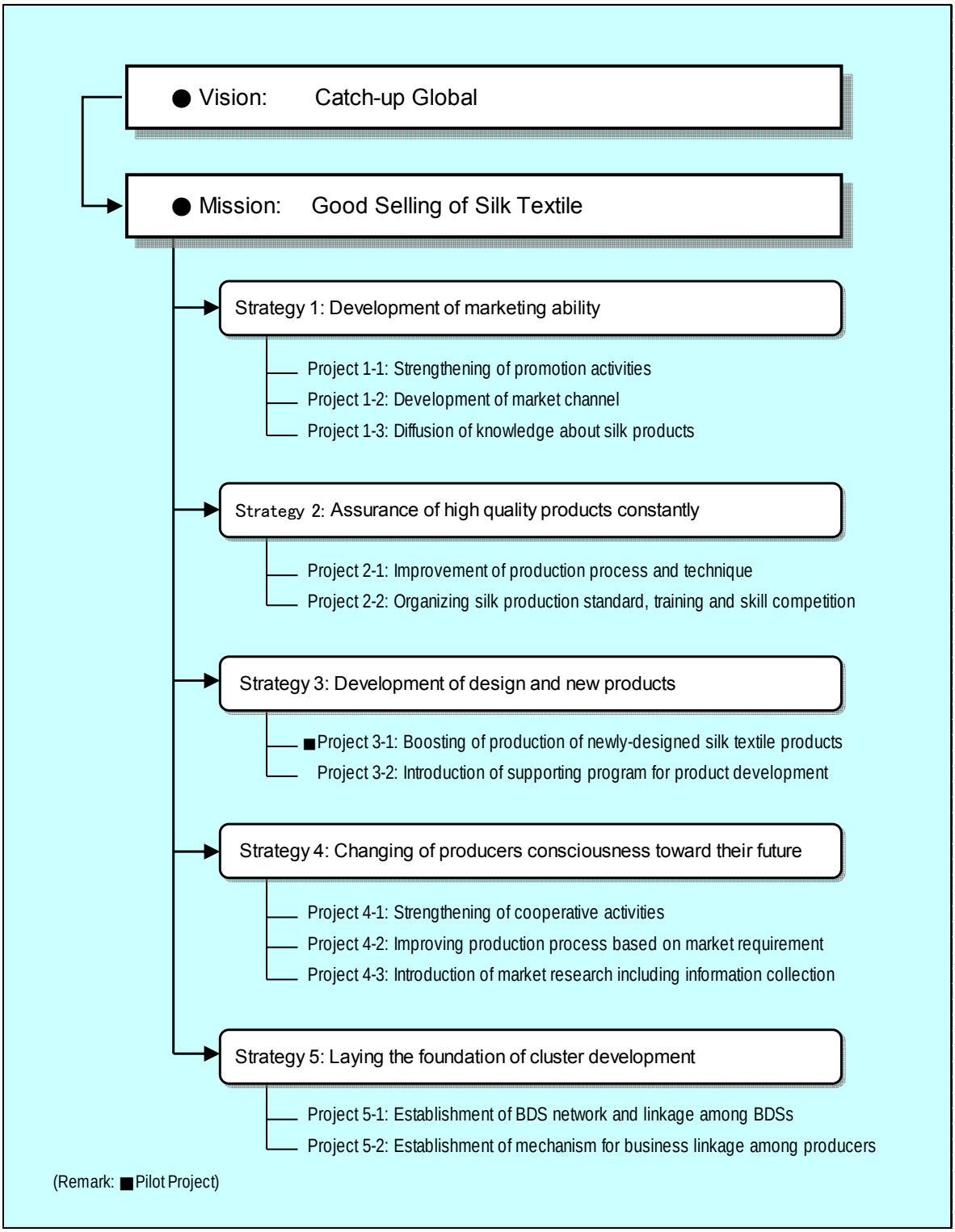

Figure 4.2-1 Framework of Master Plan for Silk Textile Cluster in Khon Kaen

4.2.5 Action Plans for Implementation of the Master Plan

4.2.5.1 General Outline of the Proposed Projects

Figure 4.2-1 shows 12 projects that are proposed to accomplish the goals of the five strategies. An outline of the projects is presented in Table 4.2-10. In addition, candidate BSD providers are listed.

4.2.5.2 Priority and Schedule for Project Implementation

For each of Khon Kaen's proposed 12 projects, evaluation questionnaire survey was performed for the attendant of Seminar 1 held at August 24 and 25 of 2004. On this survey, each of 10 proposed projects were evaluated by 4 criteria factors; i.e. FACTOR1: Urgency/Necessity, FACTOR2: Impact/Effectiveness, FACTOR3: Materialization/Feasibility, and FACTOR4: Sustainability. Those factors were marked by evaluation points of 3=high, 2=middle, and 1= low. The results of the survey are tabulated as Table 4.2-11.

For evaluating the survey results on Khon Kaen, all the proposed project received above 2.4 points on average of Factor 1 through 4 (In other area, 2.4 point was considered to be a high marked points as a standard for judging each projects). Thus in Khon Kaen's proposed projects JICA mission separated into 3 groups; i.e. the first group of projects as accumulated points of 11 and higher on total point from factor 1 through Factor 4 (or total average point of above 2.75), second group of projects as accumulated points above 10 till 11 (or total average point from 2.75 till 2.51), and third group of projects as accumulated point below 10 (or total average point below 2.50).

1) First group: total evaluation point 11 and higher (total average point above 2.75)
   Project 1-3: Diffusion of knowledge about silk products
   Project 1-1: Strengthening of promotion activities
   Project 1-2: Development of market channel

   Project 1-1 through 1-3 can be found in Strategy 1 "Development of marketing abilities" listed in Figure 4.2-1. Those projects are most requested projects by participants.

Table 4.2-10 (1/3) Brief Description of Proposed Projects

Project 1-1 Strengthening of promotion activities

Strategy : Development of marketing ability
Purpose : The KK silk industry obtains strong edge in cluster promotion activities.
Outputs and activities 1. Brand of KK silk products prevails. 2. Catalogues and leaflets of KK silk products are well prepared for marketing. 3. A website of the KK silk industrial cluster is developed. 4. Producers and manufacturers of silk products in KK continuously join OTOP 5. A detailed marketing research is once done, being followed by continuous making-up of information.
BDS provider: IPC5, Sala Mai Thai, Community Development, Tourism Authority KK Office

Project 1-2 Development of market channel

Strategy : Development of marketing ability
Purpose : Marketing channels of the KK silk products have been developed.
Outputs and activities 1. Producers and manufacturers of silk products in KK are supported to join silk exhibitions. 2. Information about domestic and international buyers is gathered and filed for easy use. 3. The KK silk industry establishes channel to make road show all over Thailand. 4. The silk industry is combined with tourism industry promotion in KK.
BDS provider: PC5, Community Development, Tourism Authority KK office

Project 1-3 Diffusion of knowledge about silk products

Strategy : Development of marketing ability
Purpose : The cluster provides users with easy maintenance silk products.
Outputs and activities 1. The cluster publishes a guidebook for easy and economic maintenance of silk products. 2. New technology to care silk textiles has been researched. 3. Finishing technology with easy care of silk textile has been researched and developed.
BDS provider: Textile Development Institutions

Project 2-1 Improvement of production process and technique

Strategy : Assurance of high quality products constantly
Purpose : Production process and technique has been improved coping with changing markets.
Outputs and activities 1. Washing and natural dyeing processes have been introduced. 2. The coloring is improved to meet the need of changing markets 3. Appropriate machinery and equipment for weaving are introduced
BDS provider: IPC5

Table 4.2-10 (2/3) Brief Description of Proposed Projects

Project 2-2: Organizing silk production standard, training and skill competition

Strategy : Assurance of high quality products constantly
Purpose : Production standards, training course and skill competition are well organized.
Outputs and activities 1. Production method is standardized by verifying best practice. 2. Training course of production skills has been established. 3. Competition of producers is opened for studying the winner's technique
BDS provider: IPC 5, Sala Mai Thai, Khon Kaen Industrial and Community Education College

Project 3-1: Boosting of production of newly-designed silk textile products

Strategy : Development of design and new products
Purpose : Production of newly-designed silk-textile products is boosted.
Outputs and activities 1. Coordinators for product development are trained. 2. Newly designed products based on Mud Mee production techniques are developed for new markets. 3. Exhibitions are held for the newly designed products.
BDS provider: Sala Mai Thai and related organizations including IPC5

Project 3-2: Introduction of supporting program for the product development

Strategy : Development of design and new products
Purpose : Supporting program for the new product development is introduced
Outputs and activities 1. Training courses are designed; pattern, coloring, processing, product design, etc. 2. Text books are prepared and trainers are trained by experts. 3. Education fund for young designers, etc is set up.
BDS provider: Provincial Government, IPC5, Khon Kaen Industrial and Community Education College

Project 4-1 Strengthening of cooperative activities

Strategy : Changing of producers consciousness toward their future
Purpose : Cooperative activities increase in the cluster
Outputs and activities 1. Cooperative selling system (Software and hardware) is introduced. 2. Cooperative purchasing system is strengthened.
BDS provider: IPC 5, Department of Community Development, Sala Mai Thai

Table 4.2-10 (3/3) Brief Description of Proposed Projects

Project 4-2 Improving production process base on market requirement

Strategy : Changing of producers consciousness toward their future
Purpose : Production process has been improved based on market requirement
Outputs and activities 1. Producers are stimulated to use natural dye as market requirements. 2. Training course of natural dying technology is established.
BDS provider: IPC 5, Department of Community Development, Khon Kaen Technical and Community Education College

Project 4-3 Introduction of market research including information collection

Strategy : Changing way of thinking of producers toward their future
Purpose : Market research and information center activities have been introduced
Outputs and activities 1. A working group for market research is organized 2. A comprehensive market research is done by the working group/ 3. Results are open to public and the collected data are available in an information center.
BDS provider: Sala Mai Thai, IPC5

Project 5-1: Establishment of BDS Network and Linkage among BDS

Strategy : Laying the foundation of cluster development
Purpose : BDS is networked for the KK silk industry cluster.
Outputs and activities 1. Network and linkage system are planned for inter-BDS and between BDS and users 2. Regular meeting is organized for the cluster development and BDS development. 3. Functions and activities of each BDS are defined. 4. BDS providers work under a guidance of a BDS facilitator with a plan of the government.
BDS provider: IPC 5, IPO, PCC, KFCT, IFCT, Sala Mai Thai, Khon Kaen University, etc.

Project 5-2: Establishment of Mechanism for Business Linkage among Producers

Strategy : Laying the foundation of cluster development
Purpose : Business linkage activities become more aggressive among producers.
Outputs and activities 1. Business linkages system is activated by cooperation between producers and BDS providers. 2. Regular meeting is organized for creation of cooperative production work and division of labor. 3. The business relationship among producers is strengthened by forum, seminars, etc.
BDS provider: BDS Providers including IPC 5

Table 4.2-11 Khon Kaen – Evaluation of Proposed Project

Project Number	Factor 1: Urgency/Necessity				Factor 2: Impact/Effectiveness				Factor 3: Materialization/Feasibility				Factor 4: Sustainability				**Grand Avg. Total**	Grand Avg.
	High	Med.	Low	Avg.	High	Med.	Low	Avg.	High	Med.	Low	Avg.	High	Med.	Low	Avg.		
Project 1-1	108	4	0	2.95	87	16	1	2.74	81	22	0	2.71	78	24	0	2.68	11.08	2.77
Project 1-2	102	8	0	2.89	90	14	1	2.76	84	20	0	2.74	60	36	0	2.53	10.92	2.73
Project 1-3	105	6	0	2.92	96	10	1	2.82	99	10	0	2.87	87	18	0	2.76	11.37	2.84
Project 2-1	90	16	0	2.79	69	30	0	2.61	69	30	0	2.61	75	26	0	2.66	10.66	2.67
Project 2-2	69	30	0	2.61	69	28	1	2.58	66	30	1	2.55	66	32	0	2.58	10.32	2.58
Project 3-1	96	10	1	2.82	87	18	0	2.76	72	26	1	2.61	75	26	0	2.66	10.84	2.71
Project 3-2	93	14	0	2.82	75	24	1	2.63	72	28	0	2.63	63	34	0	2.55	10.63	2.66
Project 4-1	96	10	1	2.82	75	24	1	2.63	51	38	2	2.39	60	32	2	2.47	10.32	2.58
Project 4-2	105	6	0	2.92	87	18	0	2.76	75	24	1	2.63	63	34	0	2.55	10.87	2.72
Project 4-3	87	18	0	2.76	66	28	2	2.53	63	34	0	2.55	54	36	2	2.42	10.26	2.57
Project 5-1	84	18	1	2.71	63	30	2	2.50	45	42	2	2.34	51	42	0	2.45	10.00	2.5
Project 5-2	84	16	2	2.68	54	36	2	2.42	51	34	4	2.34	54	36	2	2.42	9.87	2.47

Note: High = 3 points, Medium = 2 points, Low = 1 point

First Seminar on August 24-25, 2004. Number of Respondent:38

2) Second group: total evaluation point above 10 till 11 (total average point from 2.75 till 2.51)

Project 4-2: Improving production process based on market requirement

Project 3-1: Boosting of production of newly-designed silk textile products

Project 3-2: Introduction of supporting program for product development

Project 2-1: Improvement of production process and technique

Project 2-2: Organizing silk production technique, training and silk competition

Project 4-1: Strengthening of cooperative activities

Project 4-3: Introduction of market research including information collection

Those are Strategy 2, 3, and 4 listed in Figure 4.2-1. Strategy 2 is "Assurance of high quality products constantly"、Strategy 3 is "Development of design and new products", and Strategy 4 is "Changing of producers consciousness toward their future".

3) Third group: total evaluation point below 10 (total average point below 2.50)

Project 5-1: Establishment of BDS network and linkage among BDSs

Project 5-2: Establishment of mechanism for business linkage among producers

Those are in Strategy 5 "Laying the foundation of cluster development" in Figure 4.2-2. Those projects are necessity for cluster development approaches, but for participants it was difficult to find their direct benefits from the projects and thus the evaluation points might became lower than other projects.

From the results of Evaluation Questionnaire Survey, JICA mission experts' evaluations, and others, 12 proposed projects for Khon Kaen silk textile cluster were divided into the following three groups for making Action Plan. (See Figure 4.2-2.)

4) Projects that should be started urgently for implementation and that will be continued regularly

Project 1-1	Strengthening of promotion activities
Project 1-2	Development of market channel
Project 1-3	Diffusion of knowledge about silk products
Project 4-1	Strengthening of cooperative activities
Project 5-1	Establishment of BDS network and linkage among BDS
Project 5-2	Establishment of mechanism for business linkage among producers

5) Projects that require more time and effort, but needed to be implemented for new product development and production

   Project 4-2 Improving production process base on market requirement

   Project 4-3 Introduction of market research including information collection

6) Projects that are to be completed in five years, with subsequent activities that follow up their results

   Project 2-1 Improvement of production process and technique

   Project 2-2 Organizing silk production technique, training and skill competition

   Project 3-1 Boosting of production of newly-designed silk textile products

   Project 3-2 Introduction of supporting program for the product development

An implementation plan for each project is outlined below. It will specify an implementation bodies for each project (e.g., government, donor organization, BDS facilitator or provider) and will define its role. For the pilot project, Project 3-1 is proposed.

It should be noted that the projects are interrelated to each other, as illustrated in Figure 4.2-3.

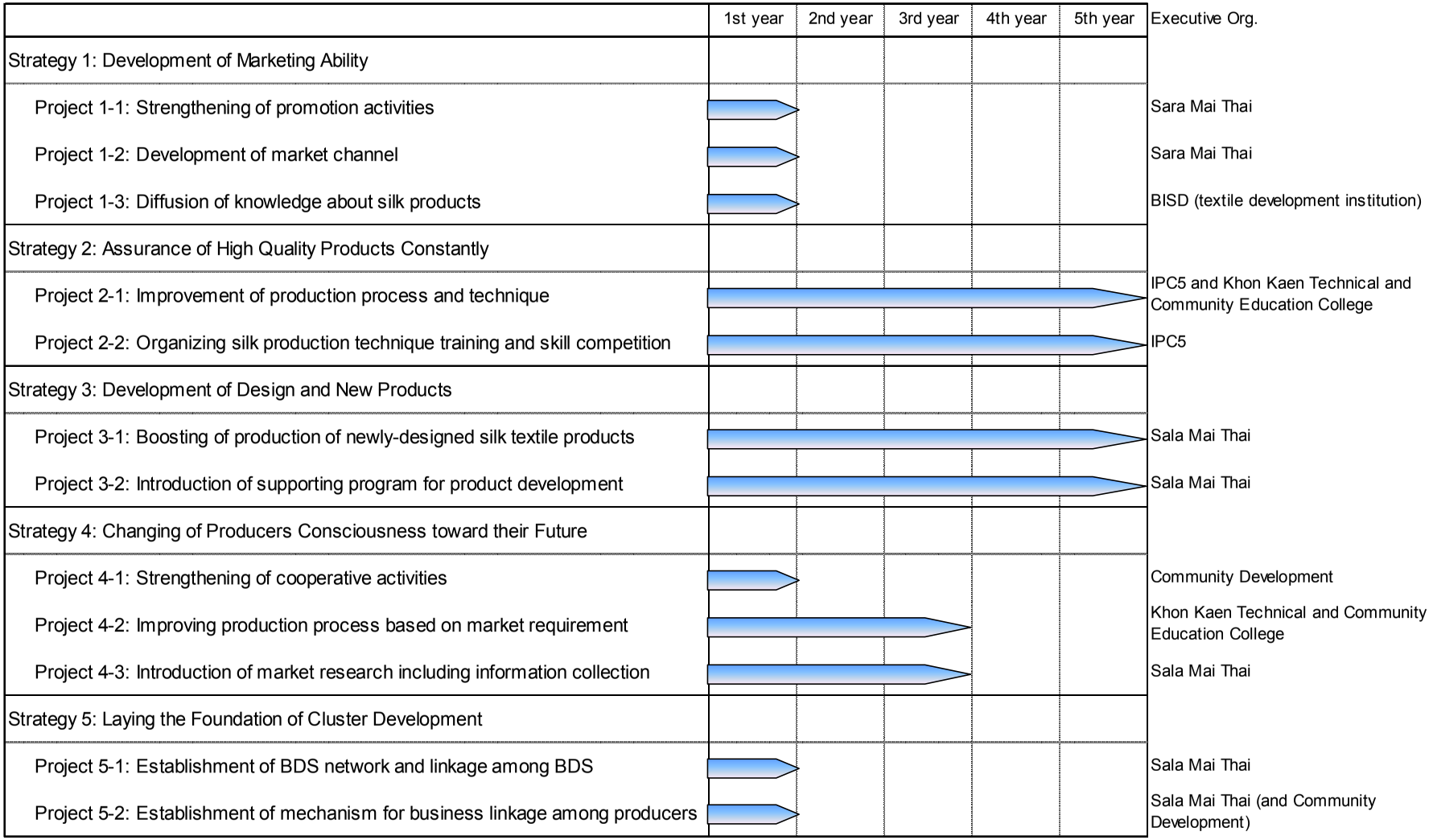

Figure 4.2-2 Timetable of Implementation of Projects under the Master Plan

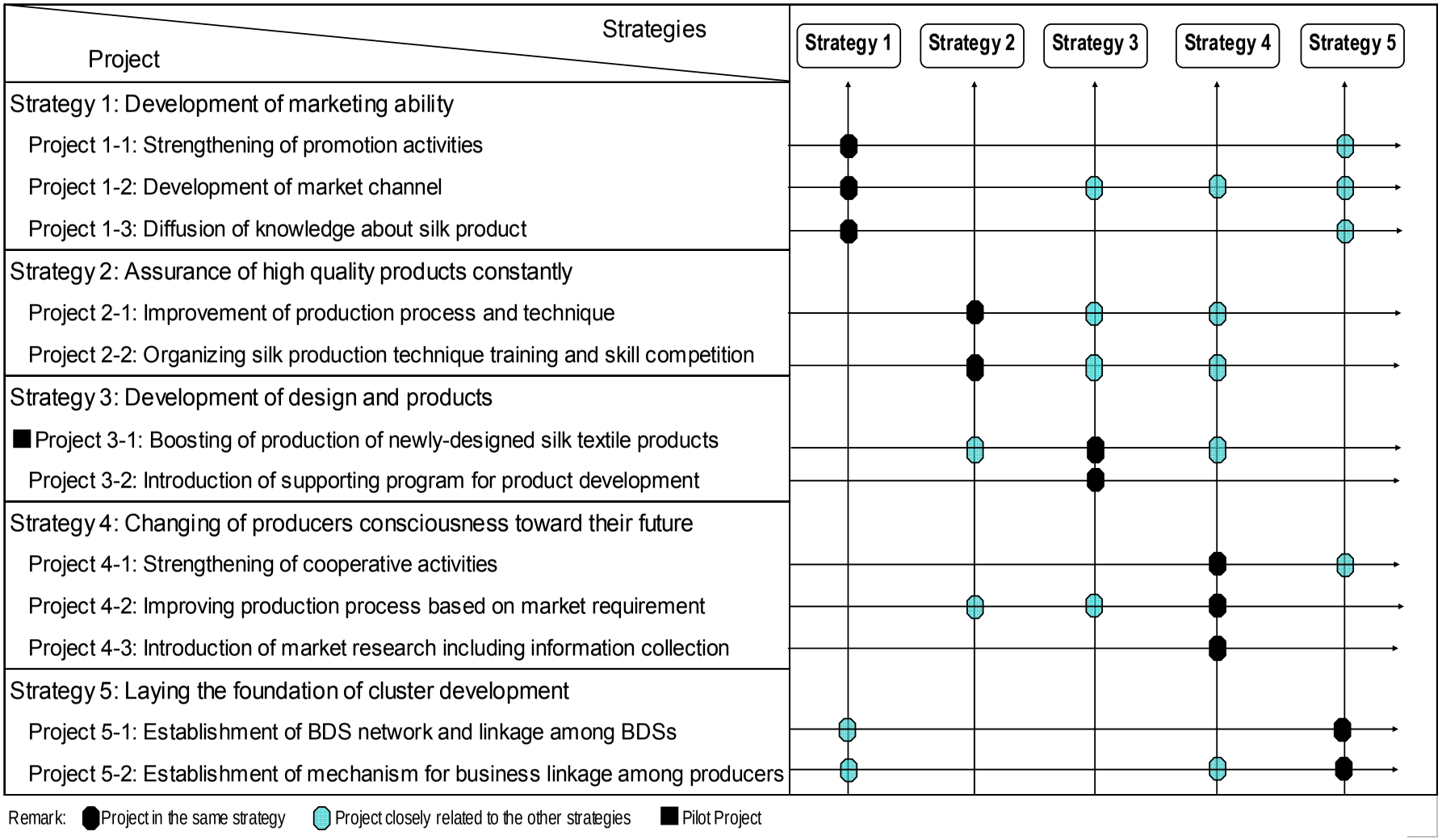

Figure 4.2-3 Interrelation between Proposed Projects and Strategies

ANNEX to 4.2 Organizations and individuals visited by the JICA mission

Government organizations

1) Khon Kaen Province Governor's Office
2) Industrial Promotion Center 5 (IPC5)
3) Provincial Industrial Office (PIO) in Khon Kaen province
4) Chonnabot Community Development Office (Chonnabot City Hall)
5) Department of Export Promotion (DEP)
6) SMEs & People Financial Advisory Center (SFAC)
7) Provincial Labor Office (PLO)

Educational Institutes & University (BDS)

1) Khon Kaen University (Architectural Department)
2) Khon Kaen Industrial and Community Education Collage (KKICEC)
3) Institute of Small and Medium Enterprise Development (ISMED) Khon Kaen Office (in Khon Kaen University)
4) Sala Mai Thai (Silk Exhibition Hall) (in Khon Kaen Industrial and Community Education Collage)

NGOs & NPOs (BDS)

1) The Association for the promotion of Thai Small and Medium Entrepreneurs (ATSME)
2) Khon Kaen Province Chamber of Commerce (KKPCC)
3) Khon Kaen Federation of Thai Industries (KKFTI)
4) Mekong Institute (in Khon Kaen University)
5) American Corners

Financial Institutes (BDS)

1) SMEs Bank
2) The Industrial Finance Corporation of Thailand (IFCT)
3) Government Saving Bank (GSB)

SMEs (Manufacturers)

1) Silk Avenue Co., Ltd.

2) Chonnabot Mai Thai
3) Boonmee Mai Thai
4) Petchthai Mai Thai
5) Kanthong Mai Thai

Silk Producer's Female Groups

1) Mud Mee Weaving Group (Mrs. Dang Jamnongpipad (Leader))
2) Ban Nong Gor Gaew Group (Pranom Thongprasat (Leader))
3) Koom Keetao Group (Mrs. Mani Kaesorn (Leader))
4) Koom Sirivilai Group (Mrs. Jumpee Marom (Leader))
5) Ban Dorgmai Group (Mrs. Aumnuay Yensabi (Leader))
6) Ban Rougduk Group (Mrs. Bangearn Krapeedang (Leader))
7) Ban Lao Nuae Group (Mrs. Maneerat Gomwang (Leader))
8) Ban Huay Eung Group (Mrs. Khanthong Nuengchumphon (Leader))
9) Ban Gudpiakorm Group (Mrs. Karnthong Sanam (Leader))
10) Ban Huafai Group (Mrs. Supanee Pulankee (Leader))
11) Ban Por Dang Group (Mrs. Kongsri Rooptum (Leader))
12) Ban Nong Natum Group (Mrs. Buppha Sinpho (Leader))
13) Ban Nonsomnuek Group (Mrs. Raaong Labantan (Leader))
14) Ban Sagaew Group (Mrs. Warrawan Siriratch (Leader))
15) Prae Pun Group (Natural Dying)

Silk Workshop and networks…etc

1) Songkram House (Mr. Songkram Ngarmying (Leader)
2) Chin Thai Silk (Mr. Suramontri Chin Srisomboon (Owner & Leader)
3) Silk Net (Mr. Tidarat Tiyajamorn (Chief))
4) Mr. Surasak Thada (in Munchakiri Province)