(h) if necessary, suggestion for appropriate common facility centers, proto-type products improvement center and their operations including cost estimates both for the construction and operational phases.

The consultants will liaise with the Census Department of HMG; and where appropriate, utilize existing statistical information for background information on patterns of employment, number and type of enterprises, sales, raw material supply, transportation availability, etc. However, since most of the information required is likely to be unavailable, the statistical base will have to be supplemented by:

(a) interviews of artisans and village industry entrepreneurs in key subsectors and regions to determine characteristics such as asset size, employment, production cost, sales revenue, management and technical skills, and major problems faced by entrepreneurs;

(b) interviews of appropriate financiers, suppliers, middlemen, exporters, commercial bank managers, farmers, and government procurement offices. In the design of questionnaires and in the sampling and data enumeration methods, the support of the United Nations Statistical Office will be requested by HMG. Major questions are outlined in Appendix 2.

5. Methodology: literature and data review; field survey of cottage industries and private and public support agents; industry visits; description, analysis, and recommendations; final interim reports; final report.

6. Report and Study Duration: one year (see Annex 4 for Stages and Timing.)

Schedule

(a) Inception Report - Within two months of study commencement (to D.C.V.I. and to I.D.A.)

(b) Interim Report - Within six months of study commencement (to D.C.V.I. and I.D.A.)

(c) Final Report - Twelve months after study commencement (to D.C.V.I., Ministry of Industry and Commerce and I.D.A.)

STAFFING AND BUDGET. These provisional estimates of staffing budget requirements have been worked out with D.C.V.I. and ISC, they assume that consultants will not be taxed. If actual expenditures vary from these estimates, adjustments in the disbursement schedule and total amount could be made.

		Man months	Rs	Equivalent US$
1.	Salaries and fees			
1.1	Project Director	12	30,000	2,400
1.2	Chief Consultant	7	350,000	28,000
1.3	Economist	12	24,000	1,920
1.4	Financial Analyst	4	8,000	640
1.5	Subsector Specialists (5)	25	1,093,750	87,500
1.6	Statistician	4	4,000	320
1.7	Data Gatherers (8)	32	32,000	2,560
1.8	Administrative Office	12	15,000	1,200
	Subtotal		1,556,750	124,540
2.	Field Expenses			
2.1	Daily allowance for 7 persons 4 months each and 6 consultants, 5 months each		310,650	24,852
2.2	Travelling and walking allowance		57,000	4,560
3.	One land rover		200,000	16,000
4.	Transportation costs: bus, hired airplane, trips to other countries		110,000	8,800
5.	Air fare for expatriates		127,500	10,200
6.	Stationary and publication		30,000	2,400
7.	Contingency (7%)		58,460	4,679
8.	Office overhead (10% of above)		89,360	7,149
	Subtotal		982,970	78,640
	Total		2,539,720	203,180

PHASE I - SURVEY OF NINE DISTRICTS

A. General

(a) Total number and location of establishments and employees in selected subsectors in nine districts covered;

(b) Investment, incomes and expenditures by sample of local enterprises, government offices and sample of households.

B. Sampling of Firms in Selected Subsectors

1. Internal Operations

(a) Annual volume and value of sales by product line; monthly sales and production patterns;

(b) Annual operating expenses broken down by wages, raw materials, depreciation, fuel, rent, transportation and incomes of owner-family; calculation of value added and profits;

(c) Calculations of fixed assets at book value and current value;

(d) Background on entrepreneur/artisan; total income from various economic activities; education, experience, technical skills, and ethnic origin;

(e) Number and skills of workers; full-time vs. part-time; paid vs. unpaid.

2. Linkages (from cottage industry vantage point)

(a) Raw Material. Annual and seasonal demand for various raw materials, seasonal and cyclical price fluctuations, supply and supply points of various raw materials, distribution system, transportation and slaes agents, credit arrangements.

(b) Marketing. Examination of present distribution and sales systems (e.g., retail shops, wholesalers, porters, marketing cooperatives, government procurement, exporters). Amount sold directly to consumer vs. to intermediary; local sales vs. sales outside village and district; and costs of transportation to reach markets. Owner's perception of product lines with market potential.

(c) Finance

(i) Borrowings in last two years from family, friends, local moneylender, D.C.V.I., banks; loan amount; terms; use of loans; felt need for finance for tools, consumption needs and off-season working capital credit.

(d) Technology

(i) Fixed assets/employee in different levels of cottage/agroindustries in subsectors;

(ii) Tools, equipment, production methods, resource utilization, production costs, break-even volumes, quality;

(iii) Costs, benefits of alternative technical packages;

(iv) Type of artisan's skills; limitations in product designs and use of tools;

(v) Normal means of learning skill: family apprenticeships, vocational training, middleman advice on designs and methods, additional training needs (e.g., new tools, designs).

C. Institutional Support Programs/Subsector Linkages (from agents' point of view)

(a) Raw Materials. Number of middlemen engaged in raw material supply, by district. Range in volume and types of inputs handled by each. Relation between supplier and cottage industry, e.g., seasonal credit, marketing of output, bulk storage by middlemen. Location of most middlemen, e.g., in neighboring main town or in villages. Frequency of transactions. Stability of relationship between supplier and cottage industry. Nature of raw material middleman in subsector: packers, owners of retail outlets, landholders growing raw material.

(b) Markets and Distribution Channels

(i) List of retail outlets, porters, wholesalers, government agencies, industries purchasing goods from subsector for consumption or final sale;

(ii) Margins for middlemen, retailers;

(iii) Point of final sale; percentage of products in subsector which are sold in village, district, zone, nation, exported;

(iv) Price trends and seasonal swings;

(v) Present total level of demand volume and value;

(vi) Major sources of competition, e.g., local industries, urban and modern industries in Nepal, imports from India, imports from elsewhere; relative price, quality, availability, design of competitive goods;

(vii) Comparative advantages of local cottage industry goods for local consumers, tourists, and exports.

(viii) Major marketing problems faced by cottage industries, e.g., tools limit quality, productivity or price, need for improved design, lack of working capital to finance inventories, quantity too small for economies of scale in transport and marketing, abundance of similar products relative to demand, poor quality control, insufficient knowledge of outside demand, or lack of channels to larger markets;

(ix) Assessment of market potential locally, in Nepal and exports, from interviews with local marketers, and through export market analysis;

(x) Assessment of which marketing system is more efficient and which yield best returns for cottage industries.

(c) Credit

(i) Commercial Banks: branches in districts, number and amount of working capital (and investment capital) loans made to cottage industries in selected subsectors in last year; terms and conditions; security requirements; special programs;

(ii) Private moneylenders: size of annual operations, number of regular clients, other businesses, source of funds, interest rates charged, other services (e.g., marketing, raw material supply); security requirements; repayment record; frequency of borrowing, repayments; selection criteria;

(iii) D.C.V.I.: number and amounts of loans to cottage industries in selected districts, subsectors; use of funds, interest rates, terms and conditions, repayment record, appraisal criteria and collection procedures, sources of funds;

(iv) Other major financial agents, and role.

3. Phase I - Conclusions and Phase I Report Contents

Description and ranking of selected subsector according to:

- severity of marketing, raw material supply, technical, and financial problems;
- market potential;
- relative ease of expanding local, regional, national and export markets;
- adequacy of existing private and/or public support systems;
- relatively small number of changes to have major impact on employment and/or earnings in subsector;
- availability of local raw materials at reasonable prices;
- existing cooperation or association among neighboring cottage industries for marketing or other functions;
- output/capital and capital/labor ratios;
- ranking of major problems;
- existence of sufficient clusters of industries of same subsector;
- access, transportation availability.

METHODOLOGY FOR PHASE I

1. Since the number of cottage industries is great, the need for fairly detailed information on firms and support systems can only be achieved by selecting priority districts and subsectors, and sampling a select number of firms which have at least three workers within these districts and subsectors.

1. Total cottage industries 380,000

2. Approximate total in 9 districts to be surveyed:

Bagmati	4,000
Gandaki	65,000

3. Approximate total with at least 3 workers:

Bagmati	2,000
Gandaki	26,000

4. Approximate number of these in selected subsectors:

Bagmati	1,200
Gandaki	15,600

2. Since a full census of even these 17,000 cottage industries (many, in the case of Gandaki Zone, located in remote villages) would be very time consuming, sampling would be required. If about 10% of all cottage industries in selected subsectors, with at least three workers, were surveyed (with slight weighting for industries with good access to roads and in clusters of cottage industries in same activity), the size of the sample would be a more manageable 1,700. If the ISC Study Director finds that early results of the survey show a high degree of homogeneity among sampled cottage industries in the various subsectors and districts, the size of the sample could be reduced, provided there is sufficient coverage of subsectors in the district under study.

3. This would be divided as follows, in approximate relation to existing distribution:

	(1) Woolen (blankets, rugs, sweaters)	(2) Cotton (handloom garments)	(3) Metal (Curios, implements)	(4) Fibers (bamboo, wood, reed)	(5) Food Processing	Total
Gandaki	200	150	100	200	200	850
Bagmati	100	50	50	100	150	450

Organizational Arrangements

4. A four-month survey of 900 firms in 6 districts of Gandaki would involve samples of 150 per district, with about 25 firms per subsector per district. If each questioner can do 5 surveys per day 5 days a week, the survey would require 36 manweeks in Gandaki, or 3 data gatherers for 3 months. Likewise, in the 3 selected districts of Bagmati, 28 manweeks or 2 data gatherers would be required for 3 months of basic surveys. In addition, survey work would cover public and private support agents in raw material supply, marketing, training and technical assistance, and credit; this work will be done by each of four ISC team leaders, who will work with and supervise data gathering of firms by D.C.V.I. field staff. Four teams each consisting of a team leader from ISC and D.C.V.I. technical staff member would conduct the form and subsector system surveys in districts Gandaki and Bagmati Zones. To perform this work ISC will allocate a Project Director and four full time Field Team supervisors from ISC's Survey and Statistics Units, to be assisted by qualified D.C.V.I. regional and district staff, as needed.

5. Data gatherers would be responsible for (a) conducting basic surveys; (b) determining total number of cottage industries in selected subsectors in each area covered; and (c) identifying village and district clusters of each subsector.

6. During these initial four months, the project coordinator, consultant, and economist would gather pertinent background information on each subsector including: (a) export, national, and local sales by volume and value; (b) major concentrations, amounts and prices of raw material for selected subsectors in districts being surveyed; and (c) transportation modes.

7. Subsector specialists, arriving in the fourth month of the study would (a) bring with them information on export markets (competition, pricing, quality, design, channels and potential customers) and appropriate technology for firms of various sizes in their subsector; (b) review the firm-level data collected for their subsectors and conduct visits and interviews with firms located in identified clusters; (c) survey public and private marketing, raw material, financial and technical support systems catering to these village/neighborhood clusters; (d) complete interim report (end month); (e) develop packages for development of these cottage industries wiht support packages and public or private agency responsibility; and (f) present a report, by end of month 8 (see subsector sections of final report).

8. The consultants would work with data from the Census Department of HMG where appropriate, utilizing existing statistical information for background information on patterns of employment, number and type of enterprises, sales, raw material supply, transportation availability, etc. However, since most of the information required is likely to be unavailable, the statistical base will have to be supplemented by:

(a) interviews of artisans and village industry entrepreneurs in key subsectors and regions to determine characteristics such as asset size, employment, production cost, sales revenue, management and technical skills, and major problems faced by entrepreneurs;

(b) interviews of financiers, suppliers, middleman, commercial bank managers, farmers, government procurement offices and financing systems in which cottage industries in various subsectors are operating;

Distribution by Value of Cottage Industry Products

	Total Value
Woolen floor coverings (rugs, blankets)	25.0%
Floor covering of reeds	14.0%
Oil	11.0%
Cotton fabrics	8.0%
Bamboo baskets, big, small	7.0%
Bamboo mats, other articles	6.0%
Rice	4.0%
Rope	4.0%
Footwear	3.0%
Agricultural tools	2.0%
Metal utensils	2.0%
Wooden furniture	2.0%
Woolen clothing	2.0%
Cotton goods	1.0%
Earthenware	0.2%
	91.2%

Top 5 = 56%
Top 10 = 75%
Top 15 = 91.2%

PHASE II: DETAILED PROJECT PREPARATION AND FINAL REPORT

1. Subsector specialists would prepare packages for their subsectors, including components and costs (e.g., marketing, raw material supply, credit, technical assistance); expected coverage village cluster and enterprises; and proposed public and/or private institutional arrangements; district level organization; programs and staffing. The project manager, economist, and chief consultant would incorporate these subsector schemes into an overall project design. Phase II would be devoted to this detailed project preparation and to discussion with relevant potential public and private institutions.

2. Packages would include:

(a) the system for delivery of local and imported raw materials supply for the subsectors in question, including the storage of such inputs;

(b) the private and/or public marketing organizations (e.g., Government Sales Emporium, private exporters and middlemen, artisan associations) that would be utilized for storage and sales of the cottage industries' merchandise;

(c) if necessary, recommendations and cost estimates for a training program in cottage industry management and marketing methods, for exporters, government officials, and/or cottage industry associations, which could be run by D.C.V.I. staff for project beneficiaries;

(d) recommended R & D work to be undertaken in Nepal to improve designs and productivity of indigenous technology;

(e) if necessary, suggestions for appropriate common facility centers, proto-type products improvement center and their operations including cost estimate both for development and operational phase;

(f) if appropriate, expansion and/or deployment requirements for D.C.V.I. extensionists; central and regional organization, staffing and costs;

(g) needed credit amounts and schemes by commercial banks or other financial intermediaries.

3. Complete schemes for the five subsectors would give special attention to problems of marketing and finance.

4. Markets and Marketing:

(a) Alternative and recommended public (Government Sales Emporium, National Trading Corporation) and private systems (exporters, retailers, middlemen, porters, marketing cooperatives) meeting various marketing functions (design, distribution, promotion; quality control, sales, storage of finished products) for local and/or export sales; justification for choice of system using criteria of relative efficiency, and returns to producers;

(b) Present sales and potential growth during next five years to specified local markets (location, volume and value of production, outlets and channels; required changes in quality, products availability, price, design to achieve growth; income and price elasticity of demand for various products;

(c) Potential export market channels; outlets, product lines; acceptability of Nepalese products; required changes in design, quality, price, delivery, materials to meet identified advantages of Nepalese and Tibetan products on price, quality; minimum volume of production and sales to achieve marketing economies, meet volume orders; recommended organization, backward and horizontal linkages to meet demand.

5. Credit

(a) If commercial banks would be used, what are possibilities for: (i) group credit to associations of cottage industries, from same or different industries; (ii) using local moneylenders or credit unions as local intermediary; (iii) simplifying identification, appraisal, follow-up and collection process to reduce administrative costs, increase repayments; (iv) learning from moneylenders on their systems for lending to rural industries;

(b) Simple profile on each subsector to be used by commercial bank branch staff: (i) list of "appropriate" equipment for different size cottage or agroindustries, e.g., 3, 10, 20 workers or local, regional vs. export markets; (ii) permanent and seasonal working capital requirements; (iii) pro forma balance sheet and operating statement for three tiers (see i); (iv) typical problems and key success factors for industries in this subsector (e.g., minimum raw material requirements, access to roads

passable by vehicles, breakeven sales volume and probable minimum population concentration or assured export sales; number of skilled workers); (v) anticipated returns for various levels of activity, number of months in operations; and (vi) necessary managerial, marketing and technical skill of owner-manager.

(c) Finance needed: (i) equity financing; (ii) guarantee schemes; and (iii) spreads to commercial banks to cover administrative costs and risks and provide incentive to extend credit.

JOB DESCRIPTIONS AND QUALIFICATIONS FOR CHIEF CONSULTANT AND SUBSECTOR SPECIALISTS

1. CHIEF CONSULTANT

1.1 Job Description

The chief consultant, with the project director, will be responsible for (a) putting together the interim and final reports; (b) orienting and coordinating the work of the subsector specialists; (c) providing advice and integrating various subsector schemes into public and private programs, including marketing, raw material supply, credit, technical assistance, training and/or common facilities.

1.2 Qualifications

Senior person with at least 10 years' experience in small-scale/cottage industry organization in a developing country including the subsectors covered under the study. Experience should include programs in: technical assistance and training, credit, export and local marketing, design, raw material supply and organization or producer groups.

2. FOOD PROCESSING AND PRESERVATION SPECIALIST

2.1 Job Description

Recommend location, investment, employment, processing and preservation industries with fixed assets below Rs 200,000, using local agricultural and livestock resources, e.g. rice, oilseed, meat, dairy products, honey, fruit, sugar, bakeries. Develop project profiles, financial packages, appropriate technology, raw material sourcing, organization, and/or marketing schemes for recommended industries, according to critical needs identified. Include estimates of coverage costs, benefits.

2.2 Qualifications

Rural/agricultural economist or engineer. At least 5 year's experience in: (a) developing integrated programs for small-scale agroprocessing industries including the above commodities and (b) introducing appropriate technology for agroprocessing industries.

3. HANDLOOMS AND GARMENTS SPECIALIST

3.1 Job Description

Develop marketing contacts and export and local marketing schemes for handloom products and garments. Develop means for expanding production base and organization to allow volume exports. Recommend improvements in:

production methods and techniques, designs and quality. Devise schemes, with estimates of coverage, cost and benefits of schemes which meet major identified needs, e.g. public and/or private market organization, design, raw material supply system, expansion and improvement of production base, technical assistance and training. Recommend institutional framework, responsibilities, staffing requirements.

3.2 Qualifications

Formal qualifications in commerce and/or technical subject. At least 3 years' experience in exports and/or imports of handloom products and garments. Experience of at least two years in developing programs for small-scale handloom and garment production including introduction of improved production techniques, formation of producer associations, financing, design, raw material supply, pre- and post-processing facilities.

4. WOOLEN PRODUCTS SPECIALIST

4.1 Job Description

Develop packages for export and small-scale production of carpets, blankets, sweaters, jackets, socks, mittens, knitted caps. Packages could include: training to expand production, producer organizations, improved design capability, recommendations for public or private dyeing, spinning, washing facilities, selective modernization of production methods, organization of raw material supply system. Package should include: costs, benefits, institutional responsibilities, organizations, programs.

4.2 Qualifications

Formal qualifications in commerce and/or technical subject. At least 3 years' experience in import and/or export of above woolen goods. Knowledge of major importers. Experience of at least two years in developing programs for woolen goods SSIs, including marketing, design, introduction of appropriate technology, distribution of raw materials and finished goods from decentralized producers.

5. FORESTRY BASED INDUSTRIES

5.1 Job Description

Recommend an organization for decentralized producers of bamboo, reed, wood, cane and "handmade" paper products. Identify import agents, most promising designs, most competitive product lines. Recommend short-term management and technical training and assistance to upgrade skills, introduce new designs, increase production base. Recommend specific geographical areas for focussing program. Describe means of introducing selective modernization in processing to increase price competitiveness. Recommend scope, costs, benefits, public and private agency responsibility of scheme.

5.2 Qualifications

Formal qualifications in commerce and/or technical subject. At least 3 years' experience in exports and/or imports of bamboo, reed, wood, cane, and "handmade" paper products. At least two years' experience in organizing household production, designing, and selecting raw materials, and introducing selective modernization in production of the above. Knowledge of raw material, growing and preservation, processing, techniques.

6. METAL PRODUCTS

6.1 Job Description

Recommend export schemes and organization of exporters and producers to meet exports. Analyze skill availability, possibilities for expanding production using existing skill base, and possibilities for training to expand production. Recommend designs, quality standards, specific market niches and importing agents. Describe selective modernization and related credit requirements for individual producers and organizers.

6.2 Qualifications

Formal qualifications in commerce and/or technical subject. At least 3 years' experience in exporting and/or importing copper and brass utensils and curios. Good contacts with major importing agents. Knowledge of designs, prices, volume requirements, shipment alternatives. At least two years' experience organizing producers for above items, installing quality control systems, organizing raw material supply from decentralized producers. Experience working with public and private organizers in developing countries.

II パ キ ス タ ン

Ⅱ　パ　キ　ス　タ　ン

パキスタンにおいては，経済省Ahmad 次官補その他に調査団訪パの趣旨を説明した後，主に，すでに要請打診を受けている，工業省所管になる①ＰＩＴＡＣ拡充改善プロジェクト②綿織物工業研究開発センター拡充改善プロジェクトに関する調査を実施した。

なお，この他，具体的内容については未定ながら工業省関係で，パキスタン標準庁プロジェクト，養蚕工業プロジェクトについて，パンジャブ州政府関係で，木工細工，耐火物関係，又，PCSIR(Pakistan Council of Scientific and Industrial Resecrch)の所管するGlass and Ceramic Divisionより窯業センターの設立プロジェクトについての要請打診があった。

1. PITAC (PAKISTAN INDUSTRIAL TECHNICAL ASSISTANCE CENTRE)拡充・改善プロジェクト要請概要

(1) 背　景

ＰＩＴＡＣは１９６２年，ＵＳＡＩＤの援助により，ＬＡＨＯＲＥにMain Workshopを設立，その後，KarachiとPeshawarに地方事務所を設置した。ＰＩＴＡＣの基本的な目的は次の通り

1) 金属加工における技術者の技術・技能の向上を計ること。

2) プラント・レイアウト，製品の向上，最新技術の導入，生産性の向上等に関し，advisory serviceを行うこと。

3) 工業に対し，jig，tool，dies，mould等の製造サービスを行うこと。

センターの主な活動は，ＬＡＨＯＲＥにおいてはtrainingの実施とproduction work である。trainingについては毎年４つのadvanced training course（各コース ５０名）がそれぞれ１０週間行われ，平均200名／１年のtraineerを送り出している。

Production Workにおいては，（工場からの委託により）精密部品，tool，jig，dies，mould等を製造し，Rs.５００，０００（約1,000万円）を実費として得ている。

Production WorkとTrainingに対する需要は非常に高く，ＬＡＨＯＲＥのWork shopのみでは需要を満たしきれない現状である。又，Baluchistanと北西部においても次第に工業化が進んでおり，これら地域で利用可能なspot facilityを設置する必要がある。カラチはすでに工業化された地域であるにもかかわらず，trainingおよびadvisoryサービスは適切に行われていない。

LAHORE の既存 Workshop においても機材は考朽化しており，metal Work 分野における最新技術の普及センターとして 改善する必要がある。

更に，PITACは，trainingおよびproducticnのみならずMaintenance,Quality Control技術の普及センターとしても機能すべく期待されている。

(2) 要 請 内 容

1) LAHORE MAIN WORKSHOPの拡充

LAHOREのWORKSHOPにおいては調和のとれた近代化が必要である。

プラントや機器は非常に考朽化しており精確さを欠いているためこれら機器の入れ替えが必要であり，又いくつかの機器についてはメートル化する必要がある。

2) Karachi,Quetta,Peshawar での新センターの設置

既存するKarachi,およびPeshawarの地方事務所はadvisor ,consultancy サービスのみを行っている。

Karachi,Quetta,Peshawar,においてLAHOREと同様のWorkshopの設置が期待されている。

これらRegional Centreは，それぞれの地域に適した工業開発に貢献することが期待されており、そのため，それぞれの地域に適した機材の供与が望まれる。

又，地方の技能者のtrainingは，工業化の基本であるが，それぞれのセンターにおいて

	Karachi	200名／年
	Peshawar	150
	Quetta	100

のtraining施設の設置が期待されている。

以上1) 2)の実施のため，日本人専門家の派遣，機材の供与，パ側カウンターパートの日本でのtrainingを期待する。協力期間は3年を期待している。現在LAHOREにおいてはすでに十分な土地建物が有る。（もし，新規建設又は拡張が必要な場合はパ側が負担する）。Regional Centreの設置については，土地・建物はパ側が負担する。その他，Counterpart staffと運営費はパ側が負担する。

2. CTIRDC (COTTON TEXTILE INDUSTRY RESEARCH AND DEVELOPMENT CENTRE) 拡充改善プロジェクト要請概要

(1) 背　景

CTIRDCは，UNIDOの援助により1973年設立され，カラチに本部，Faisalabadに SUB-CENTREを有する。

センターの長期目標は，Textile Millに対する組織，管理面および生産性の向上面での援助を行うことであり，直接の目的は

1) Resources（ 労働力，機械， 資金）の最適化によりMillの組織の近代化および生産の効率化を達成すること。

2) Spinning,Weaving,finishing原価計算，生産技術， 販売， 輸出振興に関する技術者，技能工のtraining

3) 新機械への入れ替へのためのfeasibilityおよび技術面での指導

4) 新製品の開発のための専門家派遣，およびtrainingの実施

以上のような目的達成のため，センターはManagement Consultancy Service，およびセンター又はMillにおけるtraining等の活動を行っている。

パキスタンにおけるtextile industryは，技能工に対する適切なtrainingが行われていないため，生産性が低く，製品の質も悪いという現状にある。更にこの工業は熟練工の中東諸国への流出による人材不足が深刻化している。

この熟練技術者不足という問題を早急に解決するためにはtraining systemをよりsystemdtic，科学的に改善する必要が有る。

(2) 要 請 内 容

Training Program（特にfittersのtraining）をより効率的に実施するため，Textile Mill技能者および労働者の訓練が期待されている。

協力は，カラチのCTIRDCにおいて実施され，次の援助が期待されている。

1) 技能者のtrainingのための専門家の派遣

2) Spinning,Weaving,Finishingの技術者の日本での訓練

3) 機材の供与

パ側は，カウンターパートスタッフを提供する他，専門家に対しては，office,Local transportation,Secretarial staff等ONIDO専門家と同等の便宜を提供する。

3. CERAMIC RESEARCH & DEVELOPMENT CENTRE 設置プロジェクト要請概要

(1) 背 景

PCSIR(PAKISTAN COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH)のGlass & Ceramic Divisionは，ガラス・窯業分野における原材料関係データ不足および技術・Know-howの不足をカバーするため１９７５年設立さ

れた。

その主な目的は

1） ガラス・窯業産業の振興のための調査活動およびコンサルタントサービスの実施

2） 原材料に関する調査開発の実施

3） 輸出市場の調査

4） ガラス，セラミック工業の設立，近代化を援助すること。

主に，基礎的な研究用機材の欠如および技術Know-howの不足からDivisionの活動は制約されている。

調査研究活動，職業訓練の強化のため，日本からの援助を期待する。

(2) 要 請 内 容

1） 原材料評価のための設備の設置

2） 研究開発部門の拡充

3） 人材の養成

以上の実施のための専門家派遣，機材供与，パ側カウンターパートの日本でのtraining が期待されている。

土地，建物については，Divisionの既存建物の利用が可能。

4. 調査団とパ側との合意および調査団の所見

パ側技術協力の窓口である経済省は，経済省でプロジェクトの優先順位づけを行うのは困難であるため，それぞれのプロジェクトを担当する原局との討議結果に従って，日本側で決めて欲しい旨発言している。

従って，パ側から提出される正式要請書の受理を待ってどのプロジェクトを取り上げるかが決定されることになる。

パ側は本年１２月又は１月には正式要請書を提出する旨約束した。なお，調査団としてはPITAC の拡充改善プロジェクト，（LAHORE本部およびKARACH支所の拡充改善）が最も優先順位が高いと判断される。

5. 参 考 資 料

(1) PITACプロジェクト要請書ドラフト

(2) CTIRDCプロジェクト要請書ドラフト

(1) PAKISTAN INDUSTRIAL TECHNICAL ASSISTANCE CENTRE, LAHORE-16

Brief for establishment of PITAC training, production shops and technical advisory facilities & services at Peshawar, Quetta & Karachi and balancing and modernising the facilities at PITAC. Lahore

The basic aim of PITAC is to upgrade technical skills in metal trades, of qualified engineers and technicians, to provide advisory services to different industries on plant layout, improvements in design of products, modern processes, economy in operation with the aim of increasing productivity; and to manufacture jigs, tools, dies, moulds and fixtures for the assistance of industry. PITAC was established in 1962, with the main workshop at Lahore. Later on another similar workshop was added at Dacca. However no expansion of workshop facilities in other areas was undertaken. Presently PITAC has a workshop at Lahore, and two regional Liaison Offices at Karechi and Peshawar. The main activities of the Centre are at Lahore, where training and production work is undertaken. The training activities cater for the running of 4 Advanced Training Courses of 10 weeks each per year with an intake of approximately 50/per course. The average annual out put of trainees is 200. The production work involving manufacture of sophisticated parts, tools, dies, jigs and moulds is assessed at Rs. 5,000,000/- per year at subsidised rates. The backlog of production work and demend for training is very high and it is not possible for the workshop at Lahore to cater to the requirements of training, production and design for areas of industry other than the Punjab. The areas of Baluchistan and NWFP are gradually becoming industrialised and therefore it is necessary to provide on the spot facilities available there. Karachi which is already a heavily industrial area also is not adequately covered in the field of advanced training and industrial product support. The existing workshop at Lahore also needs to be upgraded as a Centre of excellence for modern and advanced techniques in the metals working field, so theat it can serve industry in a better way.

It is also proposed that PITAC should become a Centre for training and propagation of Production Maintenance and Quality Control techniques.

Expansion programe for PITAC, Lahore.

At the Lahore workshop which was established in 1960, balancing and modernisation is needed. The plant and machinery is now very old and has lost precision and has also become outdated, as such substitution of these with modern mechines is needed. Lots of new techniques have since been developed and there is need for introducing these in PITAC. Also non - destructive testing and ana-

lysing equipment is needed. There is also need to render some of existing equipment metric. With the addition of these facilities the workshops at Lahore will be able to provide extended services to industry in upgrading the existing technical skills, introducing new skills, transfer of technology and to meet the demand of the industry of moulds, dies and jigs of a sophisticated nature.

Betting up new Centres at Karachi, Peshewar and Quetta.

At present PITAC offices are working in Karachi and Peshawar for the provision of advisory and consultancy services only, and are manned by a small staff.

It is proposed to create workshop facilities in these three cities (which are capitals of the provinces) on the pattern of the workshops at Lahore, but on a smaller scale. These Regional Centres will help in the industrialisation process in these provinces.

The aims and objectives of these workshops would be the same as for Lahore. The only changes will be in terms of machinery and manpower, the selection of which shall depend on the industrial development of these areas. The largest drawback in the industrialisation process is the lack of facilities for upgrading of existing workers. This results in lack of skill development of the workers. No such institutions are available for this purpose except PITAC, Lahore and so it is considered essential that training facilities should also be made available at the regional level, where there will be a greater demend for it. Similarly the facility of manufacture of tools, dies, jigs and fixtures has to be expanded and diversified because it is difficult for people from long distances to come to Lahore, and also because of the lack of capacity at Lahore. It is estimated that training facilities will be provided as under, once the project is completed.

Karachi - 200 trainees per year
Peshawar - 150 trainees per year
Quetta - 100 trainees per year

Income from production and advisory services will also be generated.

It is considered that these projects could be completed in about 3 years.

Inputs by Pakistan

PITAC, Lahore already has sufficient land and buildings which house workshop. Acquisition of new equipment would, however, require new construction or further improvement of the existing buildings. This will be done through own efforts. The manpower requirements are adequate and further building up is not contemplated. Pakistan would provide the costs for land, buildings (for Karachi, Peshawar and

Quetta) as well as the manpower and all local administrative expenses for the project.

In puts by Aid - giving agencies

Assistance from aid giving agencies is required to provide equipment and machinery as specified in the attached list and alos experts services for operation and training.

The period of implementation of the project is estimated to be about 3 years. It is hoped that acquisition of new equipment would further improve the manufacturing facilities, help in advenced training and result in transfer of technology. In-puts required from aid-giving countries would be in the form of machinery and equipment required for the project. The total requirements of machinery as assessed by us, based on our experience in PITAC are attached as Annexure. Assistance wouldalso be required for a period of expert services for assistance in installation and operation of modern machinery as well as to advise on modern techniques as part of our advisory activities to industry. A total of 18 months expert services are suggested.

(2) PAKISTAN INDUSTRIAL TECHNICAL ASSISTANCE CENTRE, LAHORE-16

Brief on setting up a modern Mould Making Coll

Moulds are required for manufacturing plastics products and they are by and large still being imported from abroad, with considerable expenditure in foreign exchange. In Pakistan the capability of designing and manufacturing of plastic injection and die casting moulds is not only limited, but the end products do not give the desired quality. This is particularly true of multi - cavity and compound moulds. Some work in this field is being done by PITAC and few injection moulds have been made by us, but the manufacturing time is very long due to lack of advanced and sophisticated machines used for this purpose. In order to undertake development work in the manufacture of moulds of this type, it essential that modern and sophisticated machinery is made available, as also training of technicians in this field and provision of experts. When this facility is set up, PITAC will be able to undertake development work in the manufacture of such moulds as also to train industrial workers in these techniques. With the availability of facilities and equipment it will be possible that private individual

concerns may be inclined to set up similar facilities in the comtry which will not only enable us to save foreign exchange in the import of these moulds, but will also provide better products which can compete in the overseas markets.

The site would be the present premises of PITAC. The assistance would be in the form of equipment as per attached Annexure 'E' and Expert Services for a period of 6 months to commission and teach operation of the equipment in mould making.

The field of cooperation would be the supply of equipment the provision of experts for training in handling of this field, training cacilities of our techniciens in Japan, and continued technical assistance.

Annexure 'A'

P.I.T.A.C.

ADVANCE AND SPECIALIZED TRAINING REQUIREMENTS

Field of Training	Period	No.of vacancies	Level (for whom)
1. Cutting Tool Disign	24 weeks	1	Designer with Polytechnique Diploma and 2-3 years experience in the relevant field or Draughtman with 10 years, experience in relevant field.
2. Press Tool Design	24 "	1	
3. Mould Desion (Injection & Compression).	24 W	1	
4. Tool Maker (Die & Gauge)	24 "	2	Skilled technicians Matric with 5-7 years experience in relevant field.
5. Mould Makers	24 "	2	" "
6. Die Casting Spark Erosion	24 "	2	" "
7. Heat - treatment of Ferrous and Non-Ferrous alloy.	12 "	1	Experienced technicians with minimum of 10 years, experience in the relevant field.
8. Metal finishing	12 "	1	- do -
9. Foundry technology, Shell Moulding Vaccum Casting techniques.	24 "	1	- do -

Annexure-B

ASSISTANCE FOR SETTING UP MODERN MOULD DEVELOPMENT FACILITIES AT PITAC LAHORE (MACHINERY & IEQUIPMENT DEOUIRENENTS).

Sr. No.	Description of Machines	Quantity
1.	Electric Discharge Milling (END) Capacity: Maximum Area of the cavity = 200 mm × 200 mm Low & Highly Frequency Generator.	1 No.
2.	Electric Chemical Discharge Machine (EMC). Capacity: for small multi cavity mould insert making maximum 40 mm × 40 mm area.	1 No.
3.	PENIOGRAPH Engraving Machine Engraving Ratio 1:1 Max.letter size 25 mm Flat & cylinderical surface	1 No.
4.	Die Sinking Machine Three dimensional accuracy for heavy duty die making	2 No.
5.	Cold Hobbing Fress 100 tons capacity	1 No.
6.	Hand Tools such as Ratary Burs, files, Flexible grinder, moulds finishing and polishing compaund Berrylic copper plates, for master making etc.	

(3) CTIRDC PRETICAL FOR OBTAINING ASSISTANCE UNDER JAPANESE PROJECT AREA TECHNICAL

CO-OPERATION SECTE

The Cotton Textile Industry Research and Development Centre (CTIRDC) was established on First January, 1973, with headquarters at Karachi and a Sub-Centre at Eaisalabad. The long terms objectives of the Centre were to assist the Textile Mills to improve their organizations, management and productivity as well as to improve the quality and development of the products through applied resecrch. The immediateobjectives of the Centre are as under:

(a) To achieve batter organization and improved efficiency of the manufactgring units through optimization of rescurces (Labour, machinery, finances) and improved quality control.

(b) To improve training of technical personsel and to develop specialist

expertise in such fields as technology of spinning, weaving and finishing, cost accounting, productivity techniques, marketing and oxport promotion of cotton textiles.

(c) To advise on the feasibility and techniques for replacing conventional machinery with new types of machines.

(d) To advise and provide expertise and training facilities for development of new products.

To achleve the above objectives, outlines of work plan were also laid down as given below:

(a) Management consultacy to advise on the solution of specific problems in the mills.

(b) Training courses to be held both at the Centre and in plants to upgrade the skills of plant managers, foremen and techniclans and to train management services techniclans, s.g. work study engineers, production planners and controllers.

(c) Applied research activities to solve specific mill problem.

(d) Organization of information and promoting services.

The technical personnel employed in the textile industry in Pakistan lack proper training which results in low productivity and sub-standard products. The Industry is facing acute shortage of trained workers due to the flow of already trained personnel to the Middle East Countries. In order to overcome the shortage of skilled manpower in the textile industry in the shortest possible time, it is proposed to develop the present system of training of the Centre and also to train the raw hands in a more systematic and scientific way thereby increasing the productivity. For conduct the training programme, particularly the fitters training, more effectively the following assistance under the PTTC Scheme is reques

1.	One Expert for one year (US $ 30,000/-) (For fitters training).	Rs. 3,00,000.00
2.	Three fellowships for three months each (US $ 63,000/-) (In Spinning, Weacing and Finishing).	Rs. 63,000.00
3.	Equipment (US $ 1,23,746.00) List attached.	Rs.12,37,000.00
		Rs.16,00,000.00 (Rs. 1.600 millior)

LIST OF EQUIPMENT

1.	Lea Strcugth Tester (Lbs & Kgs). with multiparpose attaclment.	Rs.	50,000.00
2.	Uster Single Tarn Strongth Toster with multipic bebbin attechment.	Rs.	3,50,000.00
3.	Twist Tesher with motor (Twist-un-twist type)	Rs.	5,000.00
4.	Open Had Unit (4 Rotors).	Rs.	1,00,000.00
5.	Two for one twister (2 splindles).	Rs.	50,000.00
6.	Antomatic Cone Winder (4 spludles).	Rs.	50,000.00
7.	Cone Winder (4 spindles).	Rs.	55,000.00
8.	Hand Stand	Rs.	1,000.00
9.	Cirth Dustor	Rs.	4,000.00
10.	Recording type hygrometer	Rs.	7,000.00
11.	Cone angle measurement tester.	Rs.	3,000.00
12.	Section Warper (Lab. Model).	Rs.	70,000.00
13.	Miniature Loom filled with Bobby.	Rs.	15,000.00
14.	Inclinao cloth Inspection One. Table (Illuminated). Leb. Model.	Rs.	5,000.00
15.	Sakamoto Loom (52" wide).	Rs.	50,000.00
16.	Plerible Rapiers Loom.	Rs.	80,000.00
17.	Yorn Tension Meter.	Rs.	500.00
18.	Warp Tension Meter.	Rs.	500.00
19.	Size Viscosity Teater.	Rs.	2,000.00
20.	Portoble Relative Inmidity Indioator.	Rs.	1,000.00
21.	Package Hariuass (Compectness) Testor.	Rs.	2,000.00
22.	Single Yern Tester for Sirength & Rlasticity.	Rs.	30,000.00
23.	Yorn Weighing (Milligrams) Seale of or Count cetcrmination.	Rs.	5,000.00
24.	Projection Type Thread Counter with 20 Times Magnification.	Rs.	10,000.00
25.	Portable Moisture Mater.	Rs.	2,000.00
26.	Yarn Hairiness Meter.	Rs.	20,000.00
27.	Electrost Charge Tester	Rs.	2,000.00
28.	Picking Adjustor for Looms	Rs.	2,000.00
29.	CRIMP Tester.	Rs.	6,000.00
30.	Reaching-In-Machine.	Rs.	10,000.00
31.	Warp Tleing Machine.	Rs.	15,000.00
32.	Portable Cloth Weight Tester (Balunces) with Sample Cutter.	Rs.	2,500.00

33.	Hlack board Winding Machine.	Rs. 5,000.00
34.	Loom timing gauge.	Rs. 4,000.00
35.	Fabric Strength tester.	Rs. 1,00,000.00
36.	Conductivity meter (Pertance).	Rs. 400.00
37.	Wash Wheel	Rs. 3,500.00
38.	Washing Machine (Spin dry).	Rs. 3,500.00
39.	Refractometer (Pocket size).	Rs. 3,940.00
40.	Equipment for measuring fluidity of fibres.	Rs. 5,000.00
41.	Crockmeter (Motor Driven) or Staining Tester.	Rs. 3,500.00
42.	Stifiness Tester.	Rs. 7,000.00
43.	Lebpratory flask shaker.	Rs. 1,140.00
44.	Magnetic stirrer cum Not Plate.	Rs. 1,490.00
45.	Ultra Violet/Visible Spectrophotometer with Reflectonce sttachment.	Rs. 52,500.00
46.	High power Microscope.	Rs. 15,000.00
47.	Laboratory Centrifuging Machine upto with 500 r.p.m.	Rs. 2,500.00
48.	Vacuum Pump.	Rs. 1,490.00
49.	Projection Microscope.	Rs. 20,000.00
50.	Microtome.	Rs. 3,000.00
51.	Valvet pad for neps counting.	Rs. 2,000.00
52.	Standard for neps in the card web.	Rs. 2,000.00
53.	Xarn conditioning Over.	Rs. 15,000.00
	Total :	Rs. 12,37,460.00 or Rs. 1,837 million

SUBJECT: TECHNICAL COOPERATION WITH JAPAN

Queries made by Japanese Embassy	Apswers by CTIRDC
a) The purpose and scope of the Project ofr which cooperation is sought.	The technical personnol employed the textile industry of Pakistan lack proper training which rosults in low productivity and below standard produc Furthermore, out textile industry is facing acute shortage of trained works due to the flow of already trained personnel to the Middle East Countries Keeping this in vies, this project has been proposed to develop our present system of training and also to train the raw hands in a more systamatic and scientific way thereby increasing the productivity.
b) The site or place of the project, the scale on which assistance is expected.	The project will be located in the existing building of Cotton Textile Industry Research and Development Cent at Rarachi. The proposed project will be a part of this Centre and for this purpose, the requirements are as under (i) One Expert for 12 man months. (ii) The Fellovships for 6 man months each (iii) Training aids and Laboratory equipment (List enclosed).
c) The field of cooperation.	The field of cooperation will be technical training for textile mill fitters as well as for workers.
d) The executing agency.	The executing agency for this pros will by Ministry of Industries, Government of Pakistan.
e) The measures to be adopted by either country.	The Pakistan Government shall provide the counterpart staff to the Experts appointed by the Government of Japan. In addition to this, experts will be provided with the office

		accompodation, local transport, Secretarial staff etc. by the Government of Pakistan.
f)	The privileqes, concessions exemptions from income tax and other facilities admissible to the Japanese experts who will be working on the project.	The Japanese Expert may be allowe the same privileges, concessions, exemptions from income tax and the facilities as are admissible to the UNDP/UNIDO experts fielded in Pakistan.
g)	The exemptions from sales tax, customs duties, etc. which may be granted in case of technical equipment to be provided by Japan during the period of cooperation.	Unless provided in the agreement, custom duty etc. will be payable by the receip ragency (CTIRDC). There will however be no liability on the part of Japanese Government.

Planning Stage a Ptunext 3 Years.

LIST OF EQUIPMENTS FOR PHASE-II

1. Pilot Plant (Spinning) i.e.
   - (i) A Short Blow Room Line.
   - (ii) Card
   - (iii) Draw Frame
   - (iv) Simplex Frame (18 Spindles).
   - (v) Ring Frame (80 Spindles).
   - (vi) A Lap Former and a Comber.
   - (vii) Miniature Spinning Plant.
2. Various Gauges for Spinning Plant Settings.
3. Moisture Testing Oven.
4. Pendulum Type Folded Yarn Strength Tester.
5. Humidifier
6. Cotton Colorimeter.
7. Shirley Analyser
8. Stelometer
9. Neptometer
10. Bobbin Hardness Tester.
11. Jacquard - 400 needles.
12. Card Punching Machine.
13. 44 " Terry Towel Loom.
14. Fischer Pump
15. Tintometer
16. Spirit Level.
17. Winch (Lab Model) Dyeing Machine.
18. Roller Shore Hardness Tester.
19. Roller Evenness Tester.
20. Spring Balance. (0-15 lbs).
21. Weighing Scale. (0-25 Kg.)
22. Laboratory Oil Bath (Electrical heated Thermostatic control fitted).
23. Stop Watch.
24. Measuring Tape 30 m.
25. Portable Stirrer.
26. U/V Meter. (Comparison of FBA's purposes)
27. Lustrometer.
28. Mercerisation Plant (Miniature type for laboratory).

29. Stooboscope.
30. Viscometer (Ostwald).
31. Sublimation fastness Tester.
32. Pressure Steamer (Miniature).
33. Laundrometer.
34. Fadeometer.