タイ王国鉱工業プロジェクト選定確認
調査報告書

昭和61年９月

国際協力事業団

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1. 調査の目的

タイの工業製品の国際競争力強化による輸出振興及び国産品の輸入品に対する競争力の確保を図るためには，工業製品の検査・規格のレベル・アップが不可欠である。

現在，TISTR[*1]の検査部門TSC[*2]がサンプルを検査し，その結果に基づき規格を管轄するTISI[*3]が製品に対してライセンスを発給するシステムとなっているが，上記の観点から，TSCの機能強化を中心に，検査・規格システムの包括的見直しを図るため，JIS制度で経験の深い日本に対し工業検査・規格開発計画調査実施の要請があった。

今回調査においては，本プロジェクトの要請の背景や具体的内容等につき確認するとともに，併せて，既に要請がありながら内容の不明確なプロジェクト及び今後我が国に正式要請の可能性のあるプロジェクトにつき，それらの背景及び経済開発計画における位置付け等を調査し，優良かつ調査実施の可能性が高いプロジェクトの発掘・選定・確認を行うことを目的とする。

2. 調査団の構成

氏　名	担当分野	所　属
三浦計治	団長・総括	国際協力事業団　鉱工業計画調査部長
伊藤隆	工業検査・規格	通商産業省　計量研究所　計量システム部
塩沢文朗	国際規格	〃　工業技術院　標準部　国際規格室
畑幸宏	工業用水行政	〃　立地公害局　工業用水課
田巻光芳	公害防止行政	〃　〃　公害防止指導課
宮沢忠雄	工業用水	㈱日本総合研究所
富永哲郎	大気汚染	〃
加藤正明	業務調整	国際協力事業団　鉱工業計画調査部　鉱工業計画課

3. 調査日程

下記の日程にて調査を実施した。

3月16日（日）　東京⟶バンコク

17日（月）　JICA事務所にて日程調整，専門家との意見交換，
日本大使館表敬
DTEC，MOSTEとの協議，JETRO事務所訪問

18日（火）　〔工業検査・規格開発計画調査グループ：以下，工業検査・規格グループ〕
TISTRと協議
〔サムット・プラカン工業地区大気汚染管理計画グループ：大気汚染グループ〕　NEB[*4]と協議

〔工業用水の合理的使用計画グループ：工業用水グループ〕

IWD[*5]と協議

19日（水）〔工業検査・規格グループ〕

TISTRと協議，タイ東芝工場視察

〔大気汚染グループ〕

Thai Tin Plate工場，Bang Poo工業団地，南バンコク火力発電所，モニタリング・ステーション視察

〔工業用水グループ〕

Sahathai製紙工場及びPattraporn鋳造工場（サムット・プラカン）視察

20日（木）〔工業検査・規格グループ〕

TISI及びNESDB[*6]と協議

〔大気汚染グループ〕

チュラロンコン大学にて意見交換，NEBと協議

〔工業用水グループ〕

IWDと協議，専門家との意見交換

21日（金）JICA事務所，日本大使館に調査結果報告

〔大気汚染グループ〕

IWDと協議

22日（土）バンコク⟶東京

4．主要面会者

日本大使館	知　久　多喜真	一等書記官
JICA事務所	後　藤　教　基	所　長
	四　釜　嘉　總	所　員
JETRO事務所	米　原　高　史	所　員
JICA 専門家	松　本　忠　生	NEB
	田　口　徳　男	首都圏水道公社
	関　　荘一郎	NEB
DTEC	Mr. WANCHAI	Director General
	Mr. SUTIN SUSILA	Chief, Japan-sub Div.
	Mr. SARAYUTH KUNGSADAN	Staff, 〃 .
MOSTE[*7]	Mr. LEK NANA	Minister
	Dr. SANGA SABPASRI	Permanent Secretary General

〔工業検査・規格グループ〕

TISTR	Dr. SMITH KAMPEMPOOL	Governor
	Mr. YENCHAI LAOHAVANICH	Deputy Governor
	Mr. SIRI NANDHASRI	Director TSC
	Mr. SURAPOL VATANAWONG	Chief of Electrical & Electronic Standards Lab.
	Mr. PREECHA DISATHIEN	Chief of Photometry & Temperature Lab.
	Mr. CHUMNONG HAYAKIJKOSOL	Chief of Analytical Chemistry Lab.
	Mr. THANIT THONGTAN	Chief of Mechanical Engineering Lab.
	Miss. SALAISOPHIN KOMARAKUL	Chief of Foreign Relations Div.
	Mrs. PRANEE NANDHSRI	Chief of Biochmistry Lab.
NESDB	Mr. CHAKRAMON PHASUKAVANICH	Director of Industrial Planning Sector
TISI		Director General
	Miss. KANYA SINSAKUL	Director of Certification Div.
Thai Toshiba Electric Industries Co, Ltd. Thai Toshiba Fluorescent Co, Ltd. Toshiba Thailand Co, Ltd.		Mr. KORN SURIYASAT President
Thai Toshiba Lighting Co, Ltd.		Mr. JUN-ICHI TSUKAHARA President
Thai Toshiba Electric Industries Co. Ltd.		Mr. NOBUYUKI HARADA Rice Cooker Electric Fan } Production Coordinator

〔大気汚染グループ〕

NEB	Mr. PRAVIT RUYABHORN	Secretary General
	Mr. ARTHORN SUPAPODOK	Deputy Secretary General
	Mr. PAKIT KIRAVANICH	〃
	Mr. SIRITHAN PAIROJ-BORIBOON	Director of Environment Quality Standards Div.

	Dr. SAKSIT TREDEJ	Head of Air and Noise Pollution Section
	Ms. NOPPAPORN PANICH	Chief of Ambient Air Quality Sub-Section
	Dr. SANGSANT PANICH	Chief of Industrial Air Pollution Sub-Section
	Mr. KANCHAI KRIENG KRIU-DOM	Staff of Air and Noise Pollution Section
	Mrs. MONTHIP TABUCANON	Chief Laboratory and Research Unit
チュラロンコン大学	Dr. VICHITRA CHONGVISAL	Assistant Prof, Dept of Chemical Eng.
	Dr. SURIN SETAMAORIT	Director, Institute of Environmental Research
	Dr. SUTHIRAK SWARITTA-NONTA	Deputy Director, Institute of Environmental Research
IWD	Mr. PRAPAS THANAKUL	Director of Industrial Environment Div.
	Mr. NOPPHORN VIERRA	Chief of Air Pollution Sub-Section
	Mr. SUGHEP PHONGPHAIROJ	Staff
Thai Tin Plate	大 川 順 弘	代表取締役副社長
	三 上 泰 蔵	副社長

〔工業用水グループ〕

IWD	Mr. PISAL KHONGSAMRAN	Director General
	Mr. CH. BOONSONG	Deputy Director General
	Mr. BOONYONG LOHWONGWA-TANA	Director, Office of Industrial Service & Waste Treatment
	Mr. ADISON NAPHARAVANON-TH	Chief of Industrial Water Supply Service Sub-Div., O.I.S.W.T.

	Mrs. KASEMARI HOMCHEAN	Staff of Industrial Water Supply Service Sub-Div, O.I.S.W.T.
Thai Union Paper Mill Co, Ltd.		
	JDTE. DHARMDVANICH	Manager of Manufacturing Div.
Tokai Dyeing Co, Ltd.		
	Mr. PULLOP CHALKUL	Manager of General Affairs & Personnel

5. 調査結果概要

以下のプロジェクトにつき関係機関との協議及び関連工場の視察を行った結果，確認した内容は次の通りである。

(1) 工業検査・規格開発計画調査

① 規格・基準原案は，ＴＩＳＩがＴＩＳＴＲ等の専門家を含めた委員会等を作り作成し，制定する。その作成にあたっては，主要外国規格が参考にされるが，タイ国内の現状に照らし修正される。問題点として，必要な規格作りが遅れていること及び規格水準が低目に設定される傾向があること等が挙げられる。

② タイ国産品の品質を認証するシステムとしては，ＴＩＳＩマーク制度がある。ＴＩＳＩ職員は，工場にサンプリングに行き，ＴＩＳＩが選んだ４６の試験所に送付され，試験される。試験データをもとにＴＩＳＩは認証を行う。ＴＩＳＴＲは，この試験の２０～４０％を受け持つ。

③ タイにおける工業製品の試験は，民間，政府関係機関，大学の検査機関により行われている。この中でＴＩＳＴＲは，ＴＩＳＩマーク関係のＴＩＳＩからの依頼試験，民間企業からの依頼試験，電気，温度（照度）の計量計測器の校正業務を行っている。ＴＩＳＴＲの試験設備は，一部を除き，量・質ともに不足している。

④ タイにおける計量システムは，計量法（1923年）により，一部が商務省，海軍等に分散しており，充分な計量システムが構成されているとはいえない。

ＴＩＳＴＲには，一部の工業標準が置かれているが，その校正は全て外国に依存する形態となっている。

⑤ 第６次経済社会開発５ケ年計画，日・タイ構造調整委員会の白書でも，規格・基準認証，試験，計量システムの整備は，重要な課題として位置付けられ，政府関係者の間でもその必要性について高い認識がある。

⑥ しかしながら，既に提出済のＴ／ＲにあるＴＩＳＴＲのGovernorをChairmanとするＴＩＳＩその他関係機関から成る〃Coordinating Body〃としての機能は充分とはいえず，

ＴＩＳＩ関係者は，本Ｔ／Ｒの内容について了解していない様子が見られた。

｛調査団帰国後，大使館よりの情報では，ＴＩＳＴＲ，ＮＥＳＤＢ，ＴＩＳＩの関係者で調整を図ったところ，本Ｔ／Ｒ中のＳ／Ｗに関し，４.１（工業標準の現状評価），４.４（タイ工業標準の国際標準との比較）を削除するラインでＴＩＳＩが納得した模様である｝

(2) 鉱工業プロジェクト選定確認調査

① サムット・プラカン工業地区大気汚染管理計画

イ）要請の目的・内容

バンコク市効外のサムット・プラカン工業地区における大気汚染管理Master Planの作成を目的とする。具体的内容については以下の通りである。

ⓐ 同地区における大気汚染源の特定

ⓑ 同地区における大気環境改善方法の検討

i）排出ガス基準の検討

ii）短・長期総合的管理計画の策定

iii）総合監視計画の策定

iv）短・長期大気規制・管理政策の検討

v）同地区個別大気汚染源への改善勧告

ⓒ 環境委員会事務局ほか大気汚染分析・監視システム等に関する行政機関の職員について，オン・ザ・ジョブ・トレーニングとしての本プロジェクトへの参画

ロ）確認事項

ⓐ 環境行政は，多数の関係省庁が担当しているため，各省庁の調整機関としてＮＥＢが設置されている。ＮＥＢは各省庁に勧告する権限は有するものの，強制力はない。産業公害の分野はMOI[※8]が担当し，Factory Actに基づいて，水質に関しては規制しているが，大気については規制されていない。

ⓑ サムット・プラカン工業地区は，タイにおける最大の工業県であるが，何ら大気汚染対策が施されていないため，深刻な問題となっている。また，同地区はバンコク市とシャム湾との中間に位置し，地理的に恵まれているため，今後も工業化が進展するものと考えられる。

ⓒ 同地区の大気汚染排出源は，主に固定排出源（工場）であることから，先方はSOx，粉じんを対象物質と考えている。

ⓓ 要請内容は，発生源の把握，汚染状況を把握するためのモニタリング，将来，工場が増設された場合の濃度予測及びモニタリング結果等に基づいた技術的側面から見た汚染対策である。

ⓔ 上記内容については，日本側として基本的に実施可能と思われる。しかし，基準（環境基準，排出基準）そのものの設定・勧告及び大気汚染管理計画そのものの策定につ

いては，関連資料・データの収集は可能であるが，タイ側が判断すべき事項である。

ⓕ NEBは，同地区の大気汚染の現状及び将来に関し，非常に危惧しており，日本側の協力を得て早急に汚染対策に着手したい意向を強く持っている。

② 工業用水の合理的使用計画

イ) 要請の目的・内容

工業用水の合理的使用に係るMaster Planの作成を目的とする。具体的内容は，バンコク市内及び周辺工場地区における

ⓐ 工場内水使用の状況調査

ⓑ 実態分析

ⓒ 水節約の見込量及びコストの計算

ⓓ 工業用水の合理的使用に関する技術指針の策定

を行うことである。

ロ) 確認事項

ⓐ バンコク市では，工場等の地下水の過剰くみ上げにより，年間10㎝もの地盤沈下が生じており，洪水の多発化等深刻かつ緊急に解決しなければならない重大問題となっている。

ⓑ 併せて，工場の廃水による河川水質の悪化が深刻な問題となっており，廃水処理の早期実施が必要である。

注 ＊1 Thailand Institute of Scientific and Technological Research

＊2 Testing and Standards Center

＊3 Thai Industrial Standard Institute

＊4 National Environment Board

＊5 Industrial Works Department

＊6 National Economic and Social Development Board

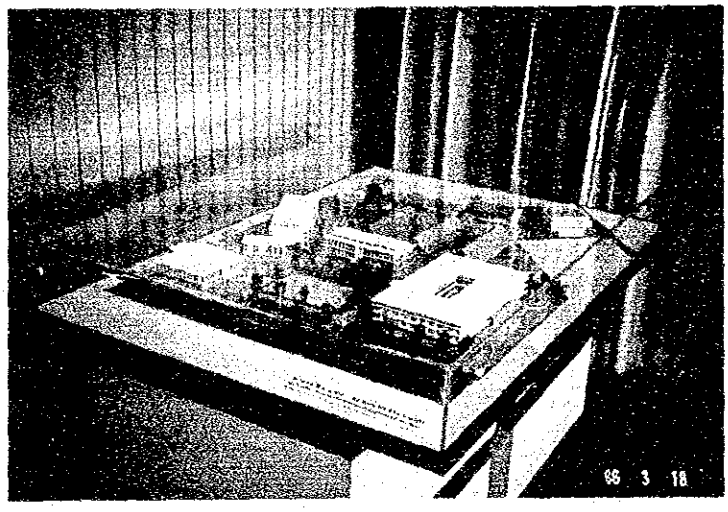
＊7 Ministry of Science, Technology and Energy

＊8 Ministry of Industry

6　工業検査・規格開発計画調査

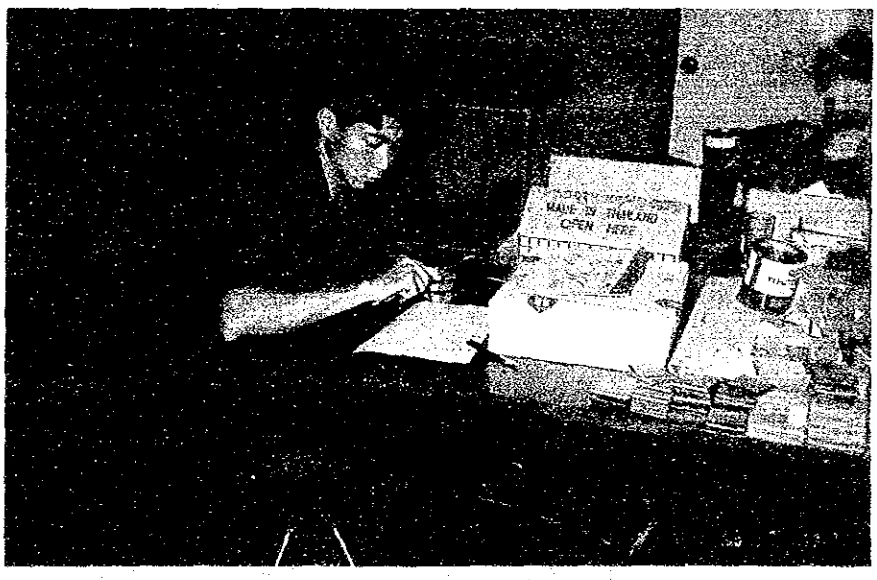
タイ科学技術エネルギー省表敬訪問
Lek-Nana 大臣会見

タイ科学技術研究所（ＴＩＳＴＲ）全景模型



タイ科学技術研究所試験標準センター
（ＴＩＳＴＲ／ＴＳＣ）試験棟

TISTR/TSC 液化石油ガス（LPG）用容器容量試験



TISTR/TSC 磁器タイル寸法検査

6－1　調査の背景及び内容

(1) 背　景

今回のＴＩＳＴＲの開発調査案件の背景として理解すべきことは，以下のとおりである。

1. タイ・日経済関係構造調整白書　　（別添１参照）

〔1985年６月，タイ・日経済関係構造調整小委員会（委員長：ピチャイ副首相）〕

① 対日経済関係の構造改善が必要であるという認識から，短期的，かつ長期的に貿易赤字を是正することを目的とした調整，問題解決の方針の答申，及び構造調整案策定のための計画づくりを行ったもの。

② その中で貿易関係調整の方向の長期的措置として，日本及び第３国の市場の需要に合致するため，タイの工業製品等の産品の基準の改善，また基準検査のための技術開発援助を日本政府に対し要望。

③ また，投資関係調整のための当面の措置として，タイ産品の外国市場参入及び競争力強化のため，生産過程における品質管理制を導入し，生産物の基準を定めるとともに検査を行うとされている。

2. 「第６次経済・社会開発計画の方向」　〔参考資料１〕

（1985年５月，ＮＥＣＤＢが原案をとりまとめ，1985年４月の経済閣僚会議で了承された。今後これをもとに，近々第６次計画をとりまとめる予定。）

この中で，タイ産品の品質向上をタイの経済・社会開発の重要な戦略の一つと位置づけ，本報告のＶＩ，「生産，マークディング，技術開発，雇用創出」の部分では第５次開発計画の継続的推進に次いで，重要なプログラムとして位置づけられている。

3. 日・タイ経済協議

（1985年12月開催。タイ側報告は，３月３日のタイの経済閣僚会議でとりまとめられている。）

① タイ側は，先にとりまとめた「タイ・日経済関係調整白書」をもとに，日本側と交渉。主な協議結果（タイ側の認識によるもの）のうち，本件に関係のある部分は以下のとおりである。

㋑ 貿易について：日本側は，タイ側の市場開拓，輸出振興等に協力する。

㋺ 投資について：日本側は，タイ製品の規格・品質の改善，検査，認証の能力向上に協力する用意がある。（日本市場を念頭に置いて，能力向上をめざす。）

② これらについて，タイ側は，科学技術エネルギー省，工業省がとりまとめ機関となり，検査，工業標準の整備についてのマスタープランを作成することになっている。

③ 上記の結果を踏まえ，タイ側がまとめたものは次のとおりである。（詳細は，別添２参照）

㈠ 検査及び工業標準について（貿易関係）

（合意事項）

日本側は，検査・工業標準整備のためのマスタープランづくりに協力する。

（これまでに取られたアクション）

フォローアップ，ＭＩＴＩと協力，マスタープランの作成，プロジェクトの準備。

（タイ側関係機関）

工業省

科学技術エネルギー省

㈡ 検査及び工業標準（規格）について（投資関係）

（合意事項）

日本側は，タイの検査，基準・認証の能力向上に必要な協力をする用意がある。

（これまでに取られたアクション）

日本側への提案を作成中

（タイ側関係機関）

工業省

㈢ タイ側に対する協力について

（合意事項）

日本側は，タイ製品の品質向上のための協力を含む６つの分野の協力をする用意あり

（これまでに取られたアクション）

ＤＴＥＣが関係機関に周知

（タイ側関係機関）

ＤＴＥＣ

4. ＴＩＳＴＲプロジェクトの第１次提案書（１９８３年２月）〔参考資料２〕

① 目 的

タイ産品の品質向上を目標として，規格・検査 校正・能力向上及び，タイ産業への技術的支援を図るため，ＴＩＳＴＲの新Lab. を設立する。

② 日本側への要請

Lab. の建設，機器の供与。

プロジェクト実施のためのＦ／Ｓの実施

5. ＴＩＳＴＲプロジェクトの第２次提案書（１９８５年３月）〔参考資料３〕

① 目 的

第５次経済社会開発計画の中でも指摘されていた国家標準システム，QC，校正，検査能力の向上を図ることを究極的目標とし，ＴＩＳＴＲの建屋，その他施設，検査設備拡

充のためのF／Sを行うこと。

② 日本側への要請

施設拡充計画，ＴＩＳＴＲの将来運営プランの調査，研究

6. ＴＩＳＴＲプロジェクトの改訂提案書（1985年6月13日）〔参考資料4〕

今回のＪＩＣＡの開発調査に係るコンタクトミッションの作業ベースとなる提案。これは第1次提案書，及び第2次提案書をもとに作成されたもの。ここで提案されているS／Wは，次のとおりである。

〔参考資料4〕

4. Scope of Work

4.1 To evaluate the present situation of Thai Industrial Standards. At the moment, TISI, TSC and universities are the main institutions concerned.

4.2 To evaluate the present mechanism of testing and standardization which include the role and status of various organizations, their activities and relation and linkage between these organizations.

4.3 To review the policy and strategies essential for the promotion of testing and standardization. The Fifth and the Sixth National Economic and Social Development Plan will be studied and used as a guideline for drafting policy and plan of Testing and Standardization system.

4.4 To compare the Thai industrial standards with the international standards. The standards for Thai industrial products drawn up by TISI are mostly referenced to international standards such as JIS, ASTM, BS, AS etc.

4.5 To prepare development programme in detail for testing and standards in the Kingdom of Thailand which include the following subjects:

i. Recommendation to develop testing and standard technology.

ii. Projects for implementation.

iii. Priority and procedure for the implementation of the projects.

iv. Project justification and viability.

7. ＴＩＳＩからのプロジェクト提案

（ＴＩＳＩからＤＴＥＣに正式に要請されたもの）

事業名称　　1968年工業製品標準法施行に関する検査能力の向上

要請主体　　工業省タイ工業標準研究所（Thai Industrial Standard Institute）

事業期間　　３～５年

事業目的　　1. 現在及び将来における国の標準認証及び標準準備の実施に掛る検査業務の効率性・有効性の確保。

原材料，部品，中間製品，農業製品の検査実施に当たっての遅れ・機材不足・戦力不足の解消。

2. 研究開発能力不足に悩む小規模製造業者及び地方の製造業者に対し標準に沿って製品の検査業務を行う

事業目標　　国内及び海外の検査業務要求（特に輸出関連）を満たすとともに迅速・適確・信頼性ある業務を確保する。

実施計画　　1. 現在及び将来における国の標準業務の実施に掛る必要なる検査機器リストの準備

2. 検査機器類を収納すべき建物の建設

3. 機器の調達及び設置

4. 検査機器類を使用，修繕，調達すべき人員の調整

5. 業務の開始

援助要請　　1. 検査機器，調整機器

2. 調達

3. 建物

(2) 調査内容

① ３月17日（於ＪＩＣＡ）

調査計画，スケジュールについての打合せ。

② ３月17日（於在タイ日本大所館）

タイ側の技術協力要請案件のプライオリティーの見通しが行われつつある。

見通しにあたっては，次の３つの委員会が方向付けを出す予定。

㈠ ３年計画委員会（プラパット，ピチャイ委員会）

無償協力，技術協力要請についての指針作成

㈡ 貿易委員会

タイ関心62品目の輸出方策検討

㈢ 産業委員会

輸出志向型投資の促進策の検討

㈣㈤の検討結果は，㈠にインプットされる予定。

3年計画委員会では，タイ・日経済関係構造調整委員会の検討結果，第6次経済・社会開発5カ年計画をクライテリアに対日協力要請を行う予定。

現在，DTECでは，4月末を目途に協力要請案件のプライオリティーづけをする作業を実施中。

③　3月17日（於 DTEC）

DTECでは，現在白書，第6次5カ年計画案をもとに，DTECに124提出されている技術協力案件について，プライオリティー付けをしているところ。

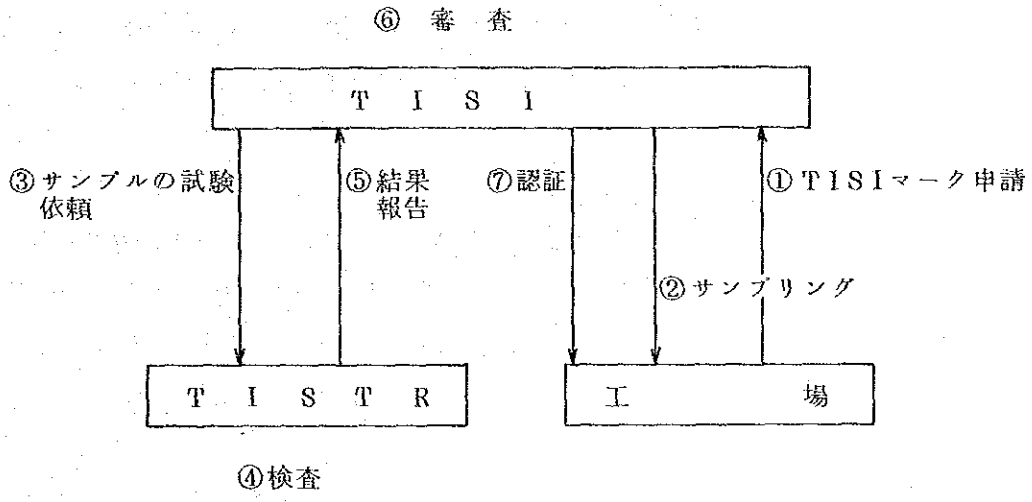
④　3月18・19日（於 TISTR）

①　タイの規格・基準，検査，認証システムの中でTISTRの果たしている役割

(i)　TIS（タイ工業規格）の作成

TISRは，TISのDrafting Committee の委員会に専門家を派遣。

(ii)　TISIマークの認証



・　TISTRは，TISIの依頼試験の20～40％を実施

・　TISIは，別添3のAccreditated Testing Lab. に試験の依頼

(iii)　Calibration Service〔参考資料5〕

電気，光量温度についてCalibration Serviceを実施

電気，光量については日本の電総研，温度はオーストラリアのNMLが協力。

(iv)　その他

ⓐ　民間企業からの依頼試験の実施

ⓑ　TISTRのR＆D部門からの依頼試験の実施

㈡　TISTRの法的設立根拠，略歴

(i)　"Thailand Institute of Scientific and Technological Research Act

（B，E．2522）"〔参考資料6〕

(ii) 科学技術エネルギー省が管轄（Public Enterprise）

(iii) TISTRの前身 ASRCT（Applict Scientific Research Corporation）は，1964年に準政府機関として発足。総理府が所管していた。

(iv) UN／UNDOの援助により，ASRCT設立時に検査機器等の供与を受ける。

(v) 1979年科学技術エネルギー省に移管

(vi) なお，TSCは，1967年に"The Instrument Repair and Calibration"として発足。

㈥ TISTR／TSCの財政

年収入 ： 200万バーツ（政府予算）

280万バーツ（検査料収入）×20％（TSCの取り分）〔80％の部分はTISTRのR＆D部門へ〕

計約250万バーツ≒1800万円／年

㈦ 6月13日付TISTRがまとめたT／Rの1.に記されているTISIをも含めた"Coordination Body"は，実質的な活動を行っていない様子がうかがわれた。

㈧ TISTR／TSCの現状

TISTRの試験設備は，一部を除き，量，質ともに不足している。

TISTRの試験設備，試験業務の現状等については「TISTR関係資料」を参照。

⑤ 3月19日（於 Thai Toshiba）

(i) Toshiba自体は，TISTRへ検査は依頼したことはない。ほとんどを日本で試験し，急ぎでやむを得ない場合に限り，チュラロンコン大学へ依頼して試験。

(ii) TISIマーク製品を政府調達の要件としているものがある。（螢光灯ランプ，扇風機等）

(iii) TISのほとんどは，外国規格（JIS等）に準拠しているが，規格の水準は，現地企業もクリアできるものとなるため，低くなりがちである。また，規格ができても技術力が不足し，規格を満足できない企業も多い。

(iv) TISIの検査官は，1年に1回不定期に工場に来て，サンプリングを行っていくのみ。

(v) 現地企業としては，タイで計測機器等のCalibrationができれば幸い。

⑥ 3月20日（於 TISI）

㈠ TISTR提出T／Rについて

(i) TISIは，TISTRの6月13日付T／Rについては内容を了解していない。T／R本体も，TISTRからも"Coordination Body"からも渡されていない。

(ii) TISIは，現在「白書」に従い，「標準化3カ年計画（マスタープラン）」と作成中。この作業の方がTISTRのT／Rよりも優先順位が高いとTISIは理解。

(iii) 最近になってTISIは，TISI内に検査機関を持つ必要性を痛感しており，その方向で作業をしている。

(iv) TISTR要件は，一つのLab. の能力upにつながるという点では評価。（TISI関係Lab.数46）

(v) 計算システムの確立に対する作業は歓迎。

㈡ タイの規格基準作成機関

(i) Ministry of Public Health.（薬，化粧品，食品）

(ii) Ministry of Commerce（輸出品規格ー農産物を中心に12～13規格）

(iii) TISI

- タイの標準化機関
- ISO, Codex Allimentarius の加盟団体
- 現在約600規格（うち約30が強制）
- TISIマーク制度運営（タイの唯一のマーク制度）

TIS適合性
製造業者のQC体制 } を審査の観点とする。

㈢ TISIの4つの優先作業課題

ⓐ Testing Lab.の設立

ⓑ QC

Ⓒ Lab.Accreditation（BSIから協力が得られる見込み）

ⓓ Standards Infurmation Centerの設立

（BSIにアプローチ中）

TISIの詳細については，別添4.を参照。

⑦ 3月20日（於NESDB）

㈠ NESDBは，次の3つの分野を標準化関係の問題として重要視。

(i) 計量システム： NESDBは，科学技術エネルギー省が中心となって，現在各省に分散し，または未整備の状態にあるタイの計量システムを整備するための新しい組織をつくるべきと考えている。

(ii) 規　　格： NESDBは，工業省が中心となって対応すべきと考えている。

(iii) 検　　査： Calibration Service

㈡ NESDB自体が，民間のシンクタンクに依頼し，改善に関する全体構想。一つの案をもっている。〔参考資料7参照〕

㈢ NESDBとしては，TISTR案件は，DTECから正式に日本に対して要請が出ている以上，干渉できる立場にないが，本件について関係機関の間の調整をできる限り行う用意あり。

6－2　調査結果

1.　タイ国全体の中の規格・基準，検査，認証，計量システム整備プロジェクトの位置づけ。

規格・基準，検査，認証，計量システムの整備の必要性については，第５次及び第６次国経済社会開発５カ年計画，タイ　日経済関係構造調整白書（ピチャイ委員会作成）等で再々重要問題として取り上げられており，政府関係者の中でもその重要性について高い認識がある。

しかしながら，タイ国政府の中では，第６次計画策定，「白書」のとりまとめ等を受けて，その実施体制等についての見通し，プロジェクトの見通し等が進められている最中であり，政府間で一致した実施戦略，方針は確立していないと見受けられた。

2.　各システムの現状

(1)　規格・基準関係

タイ国では，工業省／ＴＩＳＩ（工業製品，農産品），公衆衛生省（食品，薬品，化粧品），商務省（輸出産品）の３つの機関が，タイの規格・基準を作成，制定している。

この中では，ＴＩＳＩが最も中心的な役割を果たしており，タイ国の工業レベル，タイ製品の品質向上を図るための一つの手段として，ＴＩＳＩの作成するＴＩＳの技術内容向上，ＴＩＳ規格数の拡充（現在600規格。ＪＩＳは，約8,000規格），ＴＩＳ規格の体系化，国際的規格との整合化が重要と考えられる。

現在の問題としては，必要な規格づくりが遅れていること，規格水準が国内産業の技術レベルに影響され，低く設定されがちであるという傾向がある。

(2)　認　証

タイ国産品の品質を認証するものとしては，ＴＩＳに適合していることをＴＩＳＩが認証するＴＩＳＩマーク制度がある。

この認証は，工場からのＴＩＳＩマーク表示申請に基づき，ＴＩＳＩ職員が申請工場で生産品をサンプリングし，ＴＩＳＩが優良と認めている46の試験所で検査され，その検査データをもとにＴＩＳＩは認証を行う。

ＴＩＳＴＲは，この検査の20～40％を受け持つ。

(3)　試験・検査

タイにおける工業製品の試験・検査は，ＴＩＳＴＲのような政府機関，民間，大学のLab.等により行われている。

一般に，タイの試験・検査所の能力は，充分でないといわれている。

この中でＴＩＳＴＲ／ＴＳＣは，ＴＩＳマーク認証の一環としてのＴＩＳＩからの依頼試験，

ＴＩＳＴＲのＲ&Ｄ部門からの依頼試験，民間企業からの依頼試験を実施しているほか，電気量，温度，照度の計量計測器の校正サービスを行っている。

ＴＩＳＴＲは，政府関係機関の検査機関としては，代表的な機関としての位置付けが与えられているとみられる。（別添5.）

ＴＩＳＴＲ／ＴＳＣの５つのLabs.のDirectorは，優秀であるが，試験検査設備機器は，一部のものを除き，ＴＩＳＴＲ／ＴＳＣ設立時にUN／UNIDOから供与を受けた設備機器がほとんどであり，量，質ともに不足している。

(4) 計量標準等

タイにおける計量標準システムは，計量法（1923年）により，重さ，長さ，容積が商務省の管理下に置かれ，他の計量標準は，ＴＩＳＴＲ／ＴＳＣ，海軍が分散して保有しており，システムとして未整理なばかりか，個々の管理状況も充分とはいえない状況のようである。（別添6.参照）

計量標準システムの整備の重要性は，参考資料７等でも強調されており，"National Measurement Standards Board"の設立が提案されている。

ＴＩＳＴＲ／ＴＳＣには，一部の計量標準が置かれているが，その校正は全て外国（日本，オーストラリア）に依存する形態となっている。

3. Ｔ／Ｒ（ＴＩＳＴＲ提出）（June，1985）について

(1) "Coordination Body"の機能について

Ｔ／Ｒ（June 13，1985）のＰ3に記されているCoordination Bodyの機能は，充分とはいえず，とくに本件を進めるにあたって重要な役割を担うと考えられるＴＩＳＩとの調整は，不充分。Ⅱ2(6)に述べたように，ＴＩＳＩは，本Ｔ／Ｒの内容を承知していないばかりか，ＴＩＳＩとしては，別のアイデア（ＴＩＳＩ内検査機関設立等）を持っていた。ただし，ＴＩＳＩも計量標準システムの整備，一検査機関としてのＴＩＳＴＲの能力アップは歓迎。

(2) Ｔ／ＲのＳ／Ｗのクラリフィケーション

６月13日付Ｔ／Ｒで提案されているＳ／ＷについてClarifyした結果は，以下のとおり。

① Ｓ／Ｗ4.1の"the present situation of Thai Industrial Standards"は，個々のＴＩＳを評価する意ではなく，標準化システムの評価の意。

② Ｓ／Ｗ4.2，4.3，4.4，4.6(j)の"testing and standardization"の"standardization"あるいは"standard"は，計量標準の意。

③ 4.4を含め，Ｓ／Ｗ全体は，技術分野を限って行うこともacceptableである。

④ Ｓ／Ｗでカバーされるべき分野を限定（ＴＩＳＴＲに存在する４部門の研究室の分野よ

りも更に限定することを含む）することも可能であるとの発言があった。

(3) 在タイ王国日本大使館からの情報

① 今次調査団訪問先のうちTISIにおいて当該調査の実施を了解していない様子が見られたが，調査団帰国後大使館から入った情報によると，その後TISTR，NESDB，TISIの関係者で調整を図ったところ，当該調査T／R中のS／Wに関し4.1（工業標準の現状評価），4.4（タイ工業標準の国際標準との比較）を削除するラインでTISIが納得した模様である。

6－3 所 見

(1) TISTR提案のT／R（June，1985）については，以下のようにとらえるべきものと考えられる。

① TISTRは，TISTR／TSCの建屋，試験・検査設備の拡充に対する協力を日本に対して期待している。

② しかし，設備拡充要請を行う前に，所要の全体的勉強が必要という認識もあり，また，タイ国内において規格・基準，検査，認証，計量システムの整備が重要という認識が高まったということから，今般のT／RのS／W案をまとめた。

③ ところが，本件は，「白書」，第6次計画案に先んじて提案の骨子がまとめられていたこともあり，「白書」，第6次計画案に基づき，別途作業等を開始したTISIとの調整がつかないものとなった。調整不足は，DTEC，NESDBも必ずしも認識していない。

(2) しかしながら，①タイの試験・検査機関の現状，②計量標準システムの現状，③TISTRの試験，検査機関及び計測器校正サービス機関としてのタイ国内での位置づけ，④日・タイ経済協議の結果，及び⑤3月25日付け在タイ王国日本大使館からの公電内容を踏まえれば，現在のT／R中に提案されているS／Wに所要の修正を行い，タイの試験・検査，計量標準システムについて開発調査を実施することは妥当と考える。

(3) なお，日・タイ経済協議の合意事項にもあり，工業省がとりまとめることになっている基準，認証能力の向上については，別途タイ側から協力要請が出てきた段階で対応すべきものと考える。

6－4 別添資料リスト

1. タイ・日経済関係構造調整委員会，及び「白書」の要点
2. 1985年12月の日・タイ経済協議のタイ側とりまとめ資料（サマリー抜粋）
3. TISIに認定されている試験所一覧
4. TISI及びTISIマーク制度について

5. タイの規格・基準，検査，認証，計量システムに関係している機関

6. タイの標準器の所有状況一覧

表 1　　タイ側組織協力体制

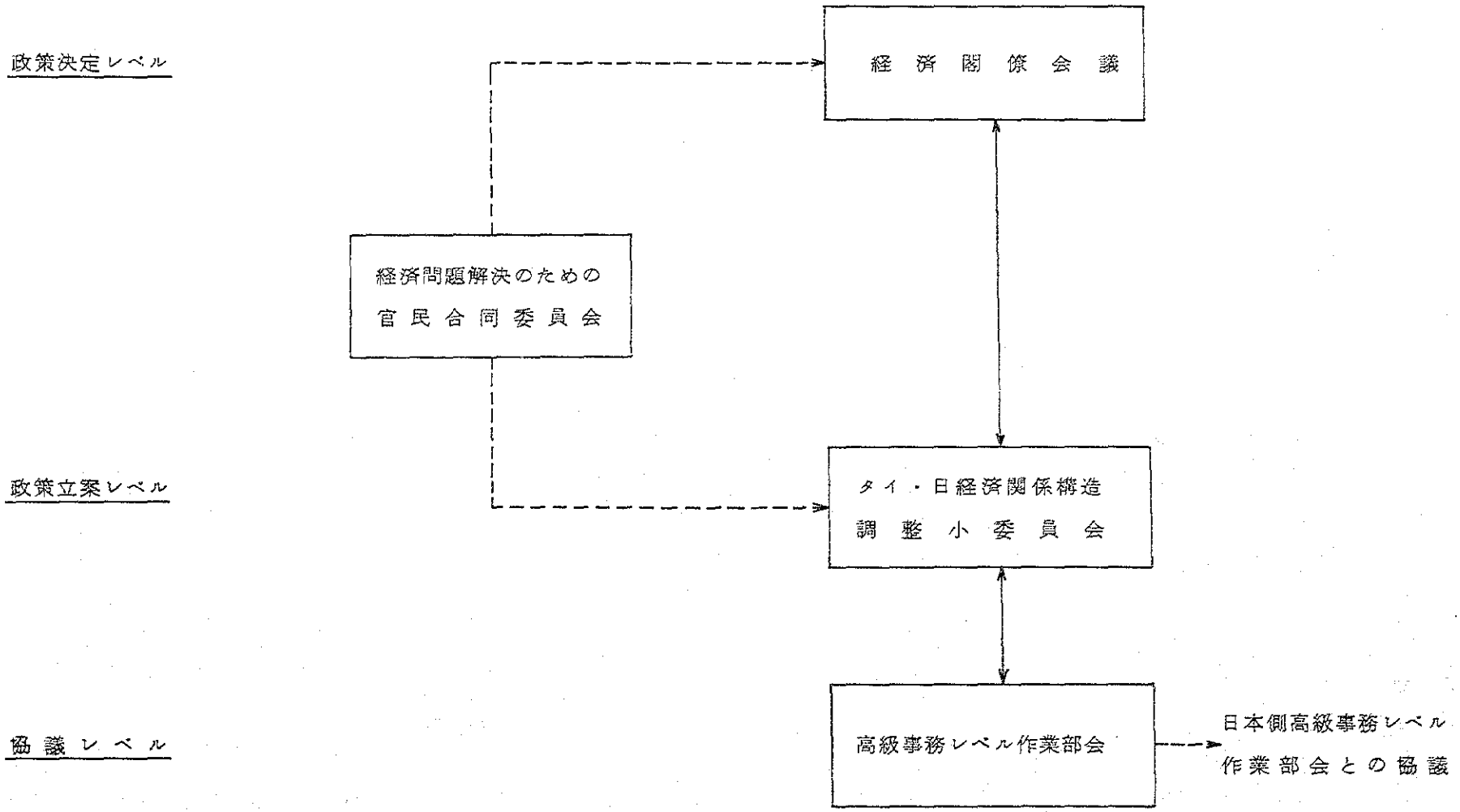
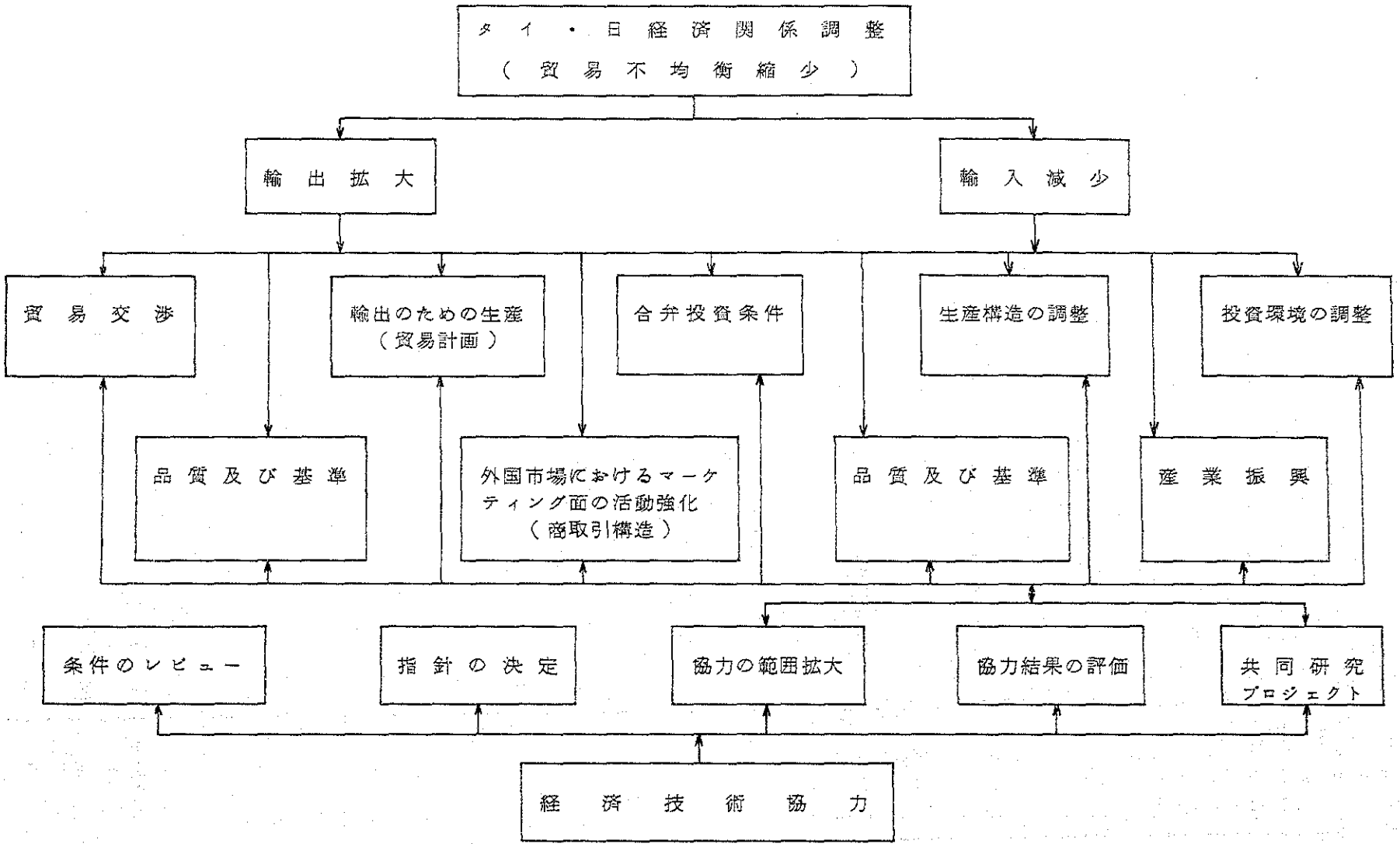


表2　　タイ・日経済関係調整方針の骨子

	当面の措置	長期的措置
貿易	(1) 対日輸出障害除去のための交渉 —関税 —輸入枠 —その他輸入制限措置の緩和 (2) タイの輸出拡大のための交渉 —毎年，品目別に輸出目標を定める —交渉のフォローアップ —輸出振興のための共同プロジェクト	(1) タイ産品の品質及び基準の改善 (2) 輸出のための生産基盤及び生産構造の拡大 (3) 外国市場におけるマーケティング面の活動強化 (4) 補助的措置
投資	(1) 合弁投資契約の条件のレヴュー —生産 —販売 (2) 商品の品質及び基準	(1) 産業構造の調整 —原材料使用比率の増加 —労働技能の向上 —生産及び経営面における技術移転 (2) 産業振興 —輸出産業の振興 —産業移転 (3) 投資環境の調整 —インフラ整備 —金融制度 —投資促進のための優遇措置
経済協力	(1) 条件のレヴュー (2) 指針の決定 (3) 協力の範囲拡大	(1) 協力結果の評価 (2) 共同研究プロジェクト

表 3　　タイ・日経済関係調整の実施



別添 2

Table for a summary and following-up of outcome and successive actions on the discussions for the adjustment of the structure of Thai-Japanese Economic Relations

(December 17-21, 1985)

Subjects	Agreements/Issues from the meeting	Performances/Actions taken	Responsible work-units	Period of time	Last status
A. General principle:					
1. White Paper	- Japan agreed with the principles of the White Paper	1. Following up the outcome, meetings by the Thai side may be held quarterly.	Ministry of Foreign Affairs		In the course of operation
2. Method of the adjustment of the structure	- Japan agreed with the method for the solution of Economic Relations problem by means of the White Paper.	2. Coordination with the Japanese side for the carrying out of all the different matters and the subsequent adjustment of the structure.	Ministry of Foreign Affairs		In the course of operation
3. General atmosphere of the meetings	- Having an understanding and creative atmosphere, also exchange of opinions are straight forward.		Royal Thai Embassy in Tokyo		
B. On Trade:					
1. Structure and the different measures of the Japanese side whereby the Thai may utilize from.	1. Action Programme	- Study in details of the Japanese Action Programme so as to find ways and means for utilization	Ministry of Commerce		
	2. JETRO's Cooperation Plan for ASEAN namely:				
	2.1 Project for the promotion of medium and small-scales Industry	- Official work-units and the private sector to study for proposal of the Cooperation Plan.	All work-units of both Government and private sectors.		
	2.1.1 Cooperation Plan in support of the small-scale Industry				
	2.1.2 Project of suitable technology for medium and small scale Industries.				
	2.1.3 Cooperation Plan on data/ Information for the system of standard Industry and technology.				

Subjects	Agreements/Issues from the meeting	Performances/Actions taken	Responsible work-units	Period of time	Last status
	2.2 Export Development Project 2.2.1 Plan for the improvement of the quality of different commodities such as precious stones, ornaments, clothings, sourvenirs, sandals and other exportable goods. 2.2.2 Trade Promotion Plan 2.2.3 Plan for assistance in sending the Trade and Investment Delegation to Japan 2.2.4 Overseas market surveys 2.3 Project for the dissemination of technology on energy 2.4 Rendering of consultation services				
2. Cooperation for the improvement of quality of goods, designs for standard goods and export promotion					
2.1 Maize	- Japan to render assistance for the control of the quantities of Afla-toxin	1. Preparations for cooperation in the control of Afla-toxin 2. Drawing up Integrated Development Plan for Maize quality by making a Pilot project and ask for 2 step loan for supporting the project	Ministry of Agriculture Ministry of Agriculture Ministry of Commerce	1986	- Experts to be sent by the end of February and early March, also to send Delegation for fact-finding at the end of March.
2.2 Mangoes & fruits	1. Japan to render assistance in getting rid of flies on mangoes by means of vapour heat treatment 2. Japan will be pleased to be cooperative in getting rid of the flies on other fruits	1. Preparations made for cooperation in getting rid of flies on mangoes 2. Preparations made for the plan to get rid of flies on other fruits.	Ministry of Agriculture Ministry of Agriculture	1986	Assistance on equipments have duly been given.

	Subjects	Agreements/Issues from the meeting	Performances/Actions taken	Responsible work-units	Period of time	Last status
2.3	Frozen pork	Japan will be cooperative for the improvement of the frozen pork quality.	Drawing up Cooperation plan for the integrated improvement of the quality of pork by making a pilot project	Ministry of Agriculture Ministry of Commerce		
2.4	Deep-water fishery	- Japan agreed to consider studying on the feasibility of a joint-venture on deep-water fishery of the private sectors of both countries.	1. Preparations for the plan, follow-up and co-ordinate with both of the Japanese Government & private sectors.	Ministry of Agriculture		
			2. Follow up this issue in the meeting of the Joint-Committee for Trade between the Thai private sector and Kaidunren	Ministry of Agriculture Board of Trade	Jan. 30-31, 1986	
2.5	Expension of markets for certain category of goods	- The Japanese side, by JETRO, to be cooperative for the expansion of markets of certain category of goods in Japan and the third country such as cut flowers, sea food and sea products.	Follow up and co-ordinate with the MITI	Ministry of Commerce		
2.6	Inspection and Industrial standards	- Japan to send her Delegation to cooperate in making master plan for the development of inspection & Industrial standards.	Follow up and co-ordinate with the MITI and prepare for the master-plan and projects.	Ministry of Industry Ministry of Science and Ministries concerned	April 1, 1986	

Subjects	Agreements/Issues from the meeting	Performances/Actions taken	Responsible work-units	Period of time	Last status
7. Kennedy Round I Project	- As per the Thai proposal, Japan agreed to consider buying as much as possible rice from Thailand for rendering assistance to the third countries.	1. Follow-up and co-ordinate with the Japanese side 2. Drawing up work-plans clearly	Ministry of Commerce		
8. Reciprocal trade	- Japan is of the opinion that this may have caused trade to be stagnant and detracting.				
9. Application of multilateral stage as reinforcement for the solution of trade deficits.		- to take into consideration of the different multilateral frames such as GATT, ASEAN and MTN by fixing clearly of aspects and work-plans.	Ministry of commerce		
C. <u>On Investment</u>:					
1. Thailand's Industrial Development Policy	1. The Japanese side acknowledged and supported an emphasis upon the Policy of Industry for Export and turn to emphasize on the production of semi-finished products or Supporting Industries in the Industries as substitutes for Import. 2. Japan supported the Overseas Investments and having the supporting agencies and organizations such as the EXIM BANK	1. The Office of the BoI shall have an exchange of the Delegation with the Japanese side. 2. Clear explanation on the Industrial Policy to be made to the Thai and the Japanese private sectors for their information.	Board of Investment Ministry of Industry		The Thai Delegation to travel to Japan by the end of Feb. 1986.

	Subjects	Agreements/Issues from the meeting	Performances/Actions taken	Responsible work-units	Period of time	Last status
2.	Investment atmosphere in Thailand	- The Thai side to remedy and create Investment atmosphere, successively and seriously, such as the trading house, improvement of the airport and the meetings of the 7 foreign Chambers of Commerce.	- All work-units concerned to join with the private sector for systematic cooperation	Ministry of Industry Ministry of Finance Ministry of Communications The Bank of Thailand BoI Office of the NESDB Association of Thai Industries the different Chambers of Commerce		
3.	Reviews on Terms for Joint-venture Agreement	- The Thai side informed of having no intent to review on the Agreement duly entered into, but to offer incentives for the joint-venture that does not limit for exportation and having high proportions for using domestic raw-materials.	1. Keep the Thai and Japanese private-sectors informed clearly. 2. Study and fix for measures offering incentives to the aforesaid joint-venture	BoI BoI Ministry of Finance		
4.	Potential Industries	- Both parties to conjointly study and analyse on potential industries of which are feasible for investments in Thailand by emphasizing upon the medium-scale Industries.	- Preparations made for the project, to follow-up and co-ordinate with the MITI and Kaidunren	Ministry of Industry BoI Office of the NESDB		
5.	Inspection and Industrial Standards	- Japan will be pleased to cooperate in upgrading the Inspection and certification of standards and to assist for providing experts, equipments and technical assistance.	- Drawing up detailed project for proposing to Japan.	Ministry of Industry		

Subjects	Agreements/Issues from the meeting	Performances/Actions taken	Responsible work-units	Period of time	Last status
10. Economic and Technical Cooperation					
1. 3 year Directive Plan	- Japan agreed to consider, as much as possible, as so outlined in the 3-year Directive Plan	1. All official work-units proposed their projects within the 3-year Directive Plan			Duly in action
		2. The DTEC and DTEC Committee to consider on the sequence of priorities of the projects under the 3-year Directive Plan			In action
		3. To hold a meeting with the Japanese side on policy-level	DTEC		
		4. All official work-units to be notified and to observe by the principles of the 3-year Directive Plan			
2. Assessment of the outcome of Economic & Technical cooperation	- Japan to consider in response to the Thai side for joint-assessment of the outcome of Economic & Technical cooperation	- DTEC to prepare guidelines and workplans in joint-assessment of the outcome of Economic & Technical cooperation	DTEC		
11. Expansion of cooperation with Thailand	- Japan is well prepared to expand cooperation with Thailand on 6 fields namely: - Cooperation for the improvement of the quality of Thai goods - Cooperation for Export Promotion - Cooperation for laying down Industrial policy - Cooperation for the expansion of Industrial sector production, through technology transfer	The DTEC informed the official and private sector work-units for their information	DTEC		

Subjects	Agreements/Issues from the meeting	Performances/Actions taken	Responsible work-units	Period of time	Last status
	- Cooperation for Investment Promotion - Cooperation for Economic Assistance to be more efficient and effective.				
12. Loans	1. Loan extended to Thailand is Japan's priority 2. Japan learned of the Thai requirements of having the Thai taking part in more utilisation of the foreign loans, particularly in employing the Consulting companies and Contracting companies. 3. The Japanese side agreed to consider expanding allocation of Baht counterparts for the subsequent Yen loans to a greater extent. 4. The Thai side to seek cooperation concerning measures for more roles of the Thai Consulting company and Thai Constructing company in loan plans.	1. To follow up matters of Baht counterparts for loan plan. 2. To negotiate with the Japanese side in normal networks in continuation from the meeting for the adjustment of structure	Ministry of Finance		
13. The 6th NESDB Plan	- Japan to send a Delegation, headed by Dr. Okita for visitation to Thailand for learning of the direction of the 6th NESD Plan.	The NESDB to make preparations and to coordinate with the Japanese side.	NESDB		The NESDB and Ministry of Foreign Affairs had consulted with the Japanese Embassy already and fixed for the visitation to be July 7-11, 1986.

February 26, 1986

別添 3

ＴＩＳＩにより認定されているＬａｂｓ

Lists of Accredited Testing Laboratories

1. Ministry of Science, Technology and Energy

   1.1 Department of Science Service

   1.2 Office of the National Environment Board

   1.3 Office of Atomic Energy for Peace

   1.4 The National Energy Administration

2. Ministry of Industry

   2.1 Department of Mineral Resources

   2.2 Department of Industrial Promotion

   2.3 The Sugar Institute

3. Ministry of Communications

   3.1 The Department of Highways

4. Ministry of Agriculture and Cooperatives

   4.1 The Royal Irrigation Department

   4.2 Department of Livestock Development

   4.3 The Royal Forest Department

   4.4 The Land Development Department

   4.5 Department of Agriculture

5. Ministry of Public Health

   5.1 Department of Medical Science

6. Ministry of Defence

   6.1 Quartermaster's Department

   6.2 Naval Dockyard Department

   6.3 Naval Science Department

   6.4 Aeronautical Engineering

7. Ministry of Interior

7.1 Department of Public Works

8. Ministry of Commerce

8.1 Department of Internal Trade (Fuel oil Division)

9. Ministry of Finance

9.1 The Excise Department

10. Ministry of University Affairs

10.1 Chulalongkorn University

(1) Faculty of Engineering
(2) Faculty of Science
(3) Faculty of Dentistry
(4) The Scientific and Technological Research Equipment Centre

10.2 Kasetsart University

(1) Faculty of Engineering
(2) Faculty of Agriculture
(3) Faculty of Forestry
(4) Institute of Food Research and Product Development
(5) National Agricultural Extension and Training Center
K.U Research and Development Institute

10.3 Mahidol University

(1) Faculty of Science

10.4 Prince of Songkhla University

(1) Faculty of Engineering Hat Yai Campus

10.5 King Mongkut's Institute of Technology

(1) Faculty of Engineering Thon Buri Campus
(2) Faculty of Engineering North Bangkok Campus
(3) Center for Research and Development

11. State Enterprises

11.1 Ministry of Science, Technology and Energy

(1) Thailand Institute of Scientific and Technological Research

11.2 Ministry of Interior

(1) Metropolitan Electricity Authority

(2) Provincial Electricity Authority

(3) Metropolitan Water works Authority

(4) Provincial Water Works Authority

11.3 Office of the Prime Minister

(1) Electricity Generating Authority of Thailand

11.4 Ministry of Defence

(1) the Tanning Organization

(2) The Preserved Food Organization

11.5 Ministry of Communications

(1) The Telephone Organization of Thailand

11.6 Ministry of Finance

(1) Thailand Tobacco Monopoly

11.7 Ministry of Industry

(1) The National Petroleum Authority

12. Private Sector

12.1 The Badminton Association of Thailand

別添4　TISI及びTISIマーク制度について

Thailand
Thaïlande

TISI

Thai Industrial Standards Institute

The Thai Industrial Standards Institute (TISI) was brought into being within the Ministry of Industry in February 1969, its objective being to prepare national standards and promulgate them as a direct contribution to the national economy and industrial rationalization.
Certification of products was begun in 1972 and the Institute now administers both voluntary and compulsory certification schemes.
Its technical committees comprise specialists from many professions and standards are formulated under the familiar "consensus-of-opinion" principle.
The Government has been a firm supporter of standardization since the inception of TISI, a notable event being a Cabinet regulation requiring all Government purchasing officers to order by reference to standards and show preference for certified products. TISI also gains support from other Government departments, associations and universities, particularly in testing for compliance with standards.
TISI holds punitive powers under the Industrial Product Standards Act, B.E. 2511 (1968) and subsequent Ministerial Regulations to take action against indigenous manufacturers and importers in the event of non-compliance with compulsory standards.

Le Thai Industrial Standards Institute (TISI) fut créé au sein du Ministère de l'Industrie en février 1969 en vue d'élaborer et de promulguer des normes nationales en tant que contribution directe à l'économie nationale et à la rationalisation industrielle.
La certification des produits fut introduite en 1972, et le TISI gère aujourd'hui des systèmes de certification volontaires et obligatoires.
Ses comités techniques sont formés d'experts de diverses professions, et les normes sont élaborées selon le principe du consensus.
Défenseur résolu de la normalisation depuis la création du TISI, le gouvernement a notamment promulgué un règlement selon lequel tous les responsables gouvernementaux de l'approvisionnement doivent effectuer leurs commandes en se référant aux normes et privilégier les produits certifiés. Le TISI est également soutenu par d'autres départements gouvernementaux, des associations et des universités, notamment pour les essais de conformité aux normes.
Aux termes de la loi B.E. 2511 (1968) sur les normes de production industrielle, et des règlements ministériels consécutifs, le TISI est habilité à prendre des mesures contre les fabricants et les importateurs convaincus de non-conformité aux normes obligatoires.

LEGAL STATUS/STATUT LÉGAL

Government body. Established under the Thai Product Standard Act B.E. 2511 (1968)
Organe gouvernemental. Créé par la loi thaïlandaise B.E. 2511 (1968) sur les normes de produits

ANNUAL BUDGET 1985 (Swiss francs)
BUDGET ANNUEL 1985 (francs suisses)

3 401 730.-

STAFF/PERSONNEL

directly employed by the member body *pour le compte du comité membre*	489
sponsored by another organization but working for the member body *pour le compte d'une autre organisation, mais travaillant pour le comité membre*	5 082

SOURCES OF REVENUE/SOURCES DE REVENU

Government/*Subvention gouvernementale*	100 %
Subscriptions/*Cotisations*	
Publications : Sales of/*Vente des*	
Certification, testing/*Certification, essais*	
Other/*Autres*	

RESPONSIBILITIES/RESPONSABILITÉS

Preparation of standards/*Élaboration des normes*	●
Publications : Sales of/*Vente des*	●
Certification : Marking of goods/*Marquage des produits*	●
Quality control services/*Gestion de la qualité*	●
Metrology/*Métrologie*	☐
Education, promotion	●
Testing facilities/*Installations d'essais*	●
Applied industrial research *Recherche industrielle appliquée*	☐

NATIONAL STANDARDS/NORMES NATIONALES

Total number of standards published at 31 December 1984 *Total des normes publiées au 31 décembre 1984*	659

Number of standards published in different fields
Nombre de normes publiées dans différents domaines

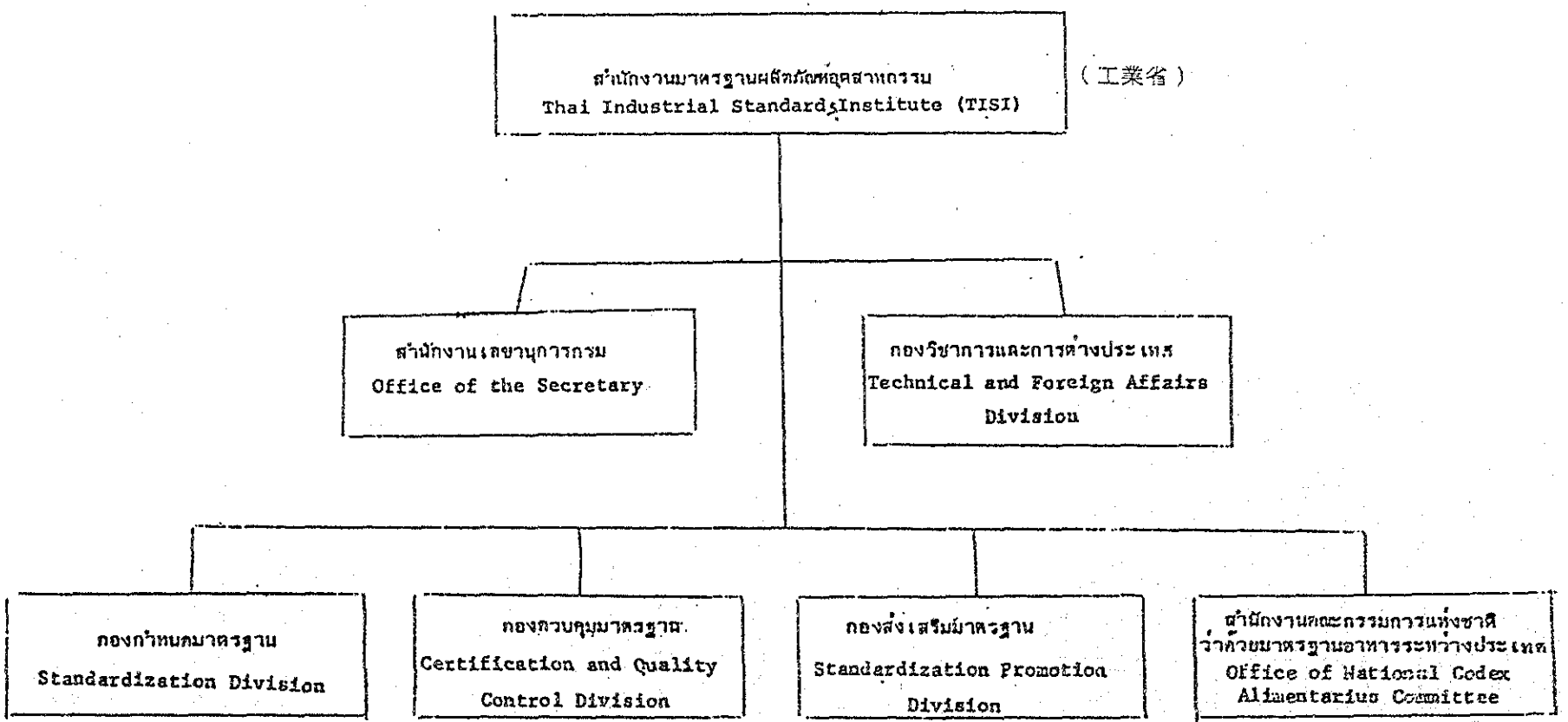
Mechanical engineering/*Mécanique*	42
Ores and metals/*Minerais et métaux*	66
Non-metallic materials/*Matériaux non métalliques*	66
Chemical and allied industries *Industries chimiques et connexes*	77
Agriculture	87
Information technology, documentation, administration *Techniques de l'information, administration, documentation*	
Building and construction/*Bâtiment et construction*	84
Health, medical equipment/*Santé, équipement médical*	16
Transport and distribution/*Transport et distribution*	39
Special technologies/*Techniques spéciales*	
Basic subjects/*Sujets fondamentaux*	22
Electrotechnology/*Électrotechnique*	48
Others/*Autres*	112

STATUS OF NATIONAL STANDARDS
STATUT DES NORMES NATIONALES

Voluntary/*Facultatif*	97 %
Mandatory/*Obligatoire*	3 %

ISO MEMBER BODIES 1985

แผนภูมิแสดงการแบ่งส่วนรายการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

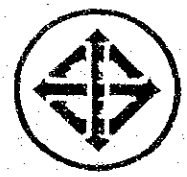


THAILAND

MARKS FOR ELECTRICAL AND NON-ELECTRICAL EQUIPMENT

STANDARDS MARK:

FOR VOLUNTARY APPLICATION



FOR COMPULSORY APPLICATION

EXISTENCE, STATUS AND PROTECTION OF THE MARK

The Thai Industrial Standards Institute (TISI) is a government department which was established within the Ministry of Industry under the Industrial Product Standards Act, 1968 (IPS).

Two kinds of TISI certification mark were registered under this legislation, indicating conformity with Thai Industrial Standards (TIS) of all types of goods, electrical and non-electrical. They are for voluntary and compulsory application as shown above. The use of these marks, dependent upon the issue of a licence by of the reference standards as exemplified below.

TIS 127-1975

TIS 51-1973

These standards marks are protected by the IPS Act of 1968. Only the licensees shall use the standards mark legally and no person shall imitate the standards mark so as to mislead the public. TISI is empowered under the IPS Act 1968 to administer the certification scheme.

ADMINISTRATIVE ORGANIZATION

All certification activities are carried out by the Certification Division of TISI, which itself is divided into sub-divisions responsible for planning, licensing, following-up, quality control, etc. TISI competent officials are responsible for factory inspection to review the overall manufacturing process and quality control of the factory, and drawing sample for independent testing both for licensing and following up purposes. The results of factory visits and the tests on samples together with a recommendation either for granting a licence, or ordering the licensee to rectify his practice, or suspending or revoking the licence will be submitted to the Industrial Products Standards Council. This Council arbitrates in the event of dispute between TISI officials and licensees.

ADMISSION OF FOREIGN PRODUCTS

Imported products are eligible for the mark and suppliers in Thailand shall apply in the same manner as indigenous manufacturers, where they are subject to compulsory certification. There are alternative conditions: either that they meet the relevant TIS

or are in conformity with a foreign standard governing Standards Council exempt them from using the standards mark providing that the imported products are in conformity with a foreign standard comparatively not lower than the standard under the IPS Act 1968 and there is a foreign standards mark exhibited thereon.

TECHNICAL CONDITIONS-INSPECTION

The issue of a licence and use of the mark are dependent solely upon compliance with the relevant TIS. The system is one of continuous surveillance, involving inspection of factory and its quality control system, surveillance of records and tests of random samples. After award of a licence, audit of the company is carried out at varying intervals according to the type of product and status of the manufacturing facilities. Testing is carried out in non-commercial laboratories of government departments, universities and other public organizations.

FINANCIAL ARRANGEMENTS

TISI is entirely supported by the government budget. A small fee is payable on application and a once-only fee of 1 000 Baht on the award of a licence. Licensees pay for tests at cost, but those coming within a compulsory royal decree pay no testing fees. All fees revert to the governmental treasury and not to TISI.

PENALTIES

Fines and/or imprisonment are specified in the Act both in respect of misuse of standards marks, the manufacture without a licence in the case of compulsory standard and in respect of the sale of industrial products knowing that it is not in conformity with the standard. TISI has used power to take action through the courts on several occasions.

PRACTICAL ACHIEVEMENTS

Since the first licence was awarded in October 1972, the TISI Certification scheme has made steady upward progress. Within the order of 500 standards prepared by January 1984, TISI has certified a total of 191 products to licensees. Thus, 174 products such as edible oils, toilet soap, fruit juice, fish sauce, refined sugar, cement and cement products, asbestos cement products, electric fans have already been certified under voluntary standard schemes and 17 products such as steel bars for reinforced concrete control ballasts for fluorescent lamps, canned pineapple, tapioca products, automotive safety glasses, liquefied petroleum gas cylinders (for domestic use and internal combustion engines), PVC insulated cables, etc. have been certified under compulsory standrd scheme.

A cabinet regulation requiring all government purchasing officers to procure by reference to standards and show preference for certified goods gives strong impetus to the movement.

ADDRESS

Thai Industrial Standards Institute (TISI)
Ministry of Industry
Rama VI Street
BANGKOK 10400

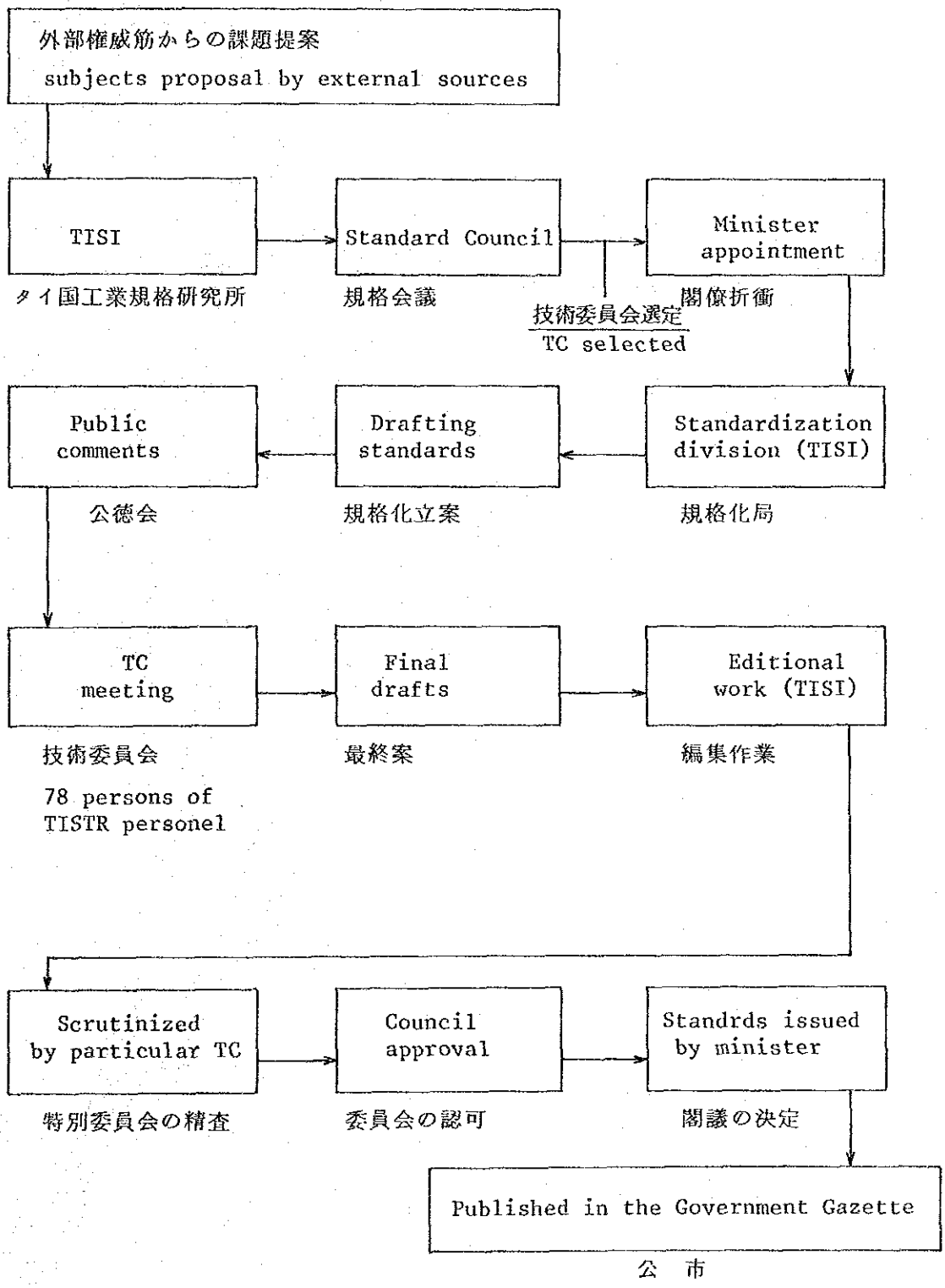
TP 282 38 22

TC thaistand

TX 84375 moithai th (attention tisi)

タイ国における工業規格化プロセス

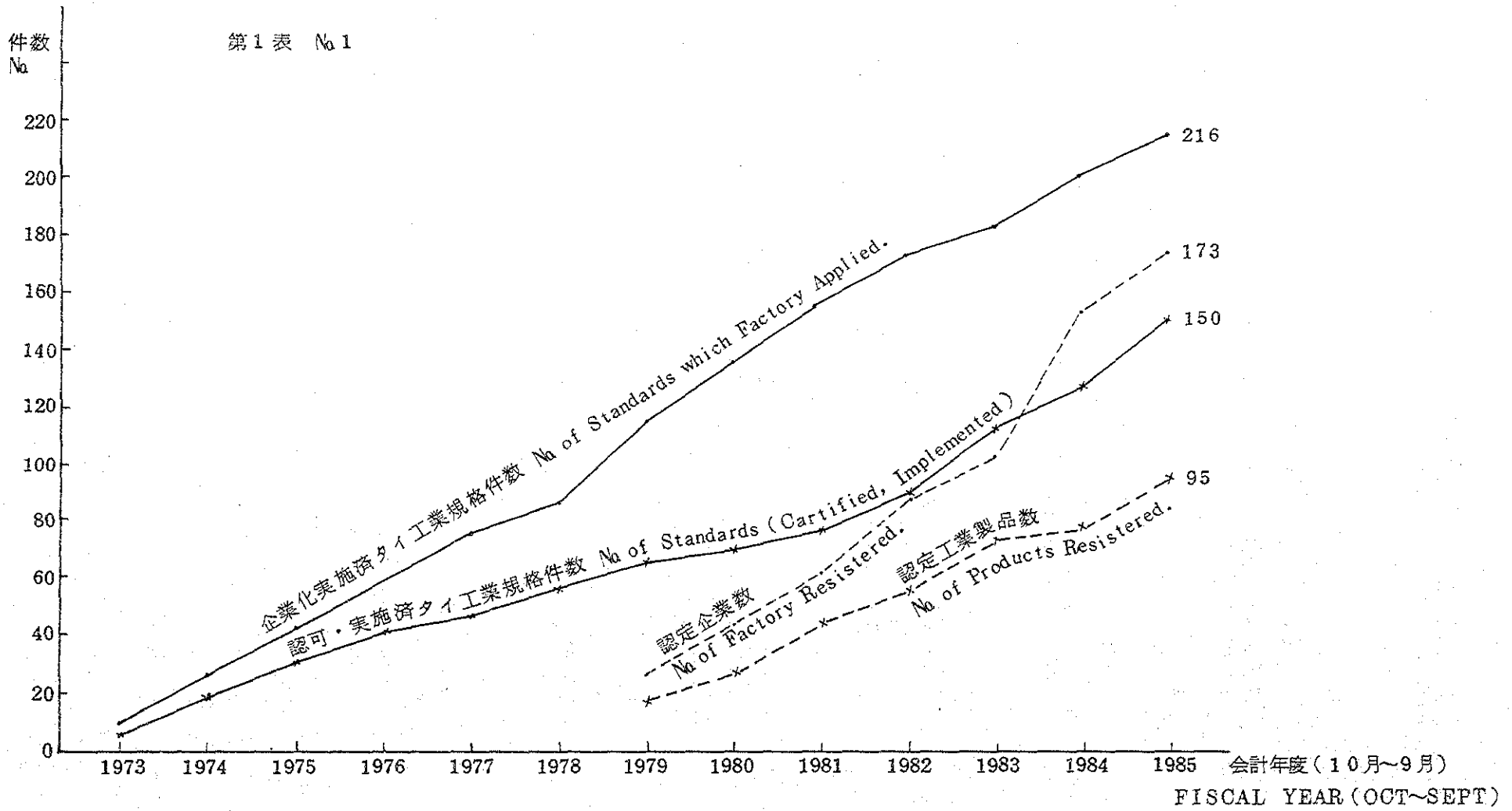
Industrial Standards in Thailand



タイ工業規格研究所・検定局統計資料（１９７３～１９８５）

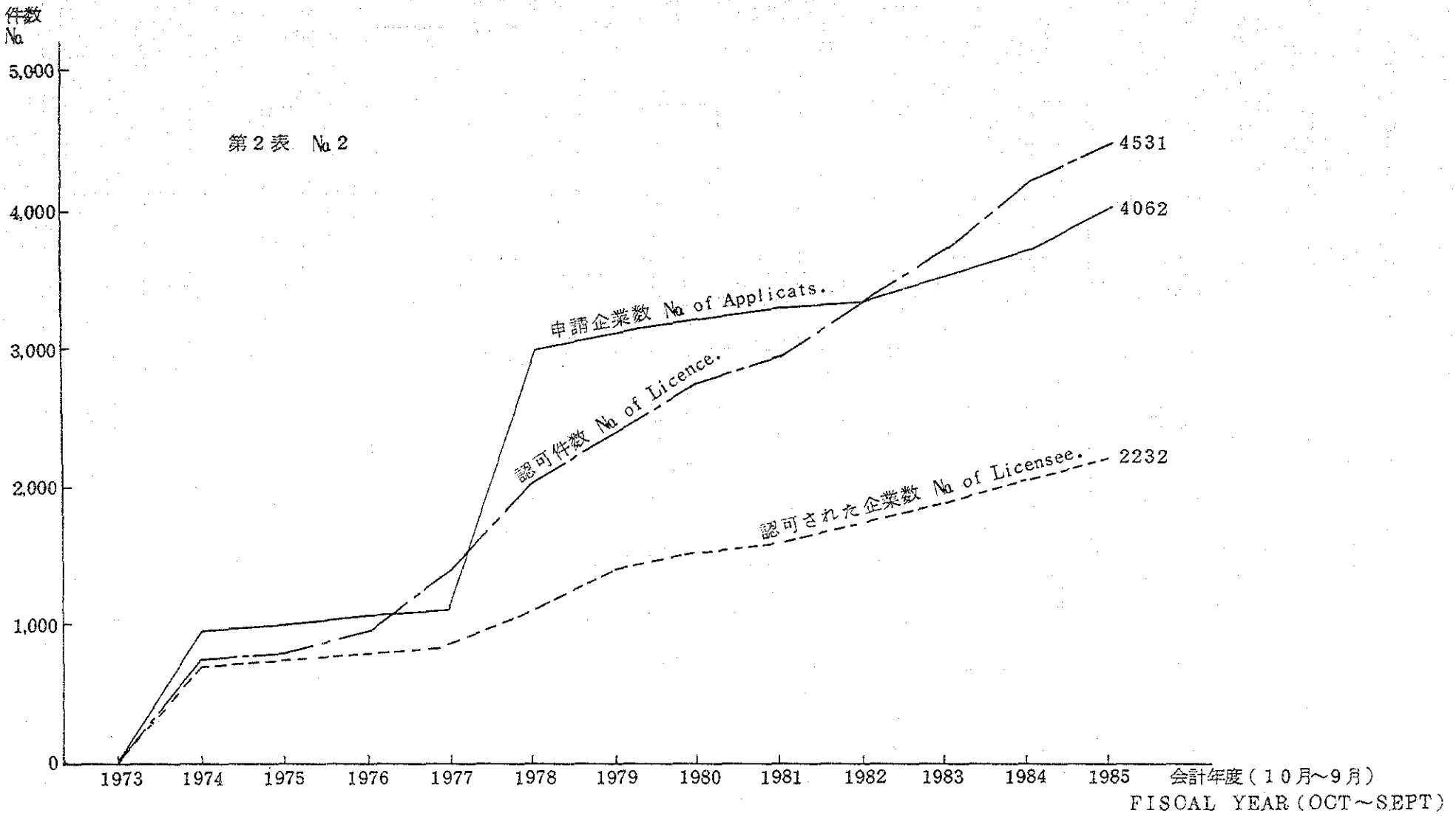
STATISTICS OF CERTIFICATION ACTIVITIES OF TISI （1973～1985）

第１表　№１



タイ工業規格研究所・検定局統計資料（１９７３～１９８５）

STRTISTICS OF CERTIFICATION ACTIVITIES OF TISI （１９７３～１９８５）



別添５　タイの規格・基準・検査・認証・計量システムに関係している機関，法令等
（参考資料７から抜粋）

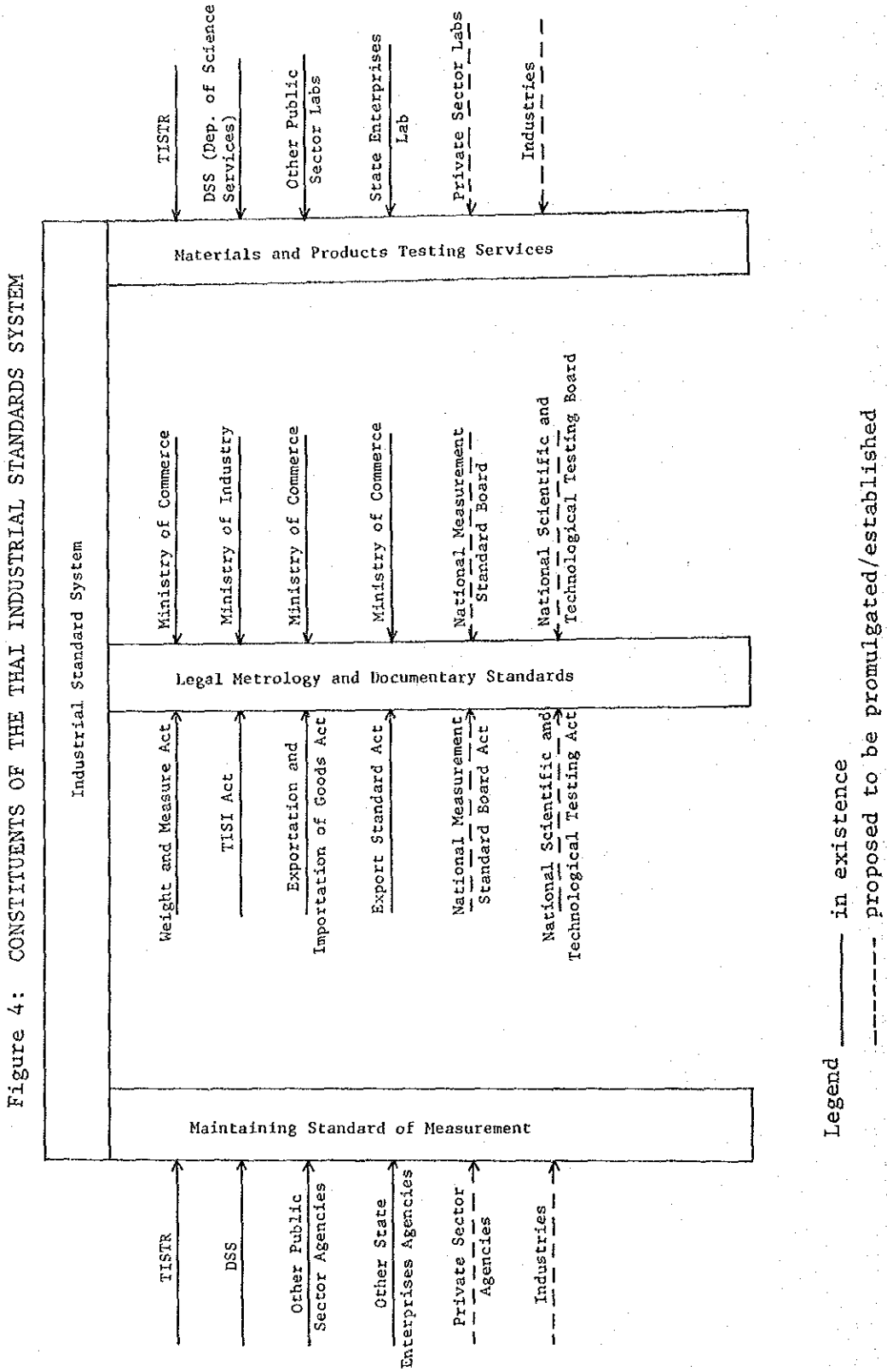


Figure 4: CONSTITUENTS OF THE THAI INDUSTRIAL STANDARDS SYSTEM

別添 6

タイ王国における標準器の所有状況一覧表
Table of Standard Level in Thailand

項目 ITEM ＼ 標準の程度 STD LEVEL	一次標準 PRIMARY STANDARD	二次標準 SECONDARY STANDARD	企業レベル標準 COMPANY STANDARD
長　さ LENGTH			○ MINIST. OF COMMERCE.
質　量 MASS		○ MINIST. OF COMMERCE.	
周波数 REQUENCY	○ ROYAL THAI NAVY		
直流一低周波数 D-C. LOW FREQUENCY	○ TSC		
高周波数 HIGH FREQUENCY	○ TSC		
温　度 TEMPERATURE	○ TSC (AUSTRALIA)	○ TSC	
照　明 PHOTOMETRY	(JAPAN)	○ TSC	
体積・流量 VOLUME. FLOW			○ MINIST. OF COMMERCE.
硬　さ HARDNESS			○ TSC
圧　力 PRESSURE			○ TSC
密　度 DENSITY (SOLID LIQUID)			○ TSC
粘　度 VICOSITY			○ TSC
音 ACOUSTICS			
放射線 RADIO-ACTIVE			○ OFFICE OF ATOMIC ENERGY FOR PEACE
標準ガス STANDARD GAS			
濃　度 DENSITY (GAS)			

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SUMMARY
DIRECTION OF THE SIXTH NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT PLAN

OCTOBER, 1985

Summary

Direction of the Sixth National Economic and Social Development Plan

October, 1985

Summary

Direction of the Sixth National Economic and Social Development Plan (1987 - 1991)

1. Background

1.1 The Office of the National Economic and Social Development Board (NESDB) together with other concerned government agencies considered and drafted the major principles and framework regarding with the Direction of the Sixth National Economic and Social Development Plan. The Direction will be made into details as a continuation from the Fifth Plan which will terminate in the fiscal year 1986.

1.2 The Executive Committee of the NESDB considered and approved the draft of the Direction of the Sixth Plan. The Committee has resulted that this draft should be forwarded for further consideration by the Council of Economic Ministers on April 15, 1985.

1.3 The Economic Ministers considered and approved the draft Direction of the Sixth Plan, which was then forwarded to the Cabinet on May 13, 1985.

1.4 The Direction of the Sixth Plan, which was proposed for consideration in special Cabinet sessions on July 29th, August 5th, and 9th, 1985; is the first step in the preparation of the Sixth National Economic and Social Development Plan. The Direction must be approved in its targets, main strategies, and major programs. The Direction will then be made into details by January 1986 in time for the deliberation of the National Budget for the fiscal year 1987.

1.5 The Cabinet accepted in principle and added comments in the draft Direction of the Sixth Plan on August 9, 1985. The Cabinet authorized NESDB to improve the Direction according to the suggestions of the Cabinet and to submit the improved version to the Prime Minister for approval. When the Direction has been approved, NESDB together with related government agencies and state enterprises will prepare detailed programs for the Sixth Plan.

2. Major Issues for Consideration in the Preparation of the Direction.

2.1 Results of Past Development Performance

The results of past development performance during the Fifth Plan period can be summarized as follow :

2.1.1 Results of the Overall Development

Measures to solve problems of trade deficit, current account deficit, monetary and fiscal problems, were implemented. The purpose of the measures was to maintain the country's economic and monetary stability and to sustain the country's economic status during a period of unstable world economy. Using such measures have resulted in the reduction of the current account deficit from 56,049 million baht in 1981 to about 40,000 million baht in 1985; with the country's overall economic growth increases at about an average of 5.3 percent per annum, which is reputed to be an expansion that is almost 2 times the world's economic growth.

2.1.2 Results of the Main Development Programs

Specific Areas Development

(1) The solving of the problems in poverty-stricken rural areas has an inclination to improve. This can be observed from during the first three years of the Plan, when there has been a reduction in the number of heavily poor amphurs from 286 to 197 amphurs or a reduction of 31 percent.

(2) The development of the New Economic Zones, for example, the Eastern Seaboard Development Plan, has

made considerable progress. Advancement can be seen in basic investment projects such as the gas separation plant, the use of various natural gas products, and the projects to build deep sea ports at Mab Ta Put and Laem Chabang, both of which is already at the engineering design stage.

Economic Structural Adjustment

(3) In past periods, agriculture development expanded at an average of 2.9 percent per annum, which is below the set target of 4.5 percent per annum. This is the result of dry weather conditions during the first year of the Plan and the low average prices of agricultural products which are not inducive to production increase.

(4) In the first three years of the Plan, industrial development expanded at an average of 6.1 percent per annum, which is below the set target of 7.5 percent per annum. This is the result of the depressed world economy. However, the industrial sector remains increasingly important in the economic system as can be seen from the ratio of industrial products to gross national products which increased from 20.3 percent in 1977 to 21 percent in 1983.

(5) The development of the energy sector yielded results as the planned targets, reducing oil imports in

the first three years of the Plan by 7,807.83 million litre of crude oil or about 10,600 million baht per year.

(6) The development and expansion of communication services especially with the expansion of domestic telephone services which proceeded at a very slow pace and below the planned target. This has become an important barrier to the overall development of the country.

Social Development

(7) In past periods, Thailand has confronted with rapid external and internal social environmental changes. Being an open society, the Thai society fully absorbs both good and bad influences from foreign countries. Foreign civilizations, ways of life, and attitudes have greatly affected the Thai society at the crucial moment when Thailand is progressing into a new development era of intensified foreign competition of various aspects. At the same time, the changing of rural to urban condition and the changing of the population age structure have increasing impacts on the Thai way of life.

In dealing with the rapid changing conditions mentioned above, social development in the past have received satisfactory successes in terms of quantity especially in the reduction of population birth rate and the wider

dispersement of social services in education and health. However, problems persist in the development of human quality to enable the population to adjust themselves to the changing environment and to fully participate in the country's development process.

(8) The expansion and dispersement of social services advance extensively and throughout. There have been an expansion of amphur level hospitals to cover 83 percent of all amphurs, an expansion of health clinics to every tambon, an expansion of primary schools to all tambons and covers 96 percent of the population in this age group, and an increase in the educational services at the secondary school level, out-of-school trainings, and higher educational levels.

(9) However, the provision of the mentioned social services remains problematic in terms of quality and worthiness of investment. At the same time, towards the end of the Fifth Plan period, the unemployment problem threatens to intensify especially among the educated whose unemployed increase from 59,300 persons in 1981 to about 84,200 persons in 1982.

Development Management System

(10) The organizing of joint cooperation between the government and private sectors in the development process is beginning to take shape. Special attention is also being given to management reform and ways to increase efficiency in the operations of state enterprises.

(11) The organizing of government management system for rural development by uniting 4 major ministries (Agriculture and Cooperatives, Interior, Education, and Health) is being extensively expanded to cover all rural areas of the country.

2.2 Major Constraints that the Country has been Facing and the Uncertainties of Events that are Expected to Occur in the Future.

(1) The fluctuations and uncertainties of world economic conditions, including the rising trend of intense competition and protectionism in the world market, will increase in the future.

(2) The price of primary goods in the world market has a tendency to decline and is expected to continue this way. Oil prices in the world market still remain uncertain.

(3) There must be a continuation in the preservation of fiscal and monetary stability of the country especially by employing and maintaining restrictions and discipline on the government's financial affairs and the country's monetary management.

(4) There will be more people entering the labor market at an average of one million people per annum. At the same time, there is a slow down of hiring in the government sector. Hiring in the agricultural sector is limited while hiring in other sectors is at a slow pace.

(5) The trend of urban expansion in the metropolis and other large urban areas will cause an increase in urban congestion. If there exist no systemized urban development planning, the increase in urban congestion will have negative economic and social impacts on the country. There will also be an increase in the shortage of consumer goods and services in the urban areas.

(6) The deterioration of natural resources and environment will intensify.

(7) The limitations in management capabilities and the limitations in government finance are important constraints to the role of government in the development process in many ways. There must be a review and search for appropriate implementation options.

3. Direction of Development under the Sixth Plan

From the conditions and constraints which have been analysed above, together with the consideration of opportunities and possibilities of future development of the country, the Sixth Plan will necessarily have a direction for development that includes 2 overall targets, 4 main strategies, and 10 working programs.

2 Targets

(1) Set the economic growth target to be at an average of more than 5 percent per annum. This is done by emphasizing the pattern of growth that will encourage effective employment generation, distribution of income, and the maintenance of an economic balance that will create opportunities for stable and continuous economic development.

(2) Develop human quality to enable progress in social development and to create peace and fairness in society. Social development must be consistent with and assists in the overall development process of the country. Together with the preservation of national identity and desirable attitudes, social development must help improve the quality of life in the rural and urban areas according to the criteria for basic necessities.

4 Strategies

(1) Continue to proceed in the development and adjustment of economic and social framework of important policies carried over from the Fifth Plan. At the same time, seek for new opportunities that will lead to economic progress and a wider distribution of benefits to the general population. However, prime consideration must always be given to economic limitations and the maintenance of the country's fiscal and monetary stability.

(2) Increase efficiency, improve quality in production, marketing, and technology, and reduce production costs to be able to better compete with other countries.

(3) Promote the development of human quality to possess the knowledge and capabilities that are beneficial in the development of life, career, and society, by mainly emphasizing the principle of self-reliance. Social development must be consistent with career development and economic development especially in creating discipline and respect for law and order; and in developing of virtue, ethics, and unity among the population. This, in a way, will reduce the responsibilities of the government and encourage frugality and savings.

(4) Adjust the role and the management organizations of the government sector through to regulations, orders, and laws; to be suitable to development directions. Considerations must be given to the limitations in the capabilities and fiscal status of the government. There will be an appropriate sharing of the development burden between the government sector, state enterprises, and the private sector under the integration principle.

10 Working Programs

(1) Economic and Financial Stabilization Program.

(2) Natural Resources Development and Environmental Management Program.

(3) Rural Development Program.

(4) Urban and Specific Zones Development Program.

(5) Program to Develop Society, Human Quality, Human Resources, and Labor.

(6) Program to Develop Production, Marketing, Technological, and Employment Generation Systems.

(7) Basic Services Development Program.

(8) Science and Technology Development Program.

(9) State Enterprises Development Program.

(10) Program to Improve Management and Review the Government's Role in the Development Process.

I. Economic and Financial Stabilization Program

In order to achieve the set economic growth target in view of the country's various resource constraints, it is appropriate that the important substances of the Economic and Financial Stabilization Program include:

a) Proceed with strict monetary and fiscal policies continuing from the Fifth Plan

- Limit the budget deficit so that it does not overexceed the capability to generate income. The majority of the loans used to compensate the deficit must come from sources that will not induce inflation, i.e. the private sector and the Government Savings Bank.

- Improve the government's debt management by considering together in one process, debts created domestically and externally.

- As for foreign debts, there will be a consideration of both public and private debt burdens so that they are in

line with the capability in debt servicing. A limit will be set on the amount of debt burden at not more than 9 percent per annum of income generated from exports during the Sixth Plan.

- Allocate the defense budget to be at an acceptable level and compatible with the country's economic capability and financial status.

b) Increase efficiency in monetary and fiscal policies

(1) Fiscal policies

- Reform the tax structure for easier comprehension, appropriate tax rate, and larger tax base. This is to increase the government's income from tax collection and to ensure fairness by putting emphasis on collecting from individuals and businesses which have received tax exemption.

- Adjust the tax structure to encourage domestic investment by using tax rates that are consistent, appropriate, and fair to large and small producers alike. In addition, consider reducing tax exemption rules for state enterprises and government supported businesses as much as possible so as to reflect the true production costs, create fairness in competition, ensure efficient use of national resources, and help increase government's income.

- Develop related institutions, tools, mechanisms, and personnels to increase efficiency in tax collection.

- Prepare an account showing the complete menetary and fiscal status of the government, local administrations, and state enterprises. This account must reflect actual economic conditions and will act as a tool for planning income generating measures for local administrations in order to reduce the responsibilities of the central government.

(2) Monetary policies

- Develop menetary institutions, tools, and mechanisms, to mobilize long term savings in the country. For example, encourage the use of provident funds, develop life insurance businesses, and develop capital markets to become the most important source of long term capital funds. Additionally, there must be an increase in the role of monetary institutions which are responsible for the allocation of long-term savings, and encourage people to save in every aspect.

- Adjust interest rates on deposits and interest rates on loans to reflect the domestic economic environment and the world market interest rates so as to encourage investments and create monetary balance.

- Use monetary measures to ensure that commercial banks and other financial institutions lend out to sectors and activities that have high priorities in terms of economic development. Increased emphasis will be on credits in the form of projects.

- Develop monetary mechanisms to encourage exports so that exporters and producers of export products benefit at appropriate proportions. These measures must be consistent with rules and regulations and international trade practices.

- Employ measures to coordinate public and private investments to be in line with development targets.

II. Natural Resources Development and Environmental Management Program

To effectively prevent and amend natural resources deterioration and to effectively develop, allocate, and utilize land, water resources, forestry, and mineral resources, in coordination with the overall economic development plan; it is appropriate that the important substances of the Natural Resources Development and Environmental Management Program include:

a) Proceed with policies continuing from the Fifth Plan

- Speed up the process of granting land ownership documents to farmers. This measure will prevent farmers from entering and exploiting protected forest land. Also, set policies for farmers who do not own any farm land.

- Classify the quality level of important river basins in every region of the country. Formulate plans to systematized the land according to each basin's quality level. This is to harmonize between the utilization of benefits of forest land around the water sources and the maintenance of ecological and environmental balance. The target is to have forest land areas including private forest parks to be at least 40 percent of total national land.

- Proceed to preserve public grasslands for use in animal grazings.

- Proceed to restore and conserve fishery resources both in the sea and in fresh water.

- Proceed to survey and explore mineral sources around the country by using air geological physics surveys, whose results will be followed by land surveys. At the same time, organize a system of data collection.

- Set policies for mineral resources utilization that are clear, continuous, and integrated. Arrange organizations only in the form of 'One Stop Service' to attract interested investors. Emphasis will be given to minerals used in the country's development, for example, energy, industry, and agriculture. Mineral surveys and mining in restricted areas such as national protected forest areas, national parks, etc., will be allowed if there are discoveries of potentially high quality minerals with high economic values.

- Encourage the use of minerals in domestic industries such as limestone, gypsium, kaolin, marble, etc. In addition, encourage mineral dressings to increase its quality. Reduce production costs in terms of government mineral charges and taxes.

b) Improve efficiency, production quality, and the use of natural resources.

- Produce a master plan for land development, utilization, and conservation by dividing into irrigated areas and rain agricultural areas. This plan will lay out the various options for farmers to improve and increase the benefits in the use of their lands. Additionally, the plan will coordinate the operations of concerned government agencies.

- Accelerate the use of existing irrigated areas and develop large water sources such as the Mekong River, Yom River, Mun River, and Chi River. Furthermore, support and improve organizations for water users. These organizations will take responsibilities in the maintenance of various irrigation system structures at the farm level. This is to lessen the pressure on the government budget and to generate benefits as much as possible from projects which the government has already invested in. More still, consideration will be given to collecting appropriate water fees.

- Formulate policies and major principles to develop and utilize mineral resources that exist in large quantities at low prices such as lignite. This is done by opening new opportunities for the private sector to enter in a joint investment and to disperse the use of lignite to other businesses other than electricity production.

c) Improve the management system in developing natural resources and environment to be appropriate and integrated

- Reform laws and administering regulations concerning land, forestry, mineral resources, and environment to be in agreement with and support economic development and to decrease conflicts in sharing the use of natural resources.

- Encourage private businesses to take part in reforestration and to encourage local population to increase reforestration for personal uses. Besides, increase the support of private businesses in the form of public corporations to participate in the utilization of natural resources.

- Maintain local level programs and projects as coordinating tools between different government agencies that are responsible in looking after the various natural resources. Concurrently, encourage local institutions such as the tambon council and farmers' associations, to increase their roles and participation in the management and allocation of natural resources.

- Correct and improve laws and regulations concerning the exploration and development of petroleum by:

- Open opportunities for the government and private corporations to jointly invest in the development, production, and exploration, by clearly set the rules for joint investment. In addition, improve laws to benefit and attract companies which have received production rights as much as possible.

- Consider reducing the exploration and production periods, and shorten the period in returning the franchised lands. Geological research data received from exploration should not be considered as 'confidential data for too long'.

- Improve the system of tax collection and transfer of money to increase conveniences especially in cases of large scale investments from foreign countries, and proceed to speed up negotiations on petroleum development in the Joint Development Area.

III. Rural Development Program

To support the overall development targets which includes economic expansion, income distribution, social services, and improvement in the quality of life of the rural population, the important substances of the Sixth Plan should include:

a) Carry on with continuous rural development.

- Concentrate on the target areas for development. This is to completely solve the remaining problems left over from the Fifth Plan.

- Proceed to develop security areas such as areas around the border, and support the population to be able to fully utilize such areas.

b) Add new factors to increase efficiency and capability in solving rural problems.

- Expand poverty - stricken areas to cover every province and every region, by using the areas' social and economic conditions as the criteria. Also, expand areas of development from the poverty - stricken areas to cover middle - level and progressive areas, by emphasizing the dispersion of land ownership rights and by improving lands with special problems.

- Encourage the increase use of small water sources and to have at one's disposal, consumption water and sanitation.

- Spread agricultural and industrial technology in the rural areas to increase the population's income.

- Classify area characteristics to clearly identify whether the area is appropriate for domestic or export production.

- Improve the quality of the rural population by having out-of-school training courses in the tambon level. The courses must be consistent with local demand.

- Use measures and loan mechanisms of the Bank for Agriculture and Cooperatives (BAAC) as a tool in supporting and developing occupations. At the same time, arrange for other incentive mechanisms such as training courses.

- In increasing the production efficiency, emphasis should be given to ways of reducing the farmers' production costs, by requiring the use of domestic and local production factors instead of imported ones.

- Consider forming rural development plans at the tambon level for every tambon.

- Coordinate rural and urban development plans and encourage poor people who have come to Bangkok for work to return to their rural homes.

- Develop the quality of life through training and raising of the family quality level.

c) Adjust the rural development management mechanisms to unite every sector and become more integrated

- Improve the rural management system under the Joint Public and Private Consultative Committee (JPPCC) in order to increase its integrity.

- Support the role of Regional and Provincial National Rural Development Committee (NRDC) in rural development, and increase the role of people associations, the population, and the private sector, to participate more in the development process.

- Improve the development coordinating system and institutions by emphasizing the improvement in the steps to coordinate plans, the increase in the responsibilities of the ministries and provincial administrations, and the coordination of private sector projects with NRDC as the core coordinator.

- Use the provincial level rural development plan as the framework of operations and include the government's and people associations' programs and projects under the framework. Confer on the private institutions to use this framework as the basis for their project operations.

- Develop a data systemtto coordinate, monitor, and evaluate the rural development plans. This is done by arranging a central data system to be used jointly between concerned agencies in the central and regional areas. Furthermore, set standards for the main data base and enccurage institutions at every level to utilize the data.

- Increase participation by the people associations in rural development, for example, farmers' groups and the tambon council; by supporting the projects of the tambon council in rural job creation, rural development fund project, project to improve the quality of life based on the criteria of basic necessities as the indicator, through to projects run by the people or with participation from private institutions.

Improve the tambon council to have true integrity and authority in management.

IV. Urban and Specific Zones Development Program

To be able to develop the Metropolis and the urban systems including the 'New Economic Zones' to become the center of prosperity; and to develop new industrial bases in the provincial areas to support the dispersion of economic activities from the center; together with improving and developing Bangkok and its suburbs to grow systematically and to decrease urban congestion; the important policy directions of the Urban and Specific Zones Development Program necessarily include:

a) Acceleration of programs and projects continued from the Fifth Plan

- Proceed with the development plan of the Eastern Seaboard to become the country's 'New Economic Zone'. The first part of the program will be completed by the end of the Sixth Plan.

- Develop the New Economic Zones around the Eastern Seaboard area and the Upper South region to become the gateway towards international trade and to increase the efficiency in the competitive status of the country's exports.

- To lay the foundation and set the direction in the development projects of Tung Kula Rong Hai, the Songkhla Lake region, the Upper South region, and other appropriate areas.

- Proceed to develop the targeted regional urban centers as set in the Development Plan. Also, accelerate the planning of town plans for every municipality and the development planning of public health districts.

- Accelerate the improvement and expansion of the network for consumer goods and services in the Bangkok Metropolis and its suburbs in order to become 'an integrated system'. This must coincide with the city plan and the increase orderly use of land in the future. This is especially true with the sewage system and flood prevention system which must be made permanent.

- Develop the transportation and traffic control systems in the Bangkok area together with the development of the city infrastructure to become a more complete and flexible system.

- Develop living quarters and congested areas. Give importance to the development of poor urban areas, and the raising of the quality of urban life.

b) Increase efficiency in the implementation and management of development projects in the urban areas and New Economic Zones

- Improve or if necessary, consider establishing a new organization for the management of consumer goods and services in the Bangkok Metropolis and major urban centers to be more free and flexible especially in sewage and flood control, public transportation, and traffic management; and consider establishing a special organization to manage the development of the Eastern Seaboard.

c) Encourage the division of responsiblities and the use of the integration principle in development

- Appropriately divide investment burdens in the provision of urban consumer goods and services between the central government, regional administrations, state enterprises, and the private sector.

- Decrease subsidies from the central sector by arranging to collect fees from self-reliant services and those that generate enough income to be able to reinvest and expand operations in the future.

- Improve regional financial status and encourage the private sector to jointly invest in the development of basic services in the urban areas while the government will help provide conveniences and academic assistances an necessary.

V. Program to Develop Society, Human Quality, Human Resources, and Labor

To ensure that the Program to Develop Society, Human Quality, Human Resources, and Labor is consistent with economic development and to ensure efficiency in achieving the set overall development targets, while having long run impacts on the development of the quality of life according to the criteria of basic necessities; the important substances of this program necessarily include:

a) Continuation of policies from the Fifth Plan

- Arrange educational courses and trainings in consistent with the demand in the development of the quality of life. Furthermore, develop discipline and attitudes favorable to the development process of the country and in agreement with the labor market demand.

- Develop human quality with emphasis given on the coordination between the sectors to develop the quality

of life for the population both in the rural and urban areas, in agreement with the criteria for basic necessities. Also, improve the quality of health services and protection from hazardous environments and dangerous working conditions in the industrial and agriculture sectors. This is done by organizing a system for accident prevention in consistent with the development of other sectors and to prevent unnecessary government losses.

- Revive, conserve, and develop national art and culture by emphasizing the preservation of the Thai way of life.

- Encourage physical education and education to spread out into the regional areas, and to encourage everybody of every gender and age to have more opportunities to play sports and exercise, while preventing and reducing narcotic drug problems and misuse of certain medicine.

- Decrease in the rate of population increase from about 1.5 percent by the end of the Fifth Plan to 1.1 percent by the end of the Sixth Plan. Incentive measures will be used to induce interests in family planning for married couples. Emphasize on permanent and semi-permanent family planning schemes with special target groups on families with low rate of family planning especially in the rural areas of the Northeast and the South, including congested urban areas.

- Improve the process of providing social welfare to increase efficiency in the operations of the righteousness process. Encourage the community including the local private sector to participate jointly in the provision of services which are demanded by the community, in order to produce more community self-reliance. Additionally, provide social services that are in line with the changing population age structure and the change from rural to urban condition. All this is to lessen the government's burden.

b) Improve efficiency and quality of work in social development, development of human resources and labor

- Review the policy of fees collection for the various social services including health and education especially in higher educational level which is still being offered at a very low price. It is necessary to adjust the fees to be more equitable, together with providing financial assistances for the poor at every educational level. Also, create a system of monetary fund for education.

- Accelerate the expansion of human resources production in sectors which are inadequate and where the market demands. In addition, slow down the production of human resources in sectors which have high unemployment problems.

- Improve labor productivity. This is to decrease production costs and to be consistent with the wage policy.

- Organize a system and mechanisms of cooperation between educational and training institutions and employers. Encourage cooperation between educational institutions, the government and private sector's training institutions, in the matter of increased vocational trainings in the workplace.

- Encourage self-employment to create self-generating work by compaigning for and propagate the direction of the labor market for students, academics, youths, and parents both inside and outside the school system. This will lead to favorable opinions on self employment. Furthermore, educate and train interested persons for the development of knowledge in terms of vocation, business, management, marketing, money, and accounting.

- Maintain existing foreign labor market, and expand into new markets. Also, develop labor skills and foreign language capabilities that are necessary for their jobs; and plan to absorb Thai workers returning from abroad.

- Improve efficiency in ensuring the people's welfare, and expand labor protection, protection in the use of women and child labor, safety in the workplace, labor relations,

setting of appropriate wage structure, and the management of the minimum wage policy so that it is exercised according to the law, create fairness for all sides, and consistent with the economic, social, and political systems of the country.

- Develop news and information system on the labor market and a data system on human resources, in order to create favorable conditions for setting of labor policies and management, employment services, career counselling, and the development of human resources in government and private sectors to be in line with the labor market.

c) Set mechanisms in the development of society, human quality, human resources, and labor by uniting every sector and emphasize the self-reliant principle, togetherness in helping each other in order to lessen the government's burden

- Adjust the role of the government to appropriately provide social welfare by taking into account the financial limitations of the country. Also, emphasize the government's role in the preservation of laws and regulations in supporting and providing of the various conveniences.

- Encourage private businesses to increase their participation in the provision of social services by promoting suitable investments, and using of price mechanisms as incentives.

- Promote and support the uniting of private institutions to be able to collaborate with the government sector, and use planning techniques as a tool in the cooperation so that both sectors follow the same targets and directions.

- Organize a system of mass participation in the development of society by giving importance to organizations and mass participation in the urban areas, especially in the congested areas and residential areas to prevent and solve social problems. Emphasis should be placed on letting the communities form their own organizations.

- Stress the importance of the family unit as the main institution in preventing and solving of the various problems by emphasizing the promotion of understanding between the family members so everybody realizes his duties and responsibilities to society.

VI. Program to Develop Production, Marketing, Technological, and Employment Generation Systems

To achieve the overall economic growth target in the Sixth Plan period depends on the constraints and changes in the market and the world economy. Therefore, it is necessary that there exist a Program to Develop Production, Marketing, Technological, and Employment Generation Systems to cope with the changes. The important substances of this program include:

a) Continuation with the policies of the Fifth Plan

- Encourage the use of Thai products

- Adjust the agricultural production structure to increase the farmers' income and to improve their standard of living by appropriately and efficiently arranging for the use of existing resources which have not been fully utilized. Also rapidly and widely distribute information concerning the use of resources and new products to farmers.

- Accelerate the diversification of production and markets to reduce the income risks of farmers and risks for the country's exports. Ensure that production is consistent with the market demand in quantity and quality. At the same time, utilize the remaining resources towards the production of new products for export and import substitution.

- Develop export industries that employ domestic raw materials as the main factor of production. This is done by expanding the existing export industrial base, adjust industries that produce for domestic use to be able to export and use more domestic raw materials. Also, add new types of export industries.

- Develop small-scale industries and rural industries by designating and supporting the development of industries in each region to be in line with the existing factors of production.

The government should provide assistances to small scale industries and regional industries more than or equal to large-scale industries. Also, provide sufficient monetary supports to the industries as demanded, and encourage the increase use of new production techniques in production.

- Develop and expand the role of services that will directly and indirectly increase foreign currencies. Additionally, support in generating employment among the educated. Apart from tourism, other important services include construction, transportation, insurance, monetary services, and international businesses.

- Proceed on with projects to develop agro-industries, export industries, and linkage industries in the Eastern Seaboard area.

- Encourage cooperation between the government sector and the private sector.

- Improve agricultural production process by emphasizing the reduction of production costs and the use of domestic factors of production. Stress on employing human and animal labors instead of machines, labor saving devices, and encourage soil improvement by using sodden fertilizer instead of chemical fertilizer.

- Alleviate the farmers' debt burden.

๖) Increase efficiency and quality in production and marketing to be able to better compete with foreign countries

- Promote exports by truly changing the concept of 'selling after producing' to 'producing for selling'.

- Increase efficiency in the use of existing natural resources and those that are being revived in agricultural development and irrigation. This is to expand production in the remaining land both inside and outside of the irrigated districts including the coastal areas which have not been sufficiently utilized for fishery.

- Improve agricultural and industrial technology in order to apply progressive technologies such as genetic engineering, bio-material, and metallurgy, etc., as appropriate.

- Place importance in developing market information network by organizing the network in the form of market demand signals for the demand of goods, quality of goods, and product prices in the world market. In addition, coordinate public relations and information distribution programs to inform the domestic export producers so that Thai products are truly in line with foreign market demands.

- Create opportunities for competition among the export producers by improving incentive measures, providing monetary assistances, and developing and improving of product quality.

- Give importance to the planning of programs and projects concerning production and market development both domestically and internationally. Included will be the varicus government services in export promotion.

- Encourage and support investments in building silos to store agricultural products.

c) Unite all concerned parties to develop production, marketing, and technological systems.

- Develop a system to integrate the government and private sectors in agricultural development in progressive, middle-level, and poverty-stricken agricultural areas.

- Set up an organization to coordinate programs for export promotion projects. This organization will coordinate export programs of the government and private sectors.

- Place importance to the development of monetary institutions by considering the possibilities of establishing

institutions to be used as tools in supporting export expansion and export production, such as the Import-Export Bank and the Institute to Guarantee Export Credits. Improvement and Development of domestic insurance institutions are also necessary to increase efficiency and create stability.

- Construct mechanisms to coordinate implementation plans in order to implement the tourism development plan. In addition, coordinate public relations and marketing programs.

- Develop a system and mechanisms to coordinate the government and private sectors in the development of science and technology especially in the transfer of technology from foreign countries. This will include research and development, selling . . ? of standards, analyzes and experiments, and the development of human resources in science and technology.

- Develop international cooperation in investments, marketing, and exports.

- Encourage farmers to organize themselves into associations such as cooperatives.

VII. Basic Services Development Program

To develop basic economic service infrastructure especially in transportation, energy, and major consumer services in order to better assist the overall development targets, it is appropriate that the important substances of the Basic Services Development Program include:

a) Continuation with policies of the Fifth Plan

- Emphasize maintaining and using benefits from existing infrastructure network as much as possible. Give special attention in building the important links of the communications network. In addition, repair and construct asphalt roads on existing roadways to every amphur and sub-amphur.

- Expand the basic services network in the 'urban districts' to be able to absorb urban growth and to ensure orderly use of land.

- Emphasize the improvement of communications projects that is crucially lacking especially in the telephone system both in the central and district levels.

- Proceed to adjust and balance the framework of the energy sector continuing from the Fifth Plan by setting the target to reduce the proportion of fuel consumption down

to 35 percent of total energy consumption during the Sixth Plan period. Natural gas will increasingly substitute for petroleum. It is also necessary to develop supply sources of natural gas both in the Gulf of Thailand and on land itself. Included are policy adjustments to appropriately expand oil refinement by considering the excess supply of neighboring countries that refine oil.

b) Improve efficiency and quality in the provision of basic services

- Adjust the service prices in the urban areas so that they become self-reliant. The government will only support basic services network in the 'rural areas'.

- Payment for the basic services should not 'necessary be at the same rate for the whole country'. The prices should depend on the production costs in each area such as rural water supply system and industrial electrification.

- Adjust retail prices of oil products to be more flexible to reduce the gap between the retail prices of gasoline and diesel oil. Consider the role of oil reserve fund and could consider abolishing the policy of retail price control in the Sixth Plan period. In addition, find ways to reduce negotiations on prices so as to accelerate the development of energy sources in the country and increase its efficiency.

- Develop air communications network by making Thailand capable of being the center of cargo transportation and air communications.

- Develop water transportation to become a support in the trade cycle of exports and imports to save energy and decrease dependency on foreigners in transportation.

c) Improve management institutions in the provision of basic economic services

- Adjust internal management systems and regulations to increase flexibility.

- It is not necessary for the government to continue to monopolize the provision of basic economic services. Emphasis will be given to joint investments and increase in the role of the private sector.

- Adjust the government's role and the framework of the Petroleum Authority of Thailand in exploration, energy production, transportation, refinement, and joint investments in energy and petroleum products. The country's financial limitations and flexibility of the private sector are the main considerations. In addition, improve joint investment laws, production commitments, rules concerning the returning of

franchise lands, and exploration data as 'incentives' for the country's energy producers. The proportion of benefits the government receives must be increasingly linked to the rate of production.

VII. Science and Technology Development Program

The Cabinet has authorized the Ministry of Science, Technology, and Energy to draft the direction of this program and propose to the Prime Minister for approval.

IX. State Enterprises Development Program

It is necessary that state enterprises operate more efficiently. State enterprises must be administered in a business-like manner to be able to compete and become self-reliant. All this is to lessen the government's financial burden and is an important factor in improving the competitive status of the country in economics and trade in the future. Therefore, the State Enterprises Development Program necessarily contains these important substances:

a) Continuation with policies and measures of the Fifth Plan to improve state enterprises

- Use serious measures in savings and reduction in the costs of production to increase income and achieve self-reliance so as to reduce subsidies and loans.

- Proceed to transform ineffective state enterprises.

- Maintain total or partial government control in certain types of state enterprise that generate income or those of the social services type.

- Adjust the prices of goods and services of some state enterprises to create self-reliance.

- Improve the efficiency of the state enterprise administration system by having a central organization administering in the policy level and the ministeries in charge administering in the implementation level.

b) Increase efficiency of state enterprises

- Increase efficiency in the operations and in generating income for the government especially with monopolistic types of state enterprises.

- State enterprises must adjust their investment plans to have a suitable debt-service ratio and must increase the proportion of investments that consists of their own income.

- Decrease or eliminate loan guarantees for state enterprise so as to encourage investments only in projects with high return and acceptable to the loan sources.

c) Improve to strengthen the state enterprise management system and unite all sectors for cooperation

- Reduce the role of industrial state enterprises or other types of state enterprises which provide basic services that the private sector can operate better by letting the private sector jointly invest, rent, or receive partial or total transfer.

- As for some new main industries that require government participation in the initial stages, usually activities which need high investment capital and technology, state enterprises may join to invest in such industries during a set time period.

- State enterprises must receive close attention from the ministries in charge and the central organization by setting a state enterprise plan and a personnel management system which are more efficient and business like.

X. Program to Improve Management and Review the Government's Role in the Development Process

To ensure efficiency in the operations of the nine previously mentioned programs and to achieve the set overall targets, it is necessary in improve the management system of the government sector to be more systematic and integrated. Therefore, the important substances of this program must include:

a) Continuation with the operations of the Fifth Plan

- Support the coordinating mechanism of the central institutions in the planning process, income distribution, human resources distribution, and income mobilization; in order to be consistent and integrated as one process.

- Support the operations of the Joint Public and Private Consultative Committee (JPPCC) and expand its operations into the regional areas.

- Support the management system according to the Rural Development Program.

- Support the management system according to the Eastern Seaboard Development Plan.

- Support economic and social development activities to be interrelated and consistent with the National Preparedness Plan.

b) Improve management efficiency to be more capable in transforming policies into the implementation stage

- Set coordinating mechanisms for the implementation plans.

- Organize a system of mechanisms to convert plans and policies into the implementation stage at regional and local levels.

- Arrange a planning and management system for energy policies to have integrity under the same central institutions.

- Develop a management data system.

- Adjust the structure, institutions, and human resources in the management of the government to create savings and efficiency and eliminate repetitions.

- Build understandings and cooperation in the operations of the government sector and the private sector by coordinating the National Public Relations Plan to be in line with the Sixth Plan for both sectors.

c) Adjust the role of the government to unite every sector in the development process

- The government must act more as a stimulator or a catalyst rather than as an interventionist or an investor of production and marketing by itself.

- Reduce domestic economic and price distortions.

- Appropriately divide the country's development burden between the government, regional administrations, state enterprises, and the private sector.

PRELIMINARY PROPOSAL

〔参考資料２〕

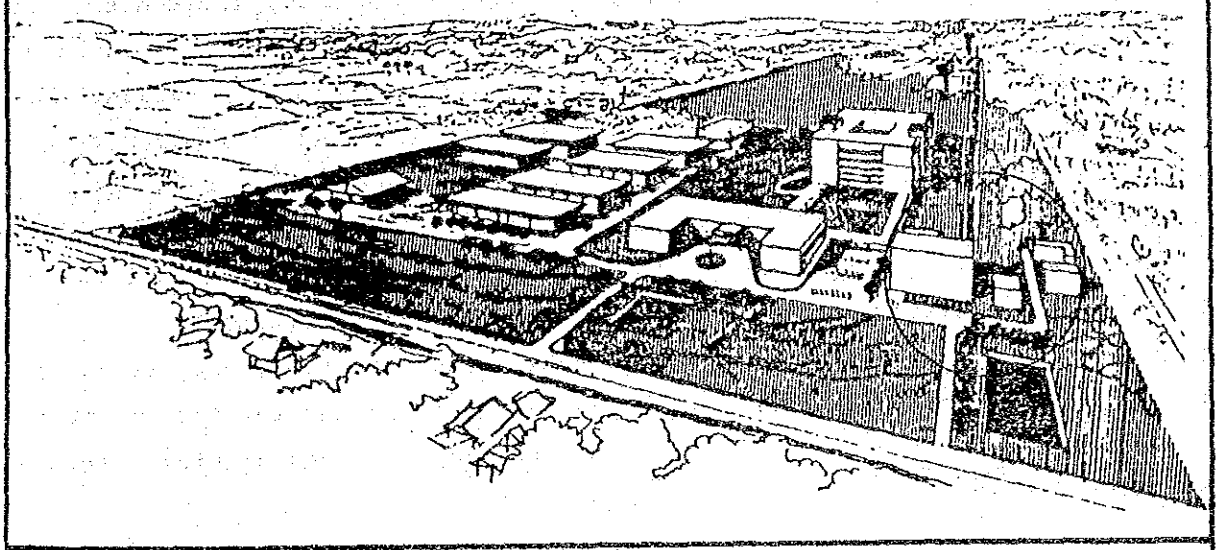
ON

DEVELOPMENT OF FACILITIES AND CAPABILITIES OF

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH

MINISTRY OF SCIENCE, TECHNOLOGY AND ENERGY

PHASE 1: TESTING AND STANDARD CENTER



SUBMITTED TO

THE GOVERNMENT OF JAPAN

by

THE ROYAL THAI GOVERNMENT

FEBRUARY 1983

Request for Grant Aid Project

Project Title: Testing and Standards Center

Requesting Agency: Department: Testing and Standards Division, Thailand Institute of Scientific and Technological Research

Ministry of Science, Technology and Energy.

Proposed Source of Assistance: Japanese Government.

Background information and justification for the project.

During the period of past national development plans, the use of science and technology in the development process was still limited and not adequately efficient, as for the industrial sector, the entrepreneurs have not sufficiently realised the use of science and technology in raising production efficiency, so that the most of domestic industrial products are not able to export as much as possible due to the low and irregular quality which is not satisfactory to the industrialists and general consumers in the other countries. Taking into consideration factors involved, the Fifth Economic and Social Development Plan of The Royal Thai Government recognizes to improve and expand the national standard system, quality control including reference standards, metrology, calibration and testing in order to make these services acceptable to foreign countries and provide adequate services for the promotion of Thai exports.

Thailand Institute of Scientific and Technological Research (TISTR) is one of the government agency, must be reformed and strenghten the capability to be able to solve technological problems for various industries. This includes its role as a leader in adapting and improving foreign technologis appropriately for efficient uses. The institute is to undertake and expand the capability of the testing and standards laboratories by request for grant aid project from the developed country as Japan. The grant

aid will be included the building, testing, calibration chemical analysis equipments and also the personnel training programmes for the amount of 200 million bat

2. Detail of the project.

2.1 Programme goal: To establish the testing and standards laboratory at the new TISTR site at Rangsit, regarding to improve and expand the TISTR services to the state and private enterprise.

2.2 Project objectives

(1) To expand evaluation and standard testing work of various government and private agencies. The purpose is to improve national standard activities on the industrial products and agro-industrial products, for the promotion of Thai exports.

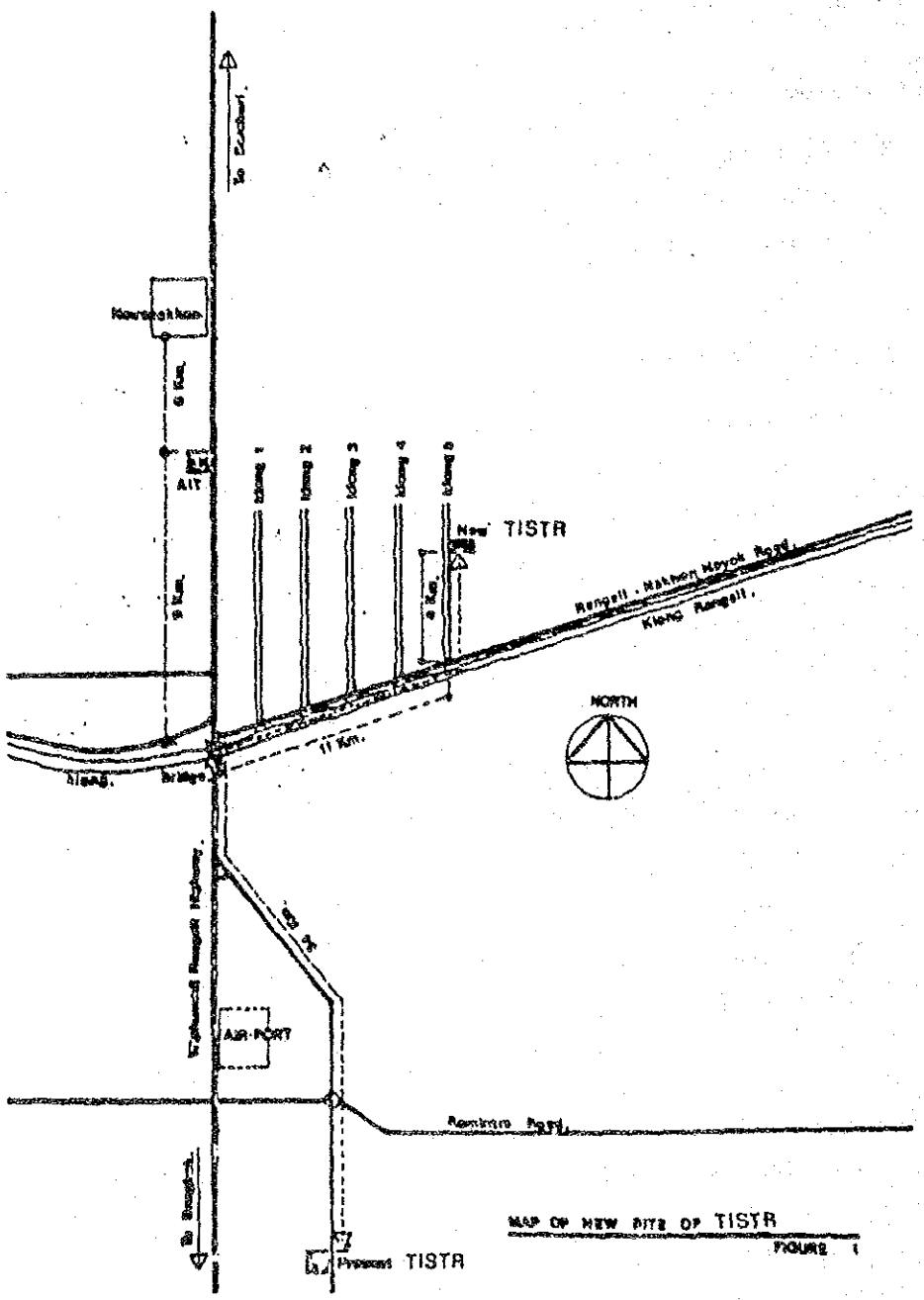
(2) To conduct research on standardization, metrology and calibration of various equipments and appliances in order to raise the standard of locally produced products to an internationally competitive level.

2.3 Conditions expected at completion of project.

The national standard system in Thailand will be reconized and acceptable to the foreign countries. The volume of Thai exports trade correspondingly will be increased to serve the Fifth Economic and Social Development Plan.

2.4 Recommended source of information and data related to the project necessary for project verification.

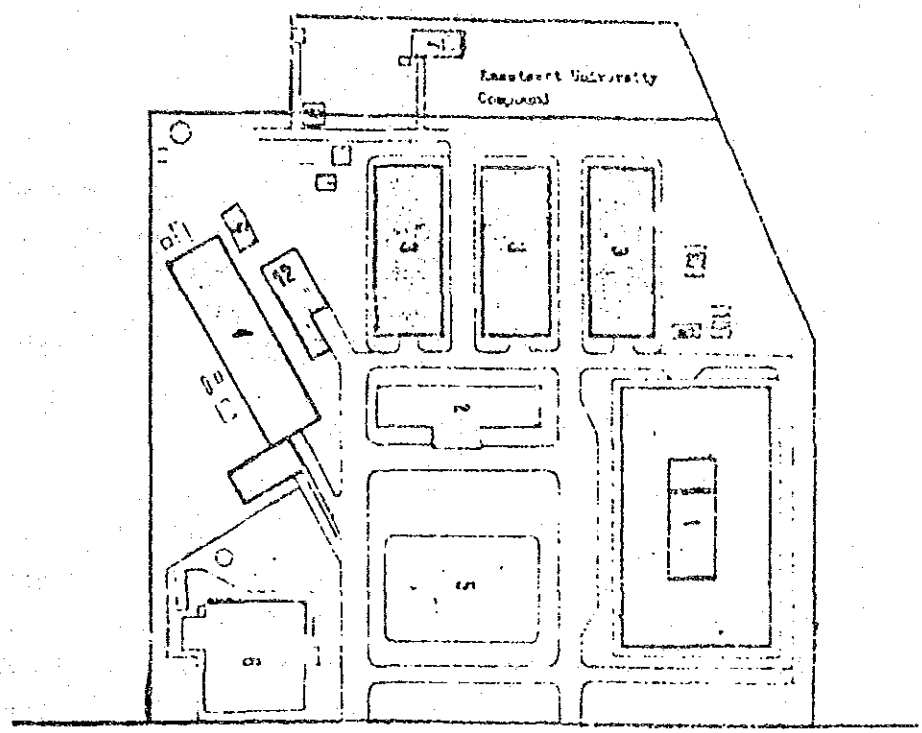
For the time being, there are about 450 Thai standards, and will be more and more in the future but the existing laboratories in Thailand are not official enough to serve the testing and analysis the industrial products in order to raise up the international standards.



MAP OF NEW SITE OF TISTR

FIGURE 1

PRESENT TISTR SITE



1.NATIONAL DOCUMENTATION CENTRE AND TECHNICAL OFFICE OF TISTR

2.OFFICE OF NATIONAL RESEARCH COUNCIL BUILDING

3.WORK SHOPS

4.INDUSTRIAL RESEARCH DEPARTMENT BUILDING

5.POOL

6.NATIONAL RESEARCH COUNCIL BUILDING

7.VEGETABLE OIL PRODUCTION FROM JOJOBA

8.PRINT WORKSHOP

9.ENVIRONMENTAL

10.GUARD HOUSE

11.PROTOTYPE UNIT FOR HOUSING AND ENVIRONMENT

12.SUGARCANE JUICE PILOT PLANT

FIGURE 1

2.5 Duration of the project:

Starting from 1983 - 1986

2.6 Project site: TISTR., Rangsit.

(See Fig. 1, 2 and 3)

2.7 Project work plan and activities

2.7.1 The Government of Japan will despatch the mission for the purpose of conducting a feasibility study in the year 1983.

2.7.2 Time schedule of project activities. Depend on 2.7.1

3. Details of the implementing/operating agency:

3.1 Institutional framework.

TISTR is entrusted with the main task of bringing the results of research to application for the benefit of the economic and social development of the country. This includes conducting research and rendering scientific and technological services to various government agencies and private enterprises. However, regarding the scientific and technological service, Testing and Standards Division (TSD) is responsible for the testing of Thai industrial products, repair and calibre of scientific instruments and chemical analysis. This aims at encouraging and promoting scientific and technological development both in the government and in the private sectors to raise up the standard of locally industrial products to an international level.

3.2 Staff/personnel participating in project implementation:

9 Engineers
9 Scientists
16 Technicians
3 Administratives
5 Others

4. Assistance requested.

4.1 Equipment: See Annex, estimated cost 130 million Bahts.

4.1.1 Justification for requesting equipment: Since the testing equipment is high cost and must be purchased from foriegn countries, it would be necessary to request for co-operation from developed countries.

4.2 Other: Construction cost.

Item requested		Total cost
Building:	Five stories building about 8500 m^2 and facilities (See table 1)	70 million Bahts

5. Thai Government Counterpart Contribution to the project:

Description of Government Counterpart Contribution	Total Contribution	
	Already available	To be requested
1. Project personnel		
1.1 Professional staff		
- Engineer	9	9
- Scientist	9	3
- Technician	16	7
1.2 Administrative		
- Staff	3	1
1.3 Others	5	2

6. Related projects/activities.

6.1 Previous assistance received in fields related to the project. TSD has previously received 13 fellowships for training in the field of calibration and testing by UNDP/UNIDO, ADB, CDG, Columbo Plan and ETL-NRLM of Japan.

7. Future work plan:

Testing and Standards Center will act as the real National Standard Center of the nation, and will provide adequate services for the promotion of Thai exports. The works will carry out as follow:

7.1 Maintaining testing calibration services in full capacities as mention in project objective.

7.2 Researching for new methods of testing.

7.3 Design and develop testing equipment corresponding to standard specifications.

7.4 Transfering testing technology to the industry.

7.5 Assistance in improving initial quality of new products at production start-up.

7.6 Assistance in improving Thai industrial products to standard level.

7.7 Assistance in establishing quality control systems for industry.

7.8 Performing experimental works to get technical data for TISI.

TABLE 1

SITE DEVELOPMENT COST

ITEM	ESTIMATED COST	
	BATHS	US. $
1. Site preparation, 76,000 m^3	6,840,000	297,390
2. Road, 280 m x 20 cm.	1,400,000	60,869
3. Electricity 4000 m @ 680.	2,720,000	118,260
4. Transformer 1200 KVA	466,000	20,260
5. Water Supply	870,000	37,826
6. Telephone	2,000,000	86,956
7. Air Conditioning System	1,200,000	52,174
8. Landscape	200,000	8,695
9. Laboratory Building 8500 m^2 x 5000	42,665,000	1,855,000
10. Resident Building 864 m^2 x 4000	3,456,000	150,260
11. Site Supervisor Resident 240 m^2 x 3000	720,000	31,304
12. Store Building 5 x 15 m^2 x 3000	360,000	15,652
Sub Total	62,897,000	2,734,652
13. Contingency 10 %	7,103,000	308,826
Total	70,000,000	3,043,478

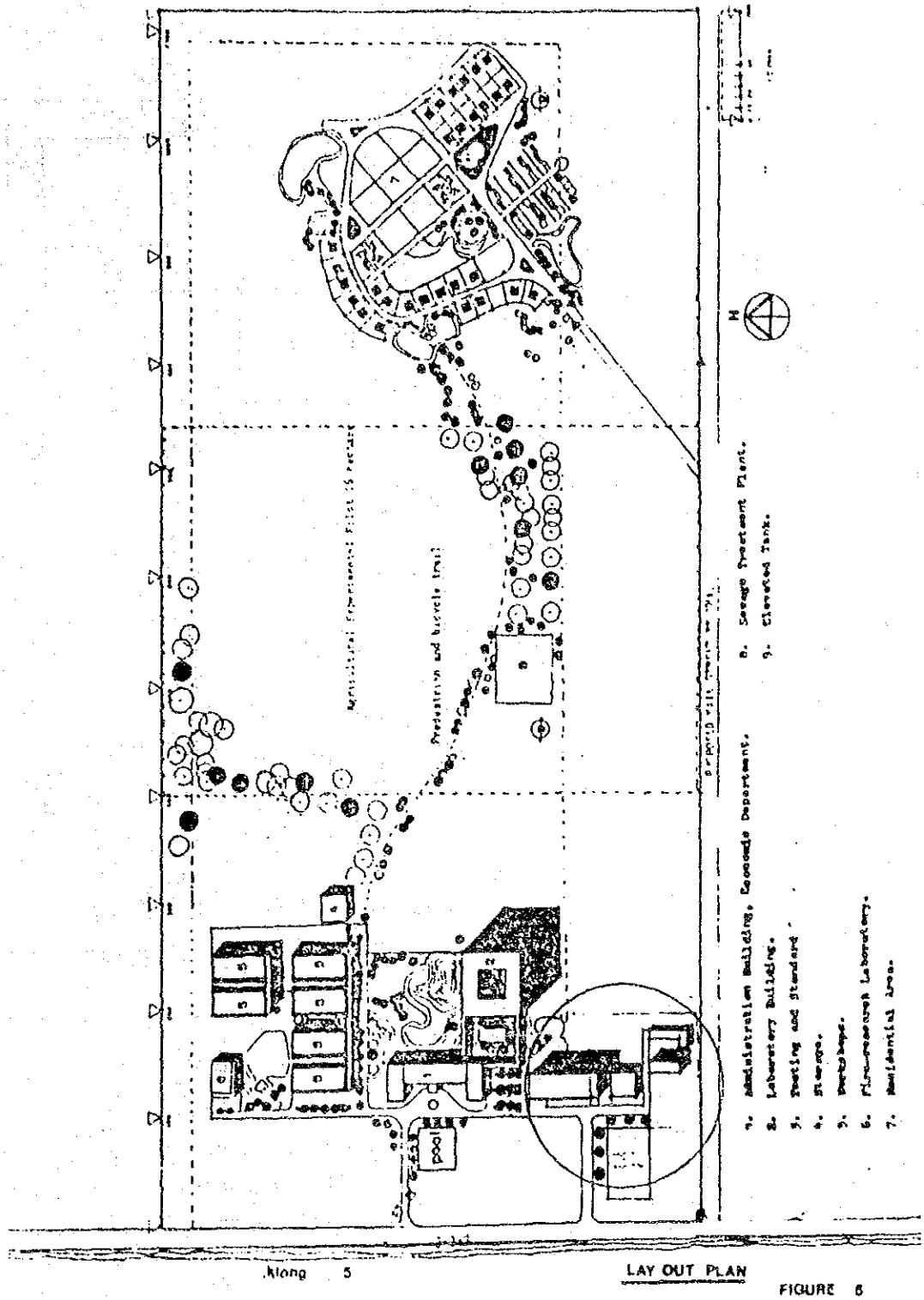
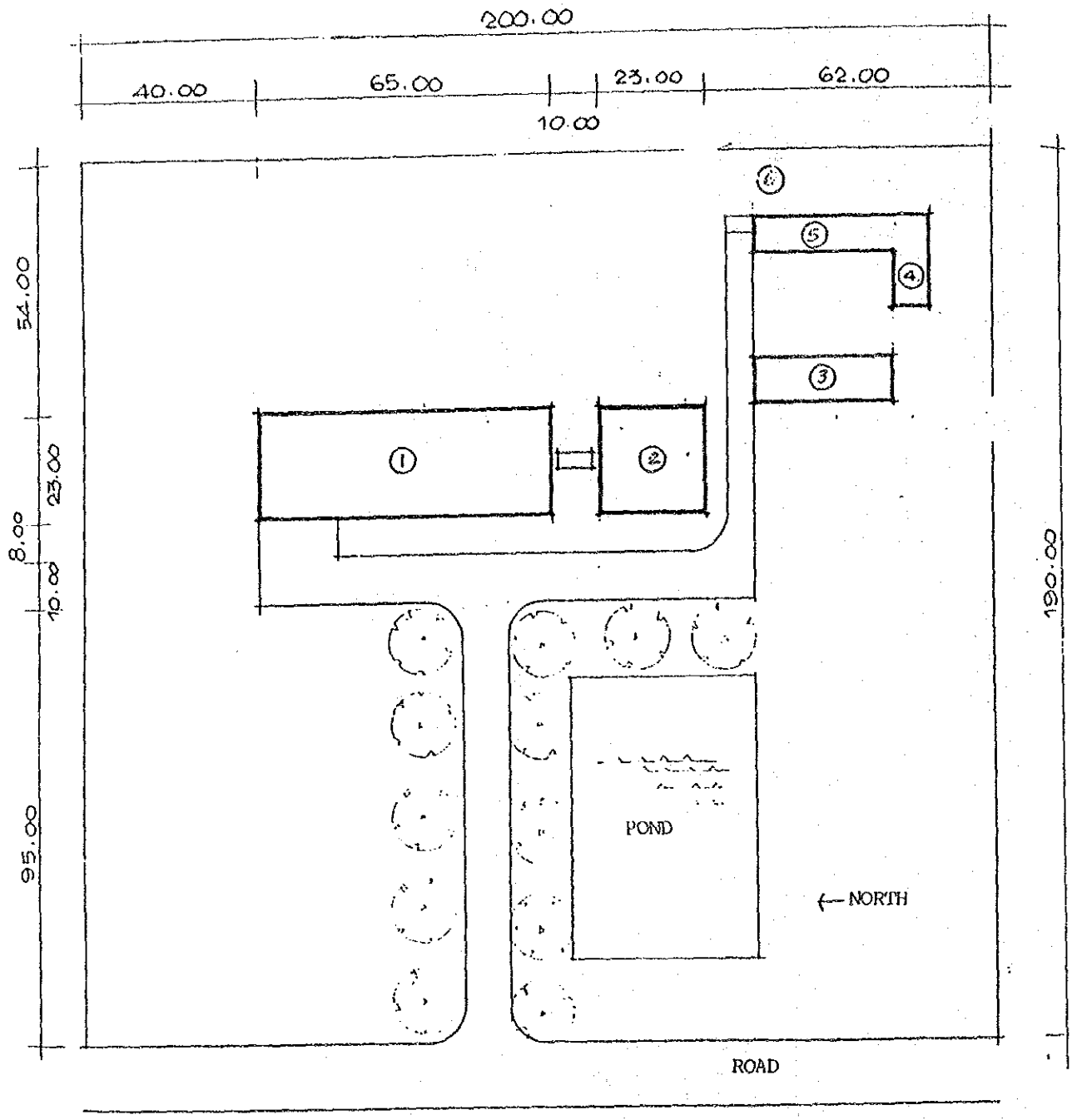


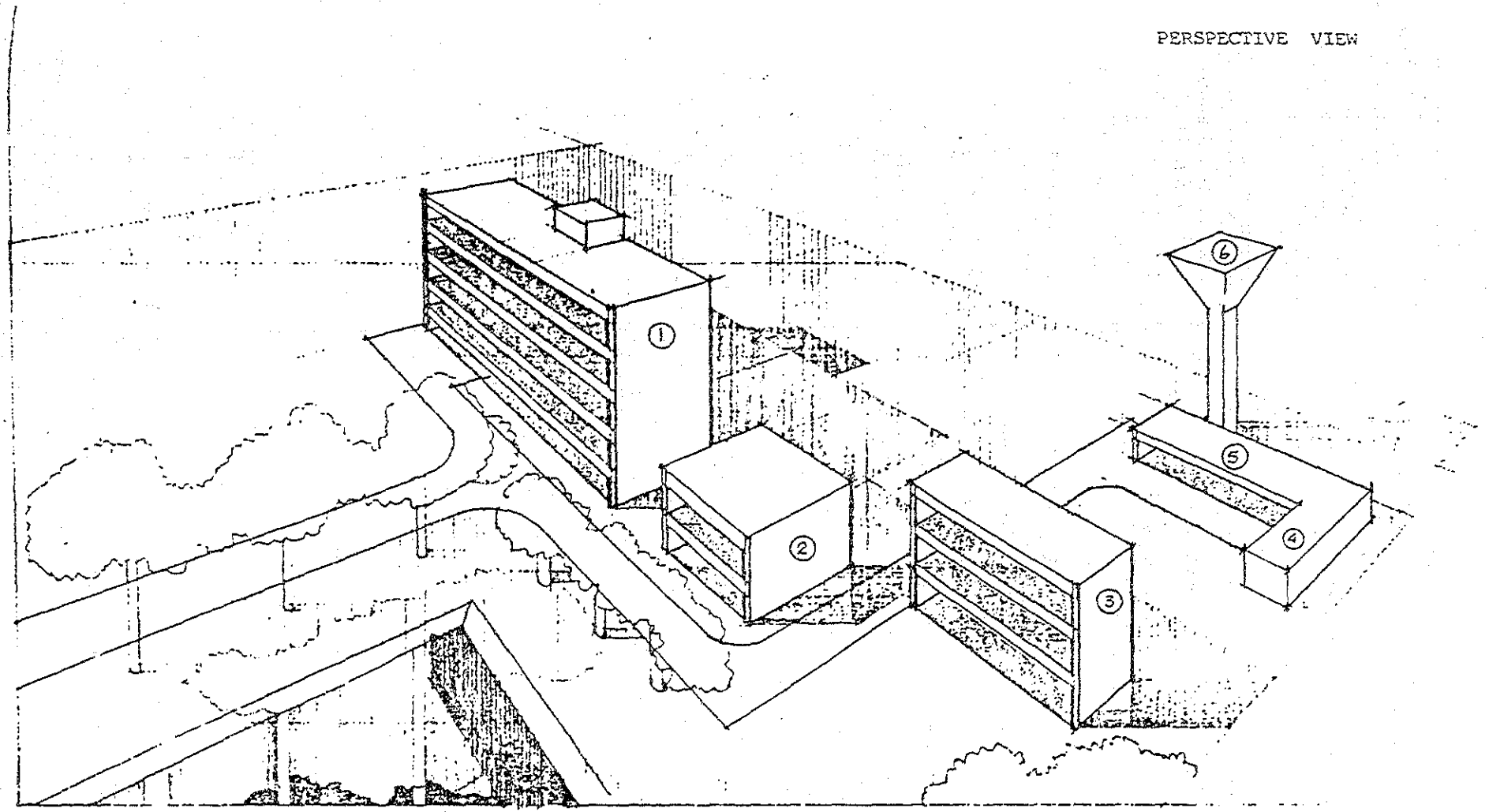
FIGURE 6



LAY-OUT PLAN SCALE 1 : 1200

1. ADMINISTRATION AND LABORATORY BUILDING
2. ANTI-VIBRATION BUILDING
3. RESIDENCE FOR SENIOR STAFF
4. RESIDENCE FOR JANITOR
5. STORAGE, POWER HOUSE
6. WATER SUPPLY TANK

PERSPECTIVE VIEW



1. ADMINISTRATION AND LABORATORY BUILDING
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ANNEX 1

A. Mechanical Standards Laboratory

a-1 Metal Testing Laboratory

Item	Description	Requested Amount of each item
1	Automated Universal Testing Machine, Capacity 50 Ton	1
2	Compression Machine, Capacity 300 Ton	1
3	Impact Testing Machine, Izod & Charpy	1
4	Automated Torsional Testing Machine, Capacity 2500 kg. m	1
5	Rockwell Hardness Tester, Superficial	1
6	Vickers Hardness Tester	1
7	Micro Hardness Tester	1
8	Surface Roughness Tester	1
9	Metal Abrasion Testing Machine	1
10	X-ray (Radiographic) Fluoroscopic Type	1
11	Microscope	1
12	Creep Testing Machine, 3000 kg/1200 °C	1
13	Portable Hardness Tester	1
14	Lathe	1
15	Shaping Machine	1
16	Vertical Universal Milling Machine	1
17	Horizontal Grinding Machine	1
18	Sheet Metal Forming	1
19	Sheet Metal Cutting Machine	1
20	Drilling & Boring Machine	1
21	Level Table, Size: width 1 m × length 2 m	1
22	Hydraulic Press, Capacity 30 Ton	1
23	Ultrasonic Thickness Meter	1

Item	Description	Requested Amount of each item
24	Gas Detector	1
25	Gas Flowmeter	1
26	Plug Gages	2
27	Flowmeter for exhaust air	1
28	Standard Tanks & Pipe Provers for Flowmeter	1
29	Endurance Tester for Water Meter	1
30	Automatic Drawing Device for Instrumental Error & performance curve	1
31	Automatic Connecting Device for Tested Flowmeters on a Test Bench	1
32	Air Separator for a Pipeline	1
33	Automatic Flow Stopper at a Set Division	1
34	Flow Converter for Test of Flowmeter in Running Stand	1
35	Air Operating Pump	1
36	Portable Magnetic-particle Inspection Set	1
37	Ultrasonic Testing and Inspection Set	1
38	Electell Crack Detector	1
39	Cyclograph	1

a-2 Elastomeric and Textile Materials Testing Laboratory

Item	Description	Amount requested of each item
1	Universal Testing Machine, 0-100 kg (dynamic)	1
2	Abrasion Resistance Tester for Rubber	1
3	Buffing Apparatus	1
4	Geerls Rubber Aging Oven	1
5	Test-Tube Method Aging Tester	1
6	International Rubber Hardness Tester	1
7	Dematttia Flex-cracking Tester	1
8	Mooney's Automatic Shearing Viscometer	1
9	Dynamic Visco-Elasticity Tester	1
10	Test-Piece Cutting Machine	1
11	Electronic Balance, sensitivity $\frac{1}{10000}$ g	1
12	capacity 0-300 g	
12	Impact Resilience of Rubber	1
13	The pusey & Hones Plastometer	1
14	Unevenness Testing Instrument	1
15	Twist Tester	1
16	Shirley Analyser	1
17	Crimp Tester	1
18	Drapemeter	1
19	Wrinkle Recovery Tester	1
20	Fibrograph	1

a-3 Plastics Testing Laboratory

Item	Description	Amount requested of each item
1	Universal Testing machine, 2000 kg	1
2	Pressurizing system 45 kPa	1
3	Balance, capacity 500g, sensitivity 0.05g	1
4	Impact Tester for Plastics	1
5	Molds for Preparation of Plastic Specimens	1

a-4 Ceramic and Glass Testing Laboratory

Item	Description	Amount requested of each item
1	Autoclave max. cap. 15 bar	1
2	Glass Analyzer	1
3	Wall Thickness Meter (digital)	1
4	Water Bath, size W 50cm x L 60 cm x D 30 cm	1
5	Impact Tester for Glass Containers	1
6	Thermal Expansion Testing System	1

B. ELECTRICAL & ELECTRONIC LABORATORY

B.1 MEASURING EQUIPMENT TESTING

B.1.1 ELECTRONICAL EQUIPMENT

(1) Direct Current

Item	Description	Amount requested for each item
1	DC voltage standard	1
2	High impedance voltmeter	1
3	Kelvin varley divider	1
4	DC current standard	1
5	Potentiometer	1
6	Universal ratio set	1
7	Kelvin varley voltage divider	1
8	Double bridge	1

(2) Low frequency

Item	Description	Amount requested for each item
1	Attenuator	1
2	Digital multimeter	1
3	AC current source	1
4	AC voltage source	1

(3) High frequency

Item	Description	Amount requested for each item
1	Power meter	1
2	RF Power Source	1
3	Electronic voltmeter	1
4	Selective voltmeter	1
5	Calibration receiver	1
6	Attenuation measuring system	1
7	Impedance measuring system	1

B.1.2 Frequency & Time Measuring Equipment

Item	Description	Amount requested for each item
1	Atomic frequency standard	1

B.2 Material testing

B.2.1 Electrical Material

(1) Solid insulating material

Item	Description	Amount requested for each item
1	Tensile & bending tester	1
2	Impact tester	1
3	Abrasion & friction tester	1
4	Hardness tester	1
5	Flexibility tester	1
6	Flexual fatigue tester	1

7	Combustibility tester	1
8	Deterioration tester	1
9	Arc resistance tester	1
10	Tracking resistance tester	1
11	Wet insulasion resistance tester	1
12	Heat distortion tester	1
13	Adhesions tester	1
14	Sample making equipment	1

B.2.2 Magnetic Material

Item	Description	Amount requested for each item
1	Gauss meter	2
2	Fluxmeter	2
3	Epstein iron loss test set	2
4	DC magnetic hysteresis loup tracer	1

B.2.3 ACOUSTIC MATERIAL

(1) Acoustic emission

Item	Description	Amount requested for each item
1	Amplifier	1
2	Pulse analyzer	1

(2) Acoustic noise

Item	Description	Amount requested for each item
1	Sound level meter	2
2	Sound level meter calibrator	1

(3)-1 Sound insulation

Item	Description	Amount requested for each item
1	Amplifier	1
2	Recorder	1
3	Generator	1
4	Power amplifier	1

(3)-2 Reverberation

Item	Description	Amount requested for each item
1	Level recorder	1
2	Generator	1
3	Amplifier	2
4	Filter	1

(4)-1 Frequency response

Item	Description	Amount requested for each item
1	Amplifier	1
2	Recorder	1
3	Generator	1

(4)-2 Phase response

Item	Description	Amount requested for each item
1	Phase meter	1
2	Recorder	1
3	Generator	1

(4)-3 Impulse response

Item	Description	Amount requested for each item
1	Analyzer	1
2	Amplifier	1
3	Gate	1
4	Generator	1

(4)-4 Distortion

Item	Description	Amount requested for each item
1	Recorder	1
2	Amplifier	1
3	Tracking filter	1
4	Generator	1

B.3 PRODUCT TESTING

B.3.1 Safety Characteristic (Household Appliance)

Item	Description	Amount requested for each item
1	Standard test finger	2
2	Test pin	2
3	Test probe	2
4	AC/DC breakdown tester	1
5	Leakage current tester	1
6	Water spray apparatus	1
7	Water splash apparatus	1
8	Impact test apparatus	1
9	Hot mandrel apparatus	1
10	Tracking test apparatus	1
11	Torque measuring apparatus	1
12	Cord anchorage test apparatus	1
13	Apparatus for flexing test	1
14	Ball pressure test apparatus	1
15	High power ac. stabilizer	2
16	Temperature, humid, Controlled cabinet	2
17	Temperature recorder	2
18	High acc.digital multimeter	2
19	Double beam oscilloscope	2
20	Electrostatic voltmeter	2
21	High voltage insulation test equipment	1
22	Earth continuity tester	1

B.3.2 Performance characteristic

(1) Power Generating machine, motor

Item	Description	Amount requested for each item
1	Dynamometer	3
2	Variable power loading	2

(2) Electric cable and cord

Item	Description	Amount requested for each item
1	Tensile & elongtion machine	1
2	Abrasion tester	1
3	Flexual tester	1
4	Weathering proof tester	1
5	Arc resistance tester	1
6	Tracking resistance tester	1
7	Wet insulation resistance tester	1
8	Line fault locator	1
9	Cable fault locator	1

(3) Conduit & Fitting

Item	Description	Amount requested for each item
1	High resistance tester	1
2	Dielectic strength tester	1

(4) Transformer, insulator

Item	Description	Amount requested for each item
1	Surge generator	1
2	Ac insulation tester	1
3	Dc insulation tester	1
4	Impulse generator	1
5	Current injection unit	1
6	Power loading	2

(5) Circuit interruping device

Item	Description	Amount requested for each item
1	High power loading	2
2	Temperature recorder	2
3	Phase adjuster	2
4	Interruping capacity measuring equipment	1

(6) Switch gear for illuminating equipment

Item	Description	Amount requested for each item
1	Double beam oscilloscope	2
2	Dielectric loss measuring equipment	1
3	Dissipation factor measuring equipment	1

(7) Cell & battery

Item	Description	Amount requested for each item
1	Test set for transistorized drycell	1
2	Test set for meter operated drycell	1
3	Test set for light emitting drycell	1
4	Test set for discharge measurement for automobile battery	1

(8) Heating appliance

(Most of equipment in B.3.1 may be used)

(9) Motor operated appliance

(Mose of equipment in B.3.1 may be used.)

(10)

Item	Description	Amount requested for each item
1	Plastic abrastion tester	1
2	Plastic friction angle tester	1
3	Breakdown voltage tester	1

(11) Radio set

Item	Description	Amount requested for each item
1	Signal generator	1
2	Oscillator	1
3	Stereo signal generator	1
4	Stereo signal demodulator	1
5	Spectrum analyzer	1

6	Function generator	1
7	Curve tracer	1
8	Transmission measuring test set	1
9	LCR bridge	1
10	Wow & flutter meter	1
11	RF. network analyzer	1

(12) Tape recorder & recorder player

Item	Description	Amount requested for each item
1	Recorder	1
2	Response unit	1
3	Generator	1

(13) Television set

Item	Description	Amount requested for each item
1	Color bar pattern generator	1
2	TV. signal generator	1
3	Pattern generator	1
4	Video level unit	1
5	Insertion signal generator	1
6	IF. modulator	1

B.3.3 INTERFERENCE CHARACTERISTIC

Item	Description	Amount requested for each item
1	Field strength meter	2

C. Photometric and Thermometric Laboratories

C.1 Photometric Laboratory

Item	Description	Amount requested of each item
1	Monochromator of the range 200 to 2500 nm	1
2	Pritchard photometer with control, sensitivity 10^{-5} to 10^{7} FL.	1
3	Luminance standards, max. brightness 500 FL. at color temperature 2854 K	2
4	Complex radiance standard lamps	2
5	Radiometer	1
6	Recording spectrophotometer	1
7	Integrating sphere Ø 150 cm.	1
8	Gonio-photometer for luminaire testing	1
9	Rack for life test of incandescent lamps	1
10	Rack for life test of fluorescent lamps	1
11	Spectrophotometer (1) Single beam for UV-VIS (2) Double beam for UV-VIS	2
12	6 points strip chart temperature recorders	2
13	Digital AC meter, 0.25 accuracy	1
14	Luminance meter, 0.2° - 2°	2
15	AC Stabilized power supply 2 Kw, accuracy ± 0.2%	1
16	AC Regulator 220 v, 20A, accuracy ± 1%	2
17	Automatic wavelength adjust for monochromator	1

C.2 Thermometric Laboratory

Item	Description	Amount requested of each item
1	Resistance thermometer bridge or AC bridge, 0.0001 to 400 ohms	1
2	Full automatic calibration equipment for thermocouple	1
3	Minicomputer with CRT display	1
4	Multipoint recorder with data logger, the alarm, math and format flexibility of a minicomputer system	1
5	6 points strip chart temperature recorders	2
6	Automatic signal scanner for thermometry and pen lift accessory	1
7	Digital thermometer for eight types of thermocouples (K, J, T, E, R, S, B, C)	1
8	Flammability test set	1
9	Differential thermal analysis	1
10	Standard resistance thermometer bulbs	2
11	8 Channels thermocouple reference source	1
12	Thermocouple amplifier	2
13	Universal temperature programmer	1
14	Thermoelectric refrigerator for ice point reference chamber	1
15	Surface temperature indicators	2