

PN-ABU-834  
- 94544

**NATIONAL CONFERENCE ON PUBLIC  
PRIVATE PARTNERSHIP IN  
TECHNOLOGY DEVELOPMENT:  
EMERGING LINKAGES BETWEEN  
INDUSTRY AND RESEARCH  
INSTITUTIONS**

**REPORT OF  
NATIONAL CONFERENCE ON PUBLIC PRIVATE  
PARTNERSHIP IN TECHNOLOGY  
DEVELOPMENT: EMERGING LINKAGES  
BETWEEN INDUSTRY AND RESEARCH  
INSTITUTIONS**

HELD AT

**MARRIOTT HOTEL  
ISLAMABAD**

ON

February 12, 1994

SPONSORED BY

**United States Agency for International Development  
Islamabad**

UNDER

**INSTITUTIONAL EXCELLENCE PROJECT**

ORGANIZED BY

**EDC (Pvt) Limited**  
Enterprise & Development Consulting

Authors: Dr. Salman A. Malik  
Mr. Assad A. Bukhari

## CONTENTS

*Page No.*

Acknowledgements		1
List of Abbreviations		2
Executive Summary		3
Objectives of the Conference		4
Summary of Inaugural Session		5
Summary of Presentations		6
Summary of Discussions		12
Achievements		13
Annexures		
Annexure 1	Recommendations	14
Annexure 2	Program of the Conference	19
Annexure 3	Agenda/Schedule of the Conference	20
Annexure 4	List of Participants	21
Annexure 5 (5-I-To 5-V)	Inaugural Addresses	24
Annexure 6	Concluding Remarks By Dr. Sarah Tirmazi (USAID)	35

## **ACKNOWLEDGEMENTS**

We wish to express gratitude to Ms. Shahnaz Wazir Ali, Special Assistant to the Prime Minister, Mr. Iftikhar Malik, President FPCCI, Professor Pareshan Khatak, Chairman UGC, and Mr. Munir Ahmed, Joint Educational Advisor (P&D), Ministry of Education for gracing the Inaugural Session and addressing the delegates.

Thanks are due to Dr. M.H. Qazi Member (W.T) UGC, for extending all his support and participating in conducting of the conference. We particularly thank Dr. A.Q. Ansari, Chairman PCSIR, Mr. M. Usmani, Secretary Education, and Dr. M. Afzal, former Education Minister, who chaired the various sessions and contributed significantly in the deliberations of the conference.

Thanks are also due to the delegates of the Research Institution, and their respective Industrial counterparts who provided the material which formed the basis of deliberations, discussions and recommendations. We gratefully acknowledge their efforts and to all we express our appreciation.

We also feel obliged to all the participants who took part in the conference deliberations and contributed in a professional manner.

To all others who helped in their own special way and made significant contributions towards the success of the conference, we would like to express our deep gratitude.

## LIST OF ABBREVIATIONS

CEMB	CENTER OF EXCELLENCE IN MOLECULAR BIOLOGY
CO-P.I	CO-PRINCIPAL INVESTIGATOR(s)
FPCCI	FEDERATION OF PAKISTAN CHAMBERS OF COMMERCE & INDUSTRIES
HEJ	HUSEIN EBRAHIM JAMAL RESEARCH INSTITUTE OF CHEMISTRY
IEP	INSTITUTIONAL EXCELLENCE PROJECT
JEA (P&D)	JOINT EDUCATIONAL ADVISOR, PLANNING & DEVELOPMENT
KGC	KHAWAJA GLASS COMPANY
MOE	MINISTRY OF EDUCATION
NCEG	NATIONAL CENTER OF EXCELLENCE IN GEOLOGY
OGDC	OIL & GAS DEVELOPMENT CORPORATION OF PAKISTAN
P.I	PRINCIPAL INVESTIGATOR(s)
PCSIR	PAKISTAN COUNCIL FOR SCIENTIFIC & INDUSTRIAL RESEARCH
QAU	QUAID-I-AZAM UNIVERSITY
R.I	RESEARCH INSTITUTION(s)
STEDEC	SCIENTIFIC & TECHNOLOGICAL DEVELOPMENT CORPORATION OF PAKISTAN
UET	UNIVERSITY OF ENGINEERING & TECHNOLOGY
UGC	UNIVERSITY GRANTS COMMISSION
W.T.,UGC	MEMBER WHOLE TIME UGC

## EXECUTIVE SUMMARY

A one day conference was organized to provide an opportunity for a collective dialogue, to present the results of the various research projects to the participants for evaluation of the over all success of IEP and to enhance and institutionalize the concept of cooperative applied research.

The conference commenced at 0900 hrs. and continued till 1730 hrs. with intermittent prayer breaks. The inaugural session was attended by more than 150 delegates who were addressed by Professor Pareshan Khatak, (UGC) Arnold Radi (USAID), Mr. Munir Ahmed (MOE), Mr. Iftikhar Malik (FPCCI) and Ms. Shahnaz Wazir Ali, Special Assistant to the prime Minister. This was followed by a poster session inaugurated by Ms. Shahnaz Wazir Ali, the chief guest of the conference.

The agenda for the working sessions was long and consequently the sessions were intense. In addition to delegates from government of Pakistan, various research institutions/centers/ universities, industry and some donor agencies, all the research institutions involved in IEP participated through P.I.(s) & Co-P.I.(s) alongwith almost all the industrial counterparts who participated through senior or executive level personnel.

The working session commenced by presentation of the results/achievements made by the P.I.(s) or Co-P.I.(s) during the operation of their respective projects. The presentations were well prepared and well delivered. Most of the speakers were able to present their final results while others reported significant progress towards the stated objectives and expressed hope that the projects would be completed in full by/before the end of March 1994 which is the project completion date.

A short session of discussions followed the presentations and continued into the concluding session. The discussions included progress made, problems encountered & their possible solutions, changes in the system which may stimulate/encourage R.I.-industry cooperation and comments/observations/remarks from the industrial counterparts.

The participants supported the concept of R.I.- Industry cooperative and applied research activity. The industrial participants expressed hope and interest to support such applied research activities in various R.I.(s) from their own resources provided some measures to safeguard their interests and investments be made.

During the concluding session the draft of an operational manual to serve as a guide for future such activities was presented to the delegates for their perusal and comments. Recommendations based on the experience of IEP to be presented to the Government of Pakistan on behalf of all the delegates of the conference were also presented, discussed and a consensus arrived at.

The concluding session was summarized separately by Dr. Sarah Tirmazi of USAID, Mr. Munir Ahmed, JEA (P&D) Ministry of Education, and Dr. M. Afzal, former Minister of Education.

The conference ended with the resolve to participate even more enthusiastically in all such future activities.

## **OBJECTIVES OF THE CONFERENCE**

The objective of the conference may be summarized as follows

### **EVALUATION**

- Of the over all degree of success of the projects.
- Of enthusiasm & interest of the industrial participants for continuing such cooperative efforts.
- Of suggestions/recommendations that may be proposed during the conference.

### **CONFIDENCE BUILDING & LEARNING**

- To enhance the confidence between research institutions and industry by providing an opportunity of a collective dialogue.
- To share the lessons learnt during IEP with government of Pakistan, donor agencies and other participants of the conference.
- To learn from each others experience.

### **PREPARATION FOR FUTURE ACTIVITIES**

- To collectively plan and prepare for similar future activities.
- To develop a consensus on recommendations to be made to the Government of Pakistan
- To present the contents of the IEP operational manual to be published before the end of IEP for perusal & comments of the participants.
- To define themes and propose a structure to Government of Pakistan and Donor agencies for institutionalization of the concept.

## SUMMARY OF INAUGURAL SESSION

The session commenced by recitation from the Holy Qurran followed by the welcome address delivered by Professor Pareshan Khatak, Chairman UGC. He welcomed all the delegates and elaborated on the role of UGC in the IEP. This was followed by an address by Mr. Arnold Radi, Chief, Office of Development Resources, USAID, who informed the delegates regarding various development activities both in the education and social sectors in which USAID has contributed significantly including the IEP.

Mr. Munir Ahmad, Joint Educational Advisor (P&D), Ministry of Education, then addressed the delegates and elaborated on the concept and achievements of IEP.

The Acting President FPCCI, Mr. Ifikhar Malik then addressed the delegates and provided the view of the private sector on such cooperative applied research activities. Mr. Malik was very appreciative of the concept and enthusiastically expressed hope that such activity is encouraged. He assured all possible assistance from the private sector and hoped that the Government would reciprocate in the same way. He also outlined the areas which in his opinion deserved most attention and priority.

Ms. Shahnaz Wazir Ali, Special Assistant to the Prime Minister, finally expressed her views which were distinctly favorable. She assured the delegates that the Government of Pakistan would take all necessary measures to enhance this kind of activity. She hoped that the deliberations of the conference would provide a guide for the Government and that she would ensure that the recommendations of this conference are favorably considered by the Government.

Ms. Shahnaz Wazir Ali, thereafter inaugurated the poster session and took keen interest in the exhibits. She was provided a guided tour through the various posters and was briefed by the presenters. The inaugural session thereafter was closed by thanks to all the dignitaries who graced the session.

## SUMMARY OF PRESENTATIONS

All the investigators were provided an opportunity to present their work. The presentations were well prepared and well delivered. The investigators explained the objectives of their respective projects and reported the achievements made. Dr. A.Q. Ansari, Chairman PCSIR, chaired the 1st working session while the 2nd working session was chaired by the Mr. M. Usmani, Secretary Education.

**Presentation 1:** Sedimentological Studies in Potential Hydrocarbon-bearing Strata:

made by  
Dr. Iftikhar Abbasi  
of NCEG

The objective of this project was to conduct the initial geological studies of the area to help OGDC in their oil exploration efforts.

It was reported that the project had been completed for some time now and the work had been commended by OGDC. A copy of the final report had already been provided to USAID and OGDC. The extracts from the same were described to the participants which included some details of the work done. It was reported that Kohat Basin consists of four formations and was once a part of an epicontinental sea. The high sea regressed but flooded the Basin again before its final regression. These studies show that the basin is composed of olive-green clay, silt stone, sand stone and lime stone with subordinate dolomite and gypsum. These occur in various proportion in different formations and relate to varied deposition due to varied environments that existed during the respective eras.

**Presentation 2:** Identification & Characterization of Quality of Silica Sand Resources for Glass Making:

made by  
Dr. Hameed Ullah  
of NCEG

The objective of this project was to study & recommend alternate sites for procuring quality silica sand for the manufacture of glass.

Summary of results of analyzed samples totalling more than 50 were presented to the participants. It was reported that samples of silica sand deposits in Munda Gucha, Mansehra; Ghalanai, Mohamand Agency, Chashma and other areas, D.I.Khan were analysed for the composition of silica sand and its grain size. The results of these studies show that some of these sites may be used for producing quality sheet glass while others may be used for producing quality ceramics. It was also reported that all the work has been completed and a formal report has been submitted to Khawaja Glass Company (KGC) for their perusal. Hope was expressed that the comments of KGC would be received soon and would be incorporated in the final completion report of the project.

**Presentation 3:**  
made by  
Dr. Qasim Jan  
of NCEG

Inclusion Studies of Sheet Glass:

The objective of this project was to study the inclusion bodies present in the glass samples and make corrective recommendations.

The results of the completed experimental work were presented to the participants. It was reported that the inclusion bodies present in the provided glass samples have been studied and detailed microscopic and geochemical analyses of the same have been performed. The results indicate that these inclusions are probably a consequence of improper blending/mixing of the various ingredients. It was also reported that the work has been completed and the findings have been submitted to KGC in the form of a report for their perusal. Hope was expressed that the comments of KGC would be received soon and would be incorporated in the final completion report of the project.

**Presentation 4:**  
made by  
Dr. Tahir Shah  
of NCEG

Review of Analytical Processes at Khawaja Glass Company:

The objective of this project was to develop/propose cost effective but reliable and time saving alternate methods for making routine analysis in the quality control laboratory at Khawaja Glass Company (KGC). In addition, to make recommendations for improving the efficiency of the quality control laboratory at KGC.

It was reported that the work on this project has also been completed. A formal report has been provided to KGC for their perusal. Extracts of the report were presented to the participants. It was reported that improved methods for the determination of various element oxides, which are important in the manufacturing of good quality sheet glass, including  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{CaO}$ ,  $\text{MgO}$  and  $\text{Fe}_2\text{O}_3$ , have been developed. Standards for comparison of results have also been developed and provided to KGC for their use. Hope was expressed that the comments of KGC would be received soon and would be incorporated in the final completion report of the project.

**Presentation 5:**  
made by  
Dr. A. Hameed  
of QAU

Bating Enzymes from Animal Sources:

The objective of this project was to develop technology for the national leather industry to locally prepare a cost effective, quality bating enzyme from microbial sources.

It was reported that the project on the whole has been going rather well and all the laboratory scale work has been completed. The findings of the completed work were presented to the participants. It was reported that a method for obtaining bating enzyme from microbial sources has been developed. The enzyme obtained by this method has been shown to yields better product compared to other bating enzymes available in the market.

It also appears to be very economical. It was further reported that installation of the fermenter for large scale production has now been completed and work on large scale production is underway. Hope was expressed that the objectives of the project would be fully accomplished by/before the end of March 1994, i.e. before the project completion date.

**Presentation 6:**  
made by  
Dr. Zafar Zaidi  
of HEJ

Bating Enzymes from Animal Sources:

The objective of this project was to develop technology for the national leather industry to locally prepare a cost effective, quality bating enzyme from extracts of pancreas.

It was reported that the technology has been developed and a bating enzyme from bovine pancreas has been purified and the initial results indicated its activity to be many fold more than the activity of the available bating enzymes in the local market. Further work on the project was continuing and final results are expected by/before the end of March 1994, i.e. before the project completion date.

**Presentation 7:**  
made by  
Dr. G. A. Miana  
of GOMAL UNIV.

Commercial Exploitation of Azadirachtin:

The objective of this project was to develop a cost effective and potent pest repellent from neem seeds.

The results of the completed experimental work were presented to the participants. It was reported that Azadirachtin had been extracted using a variety of solvents and its effectiveness as a repellent tested over sunflower fields. It has been found to show potency in all cases. Work for its bulk extraction has been carried out in collaboration with PCSIR laboratories Lahore. The extracts have been estimated for azadirachtin content and the initial results indicate a comparable but slightly lower value compared to the earlier reports. Mineral oil extraction for economy was also being considered. It was understood that the extraction work would be completed in the near future and evaluation of potency of the extract would be performed immediately thereafter.

**Presentation 8:**  
made by  
Dr. G.A. Miana  
of GOMAL

Commercial Exploitation of Taxol Anti-Cancer Drug:

The objective of this project was to economically extract and study "Taxol" from Taxus baccata. Taxol is reported to contain anticancer activity.

The results of the completed experimental work were presented to the participants. It was reported that leaves of Taxus baccata collected from Nathia Gali had been extracted with various solvents and the extracts

tested for the presence of Taxol. No Taxol has been detected in any extract. Since an earlier report suggested the presence of Taxol only during the winter it was reported that collection of more sample material would be done again soon after the snow falls. Further work on the project may be carried out only thereafter and a final view of the project obtained.

**Presentation 9:**  
made by  
Dr. Raizuddin  
of CEMB

Microbial Control of Insect Pests in Cotton:

The objective of this project was to develop a cost effective but potent bioinsecticide to supplement/substitute the chemical insecticides against cotton ball worm. In addition, a cost effective, quality medium for propagation of the microbe was also to be developed.

It was reported that there has been significant progress and the initial work has been completed. The results of the completed experimental work were presented to the participants. Some evaluation of the insecticidal activity possessed by *Bacillus thuringiensis* has been made in collaboration with CIBA GIEGY. The summary of results of these studies were also discussed. In these studies the efficacy of the culture has been tested on naturally infected potato fields in comparison with other bio-insecticide developed by CIBA GIEGY. These results appeared to be very promising. Further work on the project is continuing and hope was expressed that most of the work would be completed by the end of March 1994.

**Presentation 10:**  
made by  
Dr. Khalida Sultana  
of QAU

Bioinsecticides in the Control of Insect Pests of Cotton:

The objective of this project was to develop a cost effective, broad based/broad spectrum bioinsecticide which may supplement/substitute the chemical insecticides. In addition a cost effective, quality medium for propagation of the microbes was also to be developed.

The results of the completed experimental work were presented to the participants. It was reported that certain microbes possessing insecticidal activity have been isolated and characterized. The results obtained so far have been promising. Further work involving synergistic action of a mixture of these microbes is under way. Hope was expressed that most of the work would be completed and more results may be obtained by the end of March 1994.

**Presentation 11:**  
made by  
Dr. M. Iqbal  
of HEJ

Investigation of Medicinal Plants for Anti-diabetic Activity:

The objective of this project was to determine efficacy of the various anti-diabetic formulations prepared by Hamdard Laboratories Pakistan and to identify the potent ingredient(s) in such formulations. In addition the anti-diabetic potency of some other herbs commonly assumed to have such efficacy was to be verified.

The results of the completed experimental work were presented to the participants. It was reported that two out of five formulation commonly prescribed have positive potency. On the basis of these results and in accordance with the recommendations of HEJ, Hamdard laboratories have advised their practitioners to prescribe only the two positive potency containing formulations. It was also reported that four plants have been identified which show hypoglycemic activity. An improved formulation has been prepared from two of these and two other plants. This formulation, however will require evaluation of activity and toxicity. Hope was expressed that further work in collaboration with Hamdard laboratories on the project would continue even after the termination of IEP.

**Presentation 12:**  
made by  
Dr. Zafar Zaidi  
of HEJ

Development and Pilot Plant Production of Medical Diagnostic Kits.

The objective of this project was to develop cost effective and reliable assay kits for routine clinical analyses.

The results of the completed experimental work were presented to the participants. It was reported that two kits, one for Glucose and the other for Bilirubin have been successfully developed. The initial results for both kits were reported to be very encouraging. These compared well with the results obtained by using imported kits, although the estimated value for sugar and bilirubin using HEJ kits were reported to be a little lower (about 10%) in comparison. Efforts to develop a kit for urea estimation were continuing.

**Presentation 13:**  
made by  
Dr. Riazuddin  
of CEMB

Hormone Receptors as Prognostic Factors in Health & Disease:

The objective of this project was to develop a cost effective and reliable assay kit for an early evaluation of cancer risk to the subject due to hormonal imbalance.

The results of the completed experimental work were presented to the participants. It was reported that some initial work has been completed which includes development of method to detect alterations in hormone level. It was suggested that altered hormone level may be used as an indicator for evaluating the tendency toward disease. Further work on this project was reported to be in progress. Hope was expressed that most of the work would be completed by the end of March 1994.

**Presentation 14:**  
made by  
Dr. Zubair  
of UET

Un-interrupted Power Supply (UPS):

The objective of this project was to develop a cost effective and reliable UPS system using indigenous technology and materials/components readily available in the local market.

The results of the completed experimental work were presented to the participants. It was reported that an initial prototype had been made which required improvements and testing. The desired improvements were reported to have been made and this improved prototype was presented in the poster session of the conference. This prototype was shown to work with sine wave, which produces relatively less background disturbance, instead of the square wave. It was also reported that this prototype would be further improved and tested thoroughly before the end of the project.

**Presentation 15:** Design & Development of an Expert Logic Controller:

made by  
Dr. Zubair  
of UET

The objective of this project was to develop a reliable and cost effective A.C. motor controlling system in accordance with the needs of the national industries, using components readily available in the local market.

The results of the completed experimental work were presented to the participants. It was reported that a prototype model of the logic controller has been developed. This prototype was presented in the poster session of the conference. It was also reported that an industrial/commercial scale model may be now assembled using the same design.

**Presentation 16:** Microprocessor based Multimetering, Energy & Tariff Meter:

made by  
Dr. Zubair  
of UET

The objective of this project was to develop a cost effective & reliable multimetering, energy and tariff meter using components readily available in the local market.

The results of the completed experimental work were presented to the participants. It was reported that a prototype model of the energy and tariff meter has been assembled. This prototype was presented in the poster session of the conference. The prototype was shown to measure voltage, wattage and current separately and accurately at any given moment and could also work out the value of electricity consumed using different tariff rates. It was also reported that a variety of additional features may be added to this prototype through indigenously improvised technology as and when required.

## SUMMARY OF DISCUSSIONS

The participants enthusiastically discussed the results & progress of the projects both in terms of their economic/applied value and the impact on future such activities. There was a consensus that all the projects were of significant economic/applied value and that many of them had achieved, in full, the stated goals. There was also consensus that most others which have not yet been completed, may be completed before/by the end of March 1994 i.e. before the project completion date.

The industrial participants expressed hope and interest in supporting such applied research activities from their own resources, provided they are assured exclusive rights on results, the work is carried out in a timely manner, and that they are kept informed regarding the progress of the research work on a regular basis.

The draft of an operational manual to be published later was also presented to the participants for their perusal and comments. The participants were of the view that such a manual would serve as a useful reference/information material for future activities.

The problems encountered during the course of these projects were also discussed. These included those which may be non-reoccurring as well as those which are likely to reoccur in future again. There was a consensus that the frequency and the completeness of the progress reports in the present case was somewhat unsatisfactory and may be improved in the future. Also personal contacts/communications with the industrial counterparts including the level of contact may be further improved in the future. It was pointed out that the project activities in the present case was not given high enough priority by the administrators. This resulted in lack of timeliness and improper scheduling of the research work.

It was felt that lack of awareness of financial management and operating procedures by some of the research workers also contributed towards difficulty in arranging of the necessary funds and commodities. It was emphasized by some of the participants that most of the above said problems may be overcome if changes in attitudes and regulations are brought about at all levels and un-interrupted services of professional agencies for the management and coordination of such cooperative applied research activities are utilized.

A draft of recommendation to be made to the Government of Pakistan was also presented discussed and consensus reached at. It contained more specific solutions to some of the above said problems in the form of recommendations/suggested changes in the system which are likely to stimulate/encourage such cooperative applied research activities and help in institutionalization of the process. A copy of these recommendations after revision in accordance with the feelings of the participants is attached as Annexure 1.

The lessons learnt during IEP and the deliberation of the conference were summarized by Mr. Munir Ahmed, JEA, and Dr. Sarah Tirmazi, USAID, separately. The conference was formally closed by the concluding remarks and advise from Dr. M. Afzal, former Education Minister.

## ACHIEVEMENTS

It emerged as a consensus view that the objectives set forth for the conference were fully accomplished. These may be enumerated as:

- A high level of participation and enthusiasm was achieved.
- Progress of each project was evaluated and the overall success of IEP was established.
- Credibility of the research institutions for carrying out applied research was established.
- All participants expressed enthusiasm to continue cooperative applied research activities.
- Planning for future such activities was initiated and a commitment of enthusiastic participation by all the participants was obtained.
- Recommendations for continuing such cooperative applied research activities were approved.

# ANNEXURES

The following recommendations are presented as a result of the experience gained throughout the operation of the USAID/UGC Institutional Excellence Project (IEP), and deliberations which took place in working sessions comprising scientists, technologists, academicians, and representatives of industry and commerce. The deliberations were held at the Hotel Marriott on February 12, 1994. The recommendations are presented for consideration and implementation by the government, research institutions and the industrial/commerce sector.

These recommendations are grouped into three major categories:

- The creation of a Resource Center to institutionalize the public sector/private sector technology development process
- The role of the Government of Pakistan in the promotion of cooperative research activities
- The university/research institution's role and responsibilities

### **Section I. The Resource Center**

The institutionalization of public sector/private sector cooperation to promote technological development is strongly urged. The establishment of a long-term Resource Center is essential, and will require immediate and adequate funding. The Resource Center could be located either in the private sector or the University Grants Commission (UGC). Because the private sector is most closely tied to industrial problems in need of solutions, the first preferred location should be the private sector.

This Resource Center will have a number of functions; it will serve as a nation-wide data bank and clearing house of industrial problems and resumes of scientific and technical personnel in applied research from universities and other research institutions who are available for cooperative research. The data bank should be able to provide comprehensive information on the various Pakistani private sector and research institutions, and later similar international organizations.

In addition to collecting information, it will disseminate promotional brochures containing information of scientific personnel, current cooperative research underway, and information on industrial sector problems that need research solutions.

It will also sponsor periodic seminars for industrial and research personnel at regional Chamber of Commerce Centers and scientific institutions.

Finally, the Resource Center should have liaison personnel who can facilitate contacts between researchers and companies in the formulation of proposals and completion of final cooperative arrangements. It should have the ability to evaluate requested services by the private sector and the products/services offered by the research institutions and select the best available personnel for cooperative research.

It is recommended that the staff of the Resource Center should consist of a manager, at least two data base specialists and three liaison specialists.

It is also recommended that the staff members be sent abroad for short-term training to an institution with broad experience in the field of industry/research institution cooperation.

To assist the Resource Center in facilitating cooperation, it is recommended that a Supervisory Unit should be established, with membership from research institutions, industry and government. The Supervisory Unit should examine existing policies and procedures in each sector which need to be modified to remove impediments, and to stimulate and expand cooperative efforts.

A proposed membership for the Supervisory Unit would be four to six research representatives, four to six industrial representatives, a representative of FPCCI, a representative of the Ministries of Education and of Science and Technology, and a representative from the Economic Affairs Division.

## **Section II. The Government of Pakistan**

In order to foster indigenous scientific research, it is recommended that the following policy and funding commitment changes be made. An interim Steering Committee chaired by the Special Advisor to the Prime Minister might be formed to facilitate the process of policy changes.

### **A. University Policy Changes**

Certain recommendations should be made to improve the climate for researchers actively engaged in research. It is recommended that released time from administrative duties and reduced teaching loads be given to active researchers, i.e., half-time loads.

It is recommended that financial incentives and a share in royalty or license fee income be provided to researchers

It is recommended that merit points for promotion be given to active, successful researchers.

It is recommended that a researcher be designated as a liaison person to ensure that group meetings of researchers are arranged periodically to exchange research information and to ensure that resumes are collected and sent to the Resource Center;

It is recommended that the research staffs be trained in all aspects of the cooperative research process, e.g., proposal writing, budget preparation, project implementation and reporting, etc.

It is also recommended that a financial management unit for research be set up at each research institution which will do project costing, record keeping, and other financial reporting.

All of the above changes must be proposed to the GOP and institutionalized by the University. Initially this should not require additional funding, with the exception of the financial management.

## **B. Funding Requirements**

A private sector/research institution partnership fund amounting to rupees 30 million should be set up to serve as a revolving fund. The fund could be supplemented through foreign assistance as well as endowment by the industry and commerce sectors. The broad areas which will be supported initially will include:

1. Import substitution programs: indigenous production of finished products
2. Quality improvement of Pakistani products to meet global standards in the world's export market
3. Pilot plant production of already established manufacturing processes
4. Additional technology transfer in newly developing areas as space sciences, marine sciences, nuclear sciences and other unconventional energy production.

Only research projects which designate specific industrial partners and develop formal plans and agreements for cooperation should be eligible for support from the revolving fund.

Other funding requirements that will have to be met by the GOP and/or other sectors will be research materials and necessary equipment. These must be paid for, at least initially by the GOP. Possibly the private sector can bear 25% of the equipment and research materials at first.

It is recommended that the GOP fund the financial management unit for applied research to be established at institutions engaged in this research. Also additional funds should be provided for the liaison individual in departments who arranges meetings, collects resumes, prepares promotional brochures, etc.

Besides research materials and equipment, a significant additional expense would be the Resource Center and its staff. This expense may initially be borne by the GOP, but ultimately should be supported by the private sector.

Finally, some funding would be required for the Supervisory Unit.

### Section III. The Research Sector

The administration at research institutions should strive to promote a positive cooperative research atmosphere by making the following policy changes:

- set up a financial management unit which will do project costing, record keeping, and other financial reporting;
- develop a policy allocating merit points for promotion to researchers engaged in applied cooperative research;
- allow reduced teaching loads to faculty engaged in cooperative research. These loads should be decreased as the amount of research increases;
- appoint a liaison person within the departments to coordinate the submission of resumes and research background to the Resource Center. This individual can also serve as a liaison person to the Resource Center and department faculty;
- hold frequent discussions with departmental faculty interested in research to pool ideas and organize approaches to industry;
- address the issue of intellectual rights of industrialists and researchers and work out with industries such matters as patents, royalties, profit-sharing, etc., on an individual contract basis;
- formulate, with the assistance of trained staff, well-designed research plans and detailed proposals. Once this is completed, they must keep to project schedules and reporting deadlines. Finally, they need to complete project on time, give oral and written presentations, and do project follow-up with company representatives to ensure that results are well-understood and to assist in practical applications.

#### MANUAL RECOMMENDATION CHECK LIST

A summary of recommendations from the manual distributed at the conference is given below.

Specific recommendations are given for consideration by the private sector, the research institutions, and the government. Each of these recommendations has been identified from experience gained during the operation of the Institutional Excellence Project:

#### PRIVATE SECTOR

- ✓ Establish and fund Resource Center and Supervisory Unit
  - compile a data base of industry problems
  - compile a data base of researcher expertise
  - serve a liaison function between industry and researchers

## RESEARCH INSTITUTIONS

- ✓ **Revise/amend policies on:**
  - released time -- adjustment of teaching loads and other duties for researchers involved in cooperative research
  - financial incentives -- adequate financial compensation should be provided for researchers engaged in the cooperative applied research. Researchers should also receive a share of royalty or license fee income resulting from successful commercialization of research results.
  - career incentives -- provide career incentives and credit toward promotion for participation in cooperative research
  - promotional assistance -- assist in organizing and publicizing information on research institution capabilities
  - industry contacts -- assist researchers in making industrial contacts and the process of formulating formal agreements
  - departmental liaison -- designate liaison person as contact for Resource Center
  - submit individual resumes -- prepare resumes emphasizing expertise for industry and submit to the Resource Center
  - pool information within research unit to identify major areas for industrial cooperative research
  - seek cooperative arrangements through the Resource Center and companies related to fields of expertise

## GOVERNMENT

- ✓ Provide financial support for applied research projects and cooperate in the operation of the Resource Center
- ✓ Provide necessary policy changes at government level for industry and research institutions to stimulate and encourage cooperation

**Inaugural Session**

08:00 Registration  
09:00 Guests are seated  
09:15 Bismillah  
09:20 Chairman, UGC  
09:30 Chief, Development Resources, USAID  
09:40 Joint Educational Advisor  
09:50 Acting President Federation of Pakistan Chamber of Commerce  
10:00 Ms. Shahnaz Wazir Ali, Advisor to the Prime Minister

10:15 **Poster Session**

11:00 **Working Session**  
01:15 Break for prayer  
02:15 Working Session (Continued)

04:30 **Concluding Session**  
Discussions and recommendation  
05:30 Conclusions & Future Perspective

FEBRUARY 12, 1994

**PROJECT PRESENTATIONS** (maximum 15 min. each: presentation of results  
10 min & discussion 5 min)

<b>11:00 to 01:15</b>	<b>1st Working Session</b>	
11:00 to 10:15	Sedimentology of Kohat Basin	NCEG
10:15 to 11:30	Silica Sources	NCEG
11:30 to 11:45	Inclusions/Problems in Glass Manufacturing	NCEG
11:45 to 12:00	Improvements in Analytical Processes/ Glass Manufacturing	NCEG
12:00 to 12:15	Bating Enzymes	QAU
12:15 to 12:30	Bating Enzymes	HEJ
12:30 to 12:45	Natural Insecticides	GOMAL
12:45 to 01:00	Anticancer Compound	GOMAL
01:00 to 01:15	Discussion of Projects	
01:15 to 02:15	<b>Prayer Break</b>	
<b>02:15 to 04:30</b>	<b>2nd Working Session</b>	
02:15 to 02:30	Bioinsecticides	CEMB
02:30 to 02:45	Bioinsecticides	QAU
02:45 to 03:00	Antidiabetic Compounds	HEJ
03:00 to 03:15	Diagnostic Kits	HEJ
03:15 to 03:30	Diagnostic Kits	CEMB
03:30 to 03:45	Uninterrupted Power Supply Unit (UPS)	UET
03:45 to 04:00	A.C. Motor Controller	UET
04:00 to 04:15	Multimetering, Energy & Tariff Meter	UET
04:15 to 04:30	Discussion of Projects	
04:30 to 05:30	<b>Concluding Session</b>	
05:30 to 05:45	Conclusions and Future Perspectives	

**LIST OF PARTICIPANTS  
OF THE WORKING SESSION**

Annexure 4

S.NO	NAME	Organization
1	Dr. A. Hameed	Biology Dept., QAU, Islamabad
2	Dr. Khalida Sultana	Biology Dept., QAU, Islamabad
3	Dr. Afsari Qureshi	Biology Dept., QAU, Islamabad
4	Dr. Mehbob Ellahi	Chemistry Dept. QAU, Islamabad
5	Dr. Zahoor Ahmed	Chemistry Dept. QAU, Islamabad
6	Dr. Christy Munir	Chemistry Dept. QAU, Islamabad
7	Dr. Sadiq Subhani	Chemistry Dept. QAU, Islamabad
8	Dr. Esther Khan	CEMB, University of Punjab, Lahore
9	Dr. S. Riazuddin	CEMB, University of Punjab, Lahore
10	Prof. Atta-ur-Rahman	HEJ Institute of Chemistry, University of Karachi
11	Dr. Zafar H. Zaidi	HEJ Institute of Chemistry, University of Karachi
12	Dr. Attia Abbasi	HEJ Institute of Chemistry, University of Karachi
13	Dr. M. Iqbal Choudhary	HEJ Institute of Chemistry, University of Karachi
14	Dr. M. Qasim Jan	NCEG University of Peshawar, Peshawar
15	Dr. Tahir Shah	NCEG University of Peshawar, Peshawar
16	Dr. Iftikhar Ahmed	NCEG University of Peshawar, Peshawar
17	Dr. Syed Hamidullah	NCEG University of Peshawar, Peshawar
18	Dr. Obaidur Rehman	NCEG University of Peshawar, Peshawar
19	Mr. Mohammad Riaz	NCEG University of Peshawar, Peshawar
20	Dr. G.A. Miana	Dept. of Chemistry, Gomal University, D.I.Khan
21	Dr. Zubair A. Khan	UET, Department of Elect. Engg., Lahore.
22	Ms. Anna Wanchoo	University College of Islamabad.
23	Mr. Idress Anwar	National Institute of Electronics
24	Dr. M. Munir Hasan	NED Engineering University, Karachi
25	Dr. M. Suleman	Center of Excellence in Solid State Physics
26	Mr. S.H. Iqbal	University of Punjab, Lahore

27	Mr. Khalid Munawar	Engineering University, Lahore
28	Dr. A.Q. Ansari	Chairman, PCSIR
29	Dr. Tanweer Ahmed	PCSIR Labs., Lahore
30	Mr. Khalid Mahmood	State Engineering Corporation, Islamabad
31	Mr. Mohammad Nawaz	State Engineering Corporation, HMC, Taxila
32	Professor Imran Ali	LUMS, Lahore
33	Dr. Kauser Malik	NIBGE, Faisalabad
34	Dr. I.H. Qureshi	PAEC, Islamabad
35	Dr. Amin M. Hussain	PAEC Islamabad
36	Dr. N.M. Butt	PINSTECH
37	Ms. Surraiya J. Nasir	National Institute of Psychology. QAU, Islamabad
38	Ms. Tashneem Razzali	Dept. of Microbiology, University of Karachi
39	Dr. Muzammil Ahmed	Center of Excellence in Microbiology, Karachi
40	Dr. Amin M. Hussain	Pakistan Institute of Electronics
41	Dr. Lutfullah	National Center of Excl. Physical Chemistry
42	Dr. Anwar Nasim	Pakistan Academy of Sciences
43	Mr. Aziz A. Khan	STEDEC
44	Dr. M. Afzal	Former Minister of Education
45	Mr. Tajammal Hussain	Planning and Development Div. Govt. of Pakistan
46	Mr. Munir Ahmed	Ministry of Education, Govt. of Pakistan
47	Mr. M. Usmani	Ministry of Education, Govt. of Pakistan
48	Dr. Shahnaz A. Riaz	Ministry of Education, Govt. of Pakistan
49	Iftikhar Malik	Acting President, FPCCI, Islamabad
50	Aftab Akhtar	FPCCI, Islamabad
51	Ch. Muhammad Aslam	Former President, Gujranwala Chamber of Commerce
52	Kh. Zarar Kaleem	Gujranwala Chamber of Commerce
53	Ch. Hamid Razvi	Gujranwala Chamber of Commerce
54	Dr. Abdul Jabbar	SDPI, Islamabad

55	Dr. John J. Monagle	USAID
56	Ms. Amna Mir	USAID
57	Mr. Arnold Radi	USAID
58	Dr. Lois E. Bradshaw	USAID
59	Dr. Sarah Tirmazi	USAID
60	Mr. Dennis Weller	USAID
61	Mr. Akhtar Sabir	USAID
62	Dr. Rushna Ravji	USAID
63	Mr. Liaqat A. Butt	USAID
64	Mr. M. Muhammad	USAID
65	Dr. M. Khalid	USAID
66	Mr. Nadir Abbas	USAID
67	Mr. Samiullah Malik	USAID
68	Mrs. Abida Hassan	UGC, Islamabad
69	Mr. Talat Khurshid	UGC
70	Mr. Sajid Bari	Khawaja Glass Company, Hassanabdul
71	Mr. A.Q. Faruqui	Hamdard Labs. (Waqf) Pakistan.
72	Mr. Ch. Mohammad Aslam	Muhammadi Group
73	Mr. Aamer H. Qazi	Biotechnology Pakistan Pvt. Ltd.
74	Mr. Mushtaq A. Bukhari	ECG
75	Mr. Assad A. Bukhari	EDC
76	Dr. Salman A. Malik	EDC
77	Mr. M. Zubair	EDC
78	Mr. Iqbal Muncer	Private
79	Mr. Saadullah Khan	Private
80	Mr. Ghulam Saeed	Private

**CONFERENCE ON PUBLIC-PRIVATE PARTNERSHIP IN  
TECHNOLOGY DEVELOPMENT: EMERGING LINKAGES BETWEEN  
INDUSTRY AND RESEARCH INSTITUTIONS:**

February 12, 1994

ADDRESS BY PROFESSOR PARESHAN KHATAK, CHAIRMAN, UGC

Ladies & Gentlemen,

It is a great pleasure for me to welcome you to the inaugural session of this important Conference on Public-Private Partnership in Technology Development: Emerging linkages between Industry and Research institutions. Pakistan is passing through a phase of rapid economic development. It is becoming increasingly obvious that much of our future progress in technology development will be based on knowledge generated by the Universities. In fact, universities are the largest store house of knowledge. The use of this knowledge has to be related to the economic development of the country. For this reason, the new initiatives taken by the Government for public-private partnership have to be pursued with enthusiasm. Universities can no doubt play a dominant role in this regard. The first demonstration of this role is clearly indicated in the present conference which is the first of its kind being held in Pakistan.

The developments which led to the association of university researchers with private sector enterprises has come through the collaborative efforts of USAID, the UGC and the Ministry of Education. The USAID has played a persuasive role in developing this project. The unique feature of the project has been the identification of the industries which needed help in solving some of their problems and in developing new technologies for adoption in Pakistan. I am glad that the manpower resources for this were available in the universities. A careful selection of industrial problems has led to a modicum of success, demonstrating the effectiveness of university industry partnership. The success that we have achieved with this project, spread over several disciplines, gives us encouragement that this model can be adequately sustained. I am sure that the Government will come forward in encouraging further the appropriate groups in the universities to undertake such ventures in collaboration with industry in Pakistan.

I understand that the USAID Advisor, John Monagle in consultation with the UGC is bringing out a manual which will provide guidelines for future development of this concept. The UGC is grateful to the Ministry of Education and to the Planning Wing of the Ministry of Education for enthusiastically encouraging the use of USAID-IEP funds for this purpose. I am certain that the future development of research in this country generated by the universities will go a long way in providing impetus to economic development in the country. I once again welcome you to the Conference and hope that the recommendations made at the Conference jointly by researchers and industrialists will help us formulate a new policy for public-private partnership in the country. I wish you success.

**CONFERENCE ON PUBLIC-PRIVATE PARTNERSHIP IN  
TECHNOLOGY DEVELOPMENT: EMERGING LINKAGES BETWEEN  
INDUSTRY AND RESEARCH INSTITUTIONS:**

February 12, 1994

**ADDRESS BY MR. ARNOLD RADI, CHIEF,  
OFFICE OF DEVELOPMENT RESOURCES, USAID**

Ladies & Gentlemen,

It is a pleasure to participate in this conference on the developing Public Sector-Private Sector Partnership in Technology Development.

The efforts being reported and discussed in the conference are a result of the "Institutional Excellence Project" a joint effort between the Ministry of Education represented by the University Grants Commission and USAID.

This project is an important element in an overall USAID program designed to assist developments in both social sectors and private enterprise. Recognizing extensive needs in education and training USAID has cooperated in a variety of areas and has provided major support in the following areas;

- Primary Education - in the construction of school buildings; training of teachers; establishment of the National Educational Management Information System; curriculum and instructional materials development; and long and short term training for education personnel
- Establishment of the National Agricultural University/Peshawar, with supply of equipment, supplies and training of faculty and technical staff
- Organization and arrangement of overseas training for a broad range of faculty, staff and administrative and technical personnel. In all, approximately eight thousand individuals have benefitted from the training programs, with support provided by various ministries and numerous USAID projects. In the private sector many persons in the Private Sector Agri-Business were trained through the Agriculture Sector Support Program

In other programs involving the public and private sectors, there have been major breakthroughs in establishing firm linkages between Agriculture Research Units, universities and private businesses.

The Institutional Excellence Project (IEP) is an important additional element in this large program. It is an additional effort to demonstrate, encourage and enlarge effective cooperative arrangements between private sector companies with universities and other research units to solve industrial problems, produce indigenous products and increase economic benefits.

The IEP supported sixteen projects in cooperation with fourteen companies to work on company-designated problems, which, if solved would provide immediate economic and social benefits. The projects covered medicinal areas bioinsecticides, electronic products, leather processing and geology.

It provides a much needed bridge between higher education and industry in Pakistan which can grow into a program of great financial benefit to both participants.

The efforts in the project are also in line with the goal of providing self-generated support for universities. (It should be pointed out that in the U.S. universities generated 55-60% of their budgets from external sources).

The purpose of the conference is to present results of the projects and explore mechanisms to extend and sustain industry cooperation with universities and other applied research units. We look forward to your participation, comments and recommendations as the conference proceeds.

**CONFERENCE ON PUBLIC-PRIVATE PARTNERSHIP IN  
TECHNOLOGY DEVELOPMENT: EMERGING LINKAGES BETWEEN  
INDUSTRY AND RESEARCH INSTITUTIONS:**

February 12, 1994

ADDRESS BY MR. MUNIR AHMED, JEA (P&D) MOE

Mr. Munir Ahmad spoke extempore. Therefore only the extracts of his address are reproduced below.

He thanked the sponsors and the guests for organising the conference and felt privileged to be able to address the distinguished delegates.

He gave a brief account of the historical perspective of the project and informed that despite the serious set back to this project due to pressler amendment, it continued to the extent that was possible. He felt pleased to say that even with a relatively small amount of money 16 projects in association with 14 industries were commenced at 6 university departments/centers. He said that the results of this initiative have been very encouraging and the lessons learnt through the experience of IEP would serve as a guide to all such future cooperative applied research activities. In his opinion this was a practical demonstration that our universities/centers and the research workers have the intellectual ability and necessary expertise and determination to undertake cooperative applied research work and accomplish the objectives.

He reminded the delegates that for development of Pakistan industry & economy, it was imperative to focus on such cooperative applied research activities. He expressed hope that the concept of IEP would be enhanced and both, the research institutions and the industry would continue to participate even more enthusiastically in similar projects in the future. He also assured continued assistance and cooperation from his office in this regard.

**CONFERENCE ON PUBLIC-PRIVATE PARTNERSHIP IN  
TECHNOLOGY DEVELOPMENT: EMERGING LINKAGES BETWEEN  
INDUSTRY AND RESEARCH INSTITUTIONS:**

February 12, 1994

ADDRESS BY MR. IFTIKHAR MALIK, ACTING PRESIDENT, FPCCI

Ladies & Gentlemen,

I extend my sincere thanks to the USAID for holding this conference where report on the 16 projects launched by USAID in Pakistan to strengthen the research capabilities of selected university departments will be presented. The sponsors are hopeful that although the USAID support will terminate in late March, 1994 yet they expect the continuity of university industry linkage. In my view it is the most important linkage that we require to enter into the 21st Century with indigenously developed technologies.

Although neither Federation of Pakistan Chambers of Commerce & Industry is a Scientific Organization nor I am a Scientist yet I accepted to read a Keynote Address before this august gathering, in view of my vast experience in Industry and my belief that pursuit of knowledge and research in Science & Technology is indispensable for social & economic development. Scientific illiteracy means poverty and exploitation. Our spendings on research & development are lower even in Asia. The need for strengthening linkage and collaboration between research institutions & industries was always felt. We should feel grateful to USAID for taking the initiative. In my address I try to pin-point the priorities & directions which should be the base for improving linkage between the research institutions & industry. Industry will not be interested in theories how valuable these may be from the academic point of view. The industry in private sector will take interest only in those technologies which have commercial potentials or are market oriented.

**Agriculture Sector**

Agriculture Sector's contribution to GDP and employment are at the top of list. First of all, attention should be focussed on this sector. Farm mechanization, increase in yield per acre, control on plant diseases are the vital sectors where efforts on local level could bear fruits.

**Agri. Business & Agro-Based Industries**

These have vital link with the Agriculture. A number of value added items of commercial importance could be produced e.g.:-

- a. We have a number of flowers which have export potentials, techniques should be developed to grow, pack & export flowers according to International Standard.

- b. We have a variety of citrus fruits. Their juice and concentrates could be developed for domestic use and exports.
- c. Technology is also required to preserve pulp. Presently we import it.
- d. Live stock sector needs technical support.
- e. Farm mechanization is another prospective sector: we have made progress in it. But still a lot is required. Industry & Agricultural Universities could collaborate to improve techniques & technologies to achieve the above narrated objectives.

### **Mineral Development**

We have natural wealth but due to resource constraints could not explore it properly. It is a vast field where industry and scientist could collaborate and bring prosperity to the nation. Scientists should come out with their suggestions how these minerals could be made useful for consumption of local industry.

### **Energy Sector**

Energy Sector needs solution at war-footing. Maximum attention should be diverted to this problem. Development of new sources of energy, energy conservation, devices to save energy, development of machinery & tools based on energy savings are another field which requires intensive research.

### **Engineering Industry**

Engineering Industry is the most important industry which could play key role in the economic development. So far this sector has not been given much importance although potentials are there. Small vendors, small industries & scattered factories could make a strong base for future development if they get proper advice to improve technologies. These technologies must ensure:-

- a. Improvement in quality & design of existing products.
- b. Results in cost savings such as energy, labour & materials.
- c. Help in developing a new product having market potential.
- d. Simplify a sophisticated & expensive production methods or a new manufacturing method is evolved.
- e. Production of capital goods indigenously.
- f. Total or partial control over industrial pollution.

Our Scientists and Professors should come forward and offer the benefits of their research to industries. The industries interested in the offer would contact them and make use of their expertise. The scholars, Scientists & Scientific Research Institutions who cannot contact the industries direct, could use the channels of FPCCI or Regional Chamber of Commerce & Industry of identification & subsequent collaboration with Industries which require technical help. I am certain the research laboratories could help us develop technologies indigenously which we are internationally denied. Their efforts could result in production of items of import substitution, export oriented and strategic importance.

In applied research for industrial development, we are unfortunately greatly dependent on foreign technology. According to a World Bank survey, Pakistan's annual payment for royalty, trade marks and consultants services is US \$ 350 million. This is a colossal waste of our precious foreign exchange reserves. Our research scholars and research institutions must collaborate with industry and do their best to reverse this trend. Our principal sectors of development including agriculture, transport and communications are heavily dependent on science and technology for improved production, better knowledge, more automations and quality control to reduce cost and become more competitive in the world market. This necessitate close and effective collaboration between our scientific research institutions and private industry. FPCCI will be glad to assist in this effort.

### **R&D Activities and Support**

The industries who spend on R&D activities must be given recognition by the Government of Pakistan. Industries and scholars who come out with new technology, device or technique must be rewarded. Because these are the real factors which help attain self-reliance.

To improve the standard of science education and research, Government should increase its spending on scientific education & R&D activities. Presently budget allocation is highly unsatisfactory. It will make us strong and powerful to defend our territory if we achieve economic uplift. The private sector in Pakistan is always willing to support scientific research provided it is relevant and focussed on industries problems. In fact FPCCI has recently taken a decision in principle that all imports to Pakistan should be subjected to a cess of 0.005 percent, which is estimated to yield about Rs. 1.50 crore to support R&D activities. We hope to make this proposal to the Government of Pakistan in the near future for agreement. Our business community at large is expected to support it.

These are the points which I hope will be included in the recommendations of the Conference because these will help develop practical linkages between the research institutions and industries which could produce the desired results.

At the end I am highly Thankful to the University Grants Commission for giving me this opportunity to address you.

Thank you.

**CONFERENCE ON PUBLIC-PRIVATE PARTNERSHIP IN  
TECHNOLOGY DEVELOPMENT: EMERGING LINKAGES BETWEEN  
INDUSTRY AND RESEARCH INSTITUTIONS:**

February 12, 1994

ADDRESS BY MS. SHAHNAZ WAZIR ALI,  
SPECIAL ASSISTANT TO THE PRIME MINISTER

Ladies and Gentlemen,

I am indebted for this opportunity to address to you, on this auspicious occasion of considering ways and means to re-affirm Education's link with National Development productivity sector and frame-work of country development. We have gathered here today to carry out thread bare discussion on a concept which constitute a corner-stone to the socio-economic policies of Pakistan Peoples Party governments in the past and the present. The sustainable establishment of this concept has the potential to fulfil the long cherished dream of economic self-reliance of our government. The concept I am referring to is the "**Public Private Sector Partnership in technology development: Emerging linkages between the Industries and Research Institutions**".

The goal of self-reliance has gained greater importance for the socio economic development of Pakistan because of the present global economic trends, which indicate that for the foreseeable future, economics of developing countries like Pakistan will have to contend with the following conditions:

- Greater integration of their national economies into a closer knit global economy dominated by the developed world and their multi-nationals;
- Increased competition between the world economies for limited resources and markets;
- Need for mechanisms resulting in continued improvement in competitiveness of the national economy at the global level;
- Need for the national economies to produce innovative products and services which are attractive in quality and price for both the domestic as well as the foreign consumers in comparison to the global competitors. This has taken on an increased significance in the light of trade agreements such as GATT, NAFTA etc. which are leading to reduction of trade barriers thus increasing competition for the so far closed and nascent economies of the developing world;
- One top of all this, the developing countries will have to contend with lesser capital resources from the developed economies for development of the research institutions. This will be specially true for the pure research type activities;

Therefore, I would emphasize that the basic parameters for achievement of the goal of long term sustainable self-reliance of our national economy would seem to be:

- Efficient and profitable industrial base;
- Increased conversion of raw materials into value added goods marketable locally as well as abroad;
- Special focus on accelerated development and expansion important substitution "Industries";
- Development of indigenous processes/techniques for optimal and economical development.
- Innovative solutions to the industrial problems;
- Global competitiveness of the products;
- Need for new sources of funds for the research institutions;

It is my firm belief that the goal of self-reliance can be achieved through successful implementation of a two pronged strategy comprising of increased exports and maximized import substitution in the national economy. Import substitutions offers definite advantages towards economic self-reliance therefore in this direction may be given as much priority as the export generation if not more.

The achievement of both these can only materialize if the private sector carries out continuous research and development activities to produce innovative and cost effective solutions to their problems. The research and development activities should also provide innovative products & services to the local as well foreign customers. The research and development activities have to result in greater value addition of local raw materials and also economic replacements to the import items. As known to all, our total import bill for July 1992 to April 1993 was \$7.89 billion. I feel that there is a vast scope for reducing the import bill through import substitution. Some examples of potential areas for import substitution/increased export generation are;

#### **Agriculture Sector**

- Raw Cotton Export figures \$252.33 million may be substituted by maximum value added items.
- Edible oil import, \$455 million 1992-1993 Economic Survey.

#### **Engineering Sector**

- Local Magnesite conversion into refractory bricks for steel furnaces can substitute imports worth Rs. 200 million per annum.

- Local chromite processing in Pakistan would result in import substitutions of a large number of items such as ferro chrome, chromium sulphate for tannery industry etc.
- Pakistan steel mill in based on imported inputs such as iron ore (Rs. 1.04 billion), coal (Rs. 1.5 billion) Ferro Manganese (Rs. 88 million), ferro Silicon (Rs. 76 million) figures 1990 EAC Ministry of Prod. etc.

As we can see there are big chunks of the import bill which can be slashed through import substitution.

The private sector itself can contribute to achieving the two pronged strategy for self-reliance by several means. One suggestion which comes to mind is to reduce the high cost paid for the import of high tech machinery and other inputs. As an example we can look at the textile industry. According to my knowledge maximum percentage of the textile production cycle including the spinning, weaving, dyeing, and conversion to garments is based on imparted technologies. The use of imported technologies result in higher costs of establishment, maintenance, and financing the project. Thus the products produced from such imported technology based industries, when competing with the indigenous industrial base of countries like India, China etc. loose out. These industries, despite having comparatively lower labor cost and advantage of using local raw materials become inviable.

Therefore we can say that the foundation for any successful self-reliance effort should be a well developed indigenous research and development institutional base for the local industries.

But on the other hand the cost of establishing a viable research and development base is also very high. Presently, in most cases it may not be a viable proposition for the private sector industries to establish independent inhouse research and development capability.

It is in the wake of such considerations that the need to develop fast interaction between industry and technical and scientific research institutes and universities has become pre-eminent. I feel that this is where the importance of the basic concept of the Institutional Excellence Project lies. With a modest input from us 16 projects were launched in six universities/institutions. Apparently the success rate is around 85%. It has provided us with a tried and proven formula for establishing a sustainable **public private partnership for technology development through a mutually beneficial partnership between the private sector and research sector** The partnership should include the important players in this process such as FPCCI, Ministry of Education, University Grants Commission, Ministry of Science and Technology, Ministry of Industry and Ministry of Projection. The partnership should be coordinated by a suitable private sector advisory company to overcome any hurdles in the way of effective operation of the partnership. Ultimately the whole process should be handed over to the private sector at an appropriate time.

The project activities have demonstrated the availability of untapped pool of talent in the research sector which may be very suitable for collaborating with the private sector. Work under the IEP has also shown that this talent can successfully serve, if organized properly, broad areas of industrial problem solving and providing import substitution services to the private sector.

It has also reasonably demonstrated that if approached properly, the private sector is more than willing to contribute in cash or in kind to such a collaborative effort, if it is shown the profit potential in such efforts.

In the end I would solicit the honorable participants of this conference to provide future directions for the research institution-private sector partnership based on lessons learnt from the IEP experience. Some of the questions which I feel should be answered by this forum by the end of the day are:

- Ways to establish a sustainable partnership base between the research institutions and the private sector, for the mutual benefit for all parties concerned;
- How to expand the domestic participation level of the partnership in the private sector as well as the research sector inside Pakistan. The present participants of the IEP could provide a nucleus for this purpose;
- How the domestic research-private sector partnership when established and working at an optimum level can link up with similar international organizations working in other countries.

In the end I would like to thank the USAID, Ministry of Education, and the UGC for taking this very important initiative and hope that maximum benefit is taken from this opportunity to establish the sustainability of this concept in Pakistan.

**CONFERENCE ON PUBLIC-PRIVATE PARTNERSHIP IN  
TECHNOLOGY DEVELOPMENT: EMERGING LINKAGES BETWEEN  
INDUSTRY AND RESEARCH INSTITUTIONS:**

February 12, 1994

**CONCLUDING REMARKS BY DR. SARAH TIRMAZI, USAID**

Ladies and Gentlemen,

Dr. Afzal, Mr. Munir, Dr. Monagle, distinguished researchers and participants.

It is an honor for me to speak at this gathering, at the conclusion of the "Sustainable public-private partnership for indigenous technological development".

I wish to extend congratulations to all the individuals and organizations that have been involved in making this a successful venture. The UGC has been a major catalyst in the success of this venture, as has industry. I especially wish to congratulate the researchers on their commitment to their work, and on the successes that they have encountered.

A great deal of dedication has gone into making the individual projects a success. The Institutional Excellence Project's goal was to foster linkages between industry and research institutions and centers of excellence. However, as we all know, it is the personnel, the committed individuals, who make up the strength of any institution or center of excellence. The researchers are highly motivated individuals who have worked long hours in order to present their results here today. As was stated earlier today by the honourable special advisor to the Prime Minister, the success rate of 85 percent that has been met is most impressive. This success rate is a reflection of the high quality of work that has been put in by the individual researchers.

It is hoped that the conference today is just one land mark in the further successful development of the industry-research partnership. We at USAID feel proud to have been a part of the beginnings of a productive relationship between industry and research.

In closing, I once again commend the enthusiastic efforts of the researchers. Ladies and gentlemen, please join me in giving them a big hand of applause.