タイ王国
鉱工業プロジェクト選定確認調査
報告書

1999年1月

国際協力事業団
鉱工業開発調査部

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目次

Ⅰ．　調査の概要、結果

1．調査の目的

今回のプロジェクト選定確認調査では、我が国に今後要請提出が予想される、産業構造調整事業に盛り込まれた、タイ側工業省、ＦＴＩ等で設立を検討中の自動車部品及び電気・電子分野におけるインスティテュート構想について、その背景、国家開発計画における位置づけ、調査概要等を調査し、我が国の協力可能性・範囲等を協議する。また、過去実施した工業分野振興開発計画（裾野産業）調査について、その後のタイ側の動向を把握するとともに、同じく産業構造調整事業に盛り込まれた中小企業・裾野産業育成に関して、その背景、国家開発計画における位置づけ、調査概要等を調査し、今後の協力可能性・範囲等を協議する。

2．調査期間

１９９８年１１月４日（水）から１１月１１日（水）　８日間

3．調査団員構成（６名）

①団長・総括　：　渡辺　政嘉（Masayoshi　WATANABE）
通産省通商政策局経済協力部技術協力課技術第一班長

②調査・企画　：　永江　勉（Tsutomu　NAGAE）
国際協力事業団鉱工業開発調査部計画課課長代理

③技術協力政策：　杉中　洋一（Yoichi　SUGINAKA）
外務省経済協力局開発協力課鉱工業班長

④技術協力行政：　磯野　昌彦（Masahiko　ISONO）
通産省通商政策局南東アジア大洋州課

⑤工業開発　　：　萩野　瑞（Mitsuru　HAGINO）
国際協力事業団国際協力専門員

⑥中小工業振興：　舟橋　學（Gaku　FUNABASHI）
国際協力事業団鉱工業開発調査部計画課（ジュニア専門員）

なお、渡辺団長は鉱工業開発協力部の調査団から１１月５日に引き続き参加し、１１月７日に帰国した。渡辺団長帰国後は、永江団員が団長を務めた。

4．全体調査日程

日順	月日	曜	宿泊地	調査団
1	11/4	水	バンコク	東京発(11:00/JL717)→バンコク着(15:55)
2	5	木	バンコク	渡辺団長合流 午前　食品ｲﾝｽﾃｨﾃｭｰﾄ、工業用水技術研究所 午後　工場局 (DIW) 工業振興局 (DIP)
3	6	金	バンコク	午前　TISI Testing Centre 訪問 Thai Industrial Standards Institute (TISI) 訪問 午後　工業省 (DIP) 訪問
4	7	土	バンコク	資料整理 渡辺団長帰国 バンコク発(8:35/JL708)→東京着(16:00)
5	8	日	バンコク	資料整理
6	9	月	バンコク	午前　Bureau of Supporting Industries Development (BSID)訪問 午後　繊維ｲﾝｽﾃｨﾃｭｰﾄ、Textile Industry Div.プロ技訪問 磯野団員帰国 バンコク発(22:50/JL718)→
7	10	火	バンコク	午前　工業省 (DIP) 訪問、M/M署名 午後　DTEC、JICA事務所、在タイ日本大使館報告 磯野団員東京着(6:15)
8	11	水		バンコク発(8:35/JL708)→東京着(16:00)

5．背景、調査結果及び団長所感

1）要請の背景

タイ国では、工業部門が事業効率の改善や品質水準の向上への取り組みの遅れ等により国際競争力が低下している一方で、1997年7月の通貨危機以降低迷する国内経済の回復のため、輸出拡大が求められている。かかる状況を受け、工業省を中心に産業構造調整委員会を設置し、より付加価値の高い製品の製造・販売を可能とするための産業別マスタープラン及び業種別アクションプランが策定され閣議決定も1998年6月にされた。

我が国政府は通産省を中心に、同事業への協力を実施中であるが、このアクションプランで生産性向上のための諸方策実施に大きな役割を果たすと考えられている新機関：インスティテュートの設立（特に自動車部品、電気・電子分野）にあたり、同計画内容を把握するとともに、ＪＩＣＡとしての協力の可能性につき検討する。

また、過去に実施された開発調査の、その後のタイ側の対応と動向を把握するとともに、インスティテュート構想同様、産業構造調整事業に重要政策として盛り込まれた、生産性向上、下請企業の育成、金型産業育成、貿易・投資の促進、産業間の連携強化等を目的とする裾野産業を中心とした中小企業振興における今後の新たな協力のニーズ、可能性等を検討する。

2）調査結果概要

調査団は、工業省、工業振興局、裾野産業振興ビューローと協議を行い、合わせてThai Industrial Standards Institute、食品インスティテュート、繊維インスティテュート（及び繊維検査関連プロ技）、工場局（及び排水関連プロ技）の関係者からの意見聴取を行い、関連施設を見学した。調査結果は以下の通り。

「工業分野振興開発計画（裾野産業）」

①裾野産業振興に関する開発調査については、1995年３月に最終報告書が提出されているが、タイでは現在までこの調査結果を基に、同産業振興のための様々な施策を講じてきており、この提言は産業構造調整事業（IRP）における中小企業向けプロジェクトとしても活用されている。提言に盛り込まれた項目に対して、これまでに実際にタイ側が行った主な事項は以下の通り。

(1)政策、法整備

・MIDIからBSIDへの組織改革

・JICA専門家の構造調整事業（IRP）への協力

(2)市場開拓支援

・JETROを通じて日本企業への供給支援

・供給業者開発プログラム

(3)技術レベル向上

・JICAによるプロジェクト技術協力（金型工業等）

・生産プロセス向上プロジェクト（IRPに含まれる）

(4)金融支援

・ADB等からのツーステップローン

(5)経営近代化

・Bureau of Enterprise Development 設立

(6)投資促進

・BOIとの連携強化

②また、1997年７月の通貨危機以降低迷する国内経済の回復のため輸出拡大が求められているが、それに対応するために、工業省を中心に産業構造調整委員会を設置し、より付加価値の高い製品の生産を可能とする産業別マスタープラン及び業種別アクションプランが策定され、閣議決定も1998年６月にされている。事業規模は５年間で総額約12億ドルであるが、著しい経済環境の悪化から半年内に行うべき優先プロジェクトを選定し、予算規模1.2億ドルで本年10月から着手した。

IRPの中で重視されている内容は以下の通り。

(1)工業生産性向上と生産プロセスの変革

(2)技術向上と選定業種の近代化

(3)選定業種における労働者の職能向上

(4)裾野産業中小企業育成

(5)製品デザインの向上とマーケティングチャネル開発

(6)労働集約的・非汚染製品生産の地方への移行

(7)外国資本直接投資の誘致

(8)クリーンテクノロジーの導入

これらの中でとくに(1)、(3)、(4)、(6)について、来年３月までに着手すべきプロジェクトとして24項目を挙げている。本件に関するものとしては、(1)について後述するインスティテュートの設立が（(2)も関連している）、(4)について中小企業振興が盛り込まれている。

③タイ側より、今回の経済危機に対応するため、前回実施した裾野産業振興開発調査のフォローアップの必要性が強調され、特に上記重点項目(4)にも含まれている中小企業振興に関する様々な追加的支援策のための調査をして欲しい旨要請がなされた。また、併せて、Credit Risk Analysis（１名)、Financial Management（１名)、Production Management（３名）の分野の個別専門家についても、IRPの側面的支援として派遣して欲しい旨要請がなされた。（Factory Evaluation System １名については既に要請済）

「インスティテュート構想」

①上記のアクションプランで生産性向上のための諸方策実施に大きな役割を果たすと考えられているインスティテュート[注1]（特に自動車部品、電気・電子分野）に関して説明がなされた。その概要は以下の通り。（両インスティテュート共通）

(1)役割

❶試験・検査の実施

❷製造・技術・マーケット情報提供及びコンサルティング

❸関係機関・企業間の連携促進

❹調査及び政策面での提言

(2)1998年10月に設立された。

(3)5年後に政府からの補助金は打ち切られるが、その後も土地・建物・機材等は政府所有のままである。

(4)現在のところMr. PadetpaiがDirector代行であるが、新しいDirectorは1999年1月に決定され就任する。

(5)1年目は上記役割のうち❶だけで手一杯という状態であり、まだ❷、❸、❹の機能は果たしていない。また、それら3項目に関して2年目以降の実施計画は策定されていない。（新しいDirectorの就任後に策定を始め、Board of Directorsの承認を経て実施に移される予定）

②また、インスティテュートに関して、タイ国側がJICAに対して要望している内容は以下の通り。

(1)試験・検査業務の強化のための専門家による技術指導

自動車・・・・エンジン排気検査、1名（分析機材も必要）

電気電子・・・電波障害検査（EMC）、1名（至急）

安全性試験、1名（至急）

省エネルギー検査、1名

[注1] これらインスティテュートは我が国で言うと公益法人であり、産学官から構成されるボードにより事業の中立性は確保される模様。株式会社による営利団体への移行との認識はなく、組織的には国から独立させ、さらには中長期的には国からの予算をもらうことなく独立採算を目指すものであり、既に食品、繊維等の分野で設立されている。日本の通産省の産業所管担当課と業界団体と公設試験研究機関の活動を行う機関である。

(2)試験所運営への提言

(3)インスティテュート職員の研修

③これに加えて開発調査に関しては、両インスティテュート事業開始後２～５年目に、上記役割❷、❸、❹を実施するための計画提言へとつながる調査要望がタイ国側より出された。

④参考事例として訪問した食品インスティテュートは、TISIの食品試験検査部門が切り離されて1996年に設立された（主要監督官庁は工業省）。その役割としては検査、情報提供、研究開発、同産業内での組織間の連携である。年間予算は4,100万バーツ(97-98)であり、政府からの補助金とFederation of Food Industryから出資がそのほとんどを占める（2001年10月より政府補助金は無くなる）、現在の職員数は48人で、そのうち試験検査部門は24人となっている。

将来的には試験検査、コンサルティング、トレーニング費の徴収によってインスティテュートの運転資金を賄うことを目標としているが、現在のところ500にも満たないメンバー企業の中でも検査サービスを利用したのはわずか80社、トレーニングも昨年度は35セッションしか行われていないため、今後この数をどう増やしていくかが課題となっている。（食品産業には中小を中心に、約8,000の企業がタイ国内に存在している）

また、自立運営のためには業務の拡充が必要であり、今後検討すべき内容としては、食品栄養検査、原材料（加工用食品の）検査、国際的な相互認証の機関として認定、がある。

⑤繊維インスティテュート（TTI）は、その構想が始まってからおよそ10年後の1997年10月にスタートした機関であり、設立５年後に政府からの補助金は打ち切られることとなっている。その役割としては以下のものがある。

(1)試験・検査

(2)技術的支援（訓練プログラム）

(3)情報提供

(4)設備近代化のための低利融資

(1)に関しては、繊維という製品性格から、検査を利用する企業数を増やすことは難しいが、EU市場への輸出には必要なEco Textile検査を組み込むことによる方法をタイ国側は思料中である。（繊維連盟は５つの協会から成っており、加盟企業数は約1,000社ある）しかしながら、2002年10月以降の見通しは立っていない。

また、(4)のための予算は250億バーツ（5千万/年）であり、出所は中央銀行、TTIはこの融資を利用した企業から0.2%のマージンを受け取っている。

「産業廃棄物処理」

これは来年度案件であるが、関係機関より情報収集を行った。

①タイには産業廃棄物処理場が２つあり、対象となる工場数は、バンコク周辺で40,000、タイ全国で120,000となっている（Ordinary wasteとHazardous wasteの両方）。

②産廃管理システム確立のためのマスタープランについて、12年前にUNDPが実施した調査結果があり、当時は提言を積極的に活用していたが、既に10年以上経過しており、データの更新を含め、今回新たなマスタープランを策定したいとの意向がDIWより表明された。

③産業構造調整事業（IRP）の中の公害防止対策の１つとして取り入れられるには、全国規模での事業として始められなければならないが、まずはバンコクに絞った対策を取る方が効果も上がりやすいと考えられるため、あえて無理にIRPに組み込むことはせず、今回の対象地域はバンコクとその周辺としたい旨説明がなされた。

④タイ国では同分野で独自に調査と計画策定を行った経験はなく、技術・ノウハウ不足を補うという意味で、JICAの開発調査による協力への期待は大きく、既にそのための要請書をDTECへ送付した旨説明がなされた。

⑤マスタープラン策定後の計画実施用予算については、現時点では特定しておらず、マスタープランの結果を受け、その事業規模を検討したく、従って、BOTのような運営形態も含め、資本ソースにかかる提言をマスタープランの中に含めて欲しいとタイ国側では考えている。

⑥調査団より、今調査では詳細な協議は時間不足のため行えないが、現在日本側で検討している案件検討の中で必要性が認められれば、来年度にプロ形を実施して再協議する可能性が高い旨説明がなされた。

6．団長所感

(1)今回の調査は、主に工業振興局側との協議を中心に進められたが、冒頭、工業振興局側から、先に実施した工業分野（裾野産業振興）マスタープラン調査の実施に関し、同調査終了後、同報告書の提言を工業分野振興のため施策の実行のために随所に生かしており、その意味において、同報告書の提言内容を高く評価するとともに、改めて、日本側に対し謝意を表した。

また、タイ側では、昨年来の経済危機に対応するために、産業構造調整事業を進める中で、様々な緊急性の高い事業の実施を計画しているが、経済危機という、同国の工業分野取り巻く環境が大きく変化する中においても、これらの産業構造調整事業計画策定にあたり、同報告書の提言内容を積極的に活用している旨の説明がタイ側からなされた。

(2)今回調査の目的は、産業構造調整事業に関し、現在タイ側で進めている電気・電子分野及び自動車産業分野にかかるインスティテュート設立計画、および裾野産業支援関連事業にかかる今後のJICA協力（開発調査）の可能性を探ることにあったが、調査の結果、両分野に関し調査団に対し開発調査実施の要望がなされた。特に、インスティチュート設立構想に関しては、1998年10月に、その設立がなされ、現在試験検査部門を中心に活動の基盤整備を始めているものの、政策立案等試験検査以外の機能・役割に関する詳細な事業実施計画については、さらにその内容（具体的なヴィジョン及び実施体制）を検討していきたいとの意向がタイ側にあること、また、裾野産業振興に関しては、先の調査結果をもとに、現在の経済環境の変化に対応するために、その内容の見直しをして欲しいとの要望がなされた。

あわせて、タイ側より、可能であるならば、産業構造調整事業の重要性、緊急性に鑑み、早期の調査実施を望んでいる旨要望がなされた。

(3)タイ側からの上記要望については、タイ側の進める産業構造調整事業に関し、わが国に対する高い期待があることや、先の裾野産業開発調査に対する高い評価に鑑み、積極的に対応する方向で検討をしていきたい。

また、その実施にあたっては、タイ側の進める産業構造事業の実施に対応するために、早急な調査着手が望まれること、また、先方の要望内容が、インスティテュート設立計画も含め、基本的には先の裾野産業振興計画調査の見直しとなっていることから、先に実施した開発調査のフォローアップ事業として実施することが適当であるものと思料されるところ、同方向にて日本側における今後の作業を進めることで検討を進めたい。

なお、タイ側の要望（調査事項）については、工業振興局側がその詳細をコンセプトペーパーとして早急にまとめ、日本側に連絡することとしたところ、その進捗について

は、JICAタイ事務所において適宜フォローしていく必要があるものと思料する。

(4)なお、本調査団のマンデートでは無いが、今次調査を通じ、タイ側より中小企業振興及びインスティチュート構想に関連して種々の分野の個別専門家の派遣につき、産業構造調整事業の一環として、調査のみならずこのような専門家による協力も必須であり、また、その役割に大きく期待している旨タイ側から強い要望がだされたところ、右につきあわせて報告したい。

(5)その他、本件調査対象分野以外に、工場局において、近々正式に要請予定である産業廃棄物マスタープランに関し、その概要の聴取を行った。

7．面会者一覧

Ministry of Industry（MOI）
Department of Industrial Promotion（DIP）
Bereau of Supporting Industry Promotion（BSID）

Mr. Manu Leopairote（Director general, DIP）
Mr. Padetpai Meekun-Iam（Deputy Permanent Secretary, MOI）
Mr. Damri Sukhotanang（Deputy Director General, DIP）
Mr. Satit Sirirangkamanont（Deputy Director General, DIP）
Mr. Nuntapit Nakasarn（Director, BSID）
Mr. Pairoj Sanyadechakul（Deputy Secretary General, MOI）
Ms. Uraiwan Chandrayu（Director, Int'l Cooperation Div., DIP）
Mr. Pasu Loharjun（Director, Plastic and Electronic Component Industries Div., BSID）
Mr. Panuwat Triyangkulsri（Head of Research Sec., Electronic and Plastic Components Industries Div.）
Ms. Supa Tangkittikhun（Int'l Cooperation Div., Bureau of Industrial Promotion Admin.）
Ms. Supiya Limkitnuwat（Industrial Technical Officer, Office of the Permanent Secretary for Industry）
Ms. Kanokpan Chancharaswat（Chief, Bilateral Cooperation Sec., Foreign Relations Div., Office of the Permanent Secretary for Industry）

Thai Industrial Standards Institute（TISI）
Mr. Somkid Sangnim（Standards Bureau 2 Director）
Mr. Virat Aja-apisit（Testing Centre Director）
Mr. Vichai Charoenpipatsin（Standard Officer 8）
Mr. Bundit Wuthirakchainunt（Standard Officer 7）
Mr. Pitak Pruittisarikorn（Standard Officer 6）
Mr. Narat Rujirat（Standard Officer 6）

Electrical and Electronics Institute（EEI）
Mr. Itichai Patamasiriwat

Automotive Institute
Mr. Nattapol Rangsitpol

National Food Institute（NFI）

Mr. Suphsorn Chayovan（Director, National Food Institute）

Ms. Jocelyn O. Naewbanij（Manager, Information Services Div.）

Ms. Orawan Kaewprakaisangkul（Manager, Laboratory Services Div.）

Department of Technical and Economic Cooperation（DTEC）

Mr. Banchong Amornchewin（Chief, Japan Sub-Div., External Cooperation Div.I）

Mr. Vishnu Sanitburoot（Programme Officer, Japan Sub-Div.）

Ms. Vitida Sivakua（Programme Officer, Japan Sub-Div.）

Ms. Pin Sridurongkatum（Programme Officer, Japan Sub-Div.）

Thai Textile Institute（TTI）

Executive Director

Textile Industry Dision（TID）

Mr. Toshiyuki Ikuharu（Chief Advisor）

Mr. Hiroyuki Matsumura（Project Coordinator）

Department of Industrial Works（DIW）

Mr. Thien Mekanontchai（Director General）

Mr. Samarn Thangtongtawi（Expert）

Industrial Water Technology Institute（IWTI）

大羽　修（チーフアドバイザー兼工業排水処理）

松本　重行（業務調整）

JETRO Bangkok

野中次長

在タイ日本大使館

東条一等書記官

JICA Thailand Office

岩口所長

諏訪次長

中本所員

Ⅱ．　資料

MINUTES OF MEETING

OF

PROJECT IDENTIFICATION STUDY

ON

SUPPORTING INDUSTRIES

IN

THE KINGDOM OF THAILAND

Bangkok, November 10, 1998

Padetpai Meekun-iam
Deputy Permanent Secretary
Ministry of Industry

Tsutomu Nagae
Leader
Project Identification Study Team
Japan International Cooperation Agency

Damri Sukhotanang
Deputy Director-General
Department of Industrial Promotion
Ministry of Industry

The Government of Japan through the Japan International Cooperation Agency ("JICA") dispatched a Project Identification Study Team ("Team") to the Kingdom of Thailand in order to identify the possibility in implementing a study project for the Industrial Promotion in the Kingdom of Thailand. A series of discussions was conducted between the Team and officials of Ministry of Industry of the Kingdom of Thailand from November 5 to November 10 1998. List of attendants in the discussions appears as in Annex 1. The result of the discussion is summarized as Minutes of Meeting , as follows:

1. The Thai side explained that the government has taken the spontaneous action which has been planned and conducted in Industrial Restructuring Plan (IRP) after the burst of economic crisis, and the Team expressed that JICA was ready for considering requests of technical cooperation seriously regarding IRP.

2. The government of Thailand showed their gratitude to the Team, and reported that they positively evaluated suggestions in the Master Plan for the Development of Supporting Industries in Thailand submitted in March 1995 and that they have utilized it in planning and implementing various policies and projects since then. The Thai side also mentioned that they applied some of the suggestions in the Master Plan to projects in IRP. And, such positive attitude of the Thai government towards JICA development study highly impressed the Team.

3. The Thai side emphasized the necessity of additional development study for Small and Medium Enterprises Promotion as a follow-up of the previous study for the supporting industries to get over the current economic difficulties. They also proposed the Team to send experts in Credit Risk Analysis (1), Financial Management (1) and Production Management (3) regarding Supporting Industry Promotion, and experts in Emission (1), EMC (1), Safety (1) and Energy Saving (1) regarding Automotive and Electrical & Electronics Institutes to support projects in IRP.

4. The Thai side proposed the Team to include the study on Automotive and Electrical & Electronics Institutes in the additional development study on Small and Medium Enterprises Promotion.

5. The Team suggested that the government of Thailand submits a concept paper explaining their requests in detail to JICA Thailand Office in the following week, and the Thai side agreed with it. The Team also explained that they would convey the request of the Thai side for experts to the relevant departments and organizations.

6. The Thai side mentioned that the quick action by JICA to the requests of Thailand would be highly appreciated due to the emergency of starting new projects against economic difficulties.

N.T.

P.

D.

Annex 1.

List of Members of the Thai side and the Japanese Delegation

Thai side

Mr. Padetpai Meekun-Iam (Deputy Permanent Secretary)
Mr. Damri Sukhotanang (Deputy Director General, DIP)
Mr. Pairoj Sanyadechakul (Deputy Secretary General)
Mr. Satit Sirirangkamanont (Deputy Director General, DIP)
Mr. Nuntapit Nakasarn (Director, BSID)
Ms. Uraiwan Chandrayu (Director, International Cooperation Div., DIP)
Mr. Pasu Loharjun (Director, Plastic and Electronic Component Industries Div., BSID)
Mr. Panuwat Triyangkulsri (Head of Research Sec., Electronic and Plastic Components Industries Div., BSID)
Mr. Itichai Patamasiriwat (Electrical and Electronics Institute)
Mr. Nattapol Rangsitpol (Automotive Institute)
Mr. Suphsorn Chayovan (Director, National Food Institute)
Ms. Supiya Limkitnuwat (Industrial Technical Officer, Office of the Permanent Secretary)
Ms. Kanokpan Chancharaswat (Chief, Bilateral Cooperation Sec., Foreign Relations Div., Office of the Permanent Secretary for Industry)
Ms. Supa Tangkittikhun (Int'l Coop. Div., Bureau of Industrial Promotion Administration)
Mr. Virat Aja-apisit (Director, TISI Testing Centre)
Mr. Vichai Charoenpipatsin (TISI Testing Centre)

Japanese side

Mr. Masayoshi Watanabe (Deputy Director, Technical Cooperation Division, International Trade Policy Bureau, MITI)
Mr. Tsutomu Nagae (Deputy Director, Planning Division, Mining and Industrial Development Study Department, JICA)
Mr. Yoichi Suginaka (Development Cooperation Division, Economic Cooperation Bureau, MOFA)
Mr. Masahiko Isono (Assistant Senior Specialist, Southeast Asia-Pacific Division, International Trade Policy Bureau, MITI)
Mr. Mitsuru Hagino (Development Specialist in Industrial Management, JICA)
Mr. Gaku Funabashi (Junior Expert, Planning Division, Mining and Industrial Development Study Department, JICA)
Mr. Akio Nakamoto (JICA Thailand Office)
Mr. Tetsuaki Nonaka (Vice President, JETRO Bangkok---Observer)

N.T.

1．協議議事録

National Food Institute（NFI）　　11月5日　　9:20-11:15

タイ国側出席者：　Ms. Jocelyn O. Naewbanij（Manager, Information Services Div.）
Ms. Orawan Kaewprakaisangkul（Manager, Laboratory Services Div.）

1．冒頭、調査団より今調査の目的が説明された後、NFIの概要がタイ国側より説明された。NFIは食品分野でのインスティテュートであり、TISIの食品試験検査部門が切り離されて1996年に設立された。その役割としては検査、情報提供、研究開発、同産業内での組織間の連携である。年間予算は4,100万バーツ（97-98）であり、政府からの補助金とFederation of Food Industryから出資がそのほとんどを占める（2001年10月より政府補助金は無くなる）。現在の職員数は48人で、そのうち試験検査部門は24人となっている。

2．将来的には試験検査、コンサルティング、トレーニング費の徴収によってインスティテュートの運転資金を賄うことを目標としているが、現在のところ500にも満たないメンバー企業の中でも検査サービスを利用したのはわずか80社、トレーニングも昨年度は35セッションしか行われていないため、今後この数をどう増やしていくかが課題となっている。（食品産業には中小を中心に、約8,000の企業がタイ国内に存在している）

また、自立運営のためには業務の拡充が必要であり、今後検討すべき内容としては以下のものがある。

(1) 食品栄養検査
(2) 原材料（加工用食品の）検査
(3) 国際的な相互認証の機関として認定

3．食品という性質から農業省とのつながりもあるが、主要な監督官庁は工業省である。

4．情報ネットワークと試験所管理・技術向上に関してJICAからの協力を期待する旨タイ国側より表明されたが、食品検査という分野は鉱工業には含まれないため、今調査団にはこのための具体的な協力方法を検討するマンデートがない旨伝えた。

5．施設見学

以　上

Industrial Water Technology Institute（IWTI）　　11月5日　　11:30-12:15

プロ技側出席者：　大羽　修（チーフアドバイザー兼工業排水処理）
　　松本　重行（業務調整）

プロ技専門家より同プロジェクトの概要について説明がなされた。現在のところPhase Iの段階であるが、Phase IIに向けた準備が進んでおり、現時点では特に問題はないとの報告がなされた。

以　上

Department of Industrial Works（DIW）　　１１月５日　　14:00-15:00

タイ国側出席者：　Mr. Thien Mekanontchai（Director General）
Mr. Samarn Thangtongtawi（Expert）

１．冒頭、調査団より今調査の目的の説明がなされ、続いてDIWよりタイ国における産業廃棄物の現状が報告された。タイには産業廃棄物処理場が２つあり、対象となる工場数は、バンコク周辺で40,000、タイ全国で120,000となっている（Ordinary wasteとHazardous wasteの両方）。

２．産廃管理システム確立のためのマスタープランについて、12年前にUNDPが実施した調査結果があり、当時は提言を積極的に活用していたが、既に10年以上経過しており、データの更新を含め、今回新たなマスタープランを策定したいとの意向がDIWより表明された。

３．産業構造調整事業（IRP）の中の公害防止対策の１つとして取り入れられるには、全国規模での事業として始められなければならないが、まずはバンコクに絞った対策を取る方が効果も上がりやすいと考えられるため、あえて無理にIRPに組み込むことはせず、今回の対象地域はバンコクとその周辺としたい旨説明がなされた。

４．タイ国では同分野で独自に調査と計画策定を行った経験はなく、技術・ノウハウ不足を補うという意味で、JICAの開発調査による協力への期待は大きく、既にそのための要請書をDTECへ送付した旨説明がなされた。

５．マスタープラン策定後の計画実施用予算については、現時点では特定しておらず、マスタープランの結果を受け、その事業規模を検討したく、従って、BOTのような運営形態も含め、資本ソースにかかる提言をマスタープランの中に含めて欲しいとタイ国側では考えている。

６．調査団より、今調査では詳細な協議は時間不足のため行えないが、現在日本側で検討している案件検討の中で必要性が認められれば、来年度にプロ形を実施して再協議する可能性が高い旨説明がなされた。

以　上

Department of Industrial Promotion（DIP）　　１１月５日　　15:10-17:15

タイ国側出席者：　Mr. Damri Sukhotanang（Deputy Director General, DIP）
Mr. Satit Sirirangkamanont（Deputy Director General, DIP）
Mr. Nuntapit Nakasarn（Director, BSID）
Mr. Pasu Loharjun（Director, Plastic and Electronic Component Industries Div., BSID）
Mr. Panuwat Triyangkulsri（Head of Research Sec., Electronic and Plastic Components Industries Div.）
Ms. Supa Tangkittikhun（Int'l Cooperation Div., Bureau of Industrial Promotion Administration）

１．冒頭、調査団は、経済危機を克服するためにタイ側が現在実施を進めている産業構造調整事業（Industrial Restructuring Plan：IRP)に関して、その自助努力を高く評価するとともに、同事業の推進に関連して具体的な要請があれば前向きに検討する用意がある旨表明した。

２．裾野産業振興に関する開発調査については、1995年３月に最終報告書が提出されているが、タイ側より、同調査結果を高く評価し、調査団に対し謝意を示すとともに、現在までこの調査結果を基に、同産業振興のための様々な施策を講じてきている旨説明がなされた。また、この提言はIRPにおける中小企業向けプロジェクトとしても活用されており、調査団はタイ側のこのような積極的な姿勢を評価した。提言に盛り込まれた項目に対してこれまでに実際にタイ側が行った主な事項は以下の通り。

１）政策、法整備
・MIDIからBSIDへの組織改革
・JICA専門家の構造調整事業（IRP）への協力

２）市場開拓支援
・JETROを通じて日本企業への供給支援
・供給業者開発プログラム

３）技術レベル向上
・JICAによるプロジェクト技術協力（金型工業等）
・生産プロセス向上プロジェクト（IRP)

４）金融支援
・ADB等からのツーステップローン

５）経営近代化

・Bureau of Enterprise Development 設立

6）投資促進

・BOIとの連携強化

3．次に、タイ側よりIRPの説明がなされた。この計画の中で重視されている項目は以下の通り。

1）工業生産性向上と生産プロセスの変革

2）技術向上と選定業種の近代化

3）選定業種における労働者の職能向上

4）中小裾野産業育成

5）製品デザインの向上とマーケッティングチャネル開発

6）労働集約的・非汚染製品生産の地方への移行

7）外国資本直接投資の誘致

8）クリーンテクノロジーの導入

また、これらの中でとくに1、3、4、6については、来年3月までに着手すべきプロジェクトとして24項目が挙がっている。

4．タイ側より、今回の経済危機に対応するため、前回実施した裾野産業振興開発調査のフォローアップの必要性が強調され、特に上記重点項目にも含まれている中小企業振興に関する様々な追加的支援策のための調査をして欲しい旨要請がなされた。また、併せて、Credit Risk Analysis（1名）、Financial Management（1名）、Production Management（3名）の分野（5名）の個別専門家についても、IRPの側面的支援として派遣して欲しい旨要請がなされた。（Factory Evaluation System 1名については既に要請済）

5．これに対し調査団は、開発調査に関し、その具体的な要請内容について記述したコンセプトペーパーを翌週にもJICAタイ事務所に出すよう要請し、タイ側はこれを了解した。また、専門家派遣については、同要望がなされたことを関係機関に伝える旨説明した。

6．最後に、タイ側より経済危機下における緊急性、重要性に鑑み、可能な限り早期の調査着手につき配慮願いたい旨要請がなされた。

以　上

Ministry of Industry　　１１月６日　　14:20-18:00

タイ国側出席者：　Mr. Padetpai Meekun-Iam（Deputy Permanent Secretary）
Mr. Pairoj Sanyadechakul（Deputy Secretary General）
Mr. Suphsorn Chayovan（Director, National Food Institute）
Mr. Nuntapit Nakasam（Director, BSID）
Mr. Pasu Loharjun（Director, Plastic and Electronic Component Industries Div., BSID）
Mr. Panuwat Triyangkulsri（Head of Research Sec., Electronic and Plastic Components Industries Div., BSID）
Mr. Itichai Patamasiriwat（Electrical and Electronics Institute）
Mr. Nattapol Rangsitpol（Automotive Institute）
Ms. Supiya Limkitnuwat（Industrial Technical Officer, Office of the Permanent Secretary for Industry）
Ms. Kanokpan Chancharaswat（Chief, Bilateral Cooperation Sec., Foreign Relations Div., Office of the Permanent Secretary for Industry）
Mr. Virat Aja-apisit（Director, TISI Testing Centre）
Mr. Vichai Charoenpipatsin（TISI Testing Centre）

１．冒頭、調査団より今調査の目的についての説明があり、引き続きタイ国側より自動車と電気・電子インスティテュートに関して説明がなされた。その概要は以下の通り。（両インスティテュート共通）

１）役割
(1) 試験・検査の実施
(2) 製造・技術・マーケット情報提供及びコンサルティング
(3) 関係機関・企業間の連携促進
(4) 調査及び政策面での提言

２）1998年10月に設立された。

３）５年後に政府からの補助金は打ち切られるが、その後も土地・建物・機材等は政府所有のままである。

４）現在のところMr. PadetpaiがDirector代行であるが、新しいDirectorは1999年１月に決定され就任する。

５）１年目は上記役割のうち(1)だけで手一杯という状態であり、まだ(2)から(4)の機能は果たしていない。また、それら３項目に関して２年目以降の実施計画は策定されていない。（新しいDirectorの就任後に策定を始め、Board of Directorsの承認を経て

実施に移される予定)

2．調査団より、現在タイ国側がJICAに対して要望していることについて質問したところ、以下の回答を得た。

1）試験・検査業務の強化のための専門家による技術指導

(1) 自動車・・・・エンジン排気検査、1名（分析機材も必要）

(2) 電気電子・・・電波障害検査（EMC）、1名（至急）

安全性試験、1名（至急）

省エネルギー検査、1名

2）試験所運営への提言

3）インスティテュート職員の研修

専門家派遣に関しては、緊急に必要としているEMC分野については事前情報を得ており、今年度の補正予算の対応につき検討する用意があるものの、他分野を含め、その可否につき具体的に決定することが出来るマンデートは調査団にはないこと、従ってタイ国が早急に要請書をDTECに相談の上、日本大使館に送る必要性がある旨説明し、タイ国側の理解を得た。

3．調査団より開発調査スキームでの協力要請の有無につき質問したところ、両インスティテュート事業開始後2～5年目に、上記役割(2)から(4)を実施するための計画提言へとつながる開発調査に対する要望がタイ国側より出された。

これに対し、調査団より、同内容は過去に提出された提言に基づく事業実施の一環であり、その内容をさらに具体化することが目的であるところ、同内容のフォローアップとして位置づけられるものである旨説明した。タイ国側も、この方式に関して理解が示し、翌週に提出予定のコンセプトペーパーに、自動車、電気・電子インスティテュートに関する要望項目を盛り込むとの回答を得た。

4．調査団より、フォローアップ調査に関し、責任機関は工業省であるとしても、実施機関がDIPとOffice of Permanent Secretaryの2つに分かれるのか質問したところ、タイ国側より同調査の実施機関はDIPとするとの回答を得た。

以　上

Thai Textile Institute（TTI）　　１１月９日　　13:30-15:00

タイ国側出席者：　Executive Director

１．冒頭、調査団による今調査の目的説明の後、タイ国側より繊維インスティテュート（TTI）についての説明がなされた。TTIは、その構想が始まってからおよそ10年後の1997年10月にスタートした機関であり、設立５年後に政府からの補助金は打ち切られることとなっている。その役割としては、(1)試験・検査、(2)技術的支援（訓練プログラム）、(3)情報提供、(4)設備近代化のための低利融資がある。

２．(1)に関しては、繊維という製品性格から、検査を利用する企業数を増やすことは難しいが、EU市場への輸出には必要なEco Textile検査を組み込むことによる方法をタイ国側は思料中である。しかしながら、2002年10月以降の見通しは立っていない。

３．(4)のための予算は250 mil.バーツ（50 mil./年）であり、出所は中央銀行、TTIはこの融資を利用した企業から0.2%のマージンを受け取っている。

４．繊維連盟は５つの協会から成っており、加盟企業数は約1,000社ある。

以　上

Textile Industry Dision（TID）　　１１月９日　　15:00-16:30

プロ技側出席者：　Mr. Toshiyuki Ikuharu（Chief Advisor）
Mr. Hiroyuki Matsumura（Project Coordinator）

１．４年プログラムのうち１年半を経た段階であるが、２年目終了までに中間評価のための調査団派遣を希望しているとの報告をプロ技側より受け、鉱開部へ伝える旨説明した。

２．施設見学

以　上

Department of Industrial Promotion（DIP）　　１１月１０日　　10:30-11:30

タイ国側出席者：　Mr. Padetpai Meekun-Iam（Deputy Permanent Secretary, MOI）
Mr. Damri Sukhotanang（Deputy Director General, DIP）
Mr. Nuntapit Nakasarn（Director, BSID）
Ms. Uraiwan Chandrayu（Director, Int'l Cooperation Div., DIP）
Mr. Panuwat Triyangkulsri（Head of Research Sec., Electronic and Plastic Components Industries Div., BSID）

１．両国側より、Minutes of Meetingに署名がなされた。

以　上

Department of Technical and Economic Cooperation（DTEC）　　１１月１０日　　14:00-15:00

タイ国側出席者：　Mr. Banchong Amornchewin（Chief, Japan Sub-Div., External Cooperation Div.I）
Mr. Vishnu Sanitburoot（Programme Officer, Japan Sub-Div.）
Ms. Vitida Sivakua（Programme Officer, Japan Sub-Div.）
Ms. Pin Sridurongkatum（Programme Officer, Japan Sub-Div.）

１．冒頭、タイ国側より、これまでのJICAの協力に対する謝意が伝えられ、続いて調査団より今調査結果について説明がなされた。

２．現在、タイ国では中小企業育成が国内政治的にも焦点となっており、特にインテリ層を中心とした新政党「タイラクタイ」が、与党に中小企業政策実施を迫っているということも相まって、調査団の滞在中に、工業大臣がDIPのDirector Generalに早急な動きを指示している。かかる背景から、DTEC側からは調査よりも中小企業向けのローンプログラムも含めたプロジェクトの要請を受けたが、調査団より、計画無しではプログラムは実施できない旨説明し、タイ国側の理解を得た。

以　上

Plan No. 1 : Improvement of productivity and production process for cost and delivery competitiveness				
No.	ID	Project Name	Proposing Organization	Operating Organizations
1	101 - 109	Project to establish factory evaluation system	Department of Industrial Promotion	-Thailand Productivity Institute -Technology Promotion Institute -Small Industry Finance Corporation
2		Project for HRD on knowledge and technology in industrial, production and resource development	Thailand Productivity Institute	-Ministry of Industry -Federation of Thai Industries -Technology Promotion Institute -Thailand Management Association -Department of Skill Development -Thai-Com Foundation
3	101 - 252	Project to improve the efficiency of electric/electronic industry	Federation of Thai Industries	-Department of Industrial Promotion
4	105 - 366	Project on the utilization of HACCP for problem solving and production developing in food industry	Food Institute	-Thai Industrial Standards Institute -Office of the Food & Drug -Federation of Industries
5	101 - 430	Project to develop information system in textile industry for quick response	Textile Development Institute	-Textile Associations
6	101 - 345	Project to adjust production process from mass production to small lot and specialized production, and to adjust small lot producers to higher effectiveness system	Federation of Thai Industries	-Department of Industrial Promotion -Thailand Productivity Institute -Thailand Leather Industry Association -Thailand Foot-ware Industry Association -Federation of Thai Industries -Technology Promotion Association

No.	ID	Project Name	Proposing Organization	Operating Organizations
7		Project for HRD in metrology and calibration, to establish calibration laboratory for product quality control and cost reduction	National Metrology Institute	
Plan No. 3 : Improve labor's capability to skillful labor in target industry				
No.	ID	Project Name	Proposing Organization	Operating Organizations
8	304 - 116	Project to survey the need of labor and labor insufficiency for the purpose of effective labor movement	Department of Employment	-Federation of Thai Industries -Department of Skill Development -Provincial Industrial Offices
9	202 - 114	Project to develop labor's skill to keep pace with medium/high technology adjustment	Department of Skill Development	-Federation of Thai Industries -Small Industry Finance Corporation
10	304 - 333	Project for further training for technician and engineer in production technology sector	Thai-German Institute	
11	302 - 333	Project for HRD in industry fund	Department of Industrial Promotion	
12	301 - 013	Project to provide training to personnel to meet the need of auto/auto part industry	Federation of Thai Industries	-Ministry of Industry -Ministry of Education

Plan No. 4 : Incubate and strengthen medium and small supporting industries				
No.	ID	Project Name	Proposing Organization	Operating Organizations
13	101 - 132	Project to urge efficiency improvement in small and medium industry	Department of Industrial Promotion	-Thailand Productivity Institute -Educational Institute -Small Industry Finance Corporation
14	106 - 167	Project to promote the development of small and medium industry	Department of Industrial Promotion	-IMET -King Mongkut's Institute of Technology, North Bangkok
15	401 - 169	Project to disseminate information on small and medium trade and investment through IT	Department of Industrial Promotion	-National Science and Technology Development Agency -Department of Export Promotion -Federation of Thai Industries -Office of the Board of Investment
16	401 - 117	Project to formulate major plan for small and medium industry development	Department of Industrial Promotion	-Federation of Thai Industries -Thai Chamber of Commerce -Ministry of Commerce
17	401 - 016	Project to develop mold industry	Federation of Thai Industries	-Department of Industrial Promotion -Thai-German Institute -Thai Mold and Die Industry Association -King Mongkut's Institute of Technology, North Bangkok
18	402 - 264	Project for supplier development program	Department of Industrial Promotion	-Federation of Thai Industries -Auto Parts Manufacturers Association -Thai Mold and Die Industry Association -Thai -JCC
19	401 - 320	Project to develop industrial linkage	Office of the Board of Investment	

Plan No. 6 : Dispersion of labor-intensive and less pollution production units to regional and rural areas for job and income distribution				
No.	ID	Project Name	Proposing Organization	Operating Organizations
20	601 - 174	Project on dispersion of industry to rural area	Office of the Permanent Secretary of Industry	-Department of Industrial Promotion -Federation of Thai Industries -Department of Skill Development -NGOs -Community/provincial organizations
21	601 - 161	Loan project for the movement of labor-intensive industry out to regions	IFCT	-Department of Industrial Promotion -Office of the Board of Investment
Project to urge the operations by using other sources of fund (out of the total sum of USD 122.9 million)				
No.	ID	Project Name	Proposer	Operating Organizations
22	201 - 136	Loan project to adjust technology and machinery in target industry	IFCT	
23		Project for training for skill development	Department of Skill Development	
24		Project for trading firm to promote small and medium export industry	Department of Export Promotion	
Management project for industrial restructuring				
25		Management project for industrial restructuring	Department of Industrial Promotion office	

No. 1 Project to establish factory evaluation system

a) Objective

In order to have systematization, principles and personnel those having capability in assessing the condition and potential of enterprises, potential indicator-index which will lead to business improvement and determine for policies and privileges for industries, especially for SMEs

b) Project Period

- Accelerated Period Oct 1998 - March 1999
- Throughout Project from fiscal 1998 - 2002

c) Plan for Budget Expenditure

c. 1) Accelerated Period

- Credit extension	20	million Bt.
- Expert expenditure	42	million Bt.
- HRD Training	61.20	million Bt.
- Others	11.74	million Bt.
- Total	134.94	million Bt.

c. 2) Throughout Project

= 566.57 million Bt.

d) Performance

d.1) Accelerated Period

- Build up 320 primary appraisers
- Indicator Index of status and potential of 3,000 factories
- Assessment of status and potential of 2,000 factories

d.2) Throughout Project

- Build up 1260 primary appraisers
  560 secondary appraisers
  240 tertiary appraisers
  200 apprenticed appraisers
- Indicator-Index 6,000 factories
- Assessment of status and potential of 8,265 factories.

No. 2 Project for HRD on Knowledge and technology in industrial, production and resource development

a) **Objective**

- To increase the skill of personnel in every level in industrial sector.
- To develop high ranking executives to have board vision and new attitude to the business and industry under IRP.
- To increase the skill for middle class-executives in administration
- To relieve unemployment problem of white collar.

b) **Project Period**

- Accelerated Period Oct' 1998 - March 1999
- Throughout Project from fiscal 1998 - 2002

c) **Plan for Budget Expenditure**

c. 1) Accelerated Period

Credit extension	4.13 million Bt.
Expert expenditure/courses development	33.99 million Bt.
HRD	17.13 million Bt.
Others	44.04 million Bt.
Total	**99.29 million Bt.**

c. 2 Throughout Project = 1,395 million baht

d) **Performance**

d. 1) Accelerated Period

- Develop 10 curriculum
- Organize 65 seminars
- Train 3,030 executive, entrepreneurs
- Build up multi media

d. 2) Throughout Project

- Seminar for SMEs' vision
- Develop SMEs' high ranking executives.
- Train for knowledge and skill middle class-executives.
- Train for productivity facilitators.
- Develop SMEs' supervisors.
- Develop human resources of OJT.
- Develop human resources of Total Productive Maintenance.

- Conduct open training for basic knowledge of productivity.
- Develop experts for Integrated Productivity and Quality Improvement.
- Increase TQM efficiency.
- Prepare multi media for HRD in industrial sector.

No. 4 ***Project on the utilization of HACCP for problem solving and production developing in food industry.***

a) Objective

- Build up personnels related to HACCP system with having their qualification under international standard
- Upgrade production standard in food industry through application of HACCP.

b) Project Period

- Accelerated Period Oct' 98 - Mar.' 99
- Throughout Project Oct' 98 - Sep. 2002

c) Plan for Budget Expenditure

- Accelerated Period of 1.9 million baht
- Throughout Project of 95.1 million baht

d) Performance

d. 1) Accelerated Period

- Carry on HACCP system to apply for use in 10 food industries
- Develop/build up personnels to be the consultants for HACCP system of 7 persons.
- Conduct training for industrial personnels and government promotion officials and related to have the knowledge and understandarding of HACCP of 100 persons.

d. 2) Throughout Project

- Carry on HACCP system to apply for use in 525 food industries.
- Develop build up personnels to be the consultants for HACCP system of 56 persons.
- Conduct training for industrial personnels and governmental promotion officials and related persons on HACCP system of 5,250 persons
- Develop/build up personnels to be the experts for certification of HACCP system of 9 persons.
- Develop consultancy service of Food Institute to be the certification unit within the year of 2002

No. 5 Project to develop information system in textile industry for quick response

a) **Objective**

Textile industry can link with its supporting industries effectively and gain the comparative advantage to serve the purchase orders of the foreign customers.

b) **Project Period**

- Phase of building up information system for readiness to service (Oct 98 - Match 99)
- Phase of expanding for scope of information covering the related industries of not less than 80%, spent 24 months

c) **Plan for Budget Expenditure**

8.6 million baht within 6 months from
October 1998 - March 1999

d) **Performance**

- Provide of not less than 500 numbers of producers' data in textile industry.
- Start to give the information service through internet within February 1999
- Anticipate to have the websites audiences within the network around 5,000 times/month.

No. 6 Project to adjust production process from mass production to small lot and specialized production and to adjust small lot producers to higher effectiveness system.

a) **Objective**

- To support the improvement for production system in footwears and leather products in order to serve for market demand rapidly and to reduce cost of production,/product quality development.

b) **Project Period**

- Accelerated Period Oct 1998 - March 1999
- Throughout Project 1998 - 2002

c) **Plan for Budget Expenditure**

- Accelerated Period	=	270	million Bt.
- Throughout Project	=	2,127	million Bt.

d) **Performance**

- To survey the situation and potential of industries in order to select target group to participate in the project.
- Organize study mission for the entrepreneurs to observe production process of leather products in order to apply their own production process.
- Organize seminar for adapting entrepreneurs' idea for production process improvement.
- Provide expert service to study in those factories to analyze for production process improvement.
- Induce entrepreneurs to accept the improvement under experts' opinion.
- Organize training for employees for production process improvement.
- Grant loan for industries to improve production process.
- Conduct improvement (experts' consultancy service and advice periodically).

- Create technical media, PRs
- Follow up and evaluate production process.

No. 7 Project for HRD in metrology and calibration, to establish calibration laboratory for product quality control and cost reductions

a) **Objective**

- To develop the capability for calibration of technicians and engineers in industries.
- To support industries to verify for high precision of instruments.
- To support the standardized calibration laboratory.

b) **Project Period**

- Accelerated Period Oct 1998 - Mar 1999
- Throughout Project 1998 - 2002

c) **Plan for Budget Expenditure**

- Accelerated Period 14.05 million Bt.
- Throughout Project 195.6 million Bt.

c. 1) Accelerated Period

- grant credit to private sector 2.8 million Bt.
- develop curriculum, media and instrument 5.9 million Bt.
- employ foreign experts 2.9 million Bt.
- expenditure for survey the demand of private sector, conducting training and public relations

d) **Performance**

1. Employ to survey the need of industrial sector (such as experts for consultancy services, personnels for data collection and processing).
2. Develop instruction curriculum, instruction media instruments and develop HRD of the institute (employ local expert to develop jointly for curriculum and develop HRD by dispatching them to abroad and conduct training for instruction method and purchase instruction media and equipments).

3. Conduct training, seminars for industrial technicians and engineers by employing local lecturers to jointly instruct with institute's personnels.
4. Grant credit for calibrating measuring instruments.
5. Grant credit for consultancy service to the factories in order to set up calibration laboratories in industries
6. Employ foreign experts to consult for institute in the view of calibration and setting up calibration laboratories in industries
7. Employ temporary personnels for coordinating in conducting training seminars and others.
8. Conduct PRs of the institute by mean of printing brochures posters and advertising media
9. Procure, maintain the national standards for calibration (such as purchase metrology equipments).

No. 8 ***Project to survey the need of labor and labor insufficiency for the purpose of effective labor movement***

a) **Budget Expenditure for the Accelerated Period (Oct 98 - March 98)**

= 36.3 million baht

b) **Performance**

- Survey labor data of 15,000 factories.
- Support the training activities for 2,000 jobless labors.

No. 9 Project to develop labor's skill to keep pace with medium / high technology adjustment.

a) Objective

- To support labor force to have skill and knowledge, ability to use medium/high technology including new machinery.
- To upgrade the labor capability to be skill labor in target industries served from IRP.

b) Project Period

September 1998 - March 1999.

c) Budget Expenditure

1. Expenditure for training of 10,000 persons			
1.1	Budget for training institutes of public and private sectors	=	80.00 million Bt.
1.2	Expenditures for administration and project operation	=	0.80 million Bt.
2. Expenditure to support in the format of skill labor fund in order to give the loan to labor as the training fee		=	70.00 million Bt.
	Total	**150.80**	**million Bt.**

d) Performance

- Upgrade labor in industrial sector to have more quality and standard in order to serve for middle and high technology.
- Support skill labor to be more specialized in order to reinforce the ability in competition within the country in manufacturing sector.

No. 10 Project for further training for technician and engineer in production technology sector

a) **Objective**

- To upgrade the knowledge of technician and engineer in the field of manufacturing technology of Automation Technology, Tool & Die Technology and CNC/CAD/CAM Technology

b) **Project Period**

October 1998 - March 1999

c) **Budget Expenditure**

Government budget in 1999 = 13 million Bt.

d) **Performance**

d. 1) - Develop curriculum / text book
- Develop institute's personnels to be training instructors for training.
- Select and test for knowledge level of persons who receive scholarship
- Conduct training
- Evaluate the training result individually.

d. 2) Grant credit extension for private sector worth 4 million Bt. for supplement of HRD.

d. 3) HRD : target of 1000 persons

- Technician in field of CNC CAD/CAM Technology	:	390	persons
- Technician in Tool & Die Technology	:	260	persons
- Technician in Automation Technology	:	350	persons

No. 11 Project for HRD in industry fund.

a) **Objective**

- Support for HRD in industrial sector by mean of :-
  1. Grant credit extension for SMEs in order to employ HRD expert to study, analyze and prepare for HRD plan including prepare curriculum for HRD.
  2. Support budget as the supplement in human training with SME's activities.

b) **Project Period**

- Accelerated Period	Oct 1998 - March 1999
- Throughout Project	1998 - 2002

c) **Budget Expenditure**

- Accelerated Period	16	million Bt.
- Throughout Project	279	million Bt.

d) **Performance**

d. 1) Main activities :-

- Grant credit extension for the entrepreneurs to employ consultants in order to prepare the plan and curriculum of HRD of SMEs.
- Give financial support in conducting HRD training within the SMEs

d. 2) Prepare credit extension for private business sector with low interest, especially in the case of HRD.

d. 3) Employ experts.

- Employ Thai experts who have the knowledge and skill of HRD in order to make the HRD plan for the industries.

No. 12 Project to providing training to personnel to meet the need of auto / auto part industry

a) **Objective**

1. Prepare courses of education in the level of vocational school, bachelor degree in the field of department of automotive engineering in line with the need of industrial sector.
2. Prepare courses and media of training for skill labors, technicians and engineers
3. Prepare courses of training for primary and middle executives

b) **Project Period**

Accelerated Period	Oct 98 - March 99
Throughout Project	Oct 98 - Sep. 2002

c) **Plan for Budget Expenditure**

Accelerated Period 3.05 million Bt.
- Prepare courses of education

Throughout Project 77.65 million Bt.
- Expenditure for learning and instruction management worth 74.6 million baht

d) **Performance**

- Study the demand in training of Auto-assembly plants and auto parts industries.
- Prepare courses and courses of short-term training
- Prepare courses of instruction and media in the level of vocational school and university
- Conduct the meeting among the related agencies.

No. 13 Project to urge efficiency improvement in small and medium industry

a) **Objective**

- Upgrade and improve production efficiency, product quality and service.
- Assist and maintain condition of employment.
- Motivate the ability to export.

b) **Project Period**

October 1998 - March 1999

c) **Budget Expenditure**

498 million Bt.

- Credit extension to improve capability of the target business	400	million Bt.
- Expert employment for consultancy service	78	million Bt.
- Other expenses	20	million Bt.

d) **Performance**

- Survey target SMIs
- Prepare PRs to motivate target group to participate project
- Provide for consultants and prepare consultancy team.
- Employ consultants, allot and select industries
- Employ local and foreign experts

No. 14 Project to promote the development of small and medium industry

a) **Objective**

- Develop the capability of original SMI entrepreneurs.
- Build up new SMI entrepreneurs from the discharged persons who are educated.

b) **Project Period**

- Accelerated Period	Oct 98 - March 99
- Throughout Project 1 year	(Oct 98 - Sept 99)

c) **Budget Expenditure**

- Accelerated Period	9.8 million Bt.
- Throughout Project	12.8 million Bt.

d) **Performance**

- Prepare new curriculum, and develop existing courses to be more proper and use successful courses in order to disseminate the knowledge of management to SMI
- Search and coordinate to arrange lecturers in order to disperse in conducting seminar and training.
- Conduct seminar and training courses, issue the certificates for the trainees for both short-term and long-term

No. 15 Project to disseminate information on small and medium trade and investment through IT.

a) Objective

- Accelerated for investment in new project and trade of SMI by mean of dispersing information of industry and investment correctly and rapidly and adapting abreast of the time with IT and also giving the consultancy service to the new investors
- Set up and improve industrial data base for long-term use.
- Employ unemployed personnels from the industrial sector, who have knowledge and ability to conduct the study and research for investment opportunity, marketing and data base system.

b) Project Period

Accelerated Period	Oct' 98 - March 99
Throughout Project	1998 - 2002

c) Budget Expenditure

Accelerated Period	18.34	million baht
Throughout Project	48.96	million baht

d) Performance

- Employ PRs company to disseminate PRs by internet and printed matter.
- Conduct study and prepare investment pattern.
- Prepare bibliography of machinery.
- Employ to do software for lists of high volume of export & import commodities.
- Employ to design and develop homepage;-
  - To advertise SMEs
  - To announce product innovation and service by internet
- Employ to study and conduct project feasibility.
- Employ to study and conduct investment opportunity.
- Give consultancy and advisory service for Q & A of investment through internet and telephone.

No. 16 Project to formulate master plan for small and medium industry development

a) **Objective**

- To have frameworks, guidelines and target to promote and develop SMI.
- To let SMI entrepreneurs know the direction of policies in developing SMI of the government and know their situation.

b) **Project Period**

- 1 year (Oct 1998 - March 1999)

c) **Budget Expenditure**

- Employ to Study SMI data	10.6	million Bt.
- Research SMI promotion policies of various countries	6.0	million Bt.
- Meeting / Seminar / PRs	7.0	million Bt.
- Motivate SMI to participate for preparing plan	15.5	million Bt.
Total	**39.1**	**million Bt.**

d) **Performance**

- Survey and study SMI information.
- Study and research policies and measure to promote SMI of various countries.
- Conduct meeting / seminar for coordination and cooperation, also public hearing.

No. 17 Project of develop mold industry

a) **Objective**

- Strengthen mold industry and increase ability for mold production to be enough for local market demand.
- Upgrade quality and standard of skill labor
- Build up the capability to export on mold in future.

b) **Project Period**

- Accelerated Period Oct' 98 - March 99
- Throughout Project 1999 - 2002

c) **Budget Expenditure**

- Accelerated Period
  - 4.1 million Bt. Upgrade mold skill labors for 100 persons
  - 200.0 million Bt. Grant credit for 20 factories
- Throughout Project
  - 17.1 million Bt.

d) **Performance**

- Upgrade mold skill labors of 100 persons
- Grant credit for 20 mold factories for new machinery, human development
- Employ 1 foreign expert to give the consultancy service for mold industries
- Build up 1 Thai expert
- Give advice for mold industries
- Produce mold text books
- Produce instruction media
- Build up 1 model mold set

No. 18 Project for Supplier Development Program

a) **Objective**

- Raise up skill labor and maintain employment condition of skill labor.
- Develop local suppliers to produce parts for export by mean of technology transfer from parts purchasers.
- Develop parts producers to serve for the demand of entrepreneurs for export

b) **Project Period**

- Accelerated Period Oct 1998 - March 1999
- Throughout Project 1998 - 2002

c) **Budget Expenditure**

- Accelerated Period 979.5 million Bt.
- Throughout Project 7,857.0 million Bt.

c. 1) **Accelerated Period**

- Upgrade skill labor / HRD (5,000 persons) 142 million Bt.
- Raise up factories to ISO 9000 / QS 9000 (25 factories) 22.5 million Bt.
- Upgrade Production Technology Standards 815 million Bt.

c. 2) **Throughout Project**

- Upgrade skill labor / HRD 1,136 million Bt.
- Raise up factories to ISO 9000 / QS 9000 (200 factories) 180 million Bt.
- Upgrade Production Technology Standard 6,541 million Bt.

d) **Performance**

- Maintain condition of employment and raises up the capability of skill labor in automobile / electrical / electronic industries.

- Develop auto parts factories to be international standard level
- Upgrade standard of production technology.

No. 19 Project to develop industrial linkage

a) Objective

- Build up the network of industrial linkage between large scale of industries and SMI, as well as related agencies
- Promote subcontracting and relationship
- Conduct data base of supporting industries and data base of large scale industries
- Disseminate and promote technology transfer and technology cooperation
- Create consciousness of supporting industries entrepreneurs to pay attention to quality and delivery

b) Project Period

Accelerated Period	Oct 1998 - March 1999
Throughout Project	1998 - 2002

c) Budget Expenditure

Accelerated Period	30.3 million Bt.
Throughout Project	123.0 million Bt.

d) Performance

1. Carry on the project of the buyers to meet the sellers by assigning the parts producers to visit product assembly plants
2. Conduct ASEAN SI Database (ASID) for SIs data base passing through Internet
3. Organize the seminar / workshop for business relationship and subcontracting promotion
4. Employ foreign expert and consultant for industrial linkage and subcontract
5. Organize human training for subcontracting business
6. Exhibit products and SIs products in order to disseminate and conduct PRs of the ability and potential of SIs entrepreneurs
7. Study the report of industrial linkage with the master plan of industrial linkage and operational plan.

8. Improve the PRs system and disseminate industrial linkage including induce foreign investment.

No. 20 Project on dispersion of industry to rural area.

a) **Objective**

- Promote for employment of industrial sector in rural area by provide the measure of incentives and motivation for private business to expand the production base or set up new production unit in the rural area.
- Support for subcontracting and develop to be community industry

b) **Project Period**

- Accelerated Period	Oct 1998 - March 1999
- Through Project	1998 - 2002

c) **Budget Expenditure**

Accelerated Period	383.5	million Bt.
Throughout Project	2,234.5	million Bt.

d) **Performance**

- Conduct Geographic Information System GIS
- Organize the meeting for strategic planning
- Prepare PRs, disseminate the idea of project of rural industries
- Operate to motivate provide business to participate in the project.
- Prepare the readiness of area and target community
- Manage the project in order to coordinate for benefit of related organization
- Support for privileges to motivate private business to migrate production base.
- Grant credit extension for private sector
- Employ expert to support consultancy service of this project.

No. 21 Loan Project for the movement of labor-intensive industry out to regions

a) **Objective**

- Prepare the credit extension to support the establishment or movement of factories or production units with having high labor intention to the regional area.
- Raise up the environment standard and orrange to use common public utilities in the industrial estates.

b) **Project Period**

- Accelerated Period	Oct' 98 - March' 99
- Through Project	1998 - 2002

c) **Budget Expenditure**

Accelerated Period	800	million Bt.
Throughout Project	6,845	million Bt.

d) **Performance**

Grant the credit line to 13 sectors of industries for movement production unit to the regional area for the purpose as;-

-1 Improve cost of production and management for competitive advantage.

-2 Improve overall productivity from the location of raw materials, labor.

-3 Relieve liquidity of SME.

-4 Build up revenue from export and reduce import of products and raw materials.

-5 Motivate industrial linkage development.

-6 Relieve unemployment problem which expected to increase employment by 21,000 labors.

No. 22 Loan Project to adjust technology and machinery in target industry

a) **Objective**

- Improve production efficiency, production process, technology and machinery of 13 industrial sectors
- Reduce the ratio of defect, save energy utilization, and reduce cost of production
- Solve liquidity problem of operation

b) **Project Period**

- Accelerated Period	Oct' 98 - March' 99
- Through Project	1998 - 2002

c) **Budget Expenditure**

Accelerated Period	2,906	million Bt.
Throughout Project	10,381	million Bt.

d) **Performance**

- Grant credit line for change / adjust technology and machinery for 13 industrial sectors as the following result :-

1 Improve production efficiency, production process, technology and machinery.
2 Reduce the ratio of defect, save energy, and reduce cost of production
3 Solve liquidity of activities
4 Gain revenue from export, reduce import of products and raw materials.

No. 23 Project for training for skill development

a) **Objective**

- To let new labor force which have low opportunity be developed for knowledge and skill in the same time
- To upgrade knowledge and skill for labor force in the enterprise which can adapt for the change of production technology

b) **Project Period**

- September - December 1998

c) **Budget Expenditure**

42.40 million Bt.

d) **Performance**

- Training 1000 persons for the field of electrical / electronic industries, automobile parts.

No. 24 Project for trading firm to promote small and medium export industry

a) **Objective**

- To support the credit for export for SMEs by passing through international trading firm.
- To support trading firm to cooperate and assist SMEs in increasing of export.

b) **Project Period**

- 1998 - 2000

c) **Budget**

5,000 million Bt. for loan with low interest

d) **Performance**

- Producers and exporters of SMEs can operate the business and survive during economic recession.
- Strengthen trading firms, producers and exporters of SMEs
- Export value can expand during economic recession.
- No increase of jobless burden of labor
- maintain liquidity of business system and movement of industrial system.

Automotive Institute

Automotive Institute, an independent organization under Industrial Development Foundation - Ministry of Industry, was established to be the center of automotive industry's activities, which include all the related developmental and promotional activities. The primary objective of the institute is to enhance the competitiveness of the Thai automotive industry in the global market.

Responsibilities

The responsibilities of Automotive Institute could be classified into four areas.

1. Provides a variety of testing for automobiles, automotive parts, as well as raw materials in the following areas;
    - ⇨ Emission Testing:
        - Petrol and Diesel Automobile
        - Motorcycle
    - ⇨ measuring toxic fume from petrol engine
    - ⇨ Safety Testing:
        - Safety belt
        - Safety Glass
        - Helmet
    - ⇨ Product Testing:
        - Automobile and Motorcycle Tire
        - Automobile and Motorcycle Exhaust Pipe
        - Automobile and Motorcycle Brake Pad
        - Two-Strokes Engine Motor Oil
        - Lead-Acid Battery
    - ⇨ Material Testing: metal, plastic, and rubber

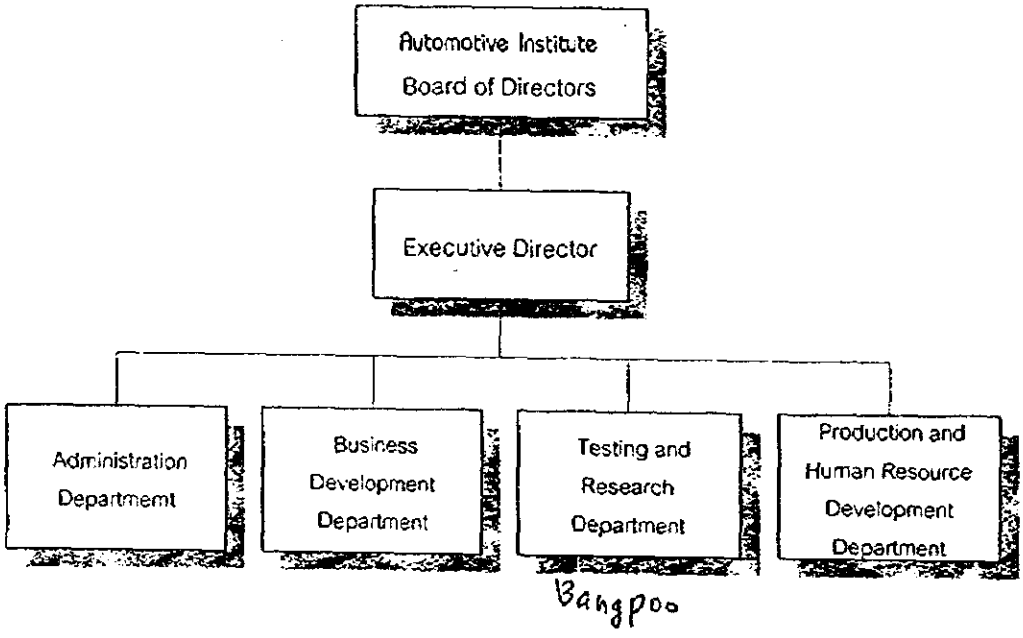
2. Disseminates automotive-related information as well as provides consultation and training to elevate the standard of Thai automotive industry to the international level

3. Coordinates and cooperates among related agencies, including governmental/ private and local/international agencies, to ensure systematic development of the Thai automotive industry

4. Conducts research on automotive-related topics in order to make recommendation on policies, strategies, and development plans for the industry

Organization

At Present, Automotive Institute is managed by Mr. Padetpai Meekuniam (Deputy Permanent Secretary, Ministry of Industry - acting Automotive Institute Executive Director) under the guidance of Automotive Institute Board of Directors, which consists of representatives from governmental, private as well as educational agencies. Automotive Institute organization structure during its inception is as follows.



The following list is the current members of the Automotive Institute Board of Directors.

1	Permanent Secretary, Ministry of Industry (Preecha Attavipath)	Chairman of the Board
2	Budget Director, The Bureau of the Budget (Seri Suksathaporn)	Director
3	Director-General, Department of Export Promotion (Sanit Vorapanya)	Director
4	Director-General, Department of Skill Development (Som Suppanakorn)	Director
5	Director-General, Department of Industrial Promotion (Manu Leopairote)	Director
6	Secretary-General, Thai Industrial Standards Institute (Kanya Sinsakul)	Director
7	Director-General, Office of Industrial Economics (Cherdpong Siriwit)	Director
8	Director, National Metal and Materials Technology Center (MTEC) (Asso. Prof. Harit Sutabutr, Ph.D.)	Director
9	Chairman of Automotive Industry Club, The Federation of Thai Industries (Ninnart Chaithirapinyo)	Director
10	Chairman of Auto-Parts Industrial Club, The Federation of Thai Industries (Prakitti Siripraiwal)	Director
11	President of The Thai Automotive Industry Association, Thai Automotive Industry Association (Ninnart Chaithirapinyo)	Director
12	President of Thai Auto-Parts Manufacturers Association, Thai Auto-Parts Manufacturers Association (Pramot Pongthong)	Director
13	Chairman, Thai Society of Automotive Engineers (Prof. Phulporn Saengbangpla, Ph.D.)	Director

14 Kavee Vasuvat Director
(Honorary President of the Thai Automotive Industry AssociationThai Automotive Industry Association)

15 Kesha Lawanyawatna, Ph.D Director
(Governor, Thailand Institute of Scientific and Technological Research)

16 Khemadhat Sukondhasingha Director
(Secretary-General, The Federation of Thai Industries)

17 Prasit Tansuvan Director
(Executive Director, Thailand Productivity Institute)

18 Prof. Phulporn Saengbangpla, Ph.D Director
(Faculty of Engineering, Chulalongkorn University)

19 Padetpai Meekuniam Executive Director and Secretary
(Deputy Permanent Secretary, Ministry of Industry - Acting Automotive Institute Executive Director)

Thai Automotive Industry

Due to the Asian financial and economic crisis that has begun in 1997, the Thai automotive industry has taken a serious strike. The production and sales has declined sharply and continuously. Enhancing the industry's ability to compete in the global market is a primary agenda of the current government.

The following section provides an overview of the Thai automotive industry at the present time, in terms of its production capacity, sale, export, and import. Detail information is presented in the Appendix.

Production

- Vehicle: There are 16 vehicle-assembly factories, which have the total capacity of 910,800 units per annum. These include Auto Alliance Co., Ltd., the newest assembler, which has started its operation in mid 1998. The total annual production capacity in 1999 will increase to 950,800 units, due to the addition of

General Motors (Thailand) Co., Ltd. The current production capacity of each assembler is shown in the Appendix.

During the first 8 months of 1998, the total of 93,615 units has been assembled. This indicates a 70 percent decrease from the same period of 1997 in which the total production was 310,540 units. The production of medium and heavy-duty truck has had the largest shrinkage, followed by that of passenger car and small truck respectively.

- Motorcycle: There are 5 assembly factories, which can provide the total annual production of 2,200,000 units. The actual production volumes in 1996 and 1997 were 1,437,794 and 1,081,044 units respectively. These indicate the volume reduction of 25 percent in 1997 compare to 1996. Between January and August this year, the actual assembly volume was 412,281 units, dropping from 832,727 units of the same period last year or roughly 50 percent.

- Auto-parts: There are approximately 600 auto-part makers, including both OEM and REM. Major local parts are engine, steering wheel system, safety parts, body parts, electronic parts, accessory parts, tire, plastic, and glass. Production volume of the auto-parts industry has always correlated with that of the automotive industry. It is anticipated that foreign investment into this industry will slow down for the next few years.

Sale

- Automobile and truck: As the result of the economic crisis, vehicle sale has plunged. The sale volume in 1997 was 363,156 units, falling from 589,126 units in 1996 or around 38 percent. The sale volume during the first 8 months of 1998 shows the continuous decline, in which the auto sales decreased by 71 percent to 308,291 units from 896,610 units last year.

Sale volumes of the market leaders are: Toyota 23,152 units, Isuzu 21,638 units, Honda 10,737 units, Nissan 8,888 units, Mitsubishi 8,212 units, Mazda 4,435 units and, others 12,548 units.

- Motorcycle: Motorcycle sales has grown steadily during 1993 to 1996. Unfortunately the sale droped seriously because of the economic crisis. Motorcycle sale volume in 1997 decreased by more than 26 percent from 1996. This year, the motorcycle sale during the first 8 months was 381,962 units.

Export

Thai automobile exporter has taken advantage from the sharp devaluation of the baht currency, which resulting in a sharp increase export value of vehicles, motorcycle and auto-parts. In 1997, the total export value was 40,031 million baht (42,265 units) increased by nearly 90 percent from 1996.

During the first 8 months of 1998, the export value of automobiles and trucks were 17,107 million baht, auto-parts and components were 13,169 million baht, motorcycles were 2,778 million baht, and motorcycle-parts and components were 4,156 million baht. These resulted in the total export value of 37,210 million baht. It is anticipated that the vehicle export volume in 1998 will be around 65,000 units, a 42 percent increase from 1997. Major exporters consist of Mitsubishi, Toyota, Honda and Isuzu.

In addition, it is expected that the export value of engine in 1998 will increase by 24 percent from 1997, resulting in a total exported value of 2,500 million baht. The engine-exporters are Siam Toyota (1,600 million baht), Isuzu (490 million baht), and Nissan (430 million baht).

Import

- Vehicles: The import of vehicles reached its peak in 1995, with the total value of 44,798.4 million baht. However, due to the crisis, it has dropped to 37,364.2 million baht and 18,524.1 million baht in 1996 and 1997 respectively.

- Motorcycle: Motorcycle import value has always been insignificant. The import value of motorcycles between 1994 and 1997 were 29.8, 12.2, 41.1, and 48.7 million baht respectively. On the other hand, motorcycle-components and

parts imports were much more significant. The import values between 1994 and 1997 were 7,200, 9,348, 6,317, 3,562 million baht respectively.

- Auto-parts and components: The import value of auto-parts and components between 1994 and 1997 were 51,269, 77,094, 79,466, 45,116 million baht respectively .

During January to August this year, the import value of vehicles was 3,042.3 million baht, auto-parts and components was 8,535.7 million baht, motorcycle was 10.3 million baht, and motorcycle-parts and components was 1,303 million baht. This results in the total import value of 12,889.3 million baht

See the following Appendix for more detail

Summary of Thai Automotive Industry

	[illegible] Truck	[illegible]	[illegible]
Number of Company	16 + 1 [illegible]	5	600
Production Capacity	[illegible]	[illegible]	
1998	910,800 + 40,000	2,200,000	n/a
Actual Production	[illegible]	[illegible]	
1996	547,312	1,437,794	n/a
1997	360,303	1,081,044	n/a
1998+	93,615	412,281	n/a
Total Sale	[illegible]	[illegible]	
1996	589,126	1,235,000	n/a
1997	363,156	907,584	n/a
1998+	89,610	381,962	n/a
*1998**	*135,000*	*500,000*	*n/a*
Export	[illegible]	[illegible]	
1996	4,902	4,210	11,920
1997	18,417	4,696	16,917
1998+	17,107	2,778	17,326
Import	[illegible]	[illegible]	
1996	37,364	41	85,784
1997	18,524	49	48,679
1998+	3,042	10	9,837

+ January through August 1998

** 1998 Estimated Figure*

Summary of Thai Automotive Industry

	Auto & Truck	Motorcycle	OEM & REM
Number of Company	[illegible]	5	600
Production Capacity	[illegible]	[illegible]	[illegible]
1998	[illegible]	2,230,000	n/a
Actual Prodution	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	n/a
[illegible]	[illegible]	[illegible]	n/a
[illegible]	[illegible]	412,281	n/a
Local Sale	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	n/a
[illegible]	[illegible]	[illegible]	n/a
[illegible]	[illegible]	[illegible]	n/a
[illegible]	[illegible]	[illegible]	n/a
Export	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	4,210	11,920
[illegible]	[illegible]	4,636	16,911
[illegible]	[illegible]	2,778	17,326
Import	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	41	85,784
[illegible]	[illegible]	40	49,679
[illegible]	[illegible]	1	3,837

PRODUCTION CAPACITY OF AUTOMOTIVE INDUSTRY IN THAILAND IN 1998

VOLUME : UNIT

NO.	ASSEMBLY FACTORY	PASSENGER	PICK UP	BUS & TRUCK	TOTAL
1	TOYOTA MOTORS (THAILAND) CO., LTD.	100,000	100,000	-	200,000
2	MMC SITTIPOL CO., LTD.	42,000	118,000	14,400	174,400
3	ISUZU MOTORS (THAILAND) CO., LTD.	-	110,000	20,000	130,000
4	SIAM NISSAN AUTOMOBILE CO., LTD.	-	78,000	3,900	81,900
5	HONDA CARS MFG. (THAILAND) CO., LTD.	50,000	-	-	50,000
6	SIAM MOTOR & NISSAN CO., LTD.	31,200	-	-	31,200
7	SUKOSOL MAZDA MOTOR INDUSTRY CO., LTD.	6,000	24,000	-	30,000
8	BANGCHAN GENERAL ASSEMBLY CO., LTD.	20,000	-	-	20,000
9	THONBURI AUTOMOTIVE ASSEMBLY CO., LTD.	13,500	-	1,400	14,900
10	YMC ASSEMBLY CO., LTD.	12,000	-	-	12,000
11	THAI RUNG UNION CARS CO., LTD.	9,600	-	-	9,600
12	THAI HINO INDUSTRY CO., LTD.	-	-	9,600	9,600
13	THAI SWEDISH ASSEMBLY CO., LTD.	6,000	-	-	6,000
14	SIAM VMC AUTOMOBILE CO., LTD.	-	6,000	-	6,000
15	MOTOR & LEASING (THAILAND) CO., LTD.	-	-	200	200
16	AUTO ALLIANCE (THAILAND) CO., LTD.	-	135,000	-	135,000
	SUB TOTAL	290,300	571,000	49,500	910,800
17	GENERAL MOTORS THAILAND	40,000	-	-	40,000
	GRAND TOTAL	330,300	571,000	49,500	950,800

Note : General Motors Thailand will start operating in 1999.

PRODUCTION CAPACITY OF MOTORCYCLE INDUSTRY IN THAILAND IN 1998

NO.	ASSEMBLY FACTORIES	UNITS
1	THAI HONDA MANUFACTURING CO., LTD.	1,000,000
2	THAI SUZUKI MOTOR CO., LTD.	500,000
3	SIAM YAMAHA CO., LTD.	480,000
4	THAI KAWASAKI MOTORS CO., LTD.	150,000
5	INTERNATIONAL VEHICLE CO., LTD.	70,000
	TOTAL	2,200,000

SOURCE : INDUSTRIAL ECONOMICS OFFICE

Production volume of Automotive Industry in Thailand

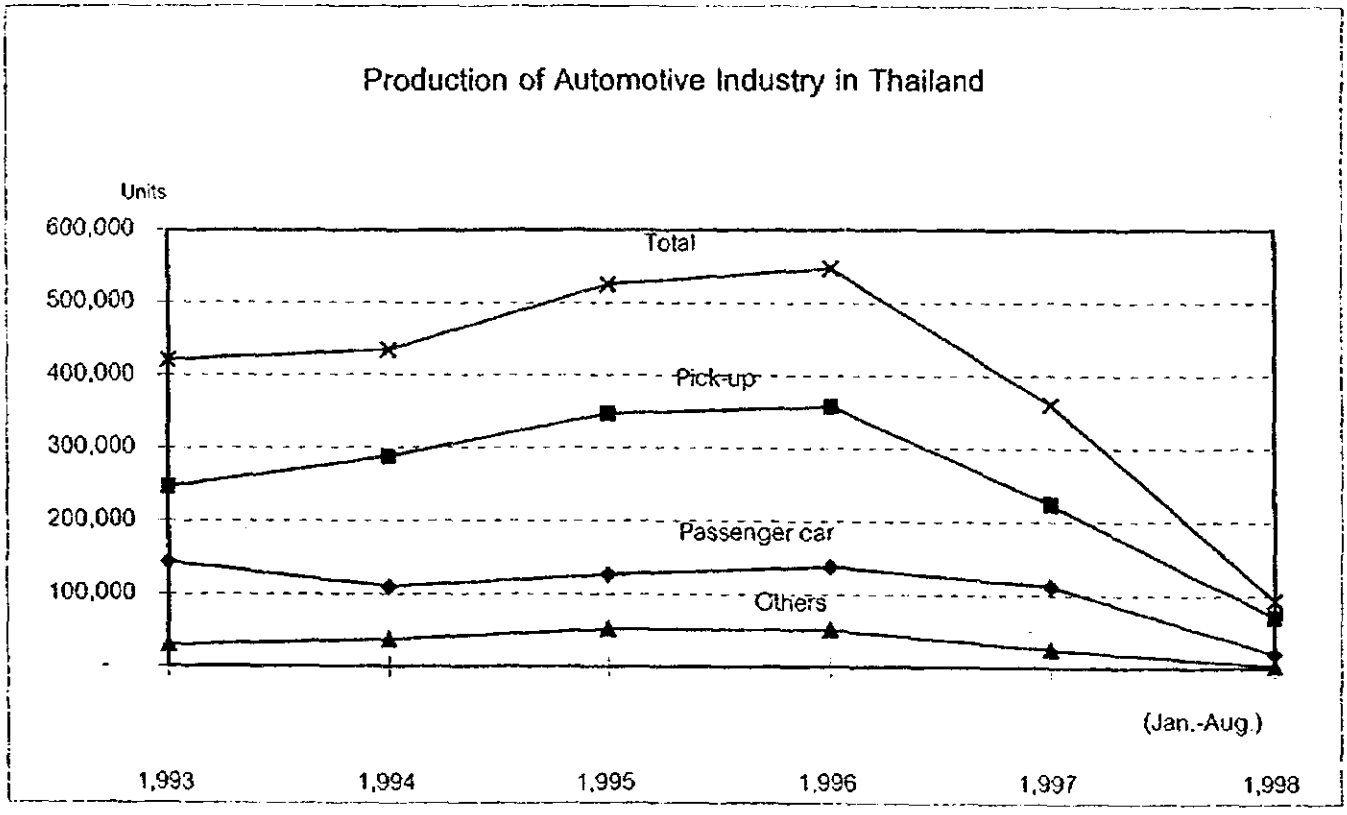
Units

Type of vehicle	Year					Compare '97 and '98		
	1,993	1,994	1,995	1,996	1,997	1997(Jan.-Aug.)	1998(Jan.-Aug.)	Change %
Passenger car	144,449	109,830	127,242	138,579	112,041	97,997	19,937	-79.7%
Pick-up truck	245,903	287,284	346,790	357,802	223,243	189,020	70,929	-62.5%
Van and Micro-buses and OPV	1,770	1,738	1,625	3,639	1,977	1,657	1,147	-30.8%
Buses	1,056	1,146	1,726	609	554	398	411	3.3%
Medium and Heavy duty truck	26,893	34,003	48,297	46,683	22,488	21,468	1,191	-94.5%
Total	420,071	434,001	525,680	547,312	360,303	310,540	93,615	-69.9%

Notes : 1. From 1996 Van and Micro bus is including OPV

2. Pick up means 1 ton and less than 1 ton pick up

Source : Automotive Industry Association

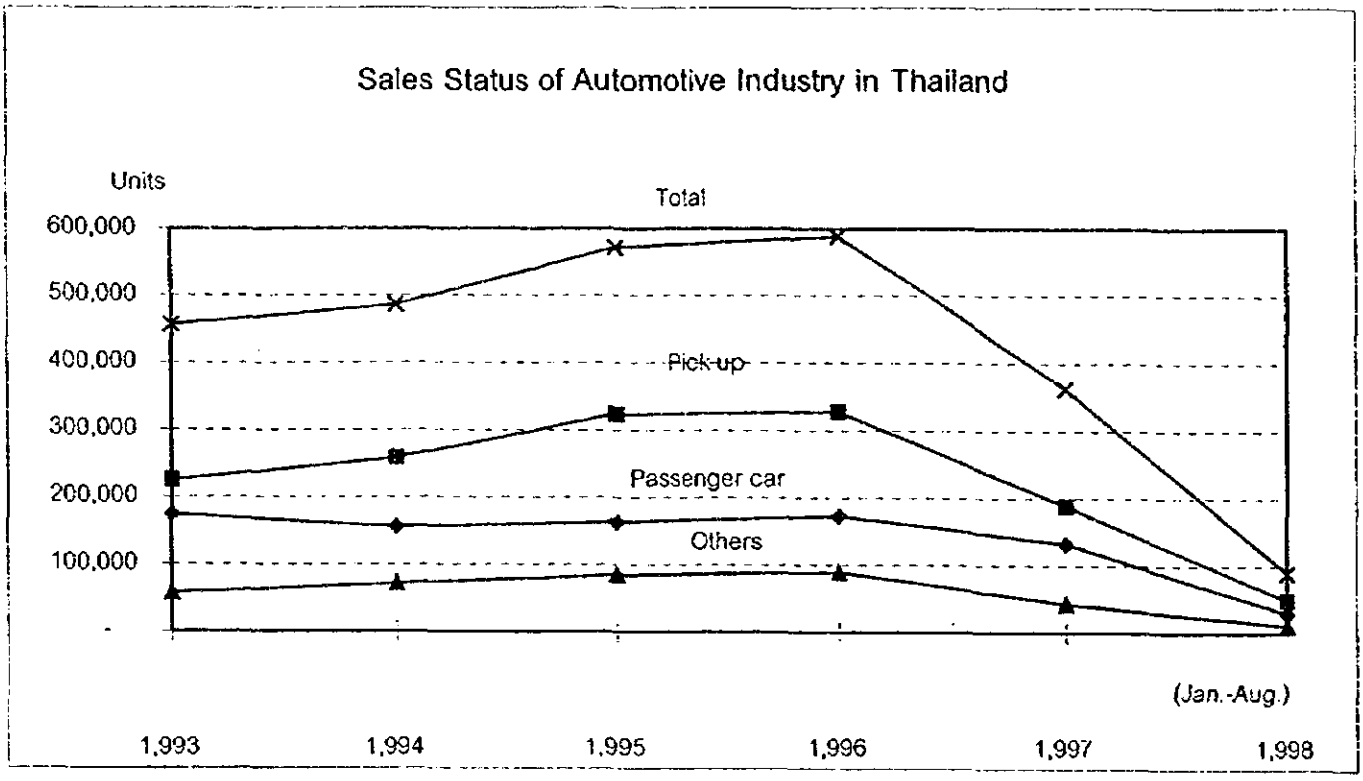


Sales volume of Automotive Industry in Thailand

Units

Type of vehicle	Year					Compare '97 and '98		
	1,993	1,994	1,995	1,996	1,997	1997(Jan.-Aug.)	1998(Jan.-Aug.)	Change %
Passenger car	174,162	155,670	163,371	172,730	132,060	111,990	29,555	-73.6%
Pick-up truck	224,388	258,091	323,813	327,663	188,324	159,921	48,740	-69.5%
Van and Micro-buses and OPV	11,727	12,672	12,425	12,633	8,353	7,045	1,912	-72.9%
Buses	12,717	14,139	16,383	16,683	9,021	8,063	1,984	-75.4%
Medium and Heavy duty truck	15,573	22,312	31,766	31,814	11,275	9,800	2,581	-73.7%
Others	17,894	22,794	23,822	27,603	14,123	11,472	4,838	-57.8%
Total	456,461	485,678	571,580	589,126	363,156	308,291	89,610	-70.9%

Source : Automotive industry Association

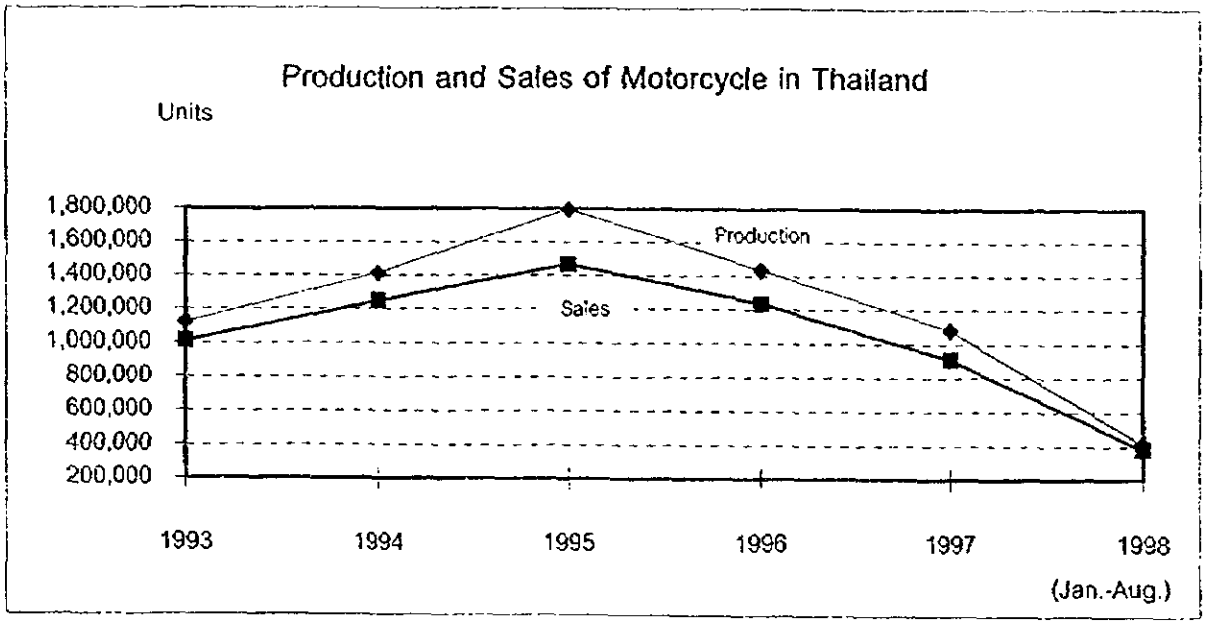


Production and Sales volume of Automotive Industry in Thailand

Units

	Year						
	1993	1994	1995	1996	1997	(Jan.-Aug.) 1998	Change %
Production	1,122,656	1,413,890	1,797,072	1,437,794	1,081,044	412,281	-50.5%
Sales	1,009,565	1,246,322	1,466,051	1,235,000	907,584	381,962	-49.1%

Source : Automotive Industry Association



Export Value of Automotive Industry in Thailand

Unit : million baht

Type of vehicle	Year				
	1994	1995	1996	1997	1998(Jan.-Aug.)
Vehicle	2,149.7	2,350.7	4,901.6	18,417.3	17,106.6
Parts and Components	17,440.4	11,636.4	10,927.0	14,343.4	13,169.4
Motorcycle	3,159.5	3,724.3	4,209.7	4,695.5	2,777.9
Components parts of motorcycle	820.9	999.0	992.7	2,574.8	4,156.2
Total	23,570.5	18,910.4	21,031.0	40,031.0	37,210.1

Source : Commercial Economics Department

Import Value of Automotive Industry in Thailand

Unit : million baht

Type of vehicle	Year				
	1994	1995	1996	1997	1998(Jan.-Aug.)
Vehicle	43,802.1	44,798.4	37,364.2	18,524.1	3,042.3
Parts and Components	51,269.5	77,094.0	79,466.4	45,116.2	8,533.7
Motorcycle	29.8	12.2	41.1	48.6	10.3
Components parts of motorcycle	7,200.5	9,348.3	6,317.7	3,562.8	1,303.0
Total	102,301.9	131,252.9	123,189.4	67,251.7	12,889.3

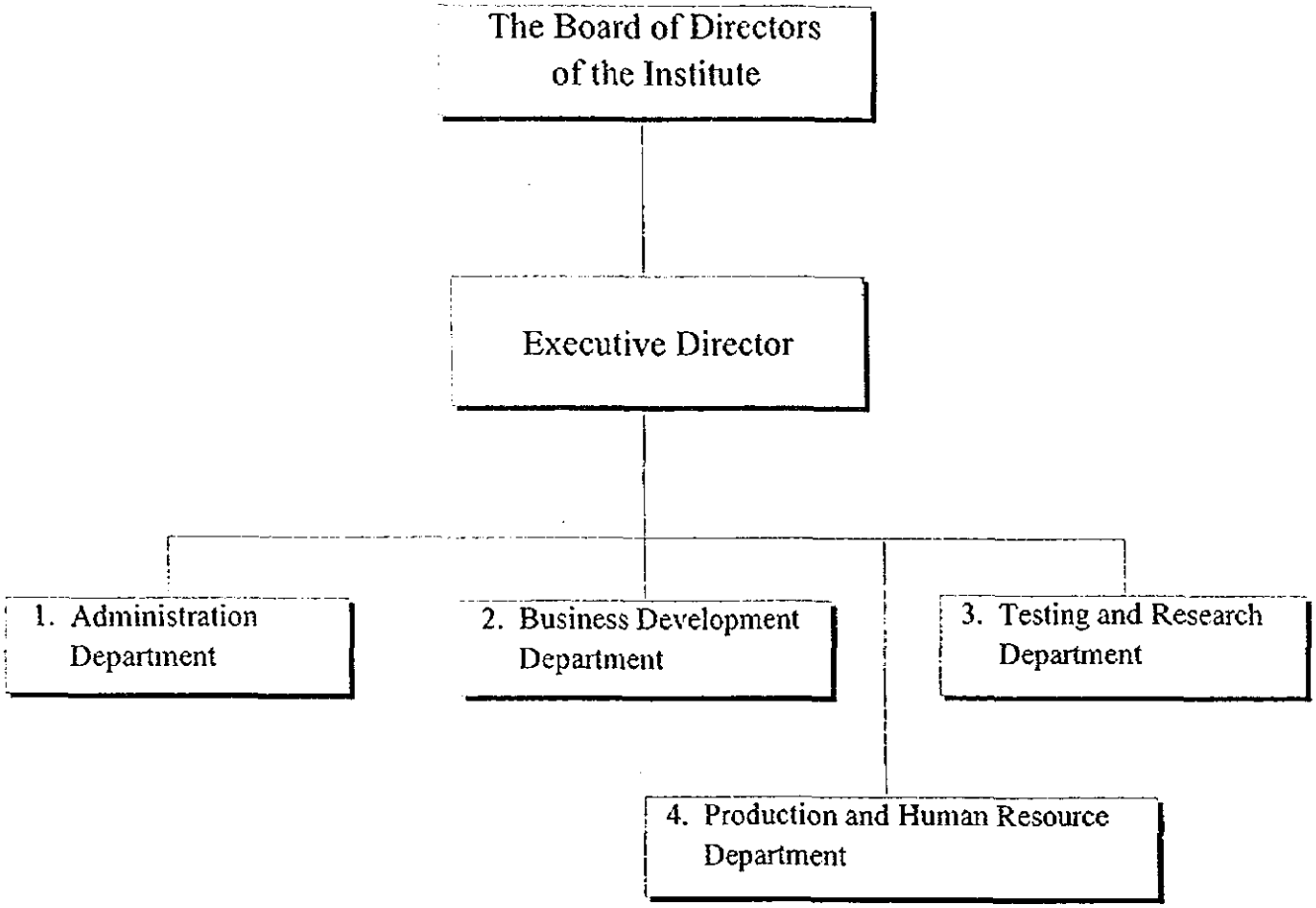
Source : Commercial Economics Department

The Responsibility of the Electrical and Electronics Institute

Electrical and Electronics Institute (EEI), an independent organization under the Industrial Development Foundation - Ministry of Industry, was established on July 7th, 1998, with the objective to strengthen the competitiveness of Thai electrical and electronics industry in the emerging free markets. The institute is managed by an executive director under the provision of EEI board of directors, which consists of representatives from governmental, private and academic agencies. The responsibilities of the institute are as follows :

1. Provides quality, safety and environmental testing for electrical and electronic products.
2. Disseminates related information on production, technology, and trade
3. Coordinates and cooperates with the governmental and private sectors both domestic and international levels to develop the industry and its related businesses as well as to improve knowledge and skills of the workforce
4. Conducts relevant studies in order to make recommendations on policies, plans, and measures for developing and solving problems of the industry

Organization Chart
Electrical and Electronics Institute



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The List of the Board of Directors of the Electrical and Electronics Institute

No.	Name-Surname	Position of the Board	Title	Organization/Company
1	Mr. Preecha Attavipach	Chairman	Permanent Secretary	Ministry of Industry
2	Miss Supattra Sungmonkol	Committee	Budget Director	The Bureau of the Budget
3	Mr. Piyasvasti Amranand	Committee	Secretary General	National Energy Policy Office
4	Mr. Sanit Vorapanya	Committee	Director General	Department of Export Promotion
5	Mr. Manu Leopaiboon	Committee	Director General	Department of Industrial Promotion
6	Miss Kanya Sinsakul	Committee	Secretary General	Thai Industrial Standards Institute
7	Mr. Cherdpong Siriwit	Committee	Director General	The Office of Industrial Economics
8	Mr. Viravat Chlayon	Committee	Governor	The Electrical Generating Authority of Thailand
9	Dr. Thongchai Yongchareon	Committee	President	Telephone Organization of Thailand
10	Dr. Thaweesak Koanantakool	Committee	Director	National Electronics and Computer Technology Center
11	Mr. Udom Chatiyanonda	Committee	Representative	The Federation of Thai Industries
12	Mr. Suraporn Simakulthorn	Committee	Representative	The Federation of Thai Industries
13	Mr. Kietphong Noichaiboon	Committee	Representative	The Federation of Thai Industries
14	Dr. Katiya Greigarn	Committee	Representative	The Federation of Thai Industries
15	Mr. Supachai Suthipongschai	Committee	Representative	The Federation of Thai Industries

No.	Name-Surname	Position of the Board	Title	Organization/Company
16	Mr. Kreetha Thienlikit	Committee	Representative	The Federation of Thai Industries
17	Mr. Thavisakdi Thangsuphanich	Committee	President	The Computer Association of Thailand under H.M. The King's Patronage
18	Prof.Dr. Pramoht Unhavaithaya	Committee	President	Merdian Technologies Co., Ltd.
19	Dr. Narong Yoothanom	Committee	President	The Engineering Institute under H.M. The King's Patronage
20	Mr. Kosol Petchsuwan	Committee	Secretary General	The Telecommunications Association of Thailand
21	Dr. Jamnarn Hokierti	Committee	Assoiate Professor	Electrical Engineering Department, Kasetsart University
22	Mr. Direk Charoenphol	Committee	Advisor	Telephone Organization of Thailand
23	Mr. Praphad Phodhivorakhun	Committee	President	Kang Yong Electric Public Co., Ltd.
24	Mr. Prayoon Shiowattana	Committee	Director	National Institute of Metrology (Thailand)
25	Prof. Dr. Pairach Thajchayapong	Committee	Director	National Science and Technology Development Agency
26	Dr. Viphandh Roengpithya	Committee	President	Viptel Co., Ltd.
27	Mr. Sompong Nakornsri	Committee	President & CEO	Bangkok Cable Co., Ltd.
28	Mr. Saengchai Ekpatanaparnich	Committee	President	Thepharak Transformer Co., Ltd.
29	Mr. Padetpai Meekun-Iamm	Committee and Secretary	Deputy Permanent Secretary (Action Director General)	Ministry of Industry (Electrical and Electronics Institute)

THE ELECTRONICS INDUSTRY

IN THAILAND

Thailand's electronics industry is roughly 30 years old. It has come to occupy a central place in Thailand's economic development .

INDUSTRIAL STRUCTURE

The electronic industry can be grouped into the following categories :

- Consumer electronics (including TV, radio, audio , video cassette recorder , camcorder and electronic watches)

- Office equipments (including copying machine , facsimiles , typing machine , calculator , computer)

- Telecommunications equipments (including telephones , mobile , sattlite reciever)

- Industrial electronic equipment (including circuit breaker , switch gear , power transformer , numerical control system)

- Electronic parts & components (including ICs , semiconductor devices , cathode ray tube , passive components , PCBs , transformer)

Another important sector closely related to computer industry is software.

THAI ECONOMY AND ELECTRONICS INDUSTRY

Thailand's electronics industry has outperformed the manufacturing sector and economy as a whole. The industry have accelerated dramatically within the last 12 years.

The rapid flow of investment capital has made electronics industry into an increasingly important contributor to the Thai economy, in terms of manufacturing value added , exports , and employment.

VALUE ADDED

During 1985 - 1989, electronics production grew at a compound annual rate of 34.2% while GDP growth averaged 10%. In 1995 , the contribution of the value added generated from electronics and electrical industry (TSIC code 383 ; including calculating machinery in 38250) to the total value added generated by the manufacturing sector accounted for 13.83 % ; amounting to 125,469 Million Baht (US$ 4,920 million).

INVESTMENT

Due to the investment promotion law ; especially export oriented promotion , foreign investors have come to settle export base in Thailand. In 1995 foreign direct investment in electrical and electronics industry has totally valued 47,192 Million Baht, 26.39% from Japan, 13.44% from Hong Kong, 13.41% from USA, 6.41% from Europe respectively.

In 1996 , there were 31 electronics manufacturing projects promoted by Board of Investment , totally valued US$ 627.5 millions.

EMPLOYMENT

It was estimated that there were totally 333,000 employment in electronic industry in 1996.

EXPORT

Electronics goods has now played the leading role in export. The average growth rate amounted to 43% per annum during 1970 - 1995 The export of electrical and electronics goods valued 487,267 Million Baht in 1996 and increased to 632,777 Million Baht in 1997.

TV is the main products for consumer group. Beside supplying domestic market , it can be exported to international market. In 1997 , Thailand exports TV and parts in the value of 43,579 Million Baht. While hard disk drives for computers , keyboards , and telephones are the main products for office automation and telecommunications equipments group.

Thailand has also become a major manufacturing / assembly base for a number of electronic and related components such as ICs , PCBs , miniature ball bearings , stepping motors , and computer cords & cables.

IMPORT

The total value of import of electrical and electronic products and parts was 518,082 Million Baht in 1997. The top five of them were

- Integrated circuits 123,035 Million Baht
- Computer peripheral and parts 95,293 Million Baht
- Circuit breaker and parts 39,466 Million Baht
- Motor, Generator and part 38,470 Million Baht
- Wire & cable 20,382 Million Baht

POLICY FRAMEWORK

In 1996 , Ministry of Industry has set "The guidelines for development of Thai's Electronics Industry ; during 1996 - 2000". It can be summarized into the following :

1. Five products are considered to be the target products for development ; these are;

   1) wafer fabrication
   2) integrated circuit design
   3) optic fiber manufacturing
   4) switching and transmission equipments for telecommunication
   5) software industry

2. Six strategic measures for development of electronics industry have been set.

   1) Special zones for electronics industrial development will be considered in order to facilitate processing and trade of electronics industry.

   2) Restructuring custom taxes in order to promote processing of parts and components and supporting industry, and also strengthen the capabilities of Thai's electronic products in the world's market.

   3) Strengthen standardization of Thai's electronic industry in order to keep with the world's standardization.

   4) Deregulate the government's approving and licensing system in order to reduce costs and times of production and trade of electronic industry.

   5) Human resources planing for electronics industry will be considered ; both in educational programs and training programs.

6) Technological base planing for future development of electronics industry will be considered. Research and development activities , multinational or joint venture in research and development activities will be promoted.

"The guidelines for development of Thai's Electronics Industry ; during 1996 - 2000" has already been approved by the Cabinets on 24th September 1996.

INVESTMENT PROMOTION POLICY

In order to induced foreign invester , Investment Promotion Committee has recently announced new measures those can be summerized below :

1. Tax exemption for machineries imported for using in 36 activities (including electrical and electronic factories) located in zone 1 and 2.

2. High value added projects or labour - intensived projects located in zone 1 and 2 can expand production capacity and gain more previlledges.

3. Tax exemption for raw material for export projects

MINUTES OF MEETING

OF

FOLLOW UP STUDY

ON

SUPPORTING INDUSTRIES

IN

THE KINGDOM OF THAILAND

Bangkok, December 16, 1998

Manu Leopairote
Director-General
Department of Industrial Promotion
Ministry of Industry
The Kingdom of Thailand

Kenji Iwaguchi
Resident Representative
JICA Thailand Office
Japan International Cooperation Agency
Japan

I. Introduction

The Government of Japan has decided to conduct a Follow Up Study on the Development of Supporting Industries (hereinafter referred to as "the Study") in accordance with the Agreement on Technical Cooperation between the Government of Japan and the Government of the Kingdom of Thailand signed on November 5, 1981.

Accordingly, the Japan International Cooperation Agency (hereafter referred to as "JICA"), the official agency responsible for the implementation of technical cooperation program of the Government of Japan, will undertake the Study in close cooperation with the authorities of the Kingdom of Thailand.

II. Objective of the Study

The objective of the Study is to formulate the long-term and short-term programs for the development of Small and Medium Enterprises in the Kingdom of Thailand by reviewing the proposed programs in Final Report of the previous study on the Development of Supporting Industries submitted in March 1995 (hereinafter referred to as "the Previous Study").

III. Scope of the Study

In order to achieve the above objective, the Study will cover the following items.

1. Review of the change in background and relevant conditions after the economic crisis such as.
   - 1.1. General economic situation in Thailand; and
   - 1.2. Contribution of Small and Medium Enterprises to the economy

2. Review and analysis of the programs proposed in the Previous Study through the visits to the related agencies and to companies (50-100 in total; half of them are from companies visited in the Previous Study in Automotive and Electric & Electronics industries so that the Japanese team can utilize data for Institute plans, and the rest are from other 11 industries targeted under the Industrial Restructuring Plan.)

3. Formulation of the long-term programs by:
   - 3.1. Modifying the proposed programs on:
     - 3.1.1. Policy & registration;
     - 3.1.2. Market development;
     - 3.1.3. Technology upgrading;
     - 3.1.4. Financial supports;
     - 3.1.5. Management Upgrading; and
     - 3.1.6. Investment promotion
   - 3.2. Adding development of:
     - 3.2.1. Enterprise Diagnostic System; and
     - 3.2.2. Other programs

4. Formulation of the short-term programs with:
   - 4.1. The urgent programs for Small and Medium Enterprises; and
   - 4.2. The action plans of Automotive and Electrical & Electronics Institutes on:

4.2.1. Information and consultation;
4.2.2. Coordination among related agencies;
4.2.3. Research and policy recommendation; and
4.2.4. Testing

IV. Work Schedule

The Study will be carried out in accordance with the attached tentative work schedule.

V. Reports

JICA shall prepare and submit the following reports in English to the Government of the Kingdom of Thailand in accordance with the attached tentative work schedule.

1.	Inception Report	10 copies	(Beginning of March, 1999)
2.	Interim Report	30 copies	(Middle of July, 1999)
3.	Draft Final Report with a summary	30 copies	(Middle of September, 1999)
4.	Final Report with a summary	30 copies	(End of September, 1999)

The short-term programs are included in Interim Report.

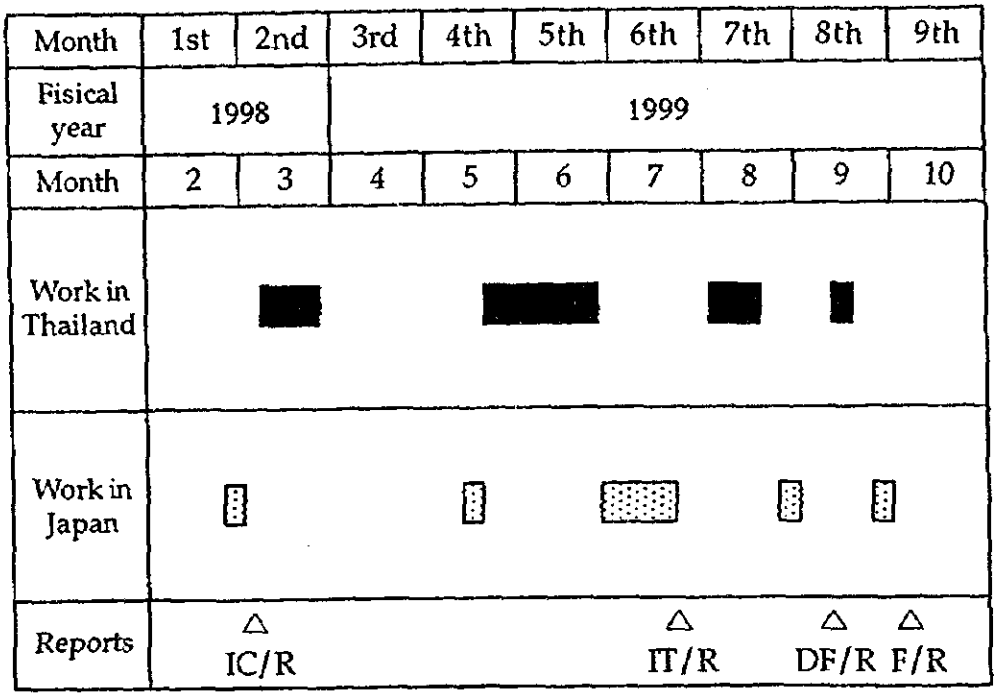
VI. Undertaking

The Government of the Kingdom of Thailand and JICA would take responsibilities for the implementation of the Study respectively in accordance with the undertaking in the Scope of Work of the Previous Study.

VII. Others

JICA and Department of Industrial Promotion, Ministry of Industry shall consult with each other in respect of any matter that may arise from or in connection with the Study.

Tentative Schedule for The Follow Up Study
on the Development of Supporting Industries in the Kingdom of Thailand



JICA

…国 鉱工業プロジェクト選定確認調査 報告書

1999年1月

国際協力事業団 鉱工業開発調査部