

**パキスタン・イスラム共和国
金型技術向上プロジェクト
実施協議調査団報告書**

2001年3月

国際協力事業団

序 文

パキスタン・イスラム共和国は、経済の活性化のために均衡のある産業の発展が必要であるとして、基幹産業の農業とともに工業の発達にも力を入れています。我が国はこの工業化支援の一環として、1982年9月から1985年10月にかけて、ラホールに本部を置くパキスタン工業技術指導センター（Pakistan Industrial Technical Assistance Center：PITAC）を実施機関として、機械加工、熱処理、鋳型及び金型の設計・製作などに係るプロジェクト方式技術協力を実施し、さらに1994年1月から1995年3月には、アフターケア協力を実施しました。この協力により供与された機材及び技術を活用し、PITACはその後現在に至るまで周辺企業に対する技術研修や製作サービスを実施するなど、活発な活動を行っています。

しかし、その後の工業の発展に伴って企業の需要が高度化しており、技術力の向上と老朽化した機材の更新が求められています。また、パキスタン政府は近年重点産業政策の1つとして中小企業育成を掲げています。こうしたなかで国内に進出している外国企業に対して部品の現地調達率目標の達成を求める国産化政策をとるなど、裾野産業の育成を図っています。

これらを背景に、現状では輸入に頼っている精密な金型、治具、部品を国産化し、外貨節約及び納期短縮を図るためにはPITACの技術力の向上及び機材の更新が必要であるとして、1997年2月、パキスタン政府は我が国に対し、各種金属加工、プラスチック射出成形、熱処理等の多岐の分野にわたるプロジェクト方式技術協力を要請してきました。

この要請を受け、我が国は1999年3月から4月にかけて「南西アジア品質管理及び標準化基礎調査団」を派遣し、要請の背景及びプロジェクト方式技術協力案件としての妥当性を確認するため、要請分野に関連するパキスタンの政策及び企業のニーズ、並びにPITACの組織・活動について調査を行いました。この結果、要請の対象分野である金属加工及びプラスチック産業は、民間部門、特に中小企業の振興と工業分野開発をめざす同国における重点分野であること、さらにPITACの堅実な運営体制が確認されました。そして、パキスタン側の要請分野に対する優先順位を考慮したうえで、協力分野をプラスチック金型技術向上に絞り込むことにより、新規案件としての妥当性があると判断しました。1999年12月には、本プロジェクトに係る正式要請書がパキスタン政府から提出されました。これを受け2000年4月に事前調査団を、2000年11月には短期調査団を派遣し、PITACとの間でプロジェクトにおける活動計画、技術移転項目についての協議を行ってきました。

本実施協議調査においては、これまでの調査結果を踏まえ、日本・パキスタン双方の責任分担を再確認するとともに具体的な活動内容及び実施計画について協議し、最終的に合意した内容を討議議事録（Record of Discussions: R/D）及びミニッツ（Minutes of Meeting: M/M）に取りまとめ、署名・交換を行いました。

本報告書は同調査団の調査結果を取りまとめたものです。ここに本調査団の派遣にあたりご協力をいただいた日本・パキスタン両国の関係各位に対し深甚の謝意を表するとともに、今後のご支援をあわせてお願いする次第です。

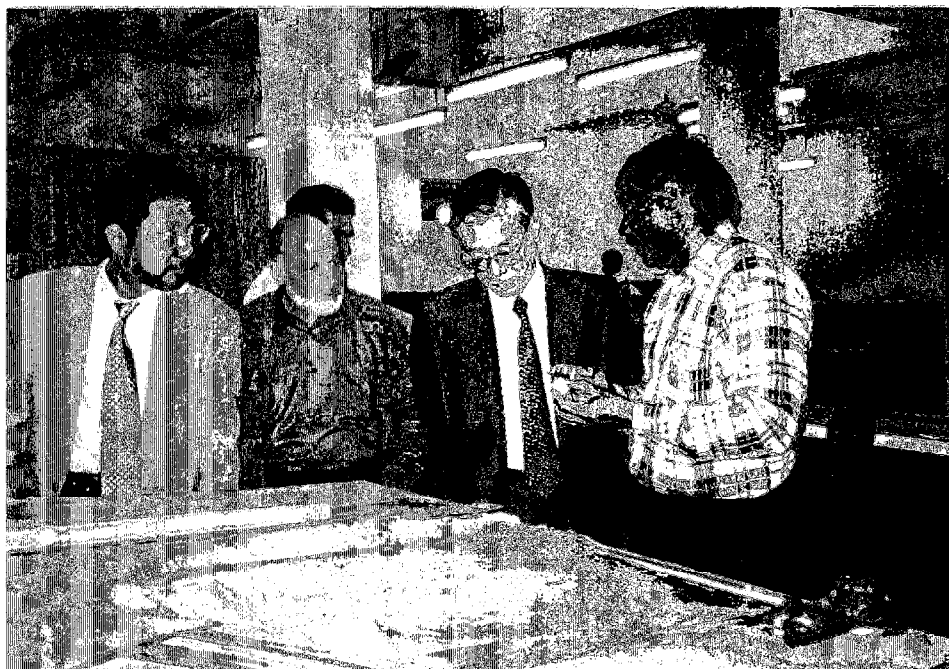
2001年3月

国際協力事業団

理事 大津 幸男



R/D・ミニッツ署名（工業産業省，2001年3月21日）



サイト視察（PITAC，2001年3月16日）

プロジェクトサイト位置図



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第1章 実施協議調査団の派遣

1-1 要請の背景及び経緯

パキスタン・イスラム共和国（以下、「パキスタン」と記す）は経済の活性化のために均衡のある産業の発展が必要であるとして、基幹産業の農業とともに工業の発達にも力を入れている。かかる背景から我が国は1982年9月から1985年10月にかけて、ラホールに本部を置くパキスタン工業技術指導センター（Pakistan Industrial Technical Assistance Center : PITAC）を実施機関として、機械加工、熱処理、鋳型及び金型の設計・製作などに係るプロジェクト方式技術協力を実施し、さらに1994年1月から1995年3月には、アフターケア協力を実施した。この協力により供与された機材及び技術を活用し、PITACはその後現在に至るまで周辺企業に対する技術研修や製作サービスを実施するなど、活発な活動を行っている。

しかし、その後の工業の発展に伴って企業の需要が高度化しており、技術力の向上と老朽化した機材の更新が求められている。また、パキスタン政府は近年重点産業政策の1つとして中小企業育成を掲げていることに加え、国内に進出している外国企業に対して部品の現地調達率目標の達成を求める国産化政策をとっており、裾野産業の育成を図っている。

上記を背景に、現状では輸入に頼っている精密な金型、治具、部品を国産化し、外貨節約及び納期短縮を図るためにはPITACの技術力の向上及び機材の更新が必要であるとして、1997年2月、パキスタン政府は我が国に対し、各種金属加工、プラスチック射出成形、熱処理等の多岐の分野にわたるプロジェクト方式技術協力を要請してきた。

この要請を受け、我が国は1999年3月30日から4月14日にかけて「南西アジア品質管理及び標準化基礎調査団」を派遣し、要請の背景及びプロジェクト方式技術協力案件としての妥当性を確認するため、要請分野に関連するパキスタンの政策及び企業のニーズ、並びにPITACの組織・活動について調査を行った。この結果、要請の対象分野である金属加工及びプラスチック産業は、民間部門、特に中小企業の振興と工業分野開発をめざす同国における重点分野であること、さらにPITACの運営体制は堅実であることが確認された。また、パキスタン側の要請分野に対する優先順位を考慮したうえで、協力分野をプラスチック金型技術向上に絞り込むことにより、新規案件としての妥当性があると判断された。

1999年12月には、本プロジェクトに係る正式要請書がパキスタン政府から提出された。これを受け、2000年4月2日から4月14日にかけて事前調査団を派遣し、1999年10月の政変後のパキスタンの政策変更の有無、金属加工及びプラスチック産業界のPITACに対するニーズを調査するとともに、プロジェクトの技術移転分野及び基本計画についてPITACと協議を行った。また、2000年10月29日から11月22日にかけて短期調査団を派遣し、さらに詳細にわたって企業調査を行い、PITACとも協議したうえでプロジェクトでめざす技術レベルを具体的なモデル金型4点として設定

し、あわせて技術移転に必要な機材の仕様を検討した。さらに、PITACとの間でプロジェクトにおける活動計画、技術移転項目についての協議を行った。

1 - 2 実施協議調査団派遣の目的

今次調査では、過去3回にわたる調査結果を踏まえ、協力の内容、範囲、パキスタン側と日本側双方の責任分担などについて、先方政府及び実施機関と協議を行い、結果を討議議事録(Record of Discussions: R/D)として取りまとめ署名を行う。

また、PDM(プロジェクト・デザイン・マトリックス)をはじめとする計画管理諸表について再検討するとともに、協力開始までに整理すべき懸案・検討事項についても協議し、合意事項などをミニッツに取りまとめ、署名を行うことを目的とする。

1 - 3 主要調査項目

(1) 討議議事録(R/D)の内容確認

(2) 以下の計画管理諸表の見直し・作成

- 1) プロジェクト・デザイン・マトリックス(PDM)
- 2) 技術協力計画(TCP)
- 3) 年次技術協力計画(ATCP)
- 4) 活動計画(PO)
- 5) 年次活動計画(APO)
- 6) 暫定実施計画(TSI)
- 7) 年次暫定実施計画(ATSI)

(3) 投入計画の確認

日本側

- 1) 専門家派遣(指導科目及び派遣スケジュール)
- 2) 研修員受入れ(初年度の受入先、受入時期)
- 3) 機材供与(詳細仕様)

パキスタン側

- 1) プロジェクト運営体制
- 2) カウンターパート(C/P)(新規に採用されたC/Pの技術レベル確認)
- 3) 設備・機材(電源、水、圧縮空気に対する条件、機材仕様)

- 4) 建屋（改修計画の確認）
- (4) モニタリング・評価計画書に関する協議
- (5) 供与機材現地調達に関する詳細確認
- (6) 要請書（A 1、A 2、3、A 4 フォーム）作成依頼

1 - 4 調査団の構成

氏 名	担当分野	所 属
林 典伸	団長・総括	国際協力事業団 鋳工業開発協力部 部長
知地 正紘	技術移転計画	財団法人 素形材センター 業務部長兼企画室長
畠山 篤彦	金型技術	財団法人 素形材センター 技術アドバイザー
吉田 恭	機材・研修計画	国際協力事業団 鋳工業開発協力部 特別囑託
岡山 明日香	協力企画	国際協力事業団 鋳工業開発協力部 鋳工業開発協力第一課 職員

1-5 調査日程

順	月日	曜日	時間	行 程			
1	3月15日	木	11:00 15:55 19:45 22:45	成田発 (JL717) バンコク市着 バンコク市発 (TG505) ラホール着			
2	3月16日	金	10:00	Kick-off Meeting PITACとの協議 ・投入詳細確認 (日本側：専門家派遣、初年度研修計画、機材・モデル金型の仕様) (パキスタン側：新規人員採用、サイト改修、機材メンテナンス)			
3	3月17日	土	9:00	PITACとの協議 ・投入詳細確認 (続き) ・計画管理諸表			
4	3月18日	日	終日	ミニッツ案作成	機材・研修計画	時間	金型技術
					専門家の居住環境調査	11:00 15:55 19:45 22:45	成田発 (JL717) バンコク市着 バンコク市発 (TG505) ラホール着
5	3月19日	月	時間	団長、機材・研修計画、協力企画	技術移転計画	時間	金型技術
			9:00	PITACとの協議 ・A1、A2・3、A4 フォーム ・共通フォーマット	新規C/Pの技術レベルチェック	10:00	建屋改修計画
6	3月20日	火	9:00	PITACとの協議 ・R/D、ミニッツ案			
			時間	団長、技術移転計画、機材・研修計画、協力企画			
			19:55 20:45	ラホール発 (PK388) イスラマバード着			
7	3月21日	水	9:00 11:00 14:00 15:30 16:30	JICA事務所での打合せ EAD報告 在パキスタン日本大使館報告 UNIDO訪問 R/D、ミニッツ署名 (於：工業産業省)		時間	金型技術
			9:00	建屋改修計画詳細			
8	3月22日	木	9:30 19:30 20:35 23:50	JICA事務所報告 イスラマバード発 (PK615) ラホール着 ラホール発 (TG506)		9:00	建屋改修計画詳細
			6:15	バンコク市着 団長、金型技術、機材・研修計画、協力企画			技術移転計画
9	3月23日	金	8:35 16:05	バンコク市発 (JL708) 成田着		長期専門家候補者との面談	
			8:20 16:00	バンコク市発 (JL708) 成田着			

1 - 6 主要面談者

パキスタン側

(1) 工業産業省

Mr. Abdul Razak Dawood	Minister
Mr. Muhammad Sharif Ijaz Ghauri	Senior Joint Secretary
Mr. Muhammad Sharif Sabar	Deputy Secretary
Mr. Rai Ali Hashim	Section Officer
Mr. Hashim Hussain	Assistant Chief Projects
Mr. Abdul Ghafoor Memon	Public Relations Officer to the Minister
Mr. Younas Siddique	Deputy Chief, Ministry of Planning and Development

(2) 財政・経済省経済局 (EAD)

Mr. Muhammad Bashir	Senior Joint Secretary
Mr. Muhammad Aslam	Deputy Chief

(3) Public Works Department

Mr. Nazeruddm Gill	Assistant Executive Engineer
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(4) パキスタン工業技術指導センター (PITAC)

Mr. Arif Ali Sheikh	Acting General Manager, Head of NPO
Mr. Muhammad Sharif	Senior Manager, Operation and Works
Mr. Arshad Javaid	Manager, NC shop
Mr. Sarfraz Ahmad	Manager, Entrepreneurship Training and IE
Mr. Javaid Iqbal Sheikh	Manager, Maintenance Elect.
Mr. Muhammad Ashraf Ch.	Manager, Machine Tool Shop
Mr. Muhammad Shakeel Ch.	Manager, Maintenance Mech.
Mr. Khalid Mahmood	Manager, CAD Center

日本側

(1) 在パキスタン日本大使館

岡井 朝子	経済班長
高橋 浩昭	一等書記官

(2) JICA パキスタン事務所

中原 正孝	所長
木下 康光	所員
Mr. Sohail Ahmad	Senior Programme Officer

その他

(1) 中小企業開発庁 (SMEDA)

加藤 博通

「中小企業振興支援」JICA 短期専門家

(2) UNIDO

Dr. Robert G. Gumen

UNIDO Representative

Mr. Ibrahim Saeed

Assistant to UNIDO Representative

第 2 章 調査・協議結果

2-1 調査・協議結果

調査項目	短期調査までの結果、現状及び問題点	対処方針	調査・協議結果
全般		<ul style="list-style-type: none"> ・今次調査の目的は以下のとおりであることをパキスタン側に説明する。 1. 過去 3 回にわたる調査結果を踏まえ、協力の内容、範囲、パキスタン側と日本側双方の責任分担等について、先方政府及び実施機関と協議を行い、結果を討議議事録 (Record of Discussions: R/D) として取りまとめ、署名を行う。 2. PDM (プロジェクト・デザイン・マトリックス) をはじめとする計画管理諸表について再検討するとともに、その他協力開始までに整理すべき懸案・検討事項についても協議し、合意事項などをミニッツに取りまとめ、署名を行う。 	<ul style="list-style-type: none"> ・左記のとおり説明し、パキスタン側の理解を得た。
<p>I 対象セクター (金属加工業及びプラスチック産業) に対する開発政策など</p> <p>1. 国家開発計画、対象セクター開発政策等との整合性</p>	<ul style="list-style-type: none"> ・2000 年 4 月の事前調査では、パキスタン政府が 1997 年に発表した長期ビジョンである「パキスタン 2010 (1999～2010 年度)」プログラムは、1999 年 10 月に発生した政変後に、「Prospective Long-term Plan」と改称したものの、内容的には前者を踏襲したものであり、国家開発政策内容の基本的な変更は行われていないことを確認した。 ・「パキスタン 2010」プログラムのもとで、パキスタンは中期計画として第 9 次 5 か年計画 (1999～2003 年度) を策定したが、1999 年 10 月の政変後には、ほぼ同じ内容を引き継いだ「Three-years Rolling Plan (2000～2003 年度)」を再スタートさせている。 	<ul style="list-style-type: none"> ・工業産業省が策定中の新産業政策の内容及び発表予定時期を聴取する。 	<ul style="list-style-type: none"> ・JICA パキスタン事務所によれば、左記新産業政策は工業産業省にて分野ごとに策定されているとのことであるが、詳細は聴取できなかった。

調査項目	短期調査までの結果、現状及び問題点	対処方針	調査・協議結果
II プロジェクト 実施体制	<ul style="list-style-type: none"> • 1999年12月15日、新政権は「経済再生計画」を発表した。同計画は、政策の一貫性・継続性の保証による国内外の投資家からの信用回復、民間部門の活性化、国内外での借入依存体質からの脱却、貧困の緩和などにより、経済再生に取り組むパキスタンの姿勢を示している。 • 短期調査時のPITACの説明によれば、左記の新産業政策ははまだ工業産業省が策定中であるが、2001-2002年度予算が確定する2001年5月ごろまでには発表される見通しとのことであった。内容的には、重点課題の1つとして、プラスチック産業を含む中小企業の振興が取り上げられる見通しとのことである。 • 「経済再生計画」においては、再生の重点産業の1つとして中小企業(工業)が特定されている。なお、工業産業省では同計画を受けて具体的な新産業政策を策定しており、このなかで重点分野として機械工業が明確に位置づけられる予定であることを聴取した。 • 工業産業省の新産業政策は、2000年11月の短期調査時にはまだ発表されていなかったが、遅くとも2001年5月までには策定される見通しとのことであった。内容的には、重点課題の1つとして、プラスチック産業を含む中小企業の振興が取り上げられる見通しとのことである。 		
1. 所管官庁	<ul style="list-style-type: none"> • 所管官庁は工業産業省 (Ministry of Industries and Production) であり、所在地はイスラマバードである。 	<ul style="list-style-type: none"> • 左記を再確認し、ミニッツに記載する。 	<ul style="list-style-type: none"> • 左記を再確認し、ミニッツに記載した。
2. 実施機関	<ul style="list-style-type: none"> • 実施機関はパキスタン工業技術指導センター (Pakistan Industrial Technical Assistance Center: PITAC) であり、本部の所在地はラホールである。 	<ul style="list-style-type: none"> • 左記を再確認し、ミニッツに記載する。 	<ul style="list-style-type: none"> • 左記を再確認し、ミニッツに記載した。
(1) 組織	<ul style="list-style-type: none"> • PITAC の本部はラホールにあり、カラチ、ペシャワールに地域事務所がある。カラチ事務所には8名の職員が勤務している。PITACの説明によれば、カラチ及びペシャワールの地域事務所は以下の機能を果たしている。 <ol style="list-style-type: none"> 1. 各種技術サービスや人材育成プログラムの紹介 2. カラチ及びペシャワールとその周辺地域における研修コースの開催 3. 技術相談・コンサルティングサービス実施に係る調整業務 4. 教育機関、研究所、産業界などとの連携 	<ul style="list-style-type: none"> • 左記を再確認し、最新の組織表をミニッツに添付する。 	<ul style="list-style-type: none"> • 左記を再確認し、ミニッツに記載した。

調査項目	短期調査までの結果、現状及び問題点	対処方針	調査・協議結果
(2) 人員	<p>ただし、本調査団がカラチを訪れた際のカラチ事務所の対応から判断する限り、事務調整能力はあまり高いとは思われない。</p> <ul style="list-style-type: none"> • PITAC の運営管理体制は「Governing Body」及び「Executive Body」から構成されている。 • 「Governing Body」は工業産業省の副次官を議長とし、連邦及び州政府、連邦商工会議所代表 (Federation of Pakistan Chambers of Commerce and Industries: FPCCI) 等12名からなる委員会でPITACの活動方針、予算を決定している。 • 「Executive Committee」は「Governing Body」の下に位置し、PITAC 所長を議長とし、工業産業省の管理部門の次官補、財政アドバイザー、FPCCI、ラホール商工会議所代表者を含む5名からなる委員会で「Governing Body」の決定に基づき、日常の活動方針を決定している。 	<ul style="list-style-type: none"> • 左記を再確認し、ミニッツに記載する。 	<ul style="list-style-type: none"> • 実施協議調査の時点での職員数は268名であった。 • 近年パキスタン政府は政府機関の人員削減を行っており、PITAC もこの流れを受けて人員を削減しているが、削減の対象は主に事務職員であり、技術者については人員数を維持するよう努めているとの説明があった。
(3) 予算	<ul style="list-style-type: none"> • パキスタンの会計年度は7月～翌6月であり、PITAC の予算は工業産業省を通じて連邦政府に要求される。 • PITAC の予算には2種類あり、通常予算とプロジェクト(開発)予算に分類される。通常予算はPITAC における人件費、ユーティリティー等の恒常的支出を含み、自己収入金額もこれに組み入れられる。プロジェクト予算はある特定のプロジェクトが開始されるときに申請され、毎年1回大蔵大臣により開催される会議で各省ごとに分配される。プロジェクトが多年度にわたる場合には申請時に協力期間の予算を申請し、期間分の経費が認められる。 • PITAC の2000-2001年度通常予算としては、連邦政府(大蔵省)より4,580万ルピー(約9,160万円)が承認された。 	<ul style="list-style-type: none"> • 左記を再確認し、ミニッツに記載する。 	<ul style="list-style-type: none"> • 左記を再確認し、ミニッツに記載した。

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	<ul style="list-style-type: none"> 2000-2001年度のPITACの収入及び支出計画は以下のとおり。 																																										
	<table border="1"> <thead> <tr> <th colspan="2">支出</th> <th colspan="2">収入</th> </tr> </thead> <tbody> <tr> <td>人件費</td> <td>34,250,000</td> <td>自己収入</td> <td></td> </tr> <tr> <td>公共料金</td> <td>3,647,000</td> <td>研修コース開催</td> <td>1,000,000</td> </tr> <tr> <td>事務消耗品</td> <td>1,243,000</td> <td>技術相談・コンサルティングサービス</td> <td>100,000</td> </tr> <tr> <td>事務所備品</td> <td>0</td> <td>セミナー、会議開催</td> <td>300,000</td> </tr> <tr> <td>施設・機材維持費</td> <td>510,000</td> <td>金型等製作サービス</td> <td>3,550,000</td> </tr> <tr> <td>APOへ会費、寄付金、会議・セミナー経費等</td> <td>6,150,000</td> <td>その他</td> <td>50,000</td> </tr> <tr> <td></td> <td></td> <td>小計</td> <td>5,000,000</td> </tr> <tr> <td></td> <td></td> <td>政府からの配分予算</td> <td>40,800,000</td> </tr> <tr> <td>合計</td> <td>45,800,000</td> <td>合計</td> <td>45,800,000</td> </tr> </tbody> </table>		支出		収入		人件費	34,250,000	自己収入		公共料金	3,647,000	研修コース開催	1,000,000	事務消耗品	1,243,000	技術相談・コンサルティングサービス	100,000	事務所備品	0	セミナー、会議開催	300,000	施設・機材維持費	510,000	金型等製作サービス	3,550,000	APOへ会費、寄付金、会議・セミナー経費等	6,150,000	その他	50,000			小計	5,000,000			政府からの配分予算	40,800,000	合計	45,800,000	合計	45,800,000	
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(4) 人事システム	<ul style="list-style-type: none"> 職員のリクルートは等級号俸の違いにより手続きが異なる。号俸の高い者については「Governing Body」が増員を承認、所長が人選を行う。それ以外の者はすべて所長に決定権がある。 PITACの職員の定年は60歳であるが、「Governing Body」で承認されれば、契約ベースで65歳まで在職可能。 	<ul style="list-style-type: none"> 左記を再確認し、ミニッツに記載する。 	<ul style="list-style-type: none"> 左記を再確認し、ミニッツに記載した。 																																								
(5) 活動内容	<ul style="list-style-type: none"> PITACの活動は主に下記の3種類に分類される。 <ol style="list-style-type: none"> 技術分野の研修コース、及び HRD (Human Resource Development、生産性向上のための人材育成) に関連する研修コース 技術相談及びアドバイス PITAC自身による部品、工具製作や技術指導による技術サービスとAPOとタイアップしてPITACが外国人専門家を企業に派遣するサービスの2種類がある。 セミナー及びシンポジウム 上記活動1及び2に対してPITACが設定している料金は以下のとおり(単位:ルピー、1ルピー:約2円)。 	<ul style="list-style-type: none"> 左記を再確認し、ミニッツに記載する。 	<ul style="list-style-type: none"> 左記を再確認し、ミニッツに記載した。 																																								

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	<p>1. 研修コース</p> <ul style="list-style-type: none"> ・一般企業・個人対象 10 週間コース：5,000 ・一般企業・個人対象 6 週間コース：3,000 ・公的機関対象 10 週間コース：7,500 ・公的機関対象 6 週間コース：4,500 ・NCマシニングコース：2,000 (1 週間) ・特別コース：1,000 (1 週間) <p>2. 技術相談・アドバイス・製作サービス</p> <ul style="list-style-type: none"> ・診断、調査：1,000 (1 名×1 日) ・機械据え付け、工程改善、品質・生産性向上に関する技術相談：750 (1 名×1 日) ・製作サービス <ul style="list-style-type: none"> 設計：50 (1 時間) 機械加工：20 (1 時間) 精密機械加工：50 (1 時間) 放電加工機 (Spark Errosion)：80 (1 時間) ワイヤカット放電加工機 <ul style="list-style-type: none"> 板厚 1.5 インチまで：7 (1 mm) 板厚 2.5 インチまで：10 (1 mm) 板厚 3.5 インチまで：20 (1 mm) CNC 旋盤加工：350 (1 時間) <p>・上記活動 1 及び 2 において、1994 年から 1999 年までに PITAC のサービスを受けた企業数は延べ 6,900 社であり、これら企業の規模別の内訳は以下のとおり。</p> <table border="1" data-bbox="373 1111 1289 1335"> <thead> <tr> <th data-bbox="373 1111 644 1178">1994-1999</th> <th data-bbox="644 1111 858 1178">小企業 (従業員 50 名以下)</th> <th data-bbox="858 1111 1075 1178">中企業 (従業員 400 名以下)</th> <th data-bbox="1075 1111 1289 1178">大企業 (従業員 400 超)</th> </tr> </thead> <tbody> <tr> <td data-bbox="373 1178 644 1211">研修コース</td> <td data-bbox="644 1178 858 1211">1,877</td> <td data-bbox="858 1178 1075 1211">422</td> <td data-bbox="1075 1178 1289 1211">47</td> </tr> <tr> <td data-bbox="373 1211 644 1245">(1) 技術訓練コース</td> <td data-bbox="644 1211 858 1245">1,502</td> <td data-bbox="858 1211 1075 1245">328</td> <td data-bbox="1075 1211 1289 1245">41</td> </tr> <tr> <td data-bbox="373 1245 644 1279">(2) 人材育成コース</td> <td data-bbox="644 1245 858 1279">375</td> <td data-bbox="858 1245 1075 1279">94</td> <td data-bbox="1075 1245 1289 1279">6</td> </tr> <tr> <td data-bbox="373 1279 644 1312">技術相談・アドバイス</td> <td data-bbox="644 1279 858 1312">221</td> <td data-bbox="858 1279 1075 1312">50</td> <td data-bbox="1075 1279 1289 1312">5</td> </tr> <tr> <td data-bbox="373 1312 644 1346">製作サービス</td> <td data-bbox="644 1312 858 1346">3,422</td> <td data-bbox="858 1312 1075 1346">770</td> <td data-bbox="1075 1312 1289 1346">86</td> </tr> </tbody> </table>	1994-1999	小企業 (従業員 50 名以下)	中企業 (従業員 400 名以下)	大企業 (従業員 400 超)	研修コース	1,877	422	47	(1) 技術訓練コース	1,502	328	41	(2) 人材育成コース	375	94	6	技術相談・アドバイス	221	50	5	製作サービス	3,422	770	86		
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III プロジェクトの内容			
1. 協力期間	<ul style="list-style-type: none"> プロジェクト期間は4年とし、うち技術移転は当初の3年間で終了させ、最後の1年は移転した技術を定着させるための期間とすることを日本側より提案し、パキスタン側の理解を得ている。プロジェクト開始日は、短期調査時に暫定的に2001年10月1日とすることでパキスタン側の了解を得、その旨ミニッツに記載した。 	<ul style="list-style-type: none"> プロジェクト期間については左記のとおり再確認する。協力開始日は、日本側の暫定案としては2001年10月1日とするが、後述のプロジェクト建屋建設スケジュールによっては延期する方針でパキスタン側と協議し、協議の結果をR/Dに記載する。 	<ul style="list-style-type: none"> プロジェクト期間について左記のとおり再確認した。 協力開始日については、パキスタン側がプロジェクト建屋を建設するのに要する期間(6か月)及び建設工事が遅れる可能性を見込み、協議の結果2002年1月15日とすることで合意し、その旨R/Dに記載した。
2. 協力計画と計画管理諸表	<ul style="list-style-type: none"> プロジェクト・デザイン・マトリックス(PDM)、活動計画(PO)、技術協力計画(TCP)、暫定実施計画(TSI)の暫定案を短期調査時まで作成している。 	<ul style="list-style-type: none"> それぞれの計画管理諸表の年次版(APO、ATCP、ATSI)をパキスタン側と協議のうえ作成し、ミニッツに添付する。 	<ul style="list-style-type: none"> これまでに暫定版を作成していたPDM、PO、TCP、TSIを下記のとおり見直し、あわせて年次版(APO、ATCP、ATSI)の暫定版を作成し、ミニッツに添付した。年次版については専門家着任後に改めて見直す必要がある旨説明し、パキスタン側の理解を得た。
(1) プロジェクト・デザイン・マトリックス(PDM)	<ul style="list-style-type: none"> 短期調査時に指標及び外部条件を一部見直し、改訂版をミニッツに添付した。これまでの調査で合意したマスタープラン(案)は以下のとおり。 「上位目標」 パキスタン国内のプラスチック金型産業が、国内のプラスチック製品製造のための、より高度なレベルの金型を供給することができるようになる。 「プロジェクト目標」 プラスチック金型技術分野における、PITACの技術支援能力が向上する。 「成果」 <ol style="list-style-type: none"> 精密なプラスチック金型を製作するための組織運営体制が整備される。 必要な機材が整備され、適切に維持管理される。 C/Pの技術力が向上する。 技術研修コース及びセミナーが計画的に実施される。 技術支援サービスが計画的に実施される。 アドバイザーサービスが計画的に実施される。 「活動」 <ol style="list-style-type: none"> 1-1 計画に沿って人員を配置する 1-2 活動計画を策定する 1-3 予算を立案し、適正に執行する 1-4 運営管理システムを確立する 2-1 必要な機材を供与の上設置する 2-2 機材を適切に運転し管理する 	<ul style="list-style-type: none"> 左記マスタープランを見直し、パキスタン側と合意のうえR/Dに記載する。 PDMについても見直しを行い、ミニッツに添付する。 	<ul style="list-style-type: none"> マスタープランをパキスタン側と見直し、R/Dに記載した。 PDMについてもパキスタン側と見直し、ミニッツに添付した。

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	3-1 技術協力計画を策定する 3-2 C/P への技術移転を実施する 3-3 C/P への技術移転の結果をモニタリング・評価する 4-1 企業訪問によりニーズを特定する 4-2 技術研修コース及びセミナーの計画を策定する 4-3 研修カリキュラム及び教材を作成する 4-4 技術研修コース及びセミナーを実施する 4-5 技術研修コース及びセミナーの結果をモニタリング・評価する 5-1 企業訪問によりニーズを特定する 5-2 技術支援サービスの計画を策定する 5-3 技術支援サービスを実施する 5-4 技術支援サービスの結果をモニタリング・評価する 6-1 企業訪問によりニーズを特定する 6-2 アドバイザリーサービスの計画を策定する 6-3 アドバイザリーサービスを実施する 6-4 アドバイザリーサービスの結果をモニタリング・評価する ・「上位目標」レベル及び「プロジェクト目標」レベルの指標については、プロジェクト開始前の現在のデータを可能な限り調査し、日本側に通知するよう短期調査時に依頼したが、十分なデータは得られていない模様である。	・左記の指標を見直し、データの入手が困難なものについては必要に応じ変更する。	・左記の指標については今後さらにデータ入手の可能性を検討のうえ、将来必要に応じて変更するよう申し入れた。
(2) 活動計画 (PO)	・暫定版を短期調査のミニッツに添付した。	・必要に応じ PO を見直すとともに、APO の暫定版についてパキスタン側と協議し、ミニッツに添付する。	・協議の結果 PO を改訂し、また APO の暫定版を作成し、それぞれミニッツに添付した。
(3) 技術協力計画 (TCP)	・短期調査時に、企業のニーズ調査及び PITAC の技術レベル調査結果を踏まえて協議を行い、改訂した TCP をミニッツに添付した。	・必要に応じて TCP を見直すとともに、ATCP の暫定版についてパキスタン側と協議し、ミニッツに添付する。	・協議の結果 TCP を改訂し、また ATCP の暫定版を作成し、それぞれミニッツに添付した。
(4) 暫定実施計画 (TSI)	・短期調査時に暫定版をミニッツに添付したが、専門家の派遣については実施協議までに詳細を決定することとしている。	・下記 III の 3 の日本側投入計画に基づき改訂した TSI 案をもとにパキスタン側と協議し、あわせて ATSI についても協議し、ミニッツに添付する。	・協議の結果 TSI を改訂し、また ATSI の暫定版を作成し、それぞれミニッツに添付した。

調査項目	短期調査までの結果、現状及び問題点	対処方針	調査・協議結果
(3) 機材供与	<ul style="list-style-type: none"> • R/D 署名後、プロジェクト開始までの間に研修員を受け入れる可能性があることを伝えるとともに、その場合の日本側の方針を以下のとおり伝えた。 1. 期間 2001年4月から9月までの期間で受け入れる。 2. 形態 日本の民間企業における金型製作技術の現状・生産管理技術の概念の理解や、PITACに類似する機能をもつ公的機関の訪問により民間企業への技術普及の方策についての示唆を得ることを目的とする視察型研修（10日から2週間程度）とする。 3. 対象者 プロジェクト運営管理を担当するC/P（2～3名程度）とする。 <ul style="list-style-type: none"> • 短期調査時に、PITACに現存する機材の使用状況、加工精度を確認のうえ、教材となるモデル金型4品を製作するのに必要な機材を選定し、それぞれパキスタン側が用意するものと日本側が供与するものを区分してリストに取りまとめ、ミニッツに添付した。 • 短期調査時に、コンピューターや関連機材の将来のバージョンアップ、加工機材用の工具や消耗品は、プロジェクト期間中であっても原則的にパキスタン側にて対応する必要がある旨を説明した。あわせて、2001-2002年度のプロジェクト予算計画にも、機材メンテナンス費用を含めるよう申し入れた。 	<ul style="list-style-type: none"> • R/D 署名後、プロジェクト開始までの間に受け入れる研修員候補者名及び希望の研修内容を聴取する。 • 受入時期については、手続きの都合上7月以降9月までの間で調整する。 • 受入人数は2名を予定している旨を伝える。 • 上記研修のためのA2・A3フォームの作成を依頼し、可能であればアドバンスコピーを入手する。あわせて正式版を早期に提出するよう申し入れる。 • 短期調査時のミニッツに添付したリストの中の機材のうち、以下のものについては、予算及び日本国内の輸出貿易管理令による制約のため供与できない旨を説明し、パキスタン側の理解を得る。 - CNC フライス盤 (CNC Milling Machine) - 細穴加工機 (Small Hole Drilling Machine) - 成形研削盤 (Profile Surface Grinder) - ツールプリセッター (Tool Presetter) - 工具顕微鏡 (Tool Maker's Microscope) 	<ul style="list-style-type: none"> • 研修員候補者は実施協議調査の時点では決定しておらず、追って連絡するよう申し入れた。研修内容については、日本側より示してきた左記の方針のとおりということで合意した。 • 受入時期は、2001年10月とし、受入人数は2名とすることで合意し、ミニッツに記載した。 • A2、A3フォームについても2001年4月第1週までにアドバンスコピーを日本側に提出するよう依頼した。 • 左記を説明するとともに、それぞれの機材の機能は以下により代替可能であるとの考えを日本側より説明した。 - CNC フライス盤：PITACに既存のフライス盤で代替 - 細穴加工機：PITACに既存の従来型のドリルで代替 - 成形研削盤：PITACに既存の研削盤で代替 - ツールプリセッター：プロジェクトで供与予定のマシニングセンターの操作技術の一環として、工具の設定技術を専門家が指導し、PITACのC/Pが習熟すればマニュアルでも設定可能 - 工具顕微鏡：PITACに既存の投影機で代替 • 上記の説明に対し、細穴加工機及びツールプリセッターについては技術的観点から是非供与機材に含めてもらいたいとの強い要望がパキスタン側より述べられた。調査団からは予算の制約を重ねて説明したうえで、パキスタン側にこの2品の優先順位を尋ねたところ、(1) ツールプリセッター、(2) 細穴加工機の順であった。協議の結果、ツールプリセッターについては工具設定の際のヒューマンエラー低減のため、供与した方が望ましいとの判断からやはり供与機材に含めることとした。細穴加工機については、予算が許せば供与することとしパキスタン側の理解を得たうえでその旨ミニッツに記載した。

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		<ul style="list-style-type: none"> • 三次元測定機については、輸出貿易管理令の非該当製品が見つければ供与する旨を説明し、パキスタン側の理解を得たうえでミニッツに記載する。 • 上記によりパキスタン側の理解を得たうえで、機材リストを改訂してミニッツに添付する。 • 日本政府の ODA による技術協力の平和利用の原則を説明し、供与機材を軍事目的に転用しない旨の確約を取り付け、R/D にその旨記載するとともに、機材供与のための A4 フォームにも同内容を記載するよう申し入れる。 また、供与機材を使用して行う技術サービスを軍事製品メーカーに対しては行わないようあわせて申し入れ、その旨 R/D に記載する。 • 日本側より供与予定の機材に関する情報をまとめてパキスタン側に提示し、機材据え付けのための条件を整えておくよう依頼する。 • パキスタン側が用意する機材についても、必要に応じ望ましい仕様を伝え、プロジェクト開始までに準備するよう申し入れる。 • 機材供与のための A4 フォームの作成を依頼し、可能であればアドバンスコピーを入手する。あわせて正式版を早期に提出するよう申し入れる。 	<ul style="list-style-type: none"> • 左記を説明し、パキスタン側の理解を得、ミニッツに記載した。 • 協議の結果を受けて機材リストを改訂し、ミニッツに添付した。 • ODA 大綱をもとに左記を説明し、パキスタン側の理解を得たうえで以下を R/D 本文に記載した。 - 機材及びプロジェクトで移転される技術を軍事目的に転用しない - 上記を A1、A2、A3、A4 フォームの口上書にも記載する • 左記の情報をパキスタン側に伝えた。また今後プロジェクト建屋建設の過程で、必要に応じ日本側より技術的助言を行うこととした。 • パキスタン側が用意する機材のうち、Tool Locker、Rack、Stocker、Mould Rack については購入せず、PITAC にて内製するとのことであり、製造するにあたって必要な工具等資機材に関する情報を追って日本側より連絡することとした。 • A4 フォームのアドバンスコピーを入手した。あわせて正式版を早期に提出するよう申し入れた。

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<p>〈パキスタン側投入〉</p> <p>(1) 人員配置</p> <p>1) 責任者</p> <p>2) カウンターパート (C/P)</p>	<ul style="list-style-type: none"> Project Director (総括責任者) は前所長で 2000 年 7 月より顧問の M.A.Jabbar Khan 氏、Project Manager (実施責任者) は NC Shop Manager の Arshad Javaid 氏、Deputy Project Manager (副実施責任者) は Industrial Engineering 部 Manager の Sarfraz Ahmad 氏とする方針であることを短期調査時に聴取し、ミニッツに記載した。 しかし、最近の情報によると、Project Director となる予定であった M.A.Jabbar Khan 氏は、2001 年 1 月をもって PITAC を退職した模様である。 事前調査時に 12 名の C/P 候補者に対する技術レベルテスト及び面接を実施し、それぞれの経験や適性に合わせたプロジェクトでの配置表を作成した。 上記の C/P 以外に、プロジェクト期間中にさらに 14 名を採用し、プロジェクトの C/P とする方針がパキスタン側より伝えられている。 上記の新規採用予定者のうち 4 名は、2001 年 2 月に採用されている。 	<ul style="list-style-type: none"> Project Director は、PITAC の所長など、実施機関の中でプロジェクト予算及び人員の配置に関する権限があり、所管官庁との交渉も行える人物が望ましい旨を伝え、最終的な総括責任者を確認し、R/D に記載する。 新規に採用された人員に対し、左記の 12 名に対して実施したのと同様のテスト及び面接を実施し、その結果を踏まえてプロジェクトでの配置表を改訂し、ミニッツに添付する。 今後の人員採用計画を聴取し、ミニッツに記載する。 	<ul style="list-style-type: none"> Project Director は PITAC 所長の Arif Ali Sheikh 氏とする。なお同氏は 2001 年 8 月に定年退職予定であるが、同氏が退職しても次の PITAC 所長が Project Director となり、プロジェクトに対して責任をもつことを確認し、ミニッツに記載した。 Project Manager は NC Shop Manager の Arshad Javaid 氏、Deputy Project Manager は Training Division Manager の Sarfraz Ahmad 氏が務めることを確認した。 事前情報では、新規に 4 名の人員を採用したとのことであったが、実際にはこのうちの 1 名しか PITAC に就職していなかったため、この 1 名に対してテスト及び面接を行った。残りの 3 名は今後早期に採用する予定とのことである。 上記の 4 名以外に、今後とも C/P となるエンジニアを採用していきたいとのことであったが、プロジェクト期間中に何人採用できるかは明確にされなかった。 エンジニア以外に、16 名のテクニシャンをエンジニアのアシスタントとして C/P に含めたいとの意向がパキスタン側より示された。この 16 名のリストをミニッツに添付した。 プロジェクトの各技術分野ごとの C/P の配置について改めて協議し、改訂した配置表をミニッツに添付した。 なお、C/P はフルタイムでプロジェクトの活動にかかわることとなっているが、実際はそれぞれプロジェクト以外の従来業務を抱えており、言葉どおりフルタイムの C/P となるかどうか若干懸念される。プロジェクト管理者側が C/P のワークロード及び時間配分を適切に管理する必要がある。

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(2) 予算措置	<ul style="list-style-type: none"> • PITAC によれば、機材通関及び国内輸送費用、機材据え付け費用、車輛購入費、プロジェクトの人員の給与・手当、部品購入費用等で、合計 835 万ルピー（約 1,670 万円）のプロジェクト予算が準備される予定であり、その内 2000-2001 年度の予算として 420 万ルピー（約 840 万円）が政府より承認されているとのことである。 なお、この 420 万ルピーの内訳は、建屋改修費（350 万ルピー）及びスタッフの人件費（70 万ルピー）とされている。 • 2001-2002 年度分としては 220 万ルピーが、2002-2003 年度分としては、215 万ルピーがそれぞれプロジェクト予算として見積もられているが、実際には追って政府に対して予算要求するとのことである。また、2003-2004 年度以降の予算については、さらにしかるべき時期に政府に対して申請する予定とのことである。 	<ul style="list-style-type: none"> • 左記を再確認し、ミニッツに記載する。 	<ul style="list-style-type: none"> • 左記を再確認した。 • プロジェクト終了までのパキスタン側予算（2003-2004 年度分、2004-2005 年度分、2005-2006 年度分）は、追って政府に対して申請する予定であることを確認した。
(3) 設備・施設	<ul style="list-style-type: none"> • 短期調査時には、既存の建屋を含む 903 平方メートルのスペースをパキスタン側が改修する予定である旨を聴取し、同スペースにおける機材のレイアウト案を日本・パキスタン双方で協議のうえ作成した。改修工事開始にあたっては、実施協議調査前に基礎設計まで終え、図面を日本側に送付することとなっていた。 • しかしその後上記のプランに基づいてパキスタン側にて改修工事の見積りをとったところ、予算をオーバーしてしまった。このため、パキスタン側からは PITAC の敷地内の空き地に、新規に建屋を建設する案が示されている。 • 日本側からは、プロジェクト建屋に対する様々な要件を取りまとめて事前を送付している。 	<ul style="list-style-type: none"> • 左記のとおり日本側より提示した要件を満たす建屋をパキスタン側が建設するうえで、財政的、あるいは技術的問題がないかどうか確認する。 • 上記を確認したうえで建屋建設のスケジュールを聴取し、建屋完成後に協力を開始できるよう、プロジェクト開始時期についてパキスタン側と協議する。 • 建設の進捗状況については、定期的に写真付きの報告書を JICA パキスタン事務所経由で提出するよう依頼する。 • 新たに機材レイアウト案を作成し、協議のうえ結果をミニッツに添付する。 	<ul style="list-style-type: none"> • 実施協議調査中に、建屋の設計を担当している連邦政府の Public Works Department の担当エンジニア及び PITAC と打合せを行い、技術的詳細について協議した。今後建屋の基礎設計及び詳細設計が完成次第、確認のため日本側に送付するよう申し入れた。 • 建屋改修経費についてはパキスタン側にて責任を持つことを確認した。 • Public Works Department より建設スケジュールを入手し、ミニッツに添付した。予定では 2001 年 9 月に完成する。 • 建設の進捗状況を、上記の建設スケジュールと対比させる形で毎月末 JICA パキスタン事務所に提出するよう申し入れた。この際工事現場の写真も添付するよう依頼した。 • 協議の結果を受けて新たに機材レイアウト案を作成し、ミニッツに添付した。 • 専門家の居室として PITAC が用意している部屋を確認したところ、チーフ・アドバイザー、業務調整員、秘書の執務スペース及び専門家チームの打合せスペースをとるのに十分な広さであった。部屋のレイアウト希望を追って日本側より PITAC に送付し、プロジェクト開始までに PITAC にて改修を行うこととなった。

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(4) 機材	<ul style="list-style-type: none"> 短期調査までに、パキスタン側にて対応すべき機材を明記したリストを作成している。また、機材のスペアパーツ、工具、金型材料及び樹脂材料などについては、原則としてパキスタン側にて負担すべきである旨を伝え、理解を得ている。 	<ul style="list-style-type: none"> パキスタン側が用意する機材に対し、必要に応じ望ましい仕様を日本側より提示し、対応を依頼する。 	<ul style="list-style-type: none"> 技術専門家の執務スペース及びマネージャークラスの C/P の執務スペースは、プロジェクトサイト内に設置することで合意し、上述のプロジェクトサイトのレイアウト案にこれらを含めて記載した。 短期調査時に作成した機材リストで、パキスタン側が対応することとしていた機材のうち、発電機及び水処理設備については他の機材に付属品等を設置することで代替可能なため、リストから削除した。天井クレーンについては3トンクレーン1台を設置することとした。 上述のとおり、Tool Locker、Rack、Stocker、Mould Rack は PITAC が独自に製作する方針のため、工具や資機材の仕様が決まり次第、連絡することとした。
4 その他			
(1) 合同調整委員会	<ul style="list-style-type: none"> 短期調査時に、合同調整委員会のメンバーとなる予定の関連工業団体の代表者とミーティングを行ったが、その際、委員会開催の頻度を高めてほしいとの要望が共通して各団体から寄せられた。 	<ul style="list-style-type: none"> 左記委員会は年2回開催することとしてパキスタン側と改めて協議を行い、結果を R/D に添付する。 	<ul style="list-style-type: none"> 左記のとおり協議して理解を得、R/D に添付した。
(2) モニタリング・評価のための共通フォーマット	<ul style="list-style-type: none"> 短期調査までに、モニタリング・評価の必要性、方法などの概略を PITAC に対して説明し、理解を得ている。 	<ul style="list-style-type: none"> プロジェクトの実施やモニタリングのための共通様式を、マイクロソフト・オフィスなどのソフトウェアを使って作成することを提案し、一部については案を作成し、ミニッツに添付する。 	<ul style="list-style-type: none"> PDM の指標データを記録するための各種様式の使用を提案するとともに案を提示し、パキスタン側の理解を得てミニッツに添付した。
(3) 他のドナーによる協力	<ul style="list-style-type: none"> PITAC に対する他のドナーからの協力実績については、事前調査時に聴取してミニッツに実績リストを添付した。 その後、UNIDO の協力を得て、2001 年よりプラスチック樹脂分野でのプロジェクトが PITAC において実施されるとの情報がある。 	<ul style="list-style-type: none"> 左記の UNIDO のプロジェクトについて詳細を聴取し、必要に応じてミニッツに記載する。 	<ul style="list-style-type: none"> PITAC によれば、UNIDO がカラチの塩ビ材料メーカーと共同で計画していたプラスチック材料分野の研修実施機関連立ち上げに際して協力を打診されたことはあったが、最近 UNIDO から塩ビメーカーからも連絡がなく、協力の話について進展はないとのことであった。

2 - 2 調査団所見

本調査団は過去3回（1999年4月・基礎調査、2000年4月・事前調査、2000年11月・短期調査）にわたる調査結果を踏まえ、パキスタン側との最終協議を行い、3月21日、工業産業大臣の臨席のもと、本件プロジェクト実施に係るR/D及びM/Mの署名を行った。調査団所見、留意事項等は以下のとおり。

(1) 本件プロジェクトの目的は、精密な工作機械を用い、精度の高い金型を製造するための技術をPITACのC/Pに移転するものである。これら工作機械及び技術は、軍事目的に転用されるおそれがあるところから、我が国の「ODA大綱の4原則」、「対パキスタン援助実施方針」、及び「輸出貿易管理令」を踏まえ、本件プロジェクトの技術移転内容あるいは供与機材がいやしくも軍事目的に転用されないよう細心の注意を払うこととした。

このため、R/D、M/M及びA1、A2、A3、A4フォームにそれぞれ「我が方の技術協力で得た技術及び機材は軍事目的に使用しない」旨を明記することとした。

また加えて、我が国「輸出貿易管理令」に基づき経済産業省担当部局に届出が必要となる機材については、当初の供与予定機材から削除し、これを供与しないこととした。

(2) パキスタンは経済の活性化のために均衡ある産業の発展が必要であるとして、基幹産業の農業とともに工業、特に中小企業の発展に力を入れている。このため、JICAは現在パキスタン工業産業省傘下の機関に次の2分野の専門家を派遣している。

(1) 投資促進専門家（所属先：投資委員会 Board of Investment）

(2) 中小企業開発専門家（所属先：中小企業開発庁 SMEDA）

今般、本件プロジェクトが同省関連の案件としてこれら2人の個別専門家に加わり、2002年1月から開始されることとなる。本件プロジェクトの上位目標は、「パキスタン国内のプラスチック金型産業が国内のプラスチック製品製造のためのより高度なレベルの金型を供給することができるようになる」であり、真にパキスタン国内の中小企業振興に貢献しようとするものである。

したがって、これら3案件は相互に関連した1つの「パキスタン中小企業振興プログラム」としてとらえ、取り進めていくことが有効なものとなる。

(3) 本プロジェクトのサイトとなる建物は、プロジェクトの開始に合わせてパキスタン側が新たに建設することになっている。このため、PITACは既に必要な経費を獲得し、先般（3月2日）在パキスタン沼田大使の臨席のもと、竣工式を執り行っている。

本建物が計画どおりに建設されることが、本プロジェクト実施の大前提となることから、

今次調査団においては、建設スケジュールの確認をはじめとして、建物の基本設計、詳細設計、機材設置のレイアウトなど、パキスタン側と細部にわたる打合せを行い、あわせてパキスタン側に対し必要な助言を行った。

この結果、前回調査において暫定的に2001年10月としていたプロジェクト開始時期を、2002年1月15日に変更した。

なお、パキスタン側はこれら建設工事が完了するまでの期間、毎月工事の進捗状況をJICA事務所あてに報告すべく約したが、JICAとしても折に触れて進捗振りをフォローすることが、プロジェクトを円滑に実施していくうえで必須となる。

(4) その他留意事項

1) パキスタン側のローカルコスト

現在、本プロジェクト用に獲得済みの予算は2000-2001年度、2001-2002年度、2002-2003年度の3か年分。

2) PITAC 所長の交代

現所長は本年(2001年)8月、定年のため退職予定。

3) 日本側のプロジェクト実施体制

日本国内における厳しい金型業界の現状を踏まえた国内支援体制の検討。

付 属 資 料

1. 討議議事録 (Record of Discussions : R/D)
2. ミニッツ (Minutes of Meeting : M/M)
3. 「技術移転計画」調査団員所見
4. 「金型技術」調査団員報告
5. 「機材・研修計画」調査団員所見

1. 討議議事録 (Record of Discussions : R/D)

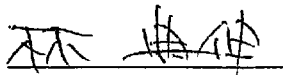
RECORD OF DISCUSSIONS BETWEEN JAPANESE
PROJECT DESIGN TEAM AND
AUTHORITIES CONCERNED OF THE GOVERNMENT OF
ISLAMIC REPUBLIC OF PAKISTAN
ON JAPANESE TECHNICAL COOPERATION
FOR THE PROJECT ON BALANCING AND MODERNIZATION OF
WORKSHOP FACILITIES AT PAKISTAN INDUSTRIAL TECHNICAL
ASSISTANCE CENTER (PITAC) - LAHORE

The Japanese Project Design Team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Norinobu Hayashi, visited Islamic Republic of Pakistan (hereinafter referred to as "Pakistan") from March 15, 2001 to March 23, 2001 for the purpose of working out the details of the technical cooperation program concerning the Project on Balancing and Modernization of Workshop Facilities at Pakistan Industrial Technical Assistance Center (hereinafter referred to as "PITAC") - Lahore in Pakistan.

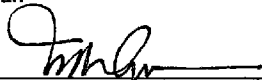
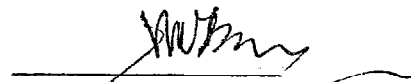
During its stay in Pakistan, the Team exchanged views and had a series of discussions with the Pakistani authorities concerned with respect to desirable measures to be taken by both Governments for the successful implementation of the above-mentioned Project.

As a result of the discussions, the Team and the Pakistani authorities concerned agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

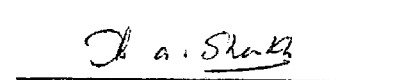
Islamabad, March 21, 2001



Norinobu Hayashi
Leader
Japanese Project Design Team
Japan International Cooperation Agency
Japan


Muhammad Aslam
Deputy Chief
Economic Affairs Division
Government of Pakistan
Islamic Republic of Pakistan

Muhammad Sharif Ijaz Chauri
Senior Joint Secretary
Ministry of Industries and Production
Islamic Republic of Pakistan


Arif Ali Sheikh
Acting General Manager
Pakistan Industrial Technical Assistance
Center (PITAC), Head of NPO
Islamic Republic of Pakistan

ATTACHED DOCUMENT

I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of Pakistan will implement the Project on Balancing and Modernization of Workshop Facilities at PITAC – Lahore (hereinafter referred to as “the Project”) in cooperation with the Government of Japan.
2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

II. MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAPAN

In accordance with the laws and regulations in force in Japan, the Government of Japan will take, at its own expense, the following measures through JICA according to the normal procedures under the Colombo Plan Technical Cooperation Scheme.

1. DISPATCH OF JAPANESE EXPERTS

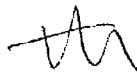
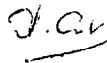
The Government of Japan will provide the services of the Japanese experts as listed in Annex II.

2. PROVISION OF MACHINERY AND EQUIPMENT

The Government of Japan will provide such machinery, equipment and other materials (hereinafter referred to as “the Equipment”) necessary for the implementation of the Project as listed in Annex III. The Equipment will become the property of the Government of Pakistan upon being delivered C.I.F. (cost, insurance and freight) to the Pakistani authorities concerned at the ports and/or airports of disembarkation.

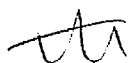
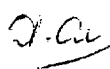
3. TRAINING OF PAKISTANI PERSONNEL IN JAPAN

The Government of Japan will receive the Pakistani personnel connected with the Project for technical training in Japan.



III. MEASURES TO BE TAKEN BY THE GOVERNMENT OF PAKISTAN

1. The Government of Pakistan will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through full and active involvement in the Project by all related authorities, beneficiary groups and institutions.
2. The Government of Pakistan will ensure that the technologies and knowledge acquired by the Pakistani nationals as a result of Japanese technical cooperation will contribute to the economic and social development of Pakistan.
3. The Government of Pakistan will grant in Pakistan privileges, exemptions and benefits to the Japanese experts referred to in II-1 above and their families, which are no less favorable than those accorded to experts of third countries working in Pakistan under the Colombo Plan Technical Cooperation Scheme.
4. The Government of Pakistan will ensure that the Equipment referred to in II-2 above will be utilized effectively for the implementation of the Project in consultation with the Japanese experts referred to in Annex II.
5. The Government of Pakistan will take necessary measures to ensure that the knowledge and experience acquired by the Pakistani personnel from technical training in Japan will be utilized effectively in the implementation of the Project.
6. In accordance with the laws and regulations in force in Pakistan, the Government of Pakistan will take necessary measures to provide at its own expense:
 - (1) Services of the Pakistani counterpart personnel and administrative personnel as listed in Annex IV ;
 - (2) Land, buildings and facilities as listed in Annex V ;



- (3) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the Equipment provided through JICA under II-2 above ; and
 - (4) Means of transport and travel allowances for the Japanese experts for official travel within Pakistan.
7. In accordance with the laws and regulations in force in Pakistan, the Government of Pakistan will take necessary measures to meet :
- (1) Expenses necessary for transportation within Pakistan of the Equipment referred to in II-2 above as well as for the installation, operation and maintenance thereof ;
 - (2) Exemption of customs duties, internal taxes and any other charges, imposed in Pakistan on the Equipment referred to in II-2 above ; and
 - (3) Value added tax and other fiscal charges of any kind imposed in Pakistan on the Equipment referred to in II-2 above in case of local purchase; and
 - (4) Running expenses necessary for the implementation of the Project.
8. The Government of Pakistan will ensure the following matters:
- (1) The Equipment procured by the Government of Japan will not be utilized for any military purposes:
 - (2) The knowledge and the experience acquired by Pakistani nationals as the result of technical cooperation in the Project will not be utilized for military purposes; and
 - (3) The statement of 8. (1) and (2) will be stipulated in the Note Verbale which the Application Form A1, A2A3, and A4 is attached to.

IV. ADMINISTRATION OF THE PROJECT

1. General Manager of PITAC, as the Project Director, will bear overall responsibility for the administration and implementation of the Project.
2. Manager Technical of PITAC, as the Project Manager, will be responsible for the managerial and technical matters of the Project.
3. The Japanese Chief Advisor will provide necessary recommendations and advice to the Project Director and the Project Manager on any matters pertaining to the implementation of the Project.
4. The Japanese experts will give necessary technical guidance and advice to the Pakistani counterpart personnel on technical matters pertaining to the implementation of the Project.
5. For the effective and successful implementation of technical cooperation for the Project, a Joint Coordinating Committee will be established whose functions and composition are described in Annex VI.

V. JOINT EVALUATION

Evaluation of the Project will be conducted jointly by the two Governments through JICA and the Pakistani authorities concerned, at the middle and during the last six months of the cooperation term in order to examine the level of achievement.

VI. CLAIMS AGAINST JAPANESE EXPERTS

The Government of Pakistan undertakes to bear claims, if any arises, against the Japanese experts engaged in technical cooperation for the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in Pakistan

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except for those arising from the willful misconduct or gross negligence of the Japanese experts.

VII. MUTUAL CONSULTATION

There will be mutual consultation between the two Governments on any major issues arising from, or in connection with this Attached Document.

VIII. MEASURES TO PROMOTE UNDERSTANDING OF AND SUPPORT FOR THE PROJECT

For the purpose of promoting support for the Project among the people of Pakistan, the Government of Pakistan will take appropriate measures to make the Project widely known to the people of Pakistan.

IX. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be from January 15, 2002 to January 14, 2006.

ANNEX I	MASTER PLAN
ANNEX II	LIST OF JAPANESE EXPERTS
ANNEX III	LIST OF MACHINERY AND EQUIPMENT
ANNEX IV	LIST OF PAKISTANI COUNTERPART AND ADMINISTRATIVE PERSONNEL
ANNEX V	LIST OF LAND, BUILDINGS AND FACILITIES
ANNEX VI	JOINT COORDINATING COMMITTEE

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Annex I MASTER PLAN

1 Overall Goal

Domestic plastic mould making industries are able to supply better quality moulds for plastic production in Pakistan.

2 Project Purpose


Technical capability of PITAC is upgraded to extend technical services in the field of plastic mould technology.

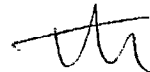
3 Outputs of the Project

- 1 The project operation unit is established for making advanced plastic moulds.
- 2 The necessary machinery and equipment are provided, installed, operated and maintained properly.
- 3 Technical capability of the C/P is upgraded.
- 4 Technical training courses and seminars are implemented systematically.
- 5 Technical backup support services are implemented systematically.
- 6 Advisory services are implemented systematically.

4 Activities of the Project

Necessary activities to achieve the above-mentioned outputs are conducted.

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Annex II LIST OF JAPANESE EXPERTS

- 1 Chief Advisor
- 2 Project Coordinator
- 3 Expert(s) on Mould Technology
- 4 Expert on CAD/CAM Network System
- 5 Other experts in the specific fields of technology transfer may be dispatched, if necessary.

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Annex III LIST OF MACHINERY AND EQUIPMENT

- 1 Machinery, equipment, tools and materials for the technology of making moulds for plastic injection
- 2 Other machinery, equipment and materials regarded as necessary for effective implementation of the Project by both sides

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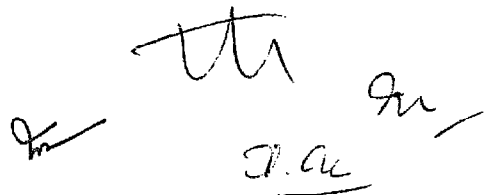
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Annex IV LIST OF PAKISTANI COUNTERPART AND ADMINISTRATIVE PERSONNEL

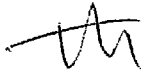



- 1 Counterpart personnel
 - (1) Administrative counterpart personnel
 - (2) Technical counterpart personnel
- 2 Administrative personnel
- 3 Supporting staff
- 4 Any other necessary personnel for the smooth implementation of the Project



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Annex V LIST OF LAND, BUILDINGS AND FACILITIES

- 1 Office space and necessary facilities for the Japanese Experts
- 2 Office space and necessary facilities for the Pakistani counterpart personnel
- 3 Lecture rooms and meeting rooms necessary for the transfer of technology
- 4 Buildings, facilities and space necessary for the installation and operation of the machinery, equipment and materials to be provided by the Government of Japan
- 5 Other facilities mutually agreed upon as necessary for the implementation of the Project

Annex VI JOINT COORDINATING COMMITTEE

1 Functions

The Joint Coordinating Committee will be held at least twice a year and whenever necessity arises.

Its functions are as follows:

- (1) To settle on the Annual Technical Cooperation Program (ATCP), the Annual Plan of Operations (APO) and the Annual Tentative Schedule for Implementation (ATSI) of the Project in line with the Technical Cooperation Program (TCP), the Plan of Operations (PO) and the Tentative Schedule of Implementation (TSI) formulated under the framework of the Record of Discussions;
- (2) To coordinate necessary actions to be taken by both sides;
- (3) To review the overall progress of the TCP and PO as well as the achievement of the ATCP and APO; and.
- (4) To exchange views on major issues arising from or in connection with the TCP and PO.

2 Composition

(1) Chairperson:

Secretary, Ministry of Industries and Production

(2) Committee Members:

(Pakistani side)

- a Project Director (PITAC Project)
- b Joint Secretary of Ministry of Industries and Production
- c Joint Secretary of Ministry of Finance and Economic Affairs (Economic Affairs Division)
- d Representative(s), National Productivity Council
- e Representative(s), Pakistan Plastic Manufacturers Association
- f Representative(s), Pakistan Association of Automotive Parts & Accessories Manufacturers
- g Representative(s), Engineering Components & Machinery Manufacturing Association of Pakistan
- h Representative(s), Pakistan Electrical Manufacturers Association





i Other personnel concerned with the Project decided by the Pakistani side, if necessary

(Japanese side)

a Chief Advisor

b Project Coordinator

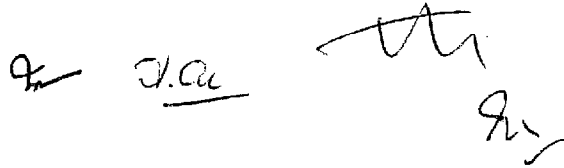
c Japanese experts designated by the Chief Advisor

d Representative(s), of the JICA Pakistan Office

e Other personnel concerned to be decided and/or dispatched by JICA, if necessary

Note :

1 Official(s) of the Embassy of Japan in the Islamic Republic of Pakistan may attend the Committee as observer(s).

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**MINUTES OF MEETING
BETWEEN THE JAPANESE PROJECT DESIGN TEAM
AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT
OF THE ISLAMIC REPUBLIC OF PAKISTAN ON THE JAPANESE
TECHNICAL COOPERATION FOR THE PROJECT ON BALANCING AND
MODERNIZATION OF WORKSHOP FACILITIES AT PAKISTAN
INDUSTRIAL TECHNICAL ASSISTANCE CENTER (PITAC) - LAHORE**


The Japanese Project Design Team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") and the authorities concerned of the Government of the Islamic Republic of Pakistan signed on the Record of Discussions (hereinafter referred to as "R/D") on the Japanese Technical Cooperation for the Project on Balancing and Modernization of Workshop Facilities at Pakistan Industrial Technical Assistance Center (PITAC) - Lahore (hereinafter referred to as "the Project").

The attached document hereto is intended to record the understanding reached between both sides in regard to the provisions stipulated in the R/D.


Islamabad, March 21, 2001



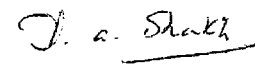
Norinobu Hayashi
Leader
Project Design Team
Japan International Cooperation Agency
Japan



Muhammad Sharif Ijaz Ghauri
Senior Joint Secretary
Ministry of Industries and Production
Islamic Republic of Pakistan



Muhammad Aslam
Deputy Chief
Economic Affairs Division
Government of Pakistan
Islamic Republic of Pakistan



Arif Ali Sheikh
Acting General Manager/Project Director
Pakistan Industrial Technical Assistance
Center (PITAC), Head of NPO
Islamic Republic of Pakistan

ATTACHED DOCUMENT

I INTRODUCTION

As a result of the Study Teams dispatched by the Government of Japan, namely Basic Study (Fact Finding) Team in April 1999, Preliminary Study Team in April 2000, Supplementary Study (Preparatory Study) Team in November 2000, and Implementation Study (Project Design) Team in March 2001, both Pakistani and Japanese sides reached the common understanding regarding the Project as follows:

II BACKGROUND

The Government of Pakistan had managed to enhance engineering sector in view of the importance of balanced development of industries including agriculture, the leading industry of the country. In line with the policy, the Government of Japan implemented a three-year project for transferring machining technology to modernize the manufacturing process of mould and die in Pakistan Industrial Technical Assistance Center (hereinafter referred to as "PITAC") from September 1982 to October 1985. Further to the project, the Government of Japan provided After-care Cooperation to PITAC from 1994 to 1995. Utilizing the machinery and equipment as well as the transferred technology, PITAC has conducted a variety of technical services to private sector since the cooperation.

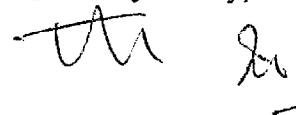
After the above-mentioned cooperation, however, PITAC came to receive strong demands for higher technical services and renewal of machines from the private sector. At the same time, the Government of Pakistan also intended to enhance the supporting industry by giving a priority to the promotion of small and medium enterprises and by taking the "Industry Specific Deletion Program" to promote domestic parts and components industries.

Against the backdrop, the Government of Pakistan submitted a request for Project Type Technical Cooperation of the Government of Japan, aiming at modernizing the machinery, equipment, and technology of PITAC to expand its capacity to support small and medium enterprises in the engineering sector.

In response to the request, the Government of Japan dispatched a Basic Study (Fact Finding) Team through JICA in April 1999 to investigate the background and details of the request. As a result, it was concluded that the request would be adequate if the scope of cooperation was focused on a certain area such as plastic injection mould making technology. In accordance with the result of the study, the Government of Pakistan submitted a revised request to the Government of Japan in December 1999, which requests the Project Type Technical Cooperation of JICA in the field of plastic mould designing and manufacturing for supporting industries.

Based on the revised request, the Government of Japan dispatched Preliminary Study Team in April 2000 and Supplementary Study (Preparatory Study) Team in

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November 2000 respectively to further investigate the status of targeted sector and to discuss with PITAC about the project design. In March 2001, the Project Design Team was dispatched to wrap up the series of discussions regarding the desirable measures to be taken by both the Pakistani and the Japanese sides.

III Problems to be Addressed and the Current Situation

1 Present Policies and Strategies relating to Metalworking and Plastic Industry in Pakistan

(1) Prospective Long-term Plan

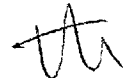
In commemoration of the 50th anniversary of Islamic Republic of Pakistan and in coping with short-term macroeconomic imbalances and medium-term structural rigidities, the Pakistani government developed a national medium to long-term development vision, called as Pakistan 2010, in 1997. Under the present government it was renamed as Future Prospective Long-term Plan.

In the plan, five distinct areas are identified as strategic intervention with a set of medium-term targets: the productive sectors (industry and agriculture), exports, science and technology, social service provision, and good governance. Especially, regarding productive sectors, the program takes stance of a demand-driven by the private sector and requires the Government to create favorable investment climate, including infrastructure and credible financial systems, simple and transparent regulatory systems, tax and tariff reforms, and so forth to facilitate the private sector development and the protection of civil rights of the public. The Government is expected to undertake a series of measures to promote small and medium scale industries.

(2) The drafted Ninth Five Year Plan (1998 - 2003) and Three-year Rolling Plan (2000 - 2003)

Based on the aforementioned vision, the Government of Pakistan had drafted Ninth Five Year Plan (1998 - 2003) (hereinafter referred to as "the Ninth Plan") as a short to medium-term policy program. The major strategies for the manufacturing sector envisaged in the Ninth Plan were as follows:

- a Promotion of value-added, export oriented and hi-tech, engineering, chemicals, electric industries as prioritized in the Investment Policy of 1997
- b Attracting foreign investment and technology transfer through the development of export processing zones
- c Instituting measures for higher capacity utilization
- d Activating Industrial Facilitation Boards
- e Cluster approach in key industries, supporting sectors, infrastructure and human resource development
- f Standardization and quality control through institutional measures



- g Human resources development through Vocational Training and on the job apprenticeship programs
- h Development of expertise on WTO agreements

Under the present administration, the drafted Ninth Plan was renamed as "Three-years Rolling Plan (2000-2003)", the contents of which were almost the same as those of the Ninth Plan.

(3) Economic Revival Plans

In December 1999, the present administration, establishing Economic Advisory Board which consists of 13 members of eminent economists and significant figures in the private sector, announced a series of Economic Revival Plans. The Plans addresses the policy framework to streamline the economy and restore business confidence by guaranteeing policy coherence and continuity and by rationalizing tax structure, and in a long run to decrease external debt and to alleviate poverty. In the Plans, priorities for the restoration are given to such four industrial sectors as agriculture, petro/gas, small and medium scale industry, and information technology.

(4) Engineering Development Board

In 1997, the Pakistani government established the Engineering Development Board (hereinafter referred to as "EDB") which consists of eighteen members from both the public and private sectors to develop a long term vision, formulating and coordinating all government policies relating to the engineering sector.

EDB organized eight sub-committees represented by around 100 private sector industries to provide policy direction, to assist government in rationalizing tariff structure, to recommend measures for promotion of exports and to adopt industry-specific deletion programs for the Engineering Sector.

The following eight sectors represent in the sub-committees:

- a Automotive and other Transport Sector
- b Plant & Machinery and Vapour Generating Equipment
- c Earthmoving Equipment, Agriculture Machinery & Implements and Material Handling Equipment
- d Textile Machinery
- e Engines, Motors and Prime Movers
- f Metal Working Machinery
- g Domestic Appliances (Fans, Air Conditioners, Refrigerators, Deep freezers etc.)
- h Electrical Capital Goods (Transformers, Switchgear, Generators etc.)

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(5) Small and Medium Scale Enterprises Promotion

Regarding small and medium scale industries, clustering approach has been introduced to identify specific sectors in specific regions instead of broad term of "industries." This approach places emphasis both on the health of the supporting industries and institutions and on links between them and leading, higher-profile firms.

In 1999, Small and Medium Enterprise Development Authorities (hereinafter referred to as "SMEDA") was established by the government with an aim of providing fresh impetus to Pakistan's economy through launching sectoral development and small and medium enterprises support program.

2 Current status of Metalworking and Plastic Industry in Pakistan

(1) Assembly Industry related to Metalworking and Plastic Industries (Automobile and Electronics Industries)

a Automobile Industry

According to Pakistan Association of Automotive Parts & Accessories Manufactures (hereinafter referred to as "PAAPAM"), there are nearly 750 automotive parts vendors, 90% of which are small and medium in scale, and nearly 95% of them are self financed. Annual production of automobiles in Pakistan ranges from 50,000 to 60,000. In 1998-1999, automotive sector generated Rs.48,251 million, which pushed the GDP growth to over 5%. There are about fifteen automobile manufacturers such as Toyota, Honda, Nissan, Suzuki, Volvo, Naya Daur, and most recently Daihatsu, Fiat and Kia, including those which produce cars, buses, trucks, motorcycles and tractors. According to PAAPAM, automotive companies should follow strictly the "deletion program" that sets the level of localization of automotive parts. The deletion program was said to be rationalized to be more transparent and more industry-specific since the formation of above-mentioned EDB.

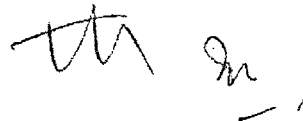
Currently dies and moulds for such parts are mostly imported from Japan or Taiwan due to quality problems of local products.

b Electronics Industry

Annual production of TV in Pakistan is estimated 500,000. The domestic distribution of black and white as well as colored TV is around 15%. Currently local content rate is not regulated for manufacturing electric/electronic appliances.

c Present Status and Problems of Assembly Industry

As a results of the survey conducted during the Supplementary Study (Preparatory Study) for five assembly makers in the fields of automobile and



electronics industries, which are the end-users of the plastic moulded parts, it was found that the said industries faced the following problems:

- (a) inability of investing in plastic mould making because of the limitation of Pakistani domestic market capacity,
- (b) dependence on the moulds imported from other countries or provided by their parent companies,
- (c) low rate of using CAD/CAM system among local vendor companies
- (d) smuggled electronics appliances with lower price and better quality compared with those made in Pakistan hindering the development of domestic electronics industry

Regarding the problems above, both Pakistani and Japanese sides understood that the improvement in competitiveness and moulding technology of domestic plastic industry was needed to meet the technical requirements and specifications of the assembly makers.

In addition to the automobile and electronics industries, there are other prominent assembly industries such as household appliances and kitchenware, which are also important indirect beneficiaries of the Project.

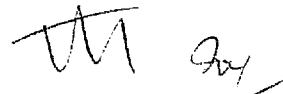

(2) Plastic Moulding Industry

a Present Status and Problems

According to the Pakistan Plastic Manufactures Association (hereinafter referred to as "PPMA"), the total number of plastic manufactures amounts to 1,800 which create 200,000 jobs for workers, among which 1,100 companies are small scale, 330 are medium scale, and 370 are large-scale. In addition, there are 3,200 units of unorganized entities categorized as cottage industry, most of which use semi-hand operating machines. According to PPMA, plastic sector generates annual value of US\$ 1 - 1.5 billion, known as a fast growing sector at 20% annual growth rate.

To overview the current situation of plastic industry in Pakistan, the Supplementary Study (Preparatory Study) Team selected four groups of plastic moulding companies to visit, such as automobile part makers, electronics part makers, home appliances makers, and medical and PET bottle makers varying from small to large scale both in Karachi and Lahore. Visiting total twenty-one plastic moulding companies, thirteen of which in Karachi and eight in Lahore, the Japanese side realized the following results:

- (a) Most important subject on the plastic industry is procurement of moulds. To make the moulds, companies need advanced design and machining technologies especially for providing their products to automobile and electronics industries. Almost all plastic moulds for the said industries are



supplied from parent companies because the lack of high technologies in Pakistan.

- (b) To accomplish the Industry Specific Deletion Program (ISDP), automobile assembly companies have interest in cooperation with domestic plastic moulding companies. However, these relations are still weak because of the same technical problem as mentioned (2) a (a) above.
- (c) Several well-managed moulding companies have the plan to expand their business from plastic moulding to mould making. In Pakistan, however, lack of proper information or suggestion about machine and technology for mould making keeps the companies from making decision to expand their business to the said field.

Most of all plastic moulding companies do not have enough fundamental moulding technologies, especially the relations between products specifications and plastic materials. Under the conditions, assembly industries must watch carefully the quality of local plastic moulding. These conditions cause low productivity of moulding companies.

b Needs of Plastic Moulding Industry

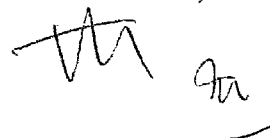

Under the current situation described above, both the Pakistani and Japanese sides found the needs of plastic moulding companies for the Project as follows:

- (a) support in the field of mould making technology to improve competitiveness of the said industry
- (b) information service about new machines, technologies, and so on
- (c) technical support to make low cost plastic moulds adequate for Pakistani market
- (d) technical training on moulding techniques for the employees of moulding companies to improve their basic skills

The Pakistani side also understood the above mentioned needs, and at the same time, explained the Japanese side their continuous efforts to grasp the needs of said industries through related associations such as PPMA, PAAPAM, Engineering Components and Machinery Manufacturing Association of Pakistan (hereinafter referred to as "ECMMA"), Pakistan Electrical Manufacturers Association (hereinafter referred to as "PEMA"), and so forth.

(3) Plastic Mould Makers

According to PPMA, there are no established mould manufactures in Pakistan and approximately 160 informal sector companies and 70-80 in-house mould makers are in operation. Their major products are household/kitchen



ware, automotive, electrical, electronics and packaging.

Along with the survey of plastic moulding companies, the Supplementary Study (Preparatory Study) Team also visited fourteen plastic mould manufacturers, six in Karachi and eight in Lahore. As a result, both the Pakistani and Japanese sides understood the current situation of said makers and their needs as follows:

a Only few advanced mould makers use CAD/CAM system with CNC machines. Even advanced mould makers do not have enough machining technique for manufacturing plastic moulds to satisfy automobile industry's needs.

b Most of all local plastic mould makers use old machines and tools, which makes some difficulties for them to enter automobile and electronics industries.

c Plastic moulds are usually made by copying plastic products or master moulds purchased from other countries with copy machines such as copy-milling machines. Therefore, designing technology for plastic moulds has not developed well in Pakistan, which causes the limitation of growth of the industry.

d To enhance Pakistan's plastic industry, most effective way is to enhance mould makers' designing and processing capabilities. By improving mould makers' technical ability, plastic industry can procure better moulds at reasonable price and improve their products. The proposed Project is expected to extend technical support services on mould making technology to the industry through PITAC's function.

3 Organizations concerned with Metalworking and Plastic Industry in Pakistan

(1) Vocational Training Centers

Vocational training centers are under the jurisdiction of Ministry of Labor and managed by local provincial governments. They offer classroom technical training for unskilled workers, while PITAC is specialized to provide both theoretical and hands-on training aiming at skill upgrading for highly skilled workers.

(2) Metal Industrial Research Development Center (MIRDC)

MIRDC was branched off from PITAC in 1982 in order to undertake specifically testing and inspection for metals and metallurgical industry. UNIDO has assisted MIRDC with foundry facilities and equipment for analysis and testing.

(3) Pakistan Council of Scientific and Industrial Research (PCSIR)

PCSIR is in charge of research and development as well as testing and inspection in industrial fields. PCSIR entrusts PITAC with designing and processing of die and moulds, and heat treatment; PITAC requests the knowledge of quality control and materials processing.

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(4) Pak-Swiss Training Center

Pak-Swiss Training Center was established by PCSIR in Karachi in 1965 with the assistance of the Swiss government. It extends vocational training on precision mechanics and instrumentation and on die and mould technology to the young at age of 15 to 19 and gives diploma to the graduates. Other than the diploma course, it also operates post-diploma courses on electronics technology and optical technology as well as specialized professional courses for engineers and technicians from industry. The center accepts the admission of yearly 66 students from all over Pakistan to the diploma courses, 16 of whom are selected to proceed to die and mould course. The diploma courses are operated based on full financial support by the Pakistani government so that the students are exempted from paying any tuition fee.

With respect to the Project at PITAC, the Japanese side expects that the center might be a partner in terms of exchanging lecturers or students in the common technical field of plastic mould making. The Pakistani side also recognized the possibility of the said partnership between the center and PITAC.

(5) Pakistan Plastic Manufacturers Association (PPMA)

Pakistan Plastic Manufacturers Association (PPMA) was established in 1985 for the purpose of protecting, promoting, encouraging, and developing plastic processing industry in Pakistan and raising the standard of its production. The number of members of PPMA was 718 as of April 2000, 124 of which were in Punjab Zone.

The members of PPMA are representatives of Governing Body and Executive Committee of PITAC through Federations and Chambers of Commerce and Industry of all Provinces. PPMA is one of the beneficiaries of PITAC in technical backup support service, training, advisory and consultancy.

According to PPMA, the plastic manufacturers in Pakistan have such technical problems as non-availability of skilled technical staff, lack of research and development, bad quality moulds, low-tech and old machines, and non-availability of engineering plastic materials in Pakistan. To address the problems, PPMA expects PITAC to provide technical services such as research and development, conception of new products, design and development of moulds, good machinery and facilities, training course on plastic materials, and so forth.

(6) Pakistan Association of Automotive Parts and Accessories Manufacturers (PAAPAM)

Pakistan Association of Automotive Parts and Accessories Manufacturers (PAAPAM) was formed in 1988 to represent and to provide technical and management cooperation to its members. PAAPAM has more than 200

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members and the number is constantly increasing.

The members of PAAPAM are also the representatives of Governing Body and Executive Committee of PITAC through Federations and Chambers of Commerce and Industry of all Provinces. PAAPAM has also been the beneficiaries of PITAC's technical services such as technical backup support, training, advisory and consultancy, but expresses its view that more upgraded technical services should be rendered in shorter time at lower cost. The representatives of PAAPAM expressed their expectation in the meeting with PITAC and the Supplementary (Preparatory) Study Team that not only operation of machinery and equipment for mould making but also the technical know-how on the process of making mould would be transferred to PITAC and Pakistani industries through the Project.

(7) Engineering Components and Machinery Manufacturing Association of Pakistan (ECMMA)

Engineering Components and Machinery Manufacturing Association of Pakistan (ECMMA) is the association of electric parts manufacturers who are one of the major users of plastic moulds. The number of members is about 80 at present.

In the meeting with PITAC and the Supplementary (Preparatory) Study Team, the representatives of ECMMA requested PITAC and the Japanese side to make the project activities match to the companies' needs, and thus the closer relationship between PITAC and industries should be strengthened. The Japanese side and PITAC replied to the request that the associations could contact Project Manager at any time and vice versa.

(8) Pakistan Electrical Manufacturers Association (PEMA)

Pakistan Electrical Manufacturers Association (PEMA) comprises of several companies such as manufacturers of energy meters, switch gears, transformers, and so forth. The members of this association are also the major users of plastic moulds and expected beneficiaries of the Project.

IV IMPLEMENTATION STRUCTURE OF THE PROJECT (PAKISTAN INDUSTRIAL TECHNICAL ASSISTANCE CENTER (PITAC))

1 Organization

PITAC is an autonomous organization affiliated to the Ministry of Industries and Production. The organization charts of the Ministry and PITAC are as shown in Annex 1 and 2, respectively.

PITAC was established in 1962 with an aim at upgrading the skills of industrial personnel in technical fields and advising industries on matters

pertaining to industrial productivity. It has two major predecessors such as Industrial Research and Development Center established in 1955 and Industrial Productivity Center established in 1957. PITAC obtained an autonomous status from the Ministry of Industries and Production which extends an administrative support to PITAC activities. In 1997 Pakistan Institute of Entrepreneurship Training was merged with PITAC.

PITAC was designated by the government as a National Productivity Organization in 1962 to coordinate activities for quality assurance and productivity in Pakistan. Based on the assistance provided by ILO/UNDP PITAC also gained strength in managerial training on ISO9000 and TQM since 1995.

In early April 1999, The Pakistani government approved to establish National Productivity Council (hereinafter referred to as "NPC") to exert higher level of authority to disseminate productivity concepts, to create a quality productivity data, to render advisory/consultancy services in techno-managerial areas, and to strengthen and promote linkage between national and international institutions to enhance productivity of various sectors of economy. PITAC is expected to fulfill further role as a secretariat to NPC.

PITAC has two liaison offices in Karachi and Peshawar. The Pakistani side explained the Japanese side the functions of the liaison offices as follows:

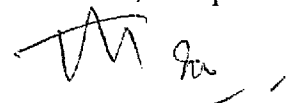
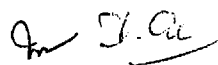
- a introduction of PITAC's technical back-up support services and human resource development programs
- b organizing training courses in Karachi, Peshawar, and other nearby towns
- c arrangements to provide advisory and consultancy services in techno-managerial fields
- d creating and maintaining linkages between educational institutions, research laboratories and industries

2 Organization Management

As an autonomous organization, PITAC has the following two layers of decision-making structure: The Governing Body and The Executive Committee.

The Governing Body, chaired by Senior Joint Secretary (Administration) of Ministry of Industries and Production, lays down the policy for managing all affairs and funds of PITAC in view of the general government policy directions received from central government. The Governing Body consists of twelve members from the federal and provincial governments, Federation of Pakistan Chambers of Commerce & Industries (hereinafter referred to as "FPCCI") and one representative each from the Chamber of Commerce & Industries at provincial headquarter respectively.

The Executive Committee, chaired by General Manager of PITAC, exercises the powers of the Governing Body in day-to-day running of PITAC, except in the



matters of major policy and functions. The Executive Committee comprises of five members including Financial Advisor & Deputy Secretary (Administration) of the Ministry of Industries and Production and one representative from FPCCI and Lahore Chamber of Commerce and Industry respectively.

3 Budget

The budget of PITAC is requested to Ministry of Finance through Ministry of Industries and Production for its scrutiny. The budget is classified into the following two categories: regular budget that is government Grant-in-Aid and development budget that aims at a specific project. Development Budget is to be requested in a different way from regular budget and its allocation is determined by Priority Committee Meeting which is held in April chaired by Minister of Finance/Secretary of Finance. If the duration of a project is more than one year, requesting agency should submit the whole plan and estimated expenditure during the project. Minister of Finance allocates block reserve of government's development budget to each ministry in accordance with priorities given by national development policy/starategy.

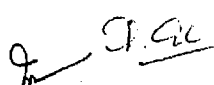
General Manager of PITAC has an authority to reappropriate necessary budget for its activities within the total allocated amount. The income generated by training service, advisory and consultancy service, seminars/conference, and production services can be expended by PITAC based on its own budgetary plan by integrating the budget allocated by the government. Carrying over is only allowed for development budget.

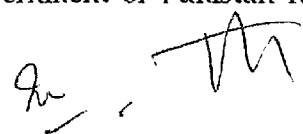
The Pakistani side explained the Japanese side that the regular budget of PITAC in 1999-2000 was about Rp.41 million, including Rp.38 million of Grant-in-Aid and Rp.3 million of income generated. For the fiscal 2000-2001, Rp.45.8 million including Rp.40.8 million of Grant-in-Aid has been approved as the regular budget. The estimated income amount in 2000-2001 is Rp.5 million. The budget, settlement account and generated income of PITAC is as shown in Annex 3.

4 Staff

(1) Staff Allocation

The approved number of staff of PITAC is 406, whereas 268 positions are currently posted. The number of staff has decreased in line with the trend of downsizing by the Pakistani government and the retirement of staff. The downsizing is mainly for administrative staff and PITAC is trying its best to retain and recruit technical staff. As and when the need arises, additional technical staff will be recruited in consultation with the Government of Pakistan for the JICA Phase II Project.





(2) Salary

Salary base of PITAC staff abides by Basic Pay Scale (hereinafter referred to as "BPS") that is regulated by intergovernmental committee and approved by Ministry of Finance. There are 20 grades of salaries for the staff of PITAC in accordance with the Basic Pay Scales in Pakistan.

The Japanese side stressed that for such Project that requires a quick and timely response to the dynamic needs in the private sector, the salary structure for the personnel working in the JICA Phase II Project should be at par with the existing salary structure of the private sector engaged in the similar activities. It will discourage trained Counterpart Personnel (hereinafter referred to as "C/P") from leaving PITAC for better salaries elsewhere.

(3) Recruitment

When PITAC requests to recruit an additional staff, recruitment procedures are as follows:

For a staff between BPS 1 to BPS 16, General Manager of PITAC approves the recruitment and decides who to be selected in consultation with Selection Committee chaired by Senior Manager in PITAC. For a staff between BPS 17 to BPS 19, Governing Body approves the recruitment and General Manager decides a new employee in consultation with Selection Board which consists of higher level of management in PITAC.

General Manager of PITAC, whose salary is BPS 20, is assigned by Minister of Industries and Production.

(4) Retirement

Retirement age of PITAC is 60 years extendable on contract until 62 years by the Government of Pakistan. On retirement, the employee is paid a pension, gratuity, and commutation.

(5) Job Hopping

Job hopping used to be low in PITAC because of relative stability of employment in the public institutions especially under the harsh economic environment. Merely one C/P resigned whereas three C/P retired from service on attaining the age of 60 years who had received training in the Phase I Project.


However, recent liberalization policy by the government has enabled the diversified salary structure even among public institutions. The Japanese side recommended to the Pakistani side that PITAC had to take incentive measures to recruit and retain competent engineers under the circumstances.

5 Activities of PITAC.

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PITAC provides three types of services to the industry: (a) Technical and HRD Training, (b) Advisory and Consultancy, and (c) Conferences and Seminars. The results of PITAC's performances in the said services are shown in Annex 4.

(1) Training

PITAC started technical training services since its establishment. In 1991, under the assistance of ILO and UNDP, managerial training including ISO9000 and TQM was initiated. Since then, PITAC has been elaborating two fields of training, namely technical training courses characterized by hands on training as well as HRD training courses emphasizing quality and productivity.

Average duration of training courses are from one week to ten weeks: Seminars from one to five days.

Outlines of training courses and their major contents are shown in Annex 5-1a, 5-1b and Annex 5-2 respectively.

The advertisement of training courses is carried out by distributing brochures and newsletters to related organizations and companies. PITAC explained the Japanese side that about 60% of the participants are from outside Lahore, and they could stay at the hostel located inside PITAC at a quite reasonable accommodation cost.

(2) Advisory and Consultancy Services.

PITAC has two channels of advisory and consultancy services: Technical Experts Services (hereinafter referred to as "TES") in which foreign experts are dispatched to a company in need of technical assistance in collaboration with APO; and Local Expertise Services and Technological Backup Support which facilitate to provide technical assistance both from PITAC and other local institutions.

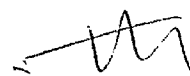
As for Local Expertise Services and Technological Backup Support, PITAC directly provides manufacturing services of tools and moulds in response to the needs of individual companies, technical guidance on feasibility of introducing new technologies to a company, information services for entrepreneurs of small and medium scale industries and so forth.

(3) Seminar and Conference

Seminars and conferences are held on hot issues to disseminate knowledge and information to the industry and for creating awareness.

6 Current Situation of and lessons learned from the PITAC Phase I Project

As a result of the observation by the Japanese side, the machinery and equipment provided by Japan through the Phase I Project has been operated and maintained in fairly good condition in general despite their 15 years of operation



except for some machines. However, it seemed that daily inspection such as cleaning, lubricating and tightening screws, and periodical inspection had not been conducted systematically. Therefore, it is desired for PITAC to conduct the said inspection and systematical preventive maintenance based on a maintenance plan. The current situation of existing machinery and equipment is shown in Annex 6.

It was also observed that training courses on milling and other workshop techniques have been conducted. PITAC analyzed the impact of the Phase I Project as such that PITAC could play the role of catalyst by motivating industries to acquire similar facilities for their own tool rooms. In addition, technical support of PITAC for manufacturing moulds has been increasing in number. The technical backup support and training activities utilizing the technology transferred in the Phase I is shown in Annex 7.

7 Cooperation extended by other bi-lateral and multi-lateral aid agencies to PITAC

Other than JICA's Phase I Project, there were a project on Low Cost Automation (hereinafter referred to as "LCA") sponsored by UNDP in 1979, a project on Auto-CAD training supported by British Commonwealth, and a project on developing supervisory training courses assisted by ILO/UNDP.

As a member of APO, PITAC occasionally convenes seminars. In 1999 PITAC organized a workshop on designing of moulds for plastic products for South South Cooperation of Asian countries under the sponsorship of APO and the Japanese Government.

The record of assistance to PITAC from donor agencies is shown in Annex 8.

V SPECIFIC ITEMS REGARDING THE PROJECT

1 Name of the Project

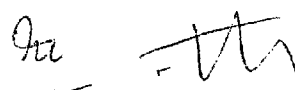
According to the formal request that has been approved by the "Central Development Working Party (CDWP)" chaired by the Secretary of Finance on the Pakistani side in November 1999, the name of the Project is "Balancing and Modernization of Workshop Facilities at PITAC - Lahore." The Japanese side suggested to the Pakistani side it would be preferable to name the Project as "Plastic Mould Technology Development Project" in order to describe the technical content of the Project more clearly.

As a result of discussions, both sides agreed that the formal name of the Project would be Balancing and Modernization of Workshop Facilities at PITAC - Lahore, while the name, "Plastic Mould Technology Development Project" could be used in Japanese language.

2 Agency concerned of the Project

The Project will be implemented by PITAC, the head office of which is

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located in Lahore.

Ministry of Industries and Production in Islamabad provides PITAC with administrative support.

3 Cooperation Period

Both sides agreed that the duration of the technical cooperation for the Project by the Government of Japan would be four years.

The date of the commencement of the Project will be January 15, 2002 as agreed by both sides in the R/D taking into consideration the necessary period for the construction of Project building on the Pakistani side and the procurement of machinery and equipment on the Japanese side.

Both sides further reconfirmed that the technology transfer from the Japanese experts to the C/P in PITAC would be implemented within three years, and that the remaining one year would be for monitoring the stability of the transferred technology.

4 Administration of the Project

Mr. Arif Ali Sheikh, the Acting General Manager of PITAC will be Project Director who bears overall responsibility for the administration of the Project. In case he retires, the succeeding General Manager of PITAC will take over the responsibility of Project Director.

Mr. Arshad Javaid, Manager of NC shop of PITAC will be the Project Manager who is responsible for managerial and technical matters of the Project.

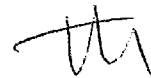
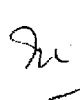
Mr. Sarfraz Ahmad, Manager of Training Division of PITAC will be Deputy Project Manager who is in charge of coordination of technical services for industries and liaison with related associations and organizations.

5 Fields and Items of Technology Transfer

(1) Target Group

The initial target group for technology transfer of the Project is the C/P in PITAC. As the Project proceeds, the target group may cover engineers and technicians, to the end, in small and medium scale plastic manufacturers as well as potential mould makers that are producing or would produce plastic moulds on their own.

Both sides understood that the intention of the Project was to increase technical support capability of PITAC for disseminating advanced technology towards the target group, and not merely to increase manufacturing capacity of moulds in PITAC. Both sides also discussed that keen attention should be paid to the needs of the industry through training, technical backup support and advisory services to upgrade mould making capability of mould manufactures in Pakistan.



(2) Fields and Items of Technology Transfer

Both sides discussed the fields and items of technology transfer in the Project and agreed the fields to be (1) plastic mould design, (2) CAD/CAM network system, (3) plastic mould processing, and (4) assembling and trial shot of plastic moulds.

The schedule of technology transfer is shown in Annex 14, "Technical Cooperation Program (TCP)".

(3) Target Level of the Technology Transfer and Target Products

The Japanese side explained the Pakistani side and the latter understood that the purposes and merits of setting target products were as follows:

a The target products are the tools for technology transfer from Japanese experts to the C/P. Drawings, data for CAD/CAM, tools and model moulds for the target products will be provided by the Japanese side as a set. Utilizing the set, the respective group of designing, processing and assembling/trial shot can simultaneously commence their technology transfer. The mould metal and plastic raw materials for the target products are to be provided by the Pakistani side in principle, but if it is impossible to procure them in Pakistan, the Japanese side might provide some of the materials necessary for making target products in order to implement the technology transfer smoothly.

b The target products are to be set for the purpose of materializing the target level of the technology to be transferred in the Project, and to enable both sides to monitor the achievement of the said technology transfer level.

c The levels of the target products are set forth from simple to complicated as shape-wise, from easy to difficult as technical-wise, but not from small to big as size-wise, as the size may not always represent the technology level of tool and mould products.

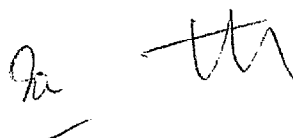

Based on the results of survey on technical level and needs of the metalworking and plastic industry in Pakistan, both sides discussed the selection of target products and agreed to set four (4) products shown in Annex 9. The specifications of the products will be finalized by the commencement of the Project.

6 Master Plan of the Project

Both sides reviewed the master plan of the Project as follows:

(1) Overall Goal

Domestic plastic mould making industries are able to supply better quality moulds for plastic production in Pakistan.



(2) Project Purpose

Technical capability of PIAC is upgraded to extend technical services in the field of plastic mould technology.

(3) Outputs of the Project

- 1 The project operation unit is established for making advanced plastic moulds.
- 2 The necessary machinery and equipment are provided, installed, operated and maintained properly.
- 3 Technical capability of the C/P is upgraded.
- 4 Technical training courses and seminars are implemented systematically.
- 5 Technical backup support services are implemented systematically.
- 6 Advisory services are implemented systematically.

(4) Activities of the Project

- 1-1 Allocate necessary personnel as planned.
- 1-2 Formulate plans of activities.
- 1-3 Make budget plan and execute it properly.
- 1-4 Establish and operate project management system.

Note: The said system includes the followings:

- a Project Organization
 - b Linkage with related industries including the industrial associations, institutes, academy, and so forth
 - c Regular Meeting such as Joint Coordinating Committee, weekly, monthly, and/or quarterly meeting within the Project and with related participants
 - d Monitoring and Evaluation System
 - e Implementation system on respective service, which means needs survey, planning, implementation, evaluation, and feedback
 - f Public Relations (Publicity)
- 2-1 Provide and install necessary machinery and equipment.
 - 2-2 Operate and maintain the machinery and equipment properly.
 - 3-1 Make Technical Cooperation Program.
 - 3-2 Implement technology transfer to the C/P.
 - 3-3 Monitor and evaluate the result of technology transfer to the C/P.
 - 4-1 Identify needs through company visits.
 - 4-2 Make plans of technical training courses and seminars.
 - 4-3 Develop training curricula and teaching material.
 - 4-4 Implement the technical training courses and seminars.
 - 4-5 Monitor and evaluate the result of technical training courses and

seminars.

- 5-1 Identify needs through company visits.
- 5-2 Make plans of technical backup support services.
- 5-3 Implement the technical backup support services.
- 5-4 Monitor and evaluate the result of technical backup support services.
- 6-1 Identify needs through company visits.
- 6-2 Make plans of advisory services.
- 6-3 Implement the advisory services.
- 6-4 Monitor and evaluate the result of advisory services.

6 Charts for Project Planning and Management

The Japanese side explained to the Pakistani side and the latter understood that the purposes and interrelation among the charts for Project Planning and Management as shown in Annex 10. Both sides reviewed and formulated the said charts as follows.

(1) PDM

Both sides jointly reviewed the provisional PDM and revised it as shown in Annex 11.

(2) Plan of Operations (PO) and Annual Plan of Operations (APO)

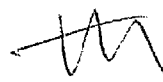
Both sides understood that the Plan of Operations (hereinafter referred to as "PO") illustrated the time frame of Activities defined in the PDM. The PO formulated by both sides for this Project is as shown in Annex 12. Along with the PO, the tentative Annual Plan of Operations (hereinafter referred to as "APO") for the first year of the Project was also discussed and formulated as shown in Annex 13.

(3) Technical Cooperation Program (TCP) and Annual Technical Cooperation Program (ATCP)

Both sides understood that Technical Cooperation Program (hereinafter referred to as "TCP") illustrated the items and the time frame of technology transfer in the Project. The TCP formulated by both sides for this Project is as shown in Annex 14. Along with the TCP, the tentative Annual Technical Cooperation Program (hereinafter referred to as "ATCP") for the first year of the Project was also discussed and formulated as shown in Annex 15.

(4) Tentative Schedule of Implementation (TSI) and Annual Tentative Schedule of Implementation (ATSI)

Both sides understood that the Tentative Schedule of Implementation



(hereinafter referred to as "TSI") illustrated the time frame of inputs to be provided by both sides. The TSI formulated by both sides for this Project is as shown in Annex 16. Along with the TSI, the tentative Annual Tentative Schedule of Implementation (hereinafter referred to as "ATSI") for the first year of the Project was also discussed and formulated as shown in Annex 17.

7 Measures to be taken by the Japanese side

(1) Dispatch of Japanese Experts

a Long-term Experts

The Japanese side explained the Pakistani side and the latter understood that the following long-term experts were scheduled to be dispatched when the Project would start:

- (a) Chief Advisor
- (b) Project Coordinator
- (c) Expert in Mould Design
- (d) Expert in CAD/CAM Network System

The Japanese side further explained that additional long-term experts would be dispatched in the following fields by the time of arrival of machinery and equipment, but they might be substituted with short-term experts in accordance with the result of their recruitment:

- (e) Expert in Mould Processing
- (f) Expert in Mould Assembling and Trial Shot

b Short-term Experts

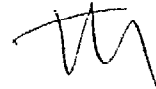
In addition to the long-term experts, short-term experts in the specific fields including maintenance will be dispatched when necessity arises.

(2) Training of the Pakistani Counterpart Personnel in Japan

The Japanese side explained to the Pakistani side and the latter understood that the number of C/P to be trained in Japan would be 0 to 3 per year and it would be very difficult for the Japanese side to accept all the C/P as a trainee in Japan during the technical cooperation period in any project nowadays because of the harshness of Japan's ODA budget.

Based on the principle described above, both sides agreed on the contents and schedule of the C/P training in Japan for the first year of the Project as follows:

- a The said training will be held in October, 2001.
- b The purpose of said training is to introduce current technology in the fields of mould making and production management exercised in Japanese companies and to provide the opportunity to visit public technical institutions with the



functions similar to those of PITAC for exchanging the ideas about the way to extend services to industries.

c The personnel to be nominated for the said training would be two PITAC staff who are in charge of project management.

d The scheduled duration of the said training would be about two weeks.

(3) Provision of Machinery and Equipment

a Regarding the machinery and equipment to be provided through the Project, the Japanese side explained the Pakistani side and the latter understood the following principles:

(a) The machinery and equipment to be provided by the Japanese side should be regarded as the tools to accomplish the technology transfer of the Project, thus minimum provision would be made.

(b) The future version-up and/or replacement, in particular of the computer-related machinery, should be borne by the Pakistani side even during the cooperation period of the Project.

(c) With reference to (b) above, the smooth implementation of such version-up and/or replacement as well as timely procurement of consumables (tools, materials and so forth) by the Pakistani side would be the decisive factor of the success of the Project, thus sufficient budget should be reserved for maintaining and/or updating the provided machinery.

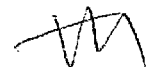

(d) The machinery and equipment should be used and maintained under the careful control of temperature, humidity, vibration, air, and dust, thus the proper refurbishment of Project site is essential to be finished until the commencement of the Project.

b In line with the principles above, both sides had discussed the composition of machinery and equipment for the technology transfer in the Project and formulated a list of the machinery and equipment to be prepared by both sides. However, further to the discussions in the Supplementary (Preparatory) Study, the Japanese side was forced to delete some items because of budgetary constraints. As a result of the discussion between the Pakistani side and Japanese Project Design Team, both sides agreed on the followings and revised the list as shown in Annex 18-1:

(a) CNC Vertical Milling Machine will be deleted from the list, and its function will be substituted with existing NC Milling Machine in PITAC and the Machining Center to be provided in the Project.

(b) Profile Grinder will be deleted from the list, and its function will be substituted with existing Profile Grinders in PITAC.

(c) Tool Maker's Microscope will be also deleted from the list and its function



will be substituted with a profile projector existing in PITAC.

- (d) Small Hole Drilling Machine will be provided by the Japanese side if its budget permits.

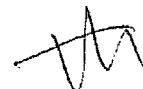
In addition to the discussion above, the Japanese side further explained the Pakistani side and the latter understood that Coordinating Measuring Machine would be provided if its export was finally allowed by the Japanese government in accordance with Japanese laws and regulations. In response to the Japanese side's explanation about the scrutiny of end users and their beneficiaries carried out by the Japanese government in case of exporting precise NC measuring machines, the Pakistani side assured the following matters:

- (a) PITAC will not use the provided machinery, equipment and transferred technology in the Project for developing mass destruction weapons.
- (b) PITAC and its beneficiaries have never developed and will never develop mass destruction weapons.
- (c) PITAC and its beneficiaries have never done and will never do the followings:
- study on nuclear fuel substances, nuclear material substances and nuclear fusion
 - operation of atomic reactor
 - production, processing, and reprocessing of heavy water
 - study on chemistry, microbe, toxin, gene, rocket, unmanned aircraft, and outer space committed by personnel or administrative institutions regarding army and national defense force

c In the said Annex 18-1, the Equipment are classified into four (4) categories, that are earmarked which sides are to provide:

- (a) The equipment which exists at PITAC, and will be used for the Project (This category is stood for "U" in the said Annex.);
- (b) The equipment which exists at PITAC, however, due to being superannuated or other reasons, should be replaced (This category is stood for "R" in the said Annex.);
- (c) The equipment which exists at PITAC, however, another one(s) should be provided for the smooth implementation of the Project (This category is stood for "I" in the said Annex.);
- (d) The Equipment which does not exist at PITAC at present, and should be provided (This category is stood for "P" in the said Annex).

d The sizes and capacities of machinery and equipment to be provided by the Japanese side are shown in Annex 18-2.



8 Measures to be taken by the Pakistani side

(1) Buildings and Facilities for the Project

a Project Site

The Pakistani side explained the Japanese side that it had changed its plan after the Supplementary (Preparatory) Study and decided to construct a new building for the Project on a newly selected site as shown in Annex 19. The Pakistani side further explained the Japanese side that the construction was scheduled to finish by June or July 2001, but there was a possibility of delay for a couple of months due to financial conditions of the Pakistani government. In response to the explanation, the Japanese side expressed its concern if any financial problems could hinder the completion of the building, but the Pakistani side replied to the concern that the construction work would be done on the Pakistani side even though some delay might happen. As a result of discussions between the both sides, it was agreed to set the Project start date on January 15, 2002 taking into consideration the possible delay of the construction work.

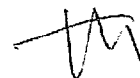

The construction schedule prepared by Public Works Department (PWD) of the Pakistani government is as shown in Annex 20. The Japanese side requested the Pakistani side and the latter agreed to submit reports on the progress in construction work with its pictures every month through JICA Pakistan Office. The first report will be submitted by the Pakistani side by the end of April, 2001.

With regard to the technical requirements for the building, the Japanese side showed its recommendations to the Pakistani side as shown in Annex 21. Based on the recommendations and the discussions between the both sides, the layout plan of the Project site was jointly revised as shown in Annex 22. The Japanese side requested the Pakistani side to send basic and detailed design of the site on its completion for technical consultation and confirmation.

b Experts' Rooms

The Japanese side requested the Pakistani side to provide rooms for Japanese experts, one(s) for administrative experts near to the Project Director's room and one(s) for technical experts near workshop. As for the administrative experts' room, the Pakistani side showed the Japanese side the rooms to be provided for Chief Advisor and his secretary, which were equipped with telephones, a fax machine, and an air-conditioning machine. The room for Project Coordinator and meeting space will be also prepared by the Pakistani side. As for the technical experts' rooms, both sides agreed to prepare them inside the new building. The planned layout of the rooms are also shown in Annex 22.

For the experts, the Pakistani side will provide e-mail addresses.



(2) Machinery, Equipment and Materials

Both sides reconfirmed that the Pakistani side would supply at its own expenses local machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than those provided by the Government of Japan through JICA during and after the technical cooperation period for the Project.

With respect to the machinery and equipment to be provided by the Pakistani side, the Japanese side suggested the following alterations:

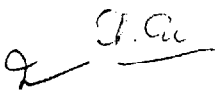
- a Delete Generator from the list of machinery and equipment for the reason that UPS for computers and data backup system built in NC processing machines can secure data even in the case of sudden blackout. Therefore, there is no need to install a generator as the backup power source.
- b Delete Water Treatment Plant from the list as well for the reason that Injection Moulding Machines to be provided by the Japanese side are equipped with waterless cooling system, and thus it is not necessary to treat tap water as the coolant for the machines.
- c Change the capacity of Crane to 3 ton taking into consideration the size and weight of mould parts and assembled moulds to be made in the Project.

The Pakistani side explained the Japanese side that it planned to fabricate Tool Locker, Rack, Stocker, and Mould Rack in PITAC instead of purchasing, and requested the Japanese side to show their desirable drawings. For the request, the Japanese side replied that it would send the specifications and catalogs of tools, cutters, and other parts after deciding all the specifications of machinery and equipment including such tools, cutters, and so forth.

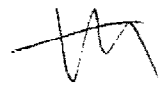
(3) Assignment of Full-Time Counterpart Personnel

The Pakistani side explained the Japanese side that it had recruited four new personnel for the Project after the Supplementary (Preparatory) Study, one of whom had already entered PITAC and the other three would enter soon. The Project Design Team carried out technical examination and interview for the newly recruited personnel during its stay and revised allocation plan as shown in Annex 23. The Pakistani side further explained the Japanese side that 16 other technicians in PITAC would be assigned as full-time C/P. The list of the 16 technicians is as shown in Annex 24.

In addition to the C/P, the Pakistani side is to allocate necessary number of supporting staff for public relations, administration, printing, training, and other necessary activities as well as secretary(ies) and driver(s) in the same manner as Phase 1 Project.







(4) Local Cost

The Pakistani side explained the Japanese side that the total amount of Rp.4.2 million had been approved by the government as the budget for the Project in 2000-2001, Rp.3.5 million of which would be for the refurbishment of the Project site and the other Rp.0.7 million for the salary and allowance of staff. The allocation plan of the Project budget shown by the Pakistani side is as Annex 25.

The Pakistani side further explained that the Project budget in 2000-2001, 2001-2002, and 2002-2003 shown in the said plan were estimated amounts and would be revised in due course of time. It was also explained that the budget for the latter half of the Project, namely those for 2003-2004, 2004-2005, and 2005-2006, would be applied to the Government of Pakistan by revising PC-1 Form in the future. The Japanese side requested the Pakistani side and the latter consented that the cost for maintaining machinery and equipment including the purchase of consumables such as tools and materials, which were to be needed from the first year of the Project, be considered in the revision of the budgetary plan.

(5) Efforts for the Sustainability of the Project

The Pakistani side will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of the Japanese technical cooperation, with the full and active involvement in the Project by all related authorities, beneficiary groups and institutions so that the technologies and knowledge acquired by the C/P through the Project will ultimately contribute to the promotion of small and medium mould makers and moulding companies in Pakistan.


9 Technical Services for the Industries

The Pakistani side plans to conduct the following services towards plastic industry as a part of the activities of the Project.

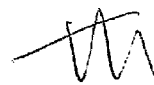
a Training courses and seminars in the field of plastic mould technology

PITAC tentatively plans to launch the following training courses through the Project:

- Post Degree Training Course in Mould Making (6 Months)
- Post Diploma Training Course in Mould Making (1 year)
- Computer Aided Mould Designing for Engineers and Supervisors (12 weeks)
- Computer Aided Mould Processing for Engineers and Supervisors (12 weeks)
- Introduction to Plastic Moulding (2 weeks)
- Operation and Maintenance of Plastic Moulding Machines (6 weeks)
- Plastic Moulding and Mould Making for Technicians (12 weeks)
- Other courses







In addition to the training courses above, the Pakistani side plans to conduct occasional seminars to disseminate the information in the said field.

b Technical backup support services

The following two types of support services would be strengthened through the Project.

(a) Mould design service

(b) Mould prototyping service

c Advisory services

These services include providing information in response to inquiries from the industries through telephone, facsimile and so forth as well as providing technical advice through factory visits. As a result of company visit survey in Karachi and Lahore, the Japanese side learned that the needs towards this service was quite high, thus emphasized the importance of early commencement of this service to the Pakistani side.

10 Localization of the Project Management

The Japanese side explained the Pakistani side and the latter understood that it would be quite difficult for the Japanese side to dispatch a study team every year, once the Project was commenced, due to the budgetary constraints of Japan's ODA.

Under this circumstance, it is desirable that the Project management as well as its monitoring and evaluation be localized by the initiative of the Joint Coordinating Committee (hereinafter referred to as "JCC") for the Project.

In this context, the Japanese side explained the Pakistani side the methods to manage, monitor and evaluate the Project-Type Technical Cooperation of the Government of Japan as follows:

(1) Project Cycle Management

Project planning and concept clarification method entitled Project Cycle Management (hereinafter referred to as "PCM") has been introduced to every Project-type Technical Cooperation project to monitor and evaluate the level of the achievement and enhance the communication for its smooth implementation.

Since its introduction, a worksheet called Project Design Matrix (PDM) has been required to prepare for every project to realize the said PCM. The PDM is a tool, to view a project based on an assumption, designed to analyze a multi-level chain of cause-to-effect: input to output, output to project purpose, project purpose to overall goal. Since the PDM explicitly shows the interrelation among the chain elements (input, output, project purpose and overall goal), it can be used as a tool to evaluate whether or not the goals have been obtained either during or after the project, it is now also being used as a framework for evaluation.

(2) Five (5) Basic Evaluation Components

In parallel with the introduction of PDM, JICA has been improving its evaluation mainly for the purpose of disseminating valuable lessons obtained from one project to better meet development needs in the future, and partially for the purpose of coping with the criticism against the effectiveness and efficiency of the Japan's ODA from Japanese taxpayers.

In this connection, the Japanese side explained Five Basic Evaluation Components as shown in Annex 26.

(3) Monitoring

Based on the PDM as well as the said evaluation components, regular monitoring on the Project's achievements should be implemented primarily by the C/P and the experts.

Within the first six months after the commencement of the Project, the monitoring system should be established by the said local initiative and that every six months from thereof, monitoring should be carried out and the results should be distributed to the organizations and/or personnel concerned with the Project.

(4) Evaluation

The final evaluation of the Project will be conducted jointly by both sides approximately six months before the termination of the cooperation period in order to examine the level of achievement of the objectives of the Project in accordance with the said evaluation components. The final evaluation team of the Pakistani side should include the personnel who are not directly involved in the Project to secure the fairness of the said evaluation, while JICA will hire a consultant exclusively for the Japanese evaluation team for the same reason.

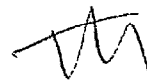
Other evaluations may be conducted when necessary during and after the cooperation period to better monitor the progress and sustainability of the objectives of the Project. The tentative monitoring and evaluation plan proposed by the Japanese side is as shown in Annex 27.

(5) Common Formats for Monitoring and Evaluation

The Japanese side suggested the Pakistani side and the latter agreed to use some common formats to record the data to be utilized as verifiable indicators at the time of monitoring and evaluation. The sample formats introduced by the Japanese side are shown in Annex 28.

(6) Joint Coordinating Committee (JCC)

Both sides reconfirmed that, for the effective and successful implementation of technical cooperation for the Project, a Joint Coordinating Committee will be



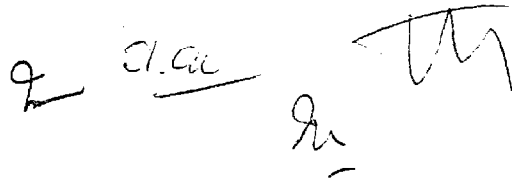
established as such in the Phase I Project. The functions and composition of JCC are shown in Annex 29. JCC is to be held at least twice a year or more when the necessity arises.

11 Schedule by the Commencement of the Project

The schedule of major events and items to be followed up by both sides are as shown in Annex 30.

V ATTENDEES OF THE MEETING

The list of attendees of the discussions is shown in Annex 31.

Handwritten signatures and initials in black ink. On the left, there is a signature that appears to be 'Z. Al. Al.' with a horizontal line underneath. To its right is another signature that looks like 'Su' with a horizontal line underneath. Further to the right is a large, stylized signature that resembles 'TH'.