UNCLASSIFIED

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C.

PROJECT PAPER

PAKISTAN-- TRANSFORMATION AND INTEGRATION OF THE PROVINCIAL AGRICULTURAL NETWORK (TIPAN)

391-0488

JULY 1984

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AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: A (A = Add, C = Change, D = Delete) — Amendment Number: — DOCUMENT CODE: 3

COUNTRY/ENTITY: Pakistan

3. PROJECT NUMBER: 391-0488

4. BUREAU/OFFICE: Asia — 04

5. PROJECT TITLE (maximum 40 characters): Transformation and Integration of the Provincial Agricultural Network(TIPAN)

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 09 DD 30 YY 90 *

7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4) *
A. Initial FY 84 B. Quarter 4 C. Final FY 87

8. COSTS ($000 OR EQUIVALENT $1 = Rs. 14.00)

A. FUNDING SOURCE	FIRST FY 1984 B. FX	C. L/C	D. Total	LIFE OF PROJECT * E. FX	F. L/C	G. Total
AID Appropriated Total	4,000	1,000	5,000	15,200	20,300	35,500
(Grant)	(4,000)	(1,000)	(5,000)	(15,200)	(20,300)	(35,500)
(Loan)	(-)	(-)	(-)	(-)	(-)	(-)
Other U.S. 1. ACF(391-0468)	3,000	-	3,000	3,000	-	3,000
Other U.S. 2.						
Host Country	-	4,404	4,404	-	29,000	29,000
Other Donor(s)						
TOTALS $	7,000	5,404	12,404	18,200	49,300	67,500

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT * 1. Grant	2. Loan
(1) ESF	189	700	-	-	-	35,500	-	35,500	-
(2)									
(3)									
(4)									
TOTALS				-	-	35,500	-	35,500	-

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each): 600 | 012 | 080 | 053 | 968

11. SECONDARY PURPOSE CODE: 689

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code	BF	R/AG	TECH	XII	TNG		
B. Amount							

13. PROJECT PURPOSE (maximum 480 characters)

To integrate agricultural research in the NWFP with agricultural education at the University level, improve the quality of education offered and research undertaken by the University, and strengthen linkages with agricultural extension through a problem-solving, farmer-oriented outreach program at the University.

14. SCHEDULED EVALUATIONS: Interim MM YY MM YY — Final MM 03 YY 88

15. SOURCE/ORIGIN OF GOODS AND SERVICES: [X] 000 [ ] 941 [X] Local [ ] Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a ____ page PP Amendment.)

* FOR PHASE I ONLY

CONT(A): DPratt

17. APPROVED BY
Signature: Donor M. Lion
Title: Director, USAID/Pakistan
Date Signed: MM 07 DD 06 YY 84

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM DD YY

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"The leading agricultural universities see themselves as real pilots of rural change. Their research programs are heavily weighted in favor of finding immediate and practical answers to the economic, social and personal problems of the people around them. There is also a lively dialogue between scientists and farmers.

This is a far cry from the dismal state of affairs only a decade ago, when the agricultural scientist in this country used to live in an ivory tower. He had little or no contact with farmers and his efforts bore little relation to their actual problems. Farmers, on their part, also tended to steer clear of research institutes, whereas today they throng to the Kisan Melas (farmers' fairs), held on some of the agricultural campuses, in the thousands."

Ashok Thapar, writing in the "Illustrated Weekly of India," January, 1973.

Quoted in Partners with India: Building Agricultural Universities, Hadley Read, University of Illinois, 1974. Page 116.

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TRANSFORMATION AND INTEGRATION OF THE PROVINCIAL AGRICULTURAL NETWORK (TIPAN)

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O. Contributors to the Project Paper

P. Participant Trainees Programmed for 1984 and 1985

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R. Review of Construction Inflation Costs In Pakistan

S. Revised Construction Plan

T. Draft Congressional Notification

PROJECT BACKGROUND DOCUMENTS (On File at USAID/Pakistan and AID/W):

VOLUME I: UNIVERSITY OF ILLINOIS DESIGN TEAM REPORT

VOLUME II: MERGER OF AGRICULTURAL RESEARCH IN NWFP BY UNIVERSITY OF ILLINOIS

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LIST OF DEFINITIONS, ABBREVIATIONS AND ACRONYMS

ACE	Agricultural Commodities and Equipment (A.I.D.-Financed Program)
ADA	Agricultural Development Authority
ADB	Agricultural Development Bank
A&E	Architecture and Engineering
AID/W	Agency for International Development in Washington
ARD	USAID's Office of Agriculture and Rural Development
AU	Northwest Frontier Province Agricultural University
CBD	Commerce Business Daily (U.S. Publication)
CDSS	Country Development Strategy Statement
CIDA	Canadian International Development Agency
DVM	Doctor of Veterinary Medicine
ENG	USAID's Office of Engineering
FATA	Federally Administered Tribal Areas
FM	USAID's Office of Financial Management
F.Sc.	Faculty of Science (Two years education after High School)
FSN	Foreign Service National (Local USAID employee)
FTE	Full Time Equivalent (Unit of person-time at AU)
GDP	Gross Domestic Product
GONWFP	Government of the Northwest Frontier Province
GOP	Federal Government of Pakistan

IBRD	International Bank for Reconstruction and Development (World Bank)
IDS	Institute of Development Studies (at NWFP-AU)
IFB	Invitation for Bids (from commodity suppliers)
INM	Bureau for International Narcotics Matters (of USG Dept. of State)
LOP	Life of Project
MAG	Management Advisory Group (of TIPAN)
MART	Management of Agricultural Research and Technology (A.I.D.-financed Project)
MOE	Ministry of Education
MOFA	Ministry of Food, Agriculture and Cooperatives
NARC	National Agricultural Research Center
NFC	National Fertilizer Corporation
nullah	Dry river bed
NWFP	Northwest Frontier Province
OJT	On-the-job training
PACD	Project Assistance Completion Date
PARC	Pakistan Agricultural Research Council
PC-1	Basic GOP project authorization document
PDM	USAID's Office of Project Development and Monitoring
PFI	Pakistan Forest Institute
PFY	Pakistan Fiscal Year (July 1 - June 30)
PIO/T	Project Implementation Order for Technical Services

PRO	USAID's Office of Program
PWG	Project Working Group (of University of Illinois)
RFP	Request for Proposal
Rupee	Pakistani Monetary Unit (Rs 14.00 = US $ 1.00)
SCARP	Salinity Control and Reclamation Project (of World Bank)
SOM	Skidmore, Owings and Merrill (A&E Design Firm)
SIU	Southern Illinois University
TA	Technical Assistance
TIPAN	The Transformation and Integration of the Provincial Agricultural Network (Project)
T&V	Training and Visitation (Extension approach fostered by World Bank project)
UBC	Uniform Building Code
UGC	University Grants Commission
UI	University of Illinois
USAID	AID Mission in Pakistan
USG	United States Government
USDA	United States Department of Agriculture
VC	Vice Chancellor
VRI	Veterinary Research Institute

I. SUMMARY AND RECOMMENDATIONS

A. Recommendations

1. Funding

USAID/Pakistan recommends that an ESF grant of $35.5 million be authorized for Phase I of the Transformation and Integration of the Provincial Agricultural Network (TIPAN) Project. If satisfactory performance is achieved under Phases I and II, the Mission will seek authorization amendments to increase the level of A.I.D. funding by $11.5 million and $8 million, respectively, to a total of $55.0 million for all three phases of this proposed 11-year project. In addition, it is proposed that $3.0 million be provided under the Agricultural Commodities and Equipment (ACE) Program in Phase I (and $2.0 million in Phase II) or a total of $5.0 million under the ACE Program for the procurement of a portion of the commodities required for the Project. The Project Assistance Completion Date (PACD) for Phase I is September 30, 1990. The anticipated PACD for all 3 phases of the project is September 30, 1995.

2. Geographic Code

The Project Authorization should specify that, except as A.I.D. may otherwise agree in writing:

a. goods and services financed by A.I.D. under this project shall have their source and origin in A.I.D. Geographic Code 000 (U.S.) or Pakistan; and,

b. ocean shipping financed by A.I.D. under this project shall be only on flag vessels of the United States or Pakistan.

A recent SER/COM, AID/Washington policy clarification concerning the eligibility of Cooperating Country flag bottoms in projects specifying A.I.D. Geographic Code 000 plus Cooperating Country source indicates host country bottoms may be authorized if a programmatic reason exists for doing so. A key concern in the negotiation of the Pakistan economic assistance program was the threat to Pakistan's economic stability posed by a deteriorating balance of payments. The use of Pakistani flag bottoms supports the intent of the overall assistance program by augmenting Pakistan's balance of payments receipts. Moreover, a precedent was established by the use of Pakistani bottoms for A.I.D.-financed projects authorized in FY 1982; excluding them from this Project would unnecessarily strain the understanding and cooperation that has been established between our two Governments.

B. Summary Description

The proposed project evolved from discussions between A.I.D. and officials of the NWFP Planning and Development Department, the NWFP Department of Agriculture, the Pakistan Agricultural Research Council and the Federal University Grants Commission. The proposal carries out the GOP-USG agreement to include assistance to the NWFP Agricultural University at Peshawar in the program negotiated in August 1981 between the Governments of the United States and Pakistan. To assist with project design work, both GOP and A.I.D. staff participated in the selection of the University of Illinois and the University of Southern Illinois from a total of eleven (11) U.S. universities and two (2) consortia which submitted bids for this activity. The University of Illinois has over thirty years of experience in the development of agricultural colleges and research systems overseas. This includes participation in two collaborative university building projects in India, one in Morocco, and one in Sierra Leone, which helped establish the University's reputation as a leading developer of third world higher education institutions.

The initial field work for the design of the proposed project was carried out from May to July 1983. Twenty-six American specialists and the entire staff of the Agricultural University at Peshawar worked closely for almost three months on this activity. Early on in the design phase, the need to link education with research was recognized. Therefore, an additional design effort was subsequently conducted to explore the feasibility of merging NWFP's agricultural research network with the University.

Simultaneously, the U.S. firm of Skidmore, Owings and Merrill (SOM) was selected from a total of sixty-seven (67) firms to develop the master plan for the physical improvement of the Agriculture University. SOM provided a team of engineers, architects, city, environmental and educational planners who worked closely with the staff of the Agricultural University and the University of Illinois to develop the master plan for the new University. SOM also has extensive overseas experience in designing and implementing projects such as the one proposed herein.

The comprehensive and detailed work of the design team, on which this Project Paper draws heavily, has been compiled in three volumes, which are on file at USAID/Pakistan and in AID/Washington. Volume I is the overall report of UI; Volume II contains the background, justification, and recommendations for the proposed merger of the provincial research network with the University; and, Volume III is the Campus Master Plan prepared by SOM.

The Project design, developed with and endorsed by the staff of the NWFP Agriculture University, calls for the NWFP's various research operations and the University to be merged into a modern, integrated

system oriented towards solving problems relevant to the agriculture sector in the NWFP. Under the project, the University's faculty will be provided advanced training in their fields of specialization as well as in new teaching techniques; the University's curriculum will be completely revised and modernized with emphasis placed on giving students a practical experience in agriculture; and, the University's physical plant will be upgraded and expanded. Research staff will be trained, a new system of planning and implementing research introduced, and farm and laboratory improvements carried out. In addition, an outreach capability will be developed within the merged system and a close working relationship established with the provincial agricultural extension department in order to better serve the Province's farmers. Finally, a capacity to provide in-service training to extension workers will be developed within the University. The objective is to create, at the Northwest Frontier Province Agricultural University (AU), a dynamic, outward-looking, problem-solving, farmer-oriented center of teaching, research and outreach linked together to increase agricultural yields, agricultural production, farm income and rural employment in the NWFP.

1. The Teaching Program

The teaching program will include a revised admissions policy that expands the sources of entering freshmen and reserved seats for various ethnic, geographic, and social groups. The enrollment of women will be encouraged to increase the numbers of female agricultural professionals in the province. The curriculum will be completely revised to include core courses for all students during the first two years, some specialization in the third year, and complete specialization in the fourth year. New courses will be added, some existing courses will be dropped, and many will be strengthened. A two-term system involving internal examinations and a grade point average scheme will be adopted. Students will choose to be educated either for the research and educational systems of the province and nation or for employment in the provincial extension service, other public agencies serving agriculture, or the private sector. The M.Sc. courses will be offered to superior students who intend to work in agricultural research, education and extension. All graduates will have marketable skills and practical experience gained through summer internships and work/study programs.

2. The Research Program

The crop and livestock research staff of the NWFP Department of Agriculture will be merged with AU, and their research work will be coordinated with on-campus research to be conducted by faculty, students and participant trainees. The merger has been formally approved by the Government of the Province (GONWFP).

The new research program will have a problem-solving orientation and will require a multi-disciplinary approach in view of the complex farming systems that characterize the province. A number of priority problems currently facing NWFP farmers has been identified; these will comprise the research program which will be planned, coordinated, supervised and evaluated under the leadership of AU's Director of Research. AU academic staff will be expected to spend one third of their time working on research topics. Graduate student theses will contribute to the overall program.

The University will also provide the leadership and coordination of the provincial research program with other provincial and national research organizations such as the Pakistan Agricultural Research Council, the National Agricultural Research Center, the Veterinary Research Institute, the Nuclear Institute for Food and Agriculture, the Pakistan Tobacco Board Research Farm, the Fruit and Vegetable Development Board and the Pakistan Forest Institute. The last four of these are located within a few miles of the AU campus, which will facilitate coordination and the conduct of collaborative activities.

3. The Outreach Program

About 25 percent of the personnel and other resources of the University will be devoted to an outreach program to ensure that technologies developed under the research program are transferred to the agricultural community. The outreach program will link AU and its merged research capability with NWFP's agricultural extension system in a number of ways. AU will develop technology packages for major crops, animal husbandry practices and the farming systems of the province for transfer by extension workers. AU will also develop a cadre of outreach personnel to serve as subject matter specialists for the extension services. At its Continuing Education Center, AU will offer in-service and refresher courses for agricultural officers, field workers and farmers and develop mass media programs for reaching a larger number of extension personnel and other members of the agricultural community.

All research scientists will be expected to spend at least 15 percent of their time on outreach activities. Those that spend 75 percent of their time in this way will be designated as outreach personnel. They will be located at research stations throughout the province and will serve as a bridge between the University and its clientele throughout NWFP.

4. Support Centers, Physical Facilities and Equipment

The Teaching, Research and Outreach Programs will be supported by the establishment of two new centers. The Learning Resources Center will house a new and expanded library, computer facilities and a language laboratory. The Continuing Education

Center will be the heart of the Outreach Program, and house a Communications Unit producing mass media programs and audio-visual instructional aids as well as facilities for short courses, seminars and workshops. In addition to these suport centers, the project will finance construction of classrooms, laboratories, and dormitories. Many existing buildings will be physically improved.

TIPAN will also finance needed textbooks, research equipment, experimental farm tools, and other commodities. An improved telecommunications system will be installed.

5. New Personnel, Faculties and Organizational Structure

The new role and orientation of AU will require many staffing and administrative innovations. The Vice Chancellor will serve as Project Manager. He will be supported by a Deputy, a new position to be created to direct the administration and financial management of the institution. Directors for Teaching, Research, and Outreach will be appointed with direct responsibility for program planning, coordination, evaluation, and administration in their respective functional areas.

The faculty structure will be reorganized to comprise four new faculties: Plant Sciences, Animal Husbandry, Engineering Applications and Food Technology, and Rural Social Sciences. The duties and responsibilities of the Dean of each faculty will be upgraded to provide for multi-disciplinary attention to teaching, research, and outreach. They will be specifically charged to prevent fragmentation within departments of their faculties. Units such as the Learning Resources Center and Library, Physical Plant, Personnel, Finance and Accounts, will serve in a staff capacity to the Vice Chancellor and his Deputy. Staffing requirements have been determined for the faculties, departments and administrative units and are discussed in Section III.C.3.

6. Participant Training and Technical Assistance

TIPAN will finance training for AU faculty, administrators and research scientists. Over the 11-year life of the project, about 140 individuals will be enrolled at U.S. institutions to study for Ph.D. and M.Sc. degrees. In addition, approximately 65 short-term participants will be provided non-degree training in the U.S. and third countries.

The project design calls for 486 person-months of long-term and 388 months of short-term technical assistance. The long-term assistance involves a total of twelve U.S. consultants, who will be at AU for an average of four people per year, over the 11-year life of project. (Details are found in Section IV. A.5. and Volume I, pp 184-186 of the Design Team Report.)

7. Project Phasing

The project will be implemented in three phases. The implementation of successive phases will be preceded by comprehensive evaluations of activities under the prior phase. At the end of Phase I, key features of AU's institutional development will have been put into place and construction of the most needed campus physical facilities will be completed or on the way to completion. At the end of Phase II, institutional development will be at a stage where major aspects of the teaching, research, and outreach programs have been sufficiently well established to leave a greatly improved, but still not completed, agricultural university in the NWFP. Most academic and other physical facilities will be in place. Phase III will concentrate on quality improvements in the teaching program and in research administration. The outreach program and external program linkages will be fully developed. Campus development will focus on student and faculty/staff housing and support facilities. Table 1 summarizes the proposed targets to be achieved for the teaching, research and outreach programs and the Learning Resources Center by the end of each phase. Table 2 presents a summary of the TIPAN project budget. More details can be found in Section V.F., the Financial Analysis.

C. Summary Findings

The various analyses of this project have established that it is administratively, technically, socially and financially feasible, more cost-effective than other approaches, and will yield monetary benefits to the NWFP agricultural sector in excess of project costs.

D. Project Checklists and Mission Director's Certifications

TIPAN meets all statutory requirements. Appropriate checklists are in Annex B.

Two certifications signed by the USAID/Pakistan Mission Director are included as Annex C: (1) an FAA 611(e) certification, which certifies that the GOP has the capacity to implement and maintain the project; and, (2) an FAA 612(b) certification to permit the disbursement of dollars in lieu of U.S.-owned rupees to finance local costs.

E. Project Issues

This section briefly addresses project issues which have been raised by AID/Washington and those identified by USAID/Pakistan during the design of TIPAN. References are also made to other sections of this paper where more details may be found.

TABLE 1

PROJECT ACTIVITIES BY PHASE

	End Phase I	End Phase II	End Phase III
TEACHING PROGRAM			
	B.Sc. Curriculum introduced	B.Sc. Curriculum revised based on experience of first cycle	Program quality improved
	M.Sc. Program planned	M.Sc. Program initiated	M.Sc. Program established
	New Teaching-learning process introduced	New Teaching-learning process established	Teaching improved
	Student experience program introduced	Student experience program established	
	Women's Program initiated	Women's program established (B.Sc.)	Women's program established (M.Sc.)
	Student body increased to 915	Student body increased to 1,050	Student body increased to 1,200
	Baluchistan student program expanded		
	A long-term internal evaluation system introduced	A long-term internal evaluation system established	
	Counselling and Job placement introduced	Counselling and Job placement established	
	Revised admission policy introduced	Revised admission policy established	
RESEARCH PROGRAM			
	Provincial research merged (personnel, budget & facilities)	Provincial research fully merged (program)	Increasing results for farmers available through outreach and extension
	New System of planning and implementation introduced	Planning and implementation system fully introduced	Research administration fully established
	Research priorities identified	M.Sc. and in-country thesis research added to program	
	Farm and laboratory improvement initiated	Farm improvement completed	Laboratory improvement completed
	Pakistan organization linkages improved	Pakistan program linkages established	External organizational program linkages estab.
		Household Studies program established	Increasing results for Women's Outreach program
OUTREACH PROGRAM			
	Extension Dept. linkages established	Programs from regional stations established	
	Outreach program initiated	Outreach program established in all areas	Technology packages available in all areas
	Continuing education center center constructed	Continuing education center program established	CEC expanded program
	Dept. of Extension, Education and Communication estab.	Mass Media program estab.	Mass Media information widely available in NWFP
LEARNING RESOURCES CENTER (LRC)			
	Interim program improved—library, teaching aids, micro-computer lab provided	Communications Services established	Expanded service use
		Micro-computer labs estab.	Expanded lab use
	LRC construction completed	New library program fully developed	Library addition completed
	Staff Developed (85%)	Staff fully developed	
	Program planning completed		

TABLE 2

TIPAN SUMMARY BUDGET
(US $ 000)

EXPENSE CATEGORY	PHASE I AID	PHASE I GOP	PHASE II AID	PHASE II GOP	PHASE III AID	PHASE III GOP	TOTAL AID	TOTAL GOP
Technical Assistance	7422	200	5825	150	2791	150	16038	500
Participant Training	5349	620	2173	500	799	280	8321	1400
TIPAN-financed Commodities	1000	2000	-	-	-	-	1000	2000
ACE-Financed Commodities	3000	-	2000	-	-	-	5000	-
A&E Services	3976	-	2620	-	3914	-	10510	-
Construction	14133	5820	-	13599	-	14851	14133	34270
Additional Operating Costs	1764	4386	-	11945	-	15019	1764	31350
Evaluation	90	-	60	-	150	-	300	-
Contingency	1563	721	814	1260	371	1545	2748	3526
Total Direct Project Costs	38297	13747	13492	27454	8025	31845	59814	73046
Estimated Operating/ Development Costs W/o Project								
Ag. University	-	5389	-	5035	-	6138	-	16562
Research System	-	9907	-	9262	-	11297	-	30466
Total Costs W/o Project	-	15296	-	14297	-	17435	-	47028
Grand Total	38297	29043	13492	41751	8025	49280	59814	120074
Total AID + GOP	67340		55243		57305		179888	
ROUNDED OFF	(67500)		(55000)		(57500)		(180000)	

1. Merging Research

Questions had been raised as to the political commitment to and feasibility of merging NWFP research institutions into AU. In fact, GONWFP has already taken the necessary policy decisions to effect the merger, and details of the transfer of personnel and physical facilities and budget arrangements are currently being finalized. Public announcements of the merger appeared in the local English language press in April 1984. (For details of the merger, see Volume II of the Design Team Report; also see Section VI.A.3. of this PP.)

2. GOP/GONWFP Financial Support

The current GOP/GONWFP financing of AU and provincial research institutions show a predominance of resources going to salaries, with meager funds available for research or outreach activities. The design of TIPAN calls not only for substantial additional financing, but a more balanced allocation of funds between salaries and operating expenses. (See Financial Analysis, Section V.F.) Financial commitments have been made by both the GOP and GONWFP for the level and type of support needed for the merged research program and the expanded teaching and outreach activities. (See Section VI.A.1 and 2.)

3. Student Unrest

The potential for student unrest and resulting university closures is recognized as a possible issue. However, the history of AU shows that it has had relatively few discipline problems; its students were not involved in disturbances last fall at adjacent campuses and have never initiated strikes or demonstrations. Student-related problems will be minimized by the new curriculum and new teaching facilities. The two-term system, with testing at more frequent intervals, will improve attendance; and student counseling, intramural activities, and the availability of temporary employment will minimize discipline problems. The anticipated behavior of students is discussed in the Social Soundness Analysis (Section V.C.). More specific details on student unrest are presented in Volume I, Chapter 10, pp 160-167 of the Design Team Report.

4. Department of Agriculture Linkages

An issue has been raised regarding the willingness of the GONWFP and the ability of the University to establish effective working relationships with the Department of Agriculture. The deliberate decision, with appropriate intra-institutional consultation, to merge provincial research with the University demonstrates the serious intentions of the GONWFP. (See Section II.A.)

A good working relationship between the University and the Department of Agriculture in the field of extension was established during the design of TIPAN. This relationship will be strengthened as the outreach capabilities of the University develop, people are trained, and the Learning Resources Center, the Continuing Education Center, and other facilities become operational. The Provincial Directorate of Extension and AU will work out the roles and responsibilities of each in the field of extension and will come to an agreement by the end of the first year of the project. The TIPAN initiatives in outreach will complement the efforts to upgrade the NWFP extension service being funded by the World Bank (See Section II.D.4., V.D.3. and VI.A.)

5. Choice of NWFP as Location of the Project

The following issue has been raised:

> "Given the backward nature of the NWFP in terms of overall economic development and the socio-political problems inherent in the tribal areas and those associated with the huge presence of Afghan refugees in the NWFP and the Soviet presence on the border with Afghanistan, is the NWFP an appropriate geographic location for such a major long-term institution-building effort?"

The FY 1986 Country Development Strategy Statement (CDSS) dated January 1984 notes USAID/Pakistan's continuing interest in the provinces of NWFP and Baluchistan as targets for development interventions on the basis of their strategic location on the border of Soviet-occupied Afghanistan and the disproportionately low public investment in these two provinces in the past. Since Baluchistan does not have an Agricultural University, and, in view of the Mission's objective to improve the economic status of the least developed and most strategic rural areas, the "givens" listed in the issue underscore the appropriateness of the NWFP as the location of the project.

The Mission strategy calls for program emphasis on initiatives to increase agricultural productivity. The agriculture of NWFP is characterized by small farms and a diversity of farming systems. Given the land and water resources, there is great potential for increased production with improvements in technology and human technical and managerial capabilities. (See Section II.B.2.) The presence of Afghan refugees adds to the urgency of initiating projects that hold promise for long range solutions to the problem of stagnant yields, low productivity, and unacceptable levels of poverty in rural areas.

The establishment of AU as a separate entity in 1981 provides a singular opportunity for a major institution-building program. (See Section II.B.2.) The special NWFP cultural characteristics of

social cohesiveness, and loyalty among the agricultural community to AU and its predecessor institutions represent social forces that will contribute to project success. (See Social Analysis, Section V.C. and Volume II, Annex F.) The choice of NWFP as the location of the project is justified in detail in Section II. E., Project Rationale.

6. The Need for Attitudinal and Behavioral Change

The question has been raised:

> "Is it reasonable and feasible to expect the revolutionary changes in attitudes and practices on the part of professors, researchers, farmers, and students which the project design calls for?"

The Social Soundness Analysis presented in Section V. C. addresses this issue in detail and concludes that it is reasonable to expect the required attitudinal and behavioral changes on the part of project beneficiaries and participants.

7. Investment in Agricultural Education and Research

The following issue has been raised:

> "The project rationale is based on the assumption that improved agricultural education leads to increased agricultural development. Is this a valid assumption? What evidence is there to support the strategy that investment in agricultural education and research will lead to increased agricultural production? What alternatives exist to improving agricultural technology and increasing agricultural yields and why are these alternatives less likely to produce the desired result in addressing the agricultural development problems in the NWFP?"

The project rationale (Section II.E.) is based on the assumption that improved agricultural education, when linked with farmer-oriented, problem-solving research and outreach, will lead to increased agricultural development. Lessons learned from other A.I.D.-financed projects (Section II.C.) indicate that this is a valid assumption. The evidence is overwhelming that improved agricultural education leads to increased agricultural development if: (a) agricultural research and education are supporting one another; and, (b) provision is made for linking research and education with an effective technology transfer system to the farmer and agri-business subsector of the agricultural economy. These "ifs" have been embodied in the design of TIPAN. As is described in Section II.B.2., NWFP has under-utilized natural and human resources that can be harnessed by appropriate technology packages to achieve increased agricultural production. The countries that

have made rapid strides in increasing agricultural production are those that have adopted this approach. They include Brazil, Colombia, Japan, Korea, Taiwan, India and the Philippines.

The returns to investment in agricultural education and research are discussed in the Economic Analysis, Section V. E. The analysis cites studies by A.I.D., the World Bank and others that indicate high returns to such investments in developing countries.

Alternatives to increasing agricultural production in NWFP are being tested by other donor-financed projects (See Section II. D. 4.). Several other USAID-financed projects, that have increased productivity and incomes as their objectives, will directly or indirectly affect the NWFP agricultural community (Section II. D. 3.). None of these alternative approaches, however, attempts to create a network with a central, institutional focus, to tie together efforts in specific crops, or research sub-sectors such as rainfed and irrigated agriculture, or in smaller areas of the province, such as Gadoon, Mardan or the Tribal Areas. TIPAN was designed to both focus and spread the benefits of all these alternative approaches.

8. Alternative Institutional Development Strategies

The following question was posed:

> "What alternative institutional development strategies have been considered for this project (such as one university department at a time) and why is the proposed project design more feasible or appropriate for achieving the objectives of the Project?"

The Technical Analysis (Section V. D.) outlines alternative strategies that were considered and rejected in favor of the more inclusive approach adopted. The reasons for this choice and a discussion of feasibility are presented.

The alternative of strengthening a single department or faculty was not seriously considered because this would not facilitate a major turn-around in the mission and program of the Agricultural University. There are examples of successful efforts in departmental or area strengthening at other universities. The Ford Foundation has assisted projects in agricultural engineering at Punjab Agricultural University and in agricultural economics at G.B. Pant University of Agriculture and Technology, both in India. However, in these cases, the Ford Foundation's efforts were complementary to A.I.D.-assisted general agricultural university development projects. Standing alone, these limited departmentally-focused projects would have been less effective.

9. Constraints to Institutional Development in Pakistan

The following issue has been raised:

"Why does this particular institutional development project enjoy better prospects for success and how is it different from other past attempts at institutional development projects in Pakistan in general and in agricultural education in particular?"

TIPAN's design reflects the experience in institution-building gained from A.I.D. projects in general and Pakistan in particular. (See Section II.B.) In general, this section indicates that TIPAN enjoys better prospects for success because of its differences from past attempts in institutional development.

Earlier projects were conceived as inter-university faculty exchange projects. Unlike the TIPAN design, the need for changes in mission, programs, and internal structure were not clearly identified along with deliberate strategies to effect those changes. Other projects did not provide for the all-important linkages with research and outreach, nor was there sufficient provision of a critical mass of GOP and A.I.D. inputs long enough to ensure institutional development and sustained change. No earlier project was designed to effect the sweeping changes in curricula and teaching methods to be adopted under TIPAN, nor enjoyed the benefits of a merged research system. The TIPAN design provides for a strengthened organizational structure reflecting the multi-functions (teaching, research, and outreach) of the new university. The new structure encourages shared leadership among the Vice Chancellor; Deputy Vice Chancellor; Directors of Teaching, Research, and Outreach; Faculty Deans; and Department Heads. Earlier agricultural university projects did not put this strong emphasis on the creation of institutional capacity. Finally, the project design includes a carefully coordinated and phased plan for development of physical facilities. There were building components in earlier projects; however, construction was not preceded by a master plan for physical development, which was coordinated with and "driven" by the needs of the teaching, research and outreach functions of the university.

10. Project Size and Magnitude of Effort

Various issues have been raised with respect to the level of effort proposed under TIPAN. The general issue was phrased as follows:

"Given the existing human and financial resources in the NWFP and the university, can the level and nature of technical assistance and training envisaged for this project be absorbed in a productive, meaningful and effective way? Is it more feasible and appropriate to begin with a more moderately sized project and then build on it?"

A number of alternatives have been considered in an attempt to "begin with a more moderately sized project". The discussion of these alternatives, presented below, is based on questions raised by AID/W.

a. Numbers of Contractor Personnel

AID/W has urged that the presence of expatriate personnel in NWFP be held to a minimum. The Mission is also determined to minimize the presence of long-term contractors. The University of Illinois points out that the technical assistance requirements outlined in this Project Paper have already been reduced drastically from the numbers (a total of 22 advisors) first suggested by AU staff. Earlier schedules did not reflect the revised 11-year implementation plan (See Section IV.A.3.) which calls for .67, 6, 10, and 7 person-years of long-term T.A. in the first four years that constitute Phase I of TIPAN's institutional development programs. The long-term T.A. is intentionally front-loaded to help establish the strengthened administrative structure needed to effect the expanded mission of the merged AU/provincial research system. Over the life of the 11-year project, long-term T.A. averages only four persons per year, a minimal level for a project of this size and complexity. The need for and scheduling of long-term UI technical assistance are described in Section III.C.5. and justified in Section IV.B.5.

Heavy dependence is placed on short-term T.A. for two reasons: (i) to supervise thesis research in the field; and, (ii) because short-term T.A. does not involve the presence of dependents and thus reduces expatriate presence.

For design and construction of the physical facilities, it is expected that short-term U.S. A&E contractor personnel will be required to visit Peshawar during the design phases, with only one long-term expatriate assigned in Peshawar during construction. The U.S. A&E contractor will be required to associate with a local Pakistani firm to provide other long-term professional and support staff.

The Mission believes that the proposed level of expatriate technical assistance is reasonable, the minimum required, and does not constitute a "presence" problem. The Mission has also concluded that conditions in Peshawar and at AU will enable the technical inputs to be used productively and meaningfully.

b. Proposed Expansion of the Student Body

AID/W has suggested a level of 900 students at the end of Phase I. The revised, schedule presented in Annex M, projects 833 students by 1987/88 and 915 by 1988/89. The Mission believes that this expansion of the student body is appropriate to the planned construction of hostel and dormitory accommodations. A more rapid expansion would lead to unacceptable overcrowding. (See Issue 10.d. below.)

c. The Enrollment of Women

AID/W has suggested that USAID obtain "extremely solid commitments" from the GOP with respect to attitudinal and job market changes that would support the greatly desired inclusion of the Women's Program in TIPAN.

While "solid" commitments are lacking, it is important to point out that the number of women entering various fields in agriculture and agri-business is gradually increasing. An informal survey of twelve GOP institutions conducted in April 1984 indicated almost 350 women in agriculture-related professional positions. In addition, a large number of women is currently enrolled in scientific and technical post-graduate programs at various Pakistani Universities. A proportion of these women is expected to join national or provincial agricultural institutions. Information provided in Section V.C.4. shows that more vacancies for women exist in the civil service than AU could fill, were it to graduate women immediately. There does not, therefore, appear to be a lack of positions for female graduates.

It is also important to note that the initiative for re-emphasizing the education of women at AU came from AU senior officials. The University has sustained its interest over the two-year design effort, requested UI to provide on the Design Team two professors with specialization in the area to focus on women's issues, and has committed AU to assume full responsibility for the women's program.

The TIPAN design involves three activities with respect to women, all of which are to be financed by the GOP. These are: the reservation of places for women; the construction of a women's hostel; and, the hiring of additional female staff. (For details, see Section III.C.1.d.). A.I.D.'s involvement will be limited to the small proportion of the A&E design costs that can be attributed to the construction of the women's dormitory.

The Mission is aware that prevailing socio-cultural conditions make it unlikely that all AU female graduates will enter the provincial extension services, the field in which they are most needed. A start must be made, however, and the enthusiasm of the AU leadership to take the risks in promoting women's enrollment, provides an ideal opportunity for A.I.D. to support one of its own policy priorities, without significant financial or programmatic commitment.

d. Construction

AID/W has suggested a number of modifications to the Campus Master Plan (Volume III) that would result in a more modest construction budget. A specific suggestion was made to reduce the LOP cost in the Master Plan ($33.9 million in 1983 $) to $26.2 million by limiting construction plans to a LOP 900 student

enrollment. This certainly would make the project more acceptable in terms of the budget and financial requirements, but it would reduce and limit the long-term goals of the University. While the Mission has confined A.I.D.'s participation in construction to a 915 student enrollment (See Section V.F.1.), it would be inappropriate to limit the long-term prospects for growth over the LOP by excluding anything beyond 915 students. Therefore, while attempts will be made to finalize all A.I.D.-funded construction in Phase I, TIPAN provides for a GOP-financed construction program to accommodate a 1200 student enrollment over the LOP. While this approach requires some increased initial costs to construct basic water, sewer, and other infrastructure in Phase I, it also reduces the overall costs of the construction program over the LOP by decreasing the impact of inflation on project costs.

Revisions to the Master Plan need to take into account the functional and operational requirements of the University during the expansion period. For example, the two existing male student hostels will have to be unoccupied during renovation. Therefore, new facilities will have to be built to accommodate students dislocated before renovation can begin.

Regarding site work and infrastructure, the GOP will finance most if not all of the general site work, including roads and lighting, the vehicular ford, the pedestrian bridge, housing and campus landscaping. A.I.D. will finance some of the basic campus water, sewer, and electrical utilities, and other Phase I infrastructure requirements. The guiding principle for A.I.D.-funded infrastructure will be to concentrate on those facilities which affect the proper functioning and appearance of the campus.

Regarding non-specialized academic and basic science laboratories, the Master Plan concept is to design classrooms, lecture rooms, teaching labs and office space to serve the entire University. The only space serving single users will be specialized research labs requiring environmental controls and the like. While building costs for some facilities in the Master Plan may be reduced during final design, the current costs are considered appropriate for the planning stage of this project. In the final design of each building, an effort will be made to maximize the institutional use and sharing of facilities and to identify specific areas where costs can be even further reduced.

Most of the off-campus research institute, station and substation laboratory and office space is generally adequate. However, maintenance is generally poor, and utilities are not always adequate. The project will include a limited amount of A.I.D. funds to maintain and rehabilitate some of the existing facilities to support proper installation and use of equipment to be provided under the project.

11. Continuing Evaluation Plan

AID/W has suggested that TIPAN needs a continuing evaluation plan that would allow the project implementors at AU to measure progress on the reorientation of the mission and activities of the institution and permit USAID to monitor how, if and when A.I.D. might consider changing the dynamics of its assistance efforts. The Mission agrees, and the parameters of a continuing evaluation plan are included in Section IV.E.1. Complete details for this plan will be developed early in project year 1. Some of the institutional variables likely to be included in the plan are found in the detailed implementation schedule for year 1 in Annex Q.

12. Participant Training and Personnel Availability

Concerns has been expressed about the size and nature of the participant training plan, and the availability of personnel at AU to implement the project while staff are away for training.

a. Number of Participants

AID/W has commented on the large number of trainees to be sent to the U.S. during Phase I. These concerns were based on a training schedule for 7 years. In the revised 11-year schedule (See Section IV.A.5.), a total of 95 participants is projected to depart for training between 1984-1988; 38 of these should have completed their programs and returned for duty by the end of Phase I. Details on the type of participants, fields of study, and duration of overseas training for those participants already receiving training and those scheduled to leave in 1984/1985 are given in Section III.C.6. and Annex P.

Experience with TIPAN participants already sent to the U.S. for training under the A.I.D.-financed Development Support Training Project has revealed lower than expected TOEFL/GRE scores. This problem has surfaced the need for refresher courses in English and other topics. Development of these courses, to be offered to potential participants on the AU campus, is now being undertaken by AU staff with the assistance of Design Team members.

b. LOP Distribution of Participants

The revised schedule of participant training shows a more balanced distribution of training than the earlier version reviewed by AID/W. There is, however, some intentional front-loading to allow for the construction of facilities to be completed when the staff return from the U.S. to take up their positions. This is especially important for the Learning Resources Center, which has 16 participant trainees, and the Continuing Education Center with 9 trainees.

c. Personnel Availability

AID/W has expressed concern that the size of the participant training program will leave only a skeletal staff, augmented by new, inexperienced recruits to run the university and teach the students. In fact, over the life of the project, of the 140 degree level participants to be trained, only 38 will come from the existing AU staff of 110; the rest will be selected from new hires and personnel from the merged research system. In addition, the Mission has received written assurances from the Chairman of the Pakistan Agricultural Research Council of his commitment to second personnel from the PARC Talent Pool to AU during Phase I to fill positions on a temporary basis while permanent incumbents are either being recruited or trained overseas. (See also Section VI.A.3.)

i. Administrative Personnel

As described in Section V. B. 5. and 6., the design envisages a 12-18 month start-up period during which candidates for the new senior administrative positions would be recruited, selected, hired and trained. The training would take the form of short-term, experimental on-the-job training involving one-on-one work with U.S. university counterparts. In the interim, the positions will be temporarily filled by existing senior staff, usually close to retirement, in an acting capacity. The merger of the provincial research system with AU provides for a sufficient pool from which to select interim administrators. In certain cases, where new personnel are slated for long-term training, the interim administrators will serve in their absence.

ii. Technical Personnel

As described in Section IV. D., there are several sources for interim replacements for positions held by technical participant trainees. These are the over 200 scientists of the merged research system, newly hired superior graduates, and personnel to be seconded from the Pakistan Agricultural Research Council Talent Pool on a short-term basis. The Mission has therefore concluded that it is reasonable to expect an adequate supply of people to: (1) maintain academic and research activities; (2) be available for academic upgrading through the participant training program; and, (3) fill the academic, research and outreach positions to be created over the life of the project.

d. On-The-Job Training for Office, Financial and Administrative Staff

AID/W has suggested a project element that focuses on intensive, continual, on-the-job (OJT) training for AU office, financial and administrative personnel. The Mission agrees, and has included provision for such an element, as described in Section V.B.6. The provision of OJT is seen as a major role for

long and short-term technical assistance personnel. In fact, an SIU member of the Design Team has already started an OJT program with a 2-week workshop designed to prepare AU personnel for adoption of the changes in admissions, curricula, annual and daily schedules and grading procedures. At the workshop, teachers with initial responsibilities for new first year courses were also appointed. (For details, see Annex O). Short-term participant training for administrative staff will also focus on practical experience and OJT training, working with counterparts on U.S. campuses. (See Section V.B.6)

e. Participant Trainee Research in Pakistan

An important feature of the training plan is the provision for degree trainees to undertake their thesis or dissertation research in NWFP. AID/W has suggested that "given the laboratory and library facilities and the low quality and reliability of existing data, very few participants could do their M.S. or Ph.D. theses in Pakistan." While the deficiencies do exist, the very lack of data calls for a maximum research effort to include the work of participant trainees. Further, it is important that Pakistani students be trained to perform effectively under the resource constraints that prevail in their country.

Returning degree students will be able to use AU students as research assistants in the collection of data, benefiting both parties. While this feature of the training plan will lengthen the time needed for students to graduate, the additional time and expense (of an extra trip to the U.S. and the presence at AU of a short-term technical assistance supervisor for most participant thesis research) are more than justified by the importance of using every opportunity to undertake farmer-oriented, productivity-enhancing research at AU.

13. Conclusion

AID/W's concerns and suggestions have been addressed in the following ways: many have been accepted and the project modified accordingly; others had been anticipated and incorporated in the project design; with respect to the remaining issues, the Mission believes that the facts and analyses contained herein demonstrate that the concerns are unwarranted and that the suggested alternatives were less feasible than the approaches adopted in the final design of TIPAN.

F. Contributors to the Project Paper

(See Annex O.)

II. BACKGROUND

A. USG/GOP Negotiations

The United States Government and the Government of Pakistan are into the third year of a renewed and strengthened effort to increase their economic and development cooperation. High level USG-GOP consultations in 1981 culminated in the negotiation of a $3.2 billion package of military and economic assistance, which the U.S. agreed to provide to Pakistan between FY 1982 and FY 1987. This assistance package is an indispensable contribution to the shaping and implementation of a new U.S.-Pakistan relationship and to the critical role that Pakistan plays in the region.

The economic assistance component was designed to achieve the maximum development impact while providing as much support as possible to Pakistan's balance of payments. The economic assistance program, which continues a tradition of cooperation between the two countries, seeks to help Pakistan to fulfill the basic human needs of its people. At the same time, it is designed to address the country's foreign exchange needs through quick-disbursing activities that lay the foundation for economic growth and stability in the future.

The program agreed upon will:

1. reactivate a long-term development assistance relationship, which is important because of Pakistan's size, levels of poverty, strategic location, and other multi-faceted US interests;

2. provide balance of payments support to help address short and medium-term foreign exchange shortfalls, thereby reducing development constraints and strengthening the economy;

3. address key economic problems, which will help Pakistan to achieve self-sustaining growth and manage its debt burden;

4. complement and support IMF, IBRD, and other donor initiatives and program assistance and accentuate their overall impact; and,

5. expand resource availability for local cost financing.

The TIPAN project has been developed in the context of the ESF program in Pakistan. It supports the objectives outlined above, particularly with respect to the need to address key economic

problems and to complement multilateral initiatives. It also supports the Government of Pakistan's efforts to improve its technical education system, upgrade agricultural research and increase agricultural yields.

B. The Setting

The context of the reform of the agricultural technology transfer system is diverse and includes the population of NWFP, its current activities in agriculture, and the present system of education, research and extension.

1. Population of NWFP

The population of NWFP is estimated at 15 million. Of these, almost 11 million are native inhabitants of the "Settled Areas" of the province; some 2 million live in the "Tribal Areas", and more than 2 million are Afghan refugees. The administrative organizations of Divisions, Districts and Agencies are shown in Figure 1.

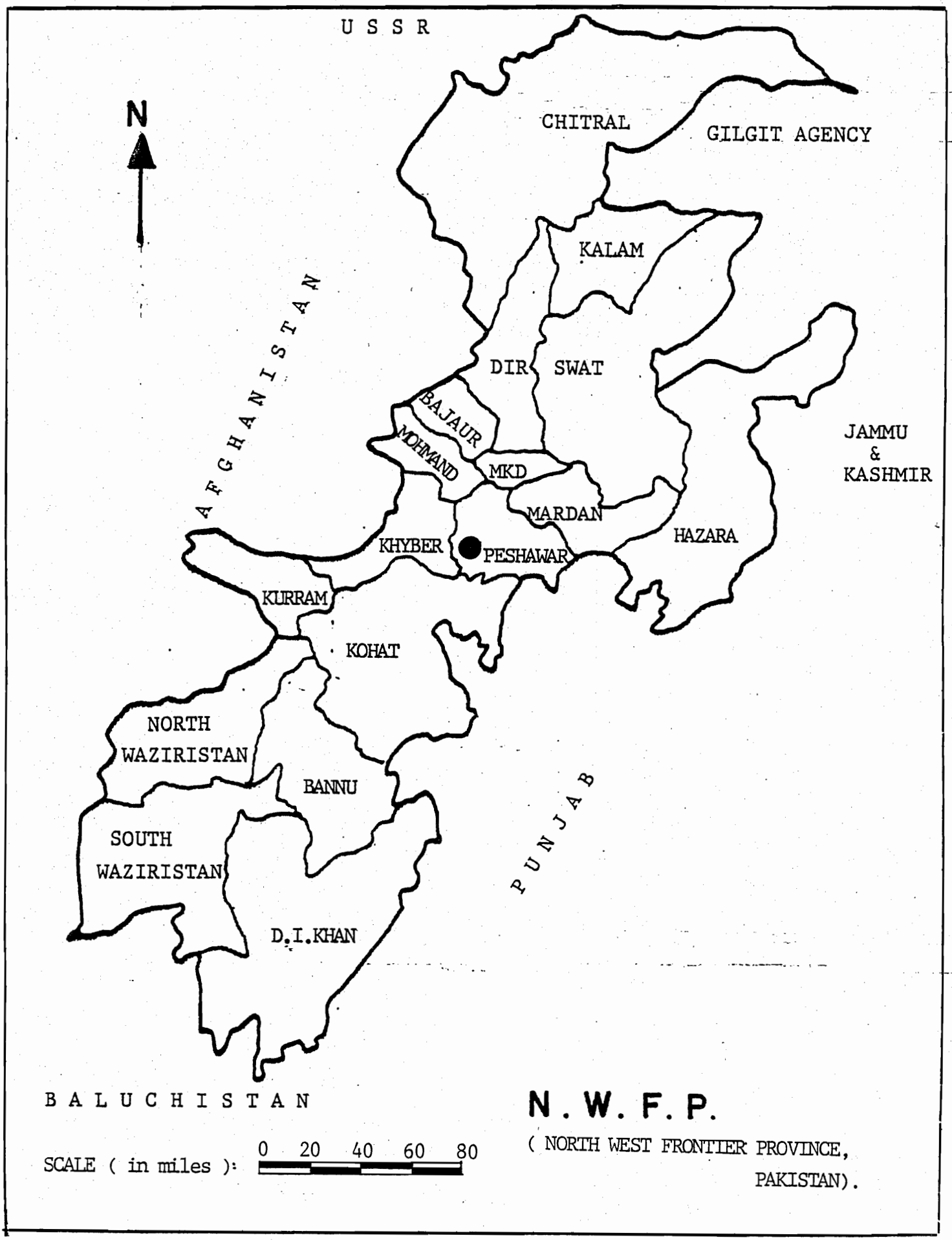
TIPAN will not have an equal impact on all the people of the province. The future of the refugees from Afghanistan is uncertain, and their participation is not an explicit part of the project design. The Tribal Areas inhabitants are concentrated in remote valleys of mountainous regions; they will benefit from the improved outreach activities of the project, especially the radio programs and the higher quality of agricultural extension that is an important output of the project. The Settled Areas have the bulk of the population, the cultivated and irrigated land, and, therefore, most of the agricultural and non-agricultural economic activity of the province. The people in these areas will be TIPAN's primary beneficiaries.

Approximately 85 percent of NWFP's people reside in about 6-7 thousand villages scattered throughout the rural areas. About half are categorized as farmers, the remaining population being engaged in trade, local manufacturing, government and private services and agriculture-related businesses. The capital city of Peshawar and its immediate surrounding areas have about 600,000 inhabitants.

The population of the NWFP is relatively young. Life expectancy is 40 to 50 years compared to 50 to 55 for Pakistan as a whole. Females make up 48 percent of the population. The overall literacy rate is officially about 21 percent. More details on the socio-economic status of the population are given in the Social Soundness Analysis.

FIGURE 1

ADMINISTRATIVE ORGANIZATION OF THE NORTHWEST FRONTIER PROVINCE



2. Agriculture in NWFP[1/]

The NWFP economy is dominated by agriculture. It is estimated that agriculture accounts for 50 percent of the Gross Provincial Product. Three-fourths of the large scale (20+ employees) manufacturing establishments in the province are based on agricultural and forestry raw materials.

a. The Physical Environment

The NWFP has a land area of 39 thousand square miles. Elevations vary from 500 feet to 25,000 feet above sea level. Most of the cultivated land is in the valleys of the Indus, Kabul, and Kurram rivers and in the D. I. Khan plain and the Bannu Basin (Kohat valley).

The climate of NWFP is classified as semi-arid to mediterranean. Rainfall in D. I. Khan and the southern Agencies ranges from 8 to 20 inches moving south to north. The Peshawar plain has 14 to 26 inches while the southern portion of the Malakand Division gets up to 44 inches. The highest rainfall (50+ inches) is in the eastern Hazara Division. There are other isolated high rainfall areas in mountainous areas in western NWFP. In the west, rainfall tends to peak in the spring (March/April) whereas in the east (particularly the northeast), there tends to be a bi-modal distribution caused by monsoonal influences.

b. Land Use

NWFP had a total cultivated area of 1.92 million hectares in PFY 1980/81. This area has increased about 350,000 hectares over the 1970/80 period, with about 60 percent to net sown area and 40 percent to fallow. The amount of cultivable waste has remained stable, but the area "not available for cultivation" has declined. The data do not reflect a vigorous attempt at exploitation of available land resources. This is further reflected by the fact that land use intensity (cultivated area/cultivable area) runs 60 to 63 percent with perhaps a slight upward trend. Cropping intensity (cropped area/cultivated area) has varied from 97 to 105 percent but with no discernable trend.

c. Farm Size

There are 650,000 farms in the province. The smallest size category under 2 hectares covers only 13 percent of the cultivated area, though representing 63 percent of all farms. On the other end of the scale, the 5 percent of farms that are over 10 hectares cover nearly half (47 percent) of the farming land.

[1/] This material is abstracted from Appendix G, Volume I of the Design Team Report.

d. Crop Production

The major food grains grown in NWFP based on gross value of output are wheat, maize, and rice. Secondary food crops are barley, rapeseed and mustard, gram (chick peas), and sorghum and millet. Fruits and vegetables, collectively, rank next to wheat. The major cash crops are sugarcane and tobacco. Opium poppies are grown by small farmers in remote areas of the province. Government efforts (assisted by USAID, INM and other donors) to eradicate this crop are reducing output substantially.

As shown in Table 3, crop yields in NWFP are generally below national averages.

TABLE 3

Average Yields of Selected Crops in Pakistan, PFY 1979/80
(In Kg/Hectare)

Crop	All Pakistan	NWFP	Punjab	Sind	Baluchistan
Wheat	1563	1088	1598	1802	1229
Rice	1581	1558	1287	2011	2223
Cotton	350	194	325	412	-
Oilseed (Rape and Mustard)	604	481	642	613	397
Tobacco	1561	1633	1403	1358	1963
Maize	1248	1261	1291	564	788

Source: Pakistan: Agricultural Data Book, compiled by A.M. Khalid, Office of Agriculture and Rural Development, USAID/Pakistan, June 1982

The higher yields in tobacco and maize reflect coordinated efforts by the public and private sector to increase production of these crops. The inferior yields in other crops may be explained by poor infrastructure, difficult terrain and low investment as well as insufficient or inappropriate research and extension service.

e. Cropping Patterns

NWFP agriculture heavily emphasizes wheat (53 percent of total acreage of major crops) and maize (25 percent). Six percent of provincial major crop acreage is in sugarcane and two percent in tobacco, both high value crops. Rice has five percent. The remaining crops, including all fruits and vegetables lumped together, cover about two percent each.

One significant characteristic of NWFP agriculture is the highly complex cropping pattern on individual farms, particularly irrigated farms. Three crops per year are grown in many areas, with intercropping of some crops in addition. Young orchards are intercropped with various cereals and forage crops. These complex cropping systems require a higher level of managerial competence than mono-cultural agriculture, and place a much heavier demand on the research and outreach system.

f. Crop Distribution

Wheat and maize are widely distributed over the province and grown in significant amounts in all Divisions. Other crops are rather heavily concentrated in one or more Divisions, such as tobacco and sugarcane, of which 91 and 84 percent, respectively, are grown in Peshawar, or rice, 67 percent of which is grown in Malakand. Malakand also has a predominant place in fruits and vegetables, followed closely by Peshawar. Sorghum, millet and oilseeds are most heavily concentrated in D. I. Khan, followed by Peshawar.

g. Irrigation

Nearly half (47 percent) of all crops grown in NWFP are irrigated. Rice, tobacco, sugarcane, onion, and both summer and winter fruits and vegetables are 100 percent irrigated. Potatoes are 85 percent irrigated, maize 58 percent, barley 23 percent, and sorghum and groundnut 18 percent. Only minor portions of other crops are irrigated.

h. Technology Growth

Several indicators show that farmers in NWFP are ready to adopt modern technology if it is made available. Fertilizer sales increased four-fold in a ten year period to 1980 and reflect a more productive balance of fertilizer type application. Fertilizer use is heavily skewed towards the Peshawar Division (78 percent). Tractor numbers increased three-fold during the same period, with 52 percent in Peshawar Division. A three-fourths increase in the use of treated seed was recorded from the early to late 1970s. Data on the use of improved, high yielding variety (HYV) seed indicate that 65 percent of wheat was planted to HYV seed, while as much as 90 percent of sugarcane is planted to improved varieties.

i. Livestock

The livestock inventory from the 1976 census is shown in Table 4.

TABLE 4

Livestock Inventory in the NWFP and Pakistan (1976)

Livestock Category	NWFP (000)	Pakistan (000)	(2)/(3) Percent
(1)	(2)	(3)	(4)
Cattle	3,000	14,855	20
Buffalo	762	10,551	7
Sheep	3,675	18,937	19
Goats	4,686	21,693	22

NWFP has about 20 percent of the national herd of cattle, sheep, and goats, but only seven percent of the buffalo. Official livestock production data are not available. However, Table 5 provides rough estimates of the value of livestock production.

TABLE 5

Estimated Value of Livestock in the NWFP (1976)

	Cattle & Buffaloes	Goats & Sheep	Poultry	Total	Percent
	(In million rupees)				
Meat	301.6	272.9	13.8	588.3	23
Milk	1,447.0	185.9	—	1,632.9	65
Hides & Skins	37.8	14.5	—	52.3	2
Wool & Hair	—	90.3	—	90.3	4
Eggs	—	—	71.0	70.0	3
By-products	45.3	26.7	—	72.0	3
TOTAL	1,831.7	590.3	84.8	2,506.8	100
Percentage	73	23	4	100	

Source: Atkinson, R.E.H., "Livestock Reconnaissance Survey: NWFP," The Livestock Industry of the Northwest Frontier Province, 1977.

Livestock production in the province is constrained by poor availability and use of feed resources, debilitating diseases, poor management practices and government pricing policies. The data in Table 5 on the value of livestock production combined with the value of crop production provide the only indication of the absolute magnitude of the crop/livestock sector of the provincial economy. These data show a 60 ($295 million[2/]): 40 ($193 million) split between crops and livestock.

3. Agricultural Education in Pakistan

a. Problems of Higher Education

At the time of partition in 1947, the University of the Punjab, established in 1882, was the only fully functional university in Pakistan. Today, the country has 19 universities, including three agricultural universities in Punjab, Sind and NWFP.

The problems inherent in the rapid growth of the numbers of institutions of higher learning and the outmoded system of education inherited from pre-independence days are reflected in the following excerpt from the GOP's Sixth Five-Year Plan:

> "While considerable progress has been made during the last thirty five years and the number of universities and research institutions have multiplied manifold, the system is still faced with numerous serious problems such as: (i) sub-critical input of vital resources like scientific manpower, funds and physical facilities for research and development; (ii) isolation of the Science and Technology system from the major user agencies; (iii) lack of well-defined priorities for scientific research and imbalance in the sectoral allocations; (iv) insufficient opportunities for Pakistani scientists to maintain professional links with active centres of learning in the world and non-availability of easy access to latest scientific information; (v) absence of effective coordination between scientific establishments leading to unnecessary fragmentation of national research effort; (vi) unsatisfactory quality of scientific manpower coming out of our universities as well as inadequacy of university programs for post-graduate research degree work; (vii) a marked national tendency for placing excessive reliance on foreign sources of technology expertise; (viii) lack of a proper accountability and reward system for individuals as well as institutions, engaged in research work; (ix) absence of effective institutions at the grass-roots level for rapid dissemination of technical information and creation of site-specific technologies." (p. 286)

[2/] Calculated on the basis of Rs 13.00 = $1.00

It is in the context of these persistent and serious problems that the TIPAN project has been designed.

b. Agricultural Universities

There are three agricultural universities in Pakistan. Each is an autonomous institution with the governor of the province serving as ex-officio Chancellor. A syndicate is the governing body, and the Vice Chancellor is the chief administrative officer. The basic budget for each of the universities is provided by the University Grants Commission (UGC), a Federal government organization of the Ministry of Education. Table 6 shows the numbers and levels of education of the professional staff of three agricultural universities.

TABLE 6

Levels of Education[a] of Staff at Pakistan's Agricultural Universities(1982)[b]

	Ph.D.	M.Sc. or Equivalent	B.Sc.	D.V.M.
University of Agriculture, Faisalabad	97	211	27	15
Sind Agricultural University	20	153	1	—
NWFP Agricultural University	12	69	—	—
TOTAL:	129	433	28	15

[a] Highest degree obtained

[b] International Service for National Agricultural Research, Report to the Pakistan Agricultural Research Council on Selected Aspects of the Pakistan Agricultural Research System, Report INSAR R12, August 1983, p. 17.

The student enrollment can be summarized as follows:

> "In 1980-81 these three institutions produced 1,090 graduates with B.Sc. degrees, 510 with M.Sc. degrees, and 5 with Ph.D. degrees. The total enrollment at the University at Faisalabad is about 81 for Ph.D., 20 for M.Phil., 498 for M.Sc., and 3,038 for B.Sc. degrees, totalling 4,087 students. In the Sind the total enrollment is about 1,800 students, including 350 M.Sc. candidates; and in the Northwest Frontier, about 600, including 120 M.Sc. candidates."[3/]

The three agricultural universities are the dominant source of educated agricultural manpower for the country. Although the primary source of financial support is from the Federal Government through the University Grants Commission, each university is provincially-oriented. The mission of the agricultural universities has been teaching students and granting degrees. There is little interchange of students and faculty members. Linkages to provincial research and extension functions have been weak, affording little opportunity to achieve complementarities among the teaching, research, and extension functions. Universities have not taken an active role in agricultural development in their respective provinces.

There is now an awareness of the problems associated with the isolation of the agricultural universities from provincial research and extension. Under the leadership of the Pakistan Agricultural Research Council, efforts are being made to coordinate and support research among universities and research institutes as well as among the provinces. There is also a growing recognition of the need for agricultural universities to more adequately meet the manpower needs of provincial extension departments and to provide scientific and technological information that can be used by extension workers and transferred to farmers.

c. Agricultural Education in NWFP

Higher education in agriculture in the NWFP began with the introduction of agriculture into the curriculum of Islamia College in 1930. A College of Agriculture was established in 1957, and a Faculty of Agriculture in 1970, both as units of the University of Peshawar. The NWFP Agricultural University was established as an autonomous university under the provisions of NWFP Ordinance No. 1 in 1981.

[3/] Information Service for the National Agricultural Research Report, op. cit.

The three-year B.Sc. degree program, based on ten years of public education (matriculation), offered at the college was revised in 1958 to include two years of pre-agriculture studies and a three-year undergraduate program leading to the B.Sc. (Honors) degree. In 1962, options or specializations were introduced in the final year. M.Sc. programs were added, primarily as a means of meeting the required educational qualifications for BPS 17 positions, the entry level for most scientific or professional careers.

Beginning in academic year 1980/81, a new curriculum was established with the F.Sc. (pre-medicine) certificate as a requirement for admission. This curriculum consists of four years, the first two years being a common core for all students, with increasing specialization in the third and fourth years. Those completing the program will receive the B.Sc. (Honors) degree and qualify for BPS 17 positions. A two-year M.Sc. (Honors) program is offered that also qualifies for BPS 17 positions.

The Faculty of Agriculture of Gomal University at D. I. Khan, about 200 miles from Peshawar, began functioning in academic year 1980/81 as an outgrowth of the Government Science and Agriculture College. B.Sc. (Honors) degrees are offered in eight fields and M.Sc. (Honors) in three fields. In academic year 1982/83, there were 144 B.Sc., nine M.Sc. students and a teaching staff of 30, two of whom held Ph.D. degrees.

The evolution of agricultural higher education in the NWFP over a period of 50 years has been gradual, and although the system has improved, it is still seriously inadequate to supply the quality of educated manpower needed for dynamic agricultural development. Like other universities in Pakistan, NWFP-AU has regarded its mission as predominantly academic instruction; research has been supported neither financially nor in principle. Linkages between AU and the agricultural research system have been weak; with the provincial extension systems even weaker.

4. Agricultural Research in NWFP

Provincial agricultural (crops) research of the Department of Agriculture[4/] is conducted at five institutes and five stations well distributed in the different agro-ecological regions of NWFP. Research headquarters are at Tarnab, near Peshawar. The work is about evenly divided between applied research and demonstration plots and dissemination of results. Most of the research is on crop variety trials, crop cultural practices, fertilizer experiments, and insect and disease control measures.

[4/] For more detail on NWFP crop and livestock production research, see "Merger of Agricultural Research in the Northwest Frontier Province, Pakistan," a report to the U.S. Agency for International Development Mission to Pakistan by the Office of International Agriculture, University of Illinois at Urbana-Champaign, October 20, 1983. (Volume II of the Design Team Report)

The provincial agricultural (crops) research system is staffed with personnel with M.Sc. and B.Sc. degrees from the Agricultural University. There is only one person with a Ph.D. degree active in the system. Despite the inadequate level of training and support, there is some good work being conducted at some of the stations. However, for the most part, the research is neither problem-solving nor programmatically oriented. Furthermore, there is a lack of the sustained, scientific research needed to effect breakthroughs and develop the technologies needed by the small farmers of the province.

Livestock production research is conducted in the Animal Production Division of the Veterinary Research Institute (VRI) and the Livestock Experiment Station at Jaba, administered by the Animal Husbandry Department. In the VRI Animal Production Division, most of the research is limited to nutrition and feeding, management and breeding of local breeds and crossbreeds with Friesian cattle and evaluation of forages. The Jaba station is used primarily as a production unit for sheep breeding stock; however, research is being initiated on the upgrading of fine wool sheep as part of a national program supported by the Australian Development Assistance Bureau.

Both crop and livestock research are constrained by inadequately trained personnel for high quality research, personnel policies that dampen incentives for superior work, insufficient field and laboratory equipment, and meager operating funds.

All of the above research institutions will be merged with AU under the TIPAN Project. Other research institutions in NWFP, such as the Pakistan Forest Institute and the Nuclear Institute for Food and Agriculture, both in Peshawar, will continue as autonomous entities, but with strengthened linkages to NWFP-AU.

5. Agricultural Extension in NWFP[5/]

There are two departments for agricultural extension in NWFP: one for Settled Areas (districts), and one for the Federally Administered Tribal Areas (FATA). Both report directly to the Secretary of Agriculture but linkages between them are virtually non-existent.

The Director of Settled Areas Extension controls: over 700 extension staff; two major projects (one for barani areas and another supporting land reclamation and desalinization in Mardan); an institute for training field technicians; seven seed development/demonstration farms; and, 25 fruit nurseries. In relation to the growing population in rural areas, agricultural extension has not

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[5/] This material is taken from "Manpower in the NWFP Government with Special Reference to the Agricultural Sector," Gadoon-Amazai Area Development Project, Working Paper No.4, USAID/Pakistan, April 1983, pp 58-60.

significantly expanded in the fifteen years or so it has been part of the NWFP government. For example, only 25 new Agricultural Officer posts have been established since PFY 1970/71, less than a 25 percent increase over ten years. Although the number of Field Assistant posts, however, has almost doubled, the ratio of agent to household is still in the region of 1:3000, except in three areas of the province where the Training and Visitation (T and V) system has been introduced. The quality of the extension services has not significantly improved over the last ten to fifteen years except within special projects. Links with agricultural research are weak. While the extension staff are expected to keep abreast of new developments, there is no formal mechanism for this to occur.

The role of agricultural extension is not clearly defined. Extension agents seem uncertain as to whether their role is primarily as purveyors of seeds and fertilizer or as purveyors of information. The establishment of semi-autonomous bodies to handle farm inputs (for example, the Agricultural Development Authority (ADA) and the National Fertilizer Corporation (NFC)) has not resolved this issue. Meanwhile, the Department has moved slowly in upgrading the caliber of its technicians to include diploma or degree-holding staff. Field Assistants, with only high school education, still comprise 80 percent of skilled staff. The training, salary, and support of this important cadre have improved little in the last fifteen years. They are still designated as Grade 5 civil servants, provided no housing, minimal technical guidance beyond supervision outside T and V areas, no opportunities for further formal training, and minimal chances for promotion into higher cadres. Their incentive, after 18 or more years of service, is promotion into Grade 6, at a salary of US $39 per month.

The rate of attrition of Field Assistants from the service is high; the Director estimates that he loses between 20 and 25 percent every year. The vacancy rate for Field Assistants is one of the highest in the agricultural sector. Still, a core of Field Assistants remains with the Department and includes those who contribute to the limits of their ability and those who have failed to secure better jobs elsewhere. Currently one-quarter of all Field Assistants are over 40 years of age, have completed 18 years of service and are approaching retirement with a pension after 25 years of service.

Steps are being taken to slow the attrition rate of Field Assistants to other jobs (e.g. to agricultural teaching jobs in secondary schools). New Field Assistants are now being bonded for five years after completing their two-year training at the Agricultural Training Institute. In addition, recurrent budgets are being increased to meet more of their travel claims, as a means of encouraging field workers to cover their geographic areas.

The TIPAN outreach program will strengthen the NWFP extension system. Many elements of the project will have a direct and positive effect on the quality of work undertaken by Field

Assistants working in the extension system. In the short run, extension workers will benefit from the training to be offered at the Continuing Education Center and the mass media training courses to be developed by the Communications Service Unit. As the outreach program of TIPAN develops, extensions workers will have access to the research generated and will become increasingly integrated into the reformed system. In its linkages with the NWFP extension services, TIPAN will reinforce the efforts of the World Bank's (IBRD) initiatives in agricultural extension, which are described in Section II.D.

C. Lessons Learned

1. World-Wide

Between 1951 and the early 1970's, the Agency for International Development assigned as one of its highest priorities, the support of technical assistance projects to develop educational and research institutions in agriculture and related fields. An analytical study was made of experiences gained through 68 projects in 39 countries.[6/] The results of this study and observations of AID-supported agricultural universities over the past 15 years have taught several lessons that have been taken into account in the design of TIPAN. These lessons are:

a. The Agricultural University must be development oriented. The goal should be to increase production and income of farmers and improve the welfare of farm families and the food supply of the nation.

b. The University must have a strong research program and effective linkages to the extension system. The research program is essential for a strong teaching effort, particularly at the graduate level. Linkages to extension provide mechanisms for transfer of results of research to farmers and feedback of problems to faculty and students.

c. The University administrative structure must be consistent with the functions to be performed. Changes in functions require changes in university organization to attain the new university goals.

[6/] Baldwin, I.L., Rigney, J.A, Roskelley, R.W. and Thompson, W.N. "Building Institutions to Serve Agriculture: A Summary Report of the C.I.C. - A.I.D. Rural Development Research Project". Lafayette, Indiana. Committee on Institutional Cooperation, Purdue University, 1968.

d. Leadership is a critical element in university development. Leadership, particularly at the Chief Administrative Officer level but also at other levels of administration, has been demonstrated to be the most important determinant of success in institutional development.

e. Commitment of government to the goals of the university and the development project is essential. Successful university development projects require understanding and willingness of the key government bodies to support the university as an investment that will improve production and the welfare of farmers and the general society.

f. Agreement among host country and U.S. personnel on the institution's development goals and strategies is essential. Participation in project planning, implementation, review and evaluation fosters understanding and agreement on goals and strategies.

g. The level of technical assistance should be carefully planned and programmed. The level of technical assistance should provide for a "critical mass" of inputs, properly related to the supply of host country resources, scheduled in a timely manner, and oriented towards the development of a truly indigenous institution.

h. Technical assistance inputs should be properly balanced. The amounts of personnel training, expatriate personnel, facilities and equipment must be carefully balanced with host country resources throughout the life of the project. Upgrading of personnel should be initiated early to gain the mid-project and longer term benefits. Expatriate personnel are most effective in guiding the changed mission and structural alterations in the institution. Facilities and equipment are most effective when scheduled to complement the programs conducted by the upgraded personnel.

i. Development of educational institutions takes time. Experience confirms that an agricultural university development project requires ten or more years for the university to be developed into a fully effective and self-sustaining institution. Important contributions to agricultural development can be made during the process of institutional growth.

j. Universities tend to decline in quality at the end of the external assistance project. This results from poor phasing of host country and external resources in the later years of the project and inadequate provision for maintaining linkages with international agricultural research and education systems.

2. Lessons Learned in Pakistan

a. Agricultural Education

A.I.D. previously supported university development projects at Peshawar, Faisalabad, and Tandojam. Several questions can be asked regarding the feasibility of another A.I.D. effort at strengthening agricultural higher education at Peshawar. What remains from the earlier efforts from 1954 to 1965? Were the gains sustained? What has changed to improve the probabilities for greater success in sustained institutional development? What lessons were learned at Peshawar?

The final report of the 1954-1965 efforts at Peshawar summarized the major accomplishments of the project as follows:[7]

i. Advanced education, mostly post-graduate, of 62 members of the teaching faculty of the University of Peshawar.

ii. Assistance in an advisory capacity to the University administration and to the faculties in Agriculture, Engineering, Home Economics, the Basic Sciences, and to the Library.

iii. Purchase and delivery to the University of Peshawar of more than $200,000 worth of scientific equipment and of several thousand books.

iv. Several buildings resulted either directly or indirectly from the program; these included classrooms for Agriculture, Home Economics, Agricultural Engineering, and Education, a Hydraulics Lab and a Teacher-Student Center. In addition, a 1,000 acre university farm was acquired.

v. Close ties between the two universities and a greatly broadened concept of education, including many new ideas which are being introduced to the University of Peshawar.

The final report of the project also suggests several reasons for lack of outstanding and sustained success:

i. Lack of agreement on long-range plans. Little attention was given to designing the project to make the needed institutional changes. At the outset, the U.S. university understood the duration of the project to be three years, the period of the original contract. However, in the end, there were two contracts and ten amendments over a period of 11 years.

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[7] Colorado State University, "Final Report, Inter-University Exchange Program, Contract AID-W-658, August 16, 1954, to September 30, 1965, p. 69.

ii. Inter-university exchange - not institution building program. The relationship between the University of Peshawar and Colorado State University was conceived as and perceived to be an inter-university exchange program. In other words, the primary emphasis was on University of Peshawar teaching faculty members receiving post-graduate education in the U.S. and Colorado State University faculty members serving as advisors and consultants. There was no deliberate strategy of institution-building serving as a framework for planned change.

iii. Lack of critical mass in agriculture. The technical assistance efforts at the University of Peshawar were spread over several fields - agriculture, engineering, home economics, teacher education, and basic science. Engineering received early and continuing emphasis with little attention to agricultural engineering. Agriculture was not given high priority by University-level administrators. Only one-third of the participant training was devoted to upgrading faculty members in agriculture; only two received Ph.D. degrees.

iv. Uncertain leadership in the College of Agriculture. There was not the essential continuity of strong top-level leadership for a strong College of Agriculture. The College of Agriculture of the University of Peshawar was established in 1954; however, it was nine years later that the first Pakistani was appointed to permanently fill the position of Principal of the College. Several persons served on an acting basis over a period of six years; a member of the Colorado State University team served as Principal from late 1960 to mid-1963.

v. Changes in the teaching program did not persist. Plans were formulated for revised curricula and syllabi and changing to a term system with internal examinations to count as 25 percent of the final grade. Some changes were introduced late in the life of the project, but there is little evidence that the changes were permanently adopted. The returned participants currently in positions of administrative responsibility at AU now realize that their academic program has been weakened by not fully institutionalizing the changes that were recommended.

vi. Research and extension linkages were not established. The splintered organization and weak linkages between the provincial teaching, research and extension functions were recognized, but no initiatives were taken to alleviate the problems.

b. Agricultural Research

In October 1983, A.I.D.'s Agricultural Research Project (391-0296) was evaluated. The following lessons learned have relevance to TIPAN:

"In the development of institutions, time, patience, perseverance and flexibility are of utmost importance.

An improved system of... coordination... for organizing and managing research as well as for setting research priorities is absolutely necessary for solving agricultural production problems.

Adequate facilities and support services must be constructed to create an environment in which well-trained Pakistani scientists can conduct professionally satisfying research; this is an important incentive for... encouraging productive research.

Educational institutions in Pakistan cannot play an effective role in the agricultural research-extension-education network unless their scientific staff regularly carry out mission oriented research, and unless these staff members also have regular access to refresher training and to reference facilities.

Merger of Pakistan's agricultural research institutions with the agricultural universities is imperative to optimize resource use, minimize waste and maximize human efforts per unit of investment."

c. Construction Problems

The following is taken from an abstract from the final report of the U.S. A&E firm Team Leader for the construction of the National Agricultural Research Center (NARC). The construction of the facility was undertaken between 1975 and 1984. After a problem-ridden nine years, the NARC was inaugurated in March 1984, and was described by some observers as "the best of national research centers in the developing countries." The lessons that follow have been reflected in the design of the TIPAN construction program and will be equally important during implementation in order to avoid the pitfalls yet achieve the success of the NARC development project.

i. Product qualitative objectives are essential. There is rarely a clear understanding and commitment regarding qualitative objectives of a project. The expectations of both nationals and expatriates are often not met in such instances because the necessary inputs are not designed into the project initially. The level of expatriate intervention is directly related to qualitative objectives, and because this was never quite clear on the NARC Project, there were many misunderstandings. Establishment of qualitative objectives would increase the probability of correct decisions about the level of professional help and the procedures necessary to achieve them.

ii. Expatriate project management may be essential. Non-existent or at best poor management practices are more often than not the cause of poor project results. Fatalism and ad hoc procedures common to developing countries cause unnecessary bottlenecks and delays, which, in the end, greatly increase costs, reduce quality, and create serious frustrations all around. It is well to include expatriate project management in the project. The

seeming extra cost could be repaid several times over in savings to the overall project costs, and the educational value to the locals, while difficult to quantify, is significant.

iii. Continuity of project coordination is critical. Particularly in long-term projects such as the Agricultural Research Project, continuity of USAID/PARC coordination should be ensured. Major problems and misunderstandings occurred on the NARC project because there were several serious breaches of continuity of knowledge and understanding during the nine year development period.

iv. Over-confidence in local "experts" is a danger. There is a disturbing tendency for USAID Missions to patronize local employees and to implicitly trust their advice over that of American professionals hired to give objective and experienced advice. The trust may be correctly placed in some instances, and sometimes the instant experts from the U.S. do not have the right answers. However, too often there is a blindness to the limited experience, biases and self-serving interest in the advice of local employees.

v. Expatriate evaluation of local expertise is critical. To avoid political favoritism and ignorance in the selection of local professionals, it is critical that objective expatriate evaluation be obtained and that the advice be followed. Too often, USAID stands helplessly by while incompetent or corrupt locals are selected, ensuring the failure of a project.

vi. Establishment of realistic targets is important. Lack of experience and wishful thinking on the part of donor agencies and local government authorities leads to establishment of unrealistic project targets. When over-optimistic targets are set, the necessary management and qualified expertise is not designed into the project that might make it feasible to meet such targets. Inevitably, there are frustrating delays, cost overruns, and reduction of quality.

vii. A pre-agreed expatriate intervention level is important. Once qualitative objectives are established and the local expertise has been evaluated, it should be clear what level of expatriate intervention is required. That is the time to reach agreement and contract for the services of whatever expertise is required, not after the project is underway.

viii. Authority commensurate with responsibility is critical. A capital development project in bricks and mortar, intended to be built on a pre-agreed schedule, requires clear lines of authority to avoid confusion and delay. Those who have the ultimate responsibility for design decision-making should also have the authority to stop work, to dismantle poor quality work, or whatever else is required to get the job done.

ix. Pre-audit tender procedures, tender documents, contracts. To prevent "leakage" of resources, all the financial arrangements in a project must be monitored closely. Too often, the reduced quality of a product is discovered only after it is manufactured or installed when it is too late to do anything. "Commissions" are a major cause of the reduced quality.

x. Preview and pre-approval of all products essential. All products to be provided in a project must have shop drawings prepared in advance and samples approved before the final order is given. Contractors and suppliers must know in advance that if what arrives on the job is not what was agreed to, it will be rejected.

3. Application of Lessons Learned

These world-wide and Pakistan-specific lessons learned are integral to the TIPAN design. Special attention has been given to experience gained from both successful and less-than-successful projects in other countries as well as the problems encountered in building self-sustaining agricultural faculties and universities in Pakistan. The complexity of the institution-building process has been made explicit and an institution-building model that recognizes the importance of both internal organizational as well as external linkages served as the framework for the development of TIPAN.

The mission of AU is to be changed from a faculty and student focused, degree-granting university to an institution to serve the development needs of the rural sector and improve the food supply and general welfare of the province and nation. GONWFP, GOP and USAID/ Pakistan officials have agreed on institutional objectives and strategies to attain these goals. Complementarities of the teaching, research, and outreach functions will be achieved by effecting the merger of AU and NWFP's agricultural research system. The design recognizes the weakness in the teaching-learning process and therefore has provided for the redesign of curricula and improvements in teaching and examination methods.

The establishment of AU as an autonomous university in 1981 makes possible concentration of a critical mass of technical assistance in agriculture in contrast to the earlier technical assistance effort. The design process confirmed the urgency of making rapid progress in institutional development while recognizing the need for time to establish a self-sustaining, multi-functional agricultural university. This led to the lengthening of the implementation phase of the project from seven to eleven years.

The project design provides for a strengthened organizational structure with faculty deans and department heads to give leadership in the various disciplines, and directors of teaching, research, and outreach to provide functional, multi-disciplinary leadership in changing the university to a mission-oriented university to serve the development needs of the NWFP. This structure will provide for

shared leadership and reduce the dependency of the project on the personalities of one or two persons. Technical assistance from long and short-term expatriates, and participant training to strengthen scientific and management capabilities is balanced to support the developing institution. Physical facilities and equipment are scheduled to support the added functions of research and outreach as well as strengthen the teaching program. The engineering components and construction contracting arrangements, described in Section III.C.4. and analyzed in Section V.A., draw on the lessons learned from the construction of the NARC, cited above.

D. Other Donor Assistance

Various elements of TIPAN will complement the activities of projects in NWFP funded by other donors. The CIDA-funded Barani (Rainfed) Agricultural Research and Development Project is putting into place a national Barani research program with the objective of developing and testing technological packages for increasing yields of rainfed crops. In NWFP, the operational research component will operate out of the Barani Research Project headquarters at Peshawar. Work will also be done at the Cereals Research Institute at Pirsabak, one of the research institutes to be merged with AU. The Barani Project research in post-harvest tillage, mixed cropping systems, fertilizer application, and weed control will be supported by research activities undertaken by AU under TIPAN.

The World Bank (IBRD) is also financing an Agricultural Research Project. In NWFP, the project will establish an Agricultural Economics Research Unit at the Agricultural Research Institute at Peshawar. The Unit will conduct research on the economic viability of new agricultural technologies, the constraints limiting yields on farmers' fields, the economics of input use, and, farm management, and will also provide assistance to other scientists in designing experiments and undertaking statistical analysis and economic interpretation of data. This Unit will work closely with the Institute for Development Studies and the Faculty of Rural Social Sciences at AU in the exchange of information and other resources. Research scientists working both on and off-campus will provide the Unit with data and identify priority research topics for investigation.

The Bank-funded On-Farm Water Management Project has a component for the training of extension service personnel in NWFP as well as the other provinces. Extension workers will be taught to include water management information in the transfer of technologies to farmers in irrigated areas. A more comprehensive program to strengthen NWFP agricultural extension is a major component of the IBRD-financed Salinity Control and Reclamation Project (SCARP) in Mardan (NWFP). During the design of this latter project, the following limitations in the NWFP extension service were identified:

1. Adequate technical support is not provided for field staff. Specialists are too few in number, and all disciplines are not represented within the extension service at the district level.

2. The territory of each Field Assistant (FA) is determined by area and not by the number of farmers he must serve.

3. The tasks field staff are expected to perform do not differentiate between advice and demonstrations on the one hand and services on the other. The two make conflicting demands on and compete for staff time.

4. Extension visits are infrequent, poorly planned and therefore have little positive effect on crop yields.

5. In-service staff training is inadequate and relies too much on pre-service knowledge. In most cases, the training is out-of-date and does not provide a sufficient base to effectively utilize advice and information offered by supervisory officers.

6. The housing situation for lower-grade staff is unsatisfactory and is only marginally better for middle management.

7. There is a lack of staff mobility; full compensation for absence from home on duty and for using vehicles owned by staff members, which are essential for efficient operation, is not made.

8. There is insufficient liaison between the extension service and the research service.

The extension component of SCARP is intended to overcome these limitations as follows:

> "Under the project, the method and staff of the extension service would be organized along the lines of a system that has proved successful in neighboring countries and other areas of Pakistan. The system is described in the World Bank publication "Agricultural Extension - Training and Visit System," by Daniel Benor and J. Q. Harrison, May 1977. Its adaptation to conditions in the NWFP and the job descriptions of the various staff grades are found in the "Operating Manual of the Agricultural Extension Service in the Northwest Frontier Province of Pakistan." The following paragraph outlines the additions or changes required to the present organization to enable the Training and Visit (T&V) system of agricultural extension to be operated effectively."
>
> "The major criteria to be followed in the improved program would include: increasing staffing levels realistically to meet demands; relieving staff of non-extension duties essential to the Agricultural Department presently performed by extension staff; making provisions for housing and transport for field staff, to enable them to perform their tasks efficiently; and, providing the necessary technical backup to field staff in the way of adequate research work and well qualified specialists."

The existence of this major effort to strengthen NWFP extension heavily influenced the TIPAN Design Team's decisions with respect to outreach. (See Technical Analysis, Section V.D.3.) The proposed outreach program at AU under TIPAN will benefit from and complement the T&V approach of SCARP.

E. Relationship to GOP Policies and Priorities

Pakistan's Sixth Five-Year Plan (1983-1988) states that "its major reliance is on the liberation of the creative energies of the people". TIPAN is a project which seeks to liberate the creative energies of the agricultural community in NWFP - educators, researchers, extension specialists, public and private agri-business and agricultural service personnel and farm families - in an integrated effort to increase agricultural productivity and incomes.

The growth strategy for Pakistan's economy in the Plan contains five major policy objectives, of which four are specific to the agricultural sector. Paraphrased, these four objectives are: increased agricultural yields through more efficient use of primary inputs and technology; an expansion of export markets for wheat, rice and other agricultural commodities; increased self-sufficiency in oilseeds; and, the establishment of agro-industries for processing agricultural surpluses. The overall agricultural development goal of the GOP is to maintain the steady sector growth rate of the last five years (over four percent per annum).

In terms of education policy, the Plan identifies, as two of its seven major policy objectives:

- continued expansion of the training of engineers, technicians and skilled workers; and,

- consolidation of existing universities, with emphasis on improvement in quality, especially in the fields of science and technology."

In agricultural research, there have been several recent indications of the importance the GOP attaches to agricultural research and to increasing the capacity of its agricultural research institutions. As part of an austerity program, the Government recently announced an across-the-board budget cut of 14 percent. Agricultural research, however, was exempt from this cut. In a speech delivered at the inauguration of the National Agricultural Research Center (NARC) on March 27, 1984, President Zia announced two incentives for agricultural scientists: (1) a Pride of Performance Award; and, (2) a technical pay increase of 20 percent of researchers' salaries. It is also significant that the Sixth Five-Year Plan explicity states that agricultural research and, particularly, the strengthening of research organizations, is a high priority.

The Sixth Five-Year Plan also recognizes the need to strengthen public and private sector institutions and to improve the agriculture sector's human resource base if its objectives are to be achieved. The Plan's development goals, objectives and policies are inherently linked to improve the nation's productive base. Paramount attention is directed toward agriculture and the rural sectors. The need for generating appropriate technology through research and communicating those findings in a form and manner acceptable to the target audiences is also explicitly identified.

As a result of these policies, the Plan assigns the highest priority to the development of the Agriculture University at Peshawar. In addition, the GOP included the TIPAN Project as part of its package of special development proposals submitted for consideration at the December 1983 Pakistan Consortium Meeting in Paris.

F. Relationship to A.I.D. Policy, A.I.D. Strategy and Other A.I.D. Projects

TIPAN has been designed to carry out A.I.D. policy as articulated in worldwide and Asia-specific policy guidance. The project also supports the development objectives of the six-year (U.S. FY 1982 - FY 1987) package of U.S. economic assistance to Pakistan and complements other USAID/Pakistan projects in the agriculture sector.

1. A.I.D. Policy "Cornerstones"

a. Policy Dialogue

TIPAN will provide an opportunity for USG and GOP officials to expand their on-going dialogue on several agricultural policy issues. These include: the basic organization of agricultural research and education, and, in particular, the allocation of resources between Federal and Provincial research and educational organizations; increased participation of farmers in the identification and application of improved agricultural technologies; the relationship between research and extension; the role of the agricultural universities in research and extension; and, the participation of the private agri-business sector in agricultural research and extension.

b. Technology Transfer

To achieve its purpose, TIPAN will introduce and/or strengthen the use of new and improved appropriate technologies in several fields. In the field of teaching, the project will introduce new curricula and modern and improved educational management systems. With regard to research, the project will seek to strengthen and expand the use of farming

systems research. In the field of information transfer, the project will assist in developing new and improved methods for the production and dissemination of research findings.

c. Institution-Building

The TIPAN project is basically an institution-building project. The ultimate goal of the Project is to create an institutional environment which is conducive to not only attaining but also maintaining excellence in teaching, research and outreach well beyond the life of the project. As a result of the project, AU should be better equipped and better able to train scientists who can carry out scientific research that responds to the needs of NWFP farmers and contributes to the achievement of NWFP's agricultural production goals.

d. Private Sector

Agricultural production is the largest privately-owned and operated sector in Pakistan's economy. Private farmers, private agri-business operators, and private distributors and marketers of agricultural produce as well as input suppliers are the backbone of this vital component of the national economy. All of these groups in the NWFP will both benefit from and participate in TIPAN. The benefits will be derived from the heightened level and increased quality of agricultural development activities in the province. And, as discussed in Section III., individuals in all of these groups will participate in training programs at AU and in the selection of priority research topics and the preparation of technical packages of information for dissemination to farmers and other end-users.

2. A.I.D. Strategy

a. Asia Regional Strategy

The TIPAN project supports and is consistent with the strategy A.I.D. has established for the Asia Region. As articulated in the Asia Regional Strategic Plan (November 1983), this strategy:

i. places overall emphasis on "analysis and reform of economic policies, the design of science and technology elements in the program, and the strengthening of institutions critical to the development process; and,

ii. singles out agriculture as a priority sector, and within agriculture, support for research, extension and education, with emphasis on the transfer of technology and institutional development.

In the Bureau Plan, institution-building and technology transfer are two of the five areas of program emphasis. With respect to institutions in South Asian countries, the Plan acknowledges that the low-income countries are weak in their institutional development and notes that the Bureau will continue to strengthen government institutions, specifically mentioning agricultural research organizations. The Plan also states that firm educational foundations must be established that will permit low-income countries to replace U.S. technical assistance with their own cadres of trained people.

b. USAID/Pakistan Development Strategy

Agriculture is one of the two major sectors that USAID/Pakistan has, in the context of the six-year economic assistance package, targeted for priority assistance. The project specifically supports the strategic objective identified in the Mission's FY 1986 CDSS dated January 1984 related to "increased cropping intensities and increased crop yields through the application and extension of agricultural technology at the farm level".

A.I.D. is the lead donor in the agricultural technology sector in Pakistan. TIPAN, an institution-building project whose goal is to increase yields and productivity in NWFP, is regarded as "the centerpiece of USAID's technology transfer strategy." The Mission's strategy in this area, as stated in its FY 1986 CDSS, is two-fold: "firstly, to build the technological foundations for yield and productivity gains and secondly, to facilitate the policy and institutional shifts which will permit structural modernization of the sector". The objective of building an integrated agricultural education and research system capable of generating, teaching and applying international quality technology to NWFP's farming community draws on the U.S. comparative advantage in agricultural technology and A.I.D.'s experience in institutional development. USAID's strategy with respect to institutional development recognizes Pakistan's constraints in developing strong, integrated technical organizations. TIPAN, as other projects in the Mission portfolio, promotes training and direct technical assistance as mechanisms to strengthen existing institutions.

3. Relationship to Other A.I.D. Projects

TIPAN is a major effort to reform the practice of agricultural education, research and outreach in NWFP. As the centerpiece of the Mission's agricultural strategy, it will favorably affect the quality of all development initiatives in the sector. As AU develops into a center of teaching and research excellence, its faculty and graduates will become a source of skilled, farmer-oriented technical assistance available to GOP,

A.I.D. and other donor supported projects and programs. The Learning Resources Center and its library will serve all provincial agricultural development workers, while the Continuing Education Center will provide short courses and conferences of interest to farmers, extension workers, personnel of agricultural development banks and public and private agri-businesses. Mass media outreach programs developed by AU's Communications Service Unit will complement a range of A.I.D. and other donor projects in NWFP, as described below.

In terms of the USAID portfolio, the project will dovetail with the research activities encouraged by the on-going Agricultural Research Project (391-0269) which ends in 1985. This project seeks to strengthen the coordination of agricultural research and focuses on strengthening the Pakistan Agricultural Research Council (PARC) and establishing the National Agricultural Research Center (NARC). Linkages between PARC and NWFP-AU and the provincial research network were established under this project and will be strengthened as a result of the TIPAN Project.

The TIPAN project is most closely linked to and will reinforce and complement the objectives of the FY 1984 Management of Agricultural Research and Technology Project (391-0489) which is a follow-on to the Agricultural Research Project. Both MART and TIPAN are designed to strengthen the policy and operational linkages among agricultural research, education, and extension; TIPAN focus on one province, the NWFP, while MART is national in its focus. The Information Transfer component of the MART Project will augment resources available for the AU's Communications Unit by providing short-term technical assistance, training seminars, and workshops that can be used by AU Unit personnel. MART's Training for the Agricultural Research Network component will utilize the NWFP's agricultural training and research facilities as one of the sites for nationwide efforts to improve the professional performance of scientists and extension personnel. The personnel needs assessment to be conducted under MART will assist the NWFP-AU in its long-term planning and projections regarding student enrollment and faculty recruitment. Management improvement interventions developed under MART will be implemented in the NWFP as well as in the other provinces in Pakistan and will therefore reinforce and accelerate the pace of reform in the agricultural system in the NWFP by strengthening the provincial agricultural and training facilities in the NWFP. Similarly, as AU develops into a center of teaching and research excellence, its faculty and graduates will become a source of skilled, farmer-oriented technical assistance available to the entire agricultural research network, including PARC and NARC. In the beginning of the TIPAN project, personnel from the PARC talent pool will serve, on an interim basis, in key management/

administrative positions at the AU while permanent staff are being recruited and trained abroad. In general, the overall linkages between the two projects will be in the sharing of information, personnel, technology, and ideas which will emanate from efforts carried out simultaneously and in tandem to strengthen Pakistan's agricultural sector at both the provincial and national levels. This integration and complementarity will be facilitated by having a representative of the NWFP-AU as a member of the Project Coordinating Committee chaired by PARC, which will be established under the MART Project.

The A.I.D.-financed Forestry Planning and Development Project (391-0481) is linked to the TIPAN Project, primarily through its research and training components. Integration of activities under the two projects will be facilitated through the existing institutional framework of the Forestry Research Technical Committee of PARC, which is comprised of both Federal and Provincial forestry officials as well as PARC agriculturalists. In addition, it is anticipated that personnel from the Pakistan Forestry Institute (PFI) in Peshawar will participate in the teaching program at AU and that TIPAN Project activities will involve NWFP forestry research facilities at PFI and the Provincial Forestry Department.

The Tribal Areas Development Project (391-0471) works in seven Agencies of NWFP, along its border with Afghanistan. Expertise from the strengthened AU will be available to support the implementors of the project; the people of the area will form part of TIPAN's target beneficiary population. In particular, TIPAN will be able to assist with the land development and cropping pattern demonstrations to be undertaken in Bara, and with research and technical assistance in the irrigated and non-irrigated agricultural components of the project.

The Gadoon-Amazai Area Development Project (391-0485) is operating in one of the major opium-poppy producing areas of the NWFP to provide farmers with alternative sources of income. The geographic focus of this Project is being expanded to support the GOP's Special Development and Enforcement Plan for Opium-Poppy Growing Areas, by including other poppy-producing areas of the NWFP. TIPAN research will directly benefit the areas, while experience gained through the GAAD Project will be fed into AU. Similar linkages will be established with a parallel project, funded by the Department of State's Bureau for International Narcotics Matters (INM), being implemented in Malakand Agency in the NWFP.

The research activities of TIPAN will both support and benefit from activities under the three components of the recently approved Food Security Management Project (391-0491). The Economic and Policy

Analysis component will provide guidelines for priority research and analytic topics, while AU's researchers will supply data through the provincial Department of Food and Agriculture to the Agricultural Data Collection component. AU and its research stations will also contribute inputs to improved technology transfer in storage design, grain quality maintenance and pest control under the Post-Harvest Management component of the project.

TIPAN Project activities should also result in technologies which permit the more efficient use of seed, water, fertilizer, and other agricultural inputs. As this knowledge is transferred to Pakistani farmers, the impact of the fertilizer and agricultural equipment provided under the Agricultural Commodities and Equipment (ACE) Program (391-0468) and the benefits of improved watercourses and irrigation systems under the On-Farm Water Management (391-0413) and the Irrigation Systems Management (391-0467) Projects will be enhanced. In addition, ACE Program funds will be used to procure commodities to support activities under the TIPAN Project.

G. Project Rationale

Agriculture dominates the economy of Pakistan. Accounting for about 30 percent of GDP, it employs more than half the labor force. USAID's FY 1986 CDSS dated January 1984, in its review of the sector, states that "the last decade has been characterized by stagnating yields, with the exception of wheat... even for new varieties, yields have remained well below those achieved under comparable conditions in other countries." The analysis suggests that growth over the last 10 years is explained by continued acreage expansion made possible by investments in irrigation. Both land and water resources are limited, and future increases in agriculture, therefore, must be achieved principally through increasing per-acre yields. The potential for such increase in Pakistan is considerable. Studies have proven that increased inputs combined with well-timed water releases and improvements in farm practices can substantially raise crop yields in the short and medium run. In the longer run, however, sustained agricultural growth will only be achieved through major efforts to strengthen the institutional framework for research, extension and other elements of the agricultural system.

Regarding Pakistan's institutions, the CDSS notes:

> "Pakistan is simultaneously institutionally rich and institutionally poor. There is certainly no dearth of organizational structure and systems. A fairly broad base of colonial institutions has been added to with enthusiasm over the past 35 years. Most sectors have too many institutions, but too few strong institutions." (p. 66)

This is certainly true of Pakistan's institutions of higher learning, as has been noted in Section II.B. above. The country is now faced with the need to allocate scarce resources to a plethora of universities, whose graduates are inappropriately trained and whose faculties are insufficiently funded to undertake productive activities in research and development.

Similarly, with respect to agricultural research, Pakistan has 65 research institutes and 162 stations, substations, centers and laboratories, all competing for operating funds, which are estimated to be only between 10 and 20 percent of total budgets. Although there is a centralized institution, the Pakistan Agricultural Research Council (PARC), with a mandate to coordinate research efforts, the provincial institutions remain independent, conducting mainly discipline and commodity-oriented research with little emphasis on small-holder production problems. For agricultural research, the basic problem is that the rapid growth of the institutional infrastructure has surpassed the country's capacity to manage it.

TIPAN is part of an integrated USAID effort, along with the MART and Agricultural Research Project described previously, to help Pakistan deal with these institutional issues. By merging agricultural research and education in NWFP, the project will provide a model for strategies to reduce duplication of effort and increase coordination. By encouraging students and professors to learn, teach and work in a developmental, problem-solving, context, the project will also provide a model for strategies to reduce resource misallocation and increase resource generation. The ultimate goal of all elements of the Project is to generate and transfer technologies that will increase per-acre yields and hence agricultural growth.

NWFP was selected for intensive assistance for several reasons. Along with Baluchistan, NWFP receives relatively less government resources than the provinces of Punjab and Sind, which enjoy advantages of nature and infrastructure that make them more productive and easier to develop. NWFP faces the problem of feeding a growing population, with the added pressure caused by the presence of over 2 million Afghan refugees. NWFP has the unique potential to grow a wide variety of horticultural crops (a major focus of the GOP's Sixth Five-Year Plan), due to its diverse agro-climatic zones, its fertile soils and controlled water supply. The province's highly complex multiple and inter-cropping patterns provide a unique field laboratory for farming systems research. The creation of NWFP-AU as an autonomous university in 1981 provided an institutional focus for project activities in a less developed province, not available in Baluchistan. The Government of the province recognizes the need for a reform of the technology transfer

system, has requested USAID assistance, and has made and is making the organizational and policy changes required for developing an effective, integrated program for research, education and outreach in NWFP.

As this background section has noted, TIPAN is a vital part of A.I.D.'s agricultural strategy, and its elements of reform in education and research are top priorities of Pakistan's Sixth Five Year Plan. The project is consistent with the Asia Bureau's strategy and the Mission's strategy, and complements the work of other donors. Its design is based on lessons learned by A.I.D. in 39 countries as well as experience gained in past projects in Pakistan. It also reflects the recommendations of the October 1983 evaluation of the A.I.D.-financed Agricultural Research Project. TIPAN draws on the U.S. comparative advantage in agricultural research, education and technology transfer. It will operate in an area of significant potential for increased productivity, based on the project's plan to harness NWFP's considerable human and physical resources.

Further, the TIPAN project has the potential to influence national policy and strategies in education and research, areas in which Pakistan's performance has lagged seriously behind its need. The transformation and integration of the agricultural technology transfer network in NWFP that will be undertaken by AU over the next decade will provide a field-testing of strategies in scientific and technical teaching and research. Specifically, TIPAN will be a model for testing approaches in the following crucial areas:

1. raising educational standards and increasing the capacity of graduates for work in technical fields;

2. focusing research, education and outreach on addressing priority problems in the agricultural and rural community;

3. allocating GOP funds for maintenance and innovative research that directly serves provincial and national development objectives;

4. upgrading the institutional environment by providing professional, financial, social and psychic incentives; and,

5. linking research and outreach to instruction and within the teaching program, linking natural and social sciences to create a model of the value of coordinated, multi-disciplinary approaches to finding solutions to development problems.

Pakistan's agricultural institutions will be closely watching the evolution of TIPAN. As lessons are learned, they will be taught beyond the boundaries of the AU campus, in educational and research institutions throughout Pakistan.

III. DETAILED PROJECT DESCRIPTION

A. Project Goal and Purpose

1. Goal

The primary goal of the project is to increase NWFP's agricultural yields, agricultural production, farm income and rural employment. The secondary goal is to transform the agricultural technology transfer network in the NWFP. While the TIPAN Project focuses on the NWFP, it is likely to serve as a model for eventual adaptation and replication in other parts of Pakistan.

2. Purpose

The purpose of the project is to integrate agricultural research in the NWFP with agricultural education at the University level, improve the quality of education offered and research undertaken by the University, and strengthen linkages with agricultural extension through a problem-solving, farmer-oriented outreach program at the University. Achievement of the project purpose will be demonstrated by the existence of the following conditions upon the completion of the 11-year project:

a. AU is a dynamic force for improved agricultural development in the NWFP;

b. AU is producing high quality graduates who are staffing the public and private agricultural sector;

c. the AU-directed provincial research program is generating improved technology packages which are relevant to NWFP farmers and their problems; and,

d. AU outreach activities are integrated with Provincial extension efforts, and new technologies are being effectively delivered to potential users and other client groups.

B. Project Outputs

The project will produce the following outputs by the end of its 11-year life:

1. AU staff increased from 110 to 208;

2. 140 staff members at AU graduated from degree programs (70 Ph.D. and 70 M.Sc.) in the U.S.;

3. 18 AU administrative staff trained in administration and management;

4. 12 new curricula in fields of specialization and 8 new courses for the core program developed and institutionalized;

5. an improved teaching and examination system institutionalized;

6. AU student body expanded from about 600 to about 1200;

7. 225 Provincial Department of Agriculture professional staff merged into AU;

8. a farmer-oriented, problem-solving, resource-generating research program established at AU;

9. a Learning Resources Center established at AU;

10. a Continuing Education Center established at AU;

11. a Department of Extension Education and Communications established at AU;

12. improved technological packages for farmers of each agro-ecological zone of the province developed and disseminated;

13. 300-400 extension agents trained each year, commencing in year 5, with larger numbers reached by mass media methods; and,

14. campus physical facilities expanded as described in the Campus Master Plan. (See also Section C.4. below.)

C. Project Components/Activities

1. New Agricultural University Programs

To date, the primary mission of NWFP-AU has been to educate young men to assume B.P.S. grade 17 and above positions in the provincial government. Nearly all professional agricultural positions in the province are filled by B.Sc. (Honors) and/or M.Sc. (Honors) graduates of the University or its predecessor agricultural programs at Islamia College and the University of Peshawar. While the Agricultural University has been and will continue to be the major source of professional agricultural manpower for NWFP, its new mission will be broader and its orientation refocused.

The redesigned NWFP-AU will become the lead institution in agricultural development of the province and serve as a model for agricultural universities throughout Pakistan. Its orientation will be refocused toward teaching, research and outreach designed to solve the problems of farmers, rural households, and the private and public agro-industrial sectors. It will educate women as well as men for professional positions in the agricultural sector. These changes and new advances will be achieved through the four programs described below.

a. The Teaching Program

i. Weaknesses of the Present System

The current B.Sc. and M.Sc. teaching programs have a number of weaknesses. The curricula are poorly balanced in terms of the agricultural science base, and an applied orientation is lacking. There is a proliferation of courses in some departments, e.g., plant breeding and agronomy, and a lack of sufficient courses in other areas, e.g., farm mechanization and agricultural economics. There is no differentiation of courses for different career paths. The teaching-learning environment and procedures are outdated. There is an overdependence on the lecture method; library and textbook resources are inadequate; and the nearly complete dependence on the external evaluation system provides neither incentives for students to study on a continuous basis nor a procedure for faculty members to judge whether the student is learning what is intended as the course work progresses, or to report to the student on his progress. There is little use of audio-visual techniques, and demonstration aids for laboratory work are outdated and inadequate.

ii. Reform of the Undergraduate Curricula

Agreement has been reached among Design Team and Agricultural University faculty members and administrators on revised curricula at the B.Sc. level. There will be a common core of courses for all students during the first two years. In the third year, students will select a field of specialization for which some courses will be required and some electives will be permitted. The fourth year will be open to enable students to concentrate on their field of specialization. Courses taken will be determined by the student's choice between two career paths: employment with the provincial or federal research and educational system or employment in the provincial extension department or public sector organizations such as the Agricultural Development Authority and Cooperative Societies. This option will provide students with specialized research skills or tailored courses that will prepare them to work in credit banks, agricultural industries and other agri-business organizations. Private sector employment opportunities are currently not significant but are expected to increase considerably in the future.

Eight new courses have been developed for the core program. Two courses will provide students with a background on employment opportunities and offerings of the University in the various fields for career guidance and to assist in selecting a field of specialization. Other new courses include biology for F.Sc. (pre-engineering) entrants; an introduction to computers; micro-biology; agricultural program development and implementation; general principles of animal hygiene and health; and, farming systems management. These courses will strengthen the University's offerings in weak areas and help balance the core program. Each of the core courses is briefly described in Appendix A of Volume I of the Design Team Report.

A detailed curriculum has been developed for each field and sub-field of specialization at both the B.Sc. and M.Sc. levels. These are also presented in detail in Appendix A of Volume I. Fields of specialization and sub-specialization include: Agriculture (Agricultural Chemistry); Animal Husbandry; Plant Science (Agronomy or Horticulture); Social Science (Agricultural Economics/Rural Sociology or Agricultural Extension/Agricultural Communications); and, Engineering Applications and Food Technology (Agricultural Mechanization or Food Technology).

The rationale for the breadth of offerings in the core curriculum and for requiring that it be taken by all students is: (1) the interrelated nature of the various aspects of agriculture; (2) the complexity of farming systems in the NWFP which requires a broad technological base; and, (3) the desire to expose students to the full range of scientific disciplines offered by the University before career choices are made.

To assure that the University's program is pragmatic, students will be required to become involved in hands-on, practical work as a part of each course. In addition, students will take an internship to give them an opportunity to work in agricultural positions. There will also be a student part-time employment program which will help reduce AU operating costs and the size of the staff. Students will be given opportunities, in response to their requests, to earn pocket money and add to their skills by working as laboratory and field assistants, office and library aides, and faculty research assistants.

iii. Reform of the Graduate Curricula

The Design Team and AU faculty have also agreed on changes in the graduate program. To date, the M.Sc. (Honors) degree has been a pre-requisite for entry into government service at the BPS 17 level. The B.Sc. (Honors) program currently taught at AU (which will have its first graduate in 1985) and the revised undergraduate degree program described above will qualify

graduates for this civil service grade. There will, therefore, be less pressure from undergraduates to enroll in the M.Sc. program. Entrance standards for the M.Sc. program will be raised, and the program will focus entirely on the training of research scientists and teachers. The M.Sc. curriculum for each field of specialization is provided in Appendix A of Volume I of the Design Team Report.

iv. Evaluation System

A two-term system will be adopted with heavy emphasis on progressive, internal evaluation by the teacher. External examinations will be retained, to confirm teacher evaluation and ensure the achievement and maintenance of high academic standards. The establishment of the new Learning Resources Center and library and other facilities will provide students with an enhanced opportunity to learn and contribute to an improved academic environment.

v. Admissions Policy

The admissions policy will be revised to admit F.Sc. (pre-engineering) students in addition to F.Sc. (pre-medical) students and other students who meet the required qualifications. Consistent with its development orientation, the University will continue its policy of reserved seats for various ethnic, geographic, or social groups. Special arrangements are permitted for students whose education is sponsored by a third party, such as employees sponsored by their public or private sector agricultural institutions to study for B.Sc. or M.Sc. degrees.

Special attention will be given to students from Baluchistan. Baluchistan is the only province in Pakistan that does not have an agricultural university. Seats will be reserved for qualified students from Baluchistan to provide B.Sc. and M.Sc. level manpower to contribute to the agricultural development of that province. The M.Sc. graduates will provide a cadre of personnel that will serve as a foundation for the establishment of an agricultural university in Baluchistan at a future date. The current most serious constraint in accepting Baluchi students into the University is their lack of preparation. The AU faculty and administrators, assisted by the expatriate consultants, will work with agricultural and university groups in Baluchistan to increase the number of Baluchi students qualified for admission to the University. AU faculty members and administrators and expatriate personnel will also take every opportunity to share experiences in agricultural university development with the leaders of agricultural development from Baluchistan. The expanded mission and improved quality of programs at NWFP-AU should serve as a model to be adopted or adapted to meet the special needs of Baluchistan.

b. The Research Program

i. Weaknesses of the Present System

Research at NWFP-AU is currently focused primarily on M.Sc. student research; it is not directly oriented toward solving priority problems nor does it reflect any programmatic thrust. A significant volume of research is conducted in three administrative units: the Department of Soils; the Department of Chemistry and Human Nutrition; and, the Institute of Development Studies. Research is constrained by the lack of financial support, an inadequate library with no access to literature data bases, limited equipment and lack of transport, all of which has stifled the incentives for faculty members to conduct research other than that required to supervise M.Sc. theses.

Provincial crops agricultural research is undertaken by M.Sc. and B.Sc. degree holders in the service of the Department of Agriculture. The Design Team observed that despite the inadequate levels of support and training, some good work was being done. However, the Team found that, for the most part, the research was not sufficiently sustained to generate scientific breakthroughs or develop technology packages for the small farmers of NWFP.

Livestock production research is conducted in the Animal Production Division of the Veterinary Research Institute (VRI) and the Livestock Experiment Station at Jaba, administered by the Animal Husbandry Department. In the VRI Animal Production Division, most of the research is limited to nutrition and feeding, management and breeding of local breeds and crossbreeds with Friesian cattle, and evaluation of forages. The Jaba station is used primarily as a production unit for sheep breeding stock; however, research is being initiated on the upgrading of fine wool sheep as part of a national program supported by the Australian Development Assistance Bureau.

Both the crops and livestock research are constrained by inadequately trained personnel for high quality research, personnel policies that dampen incentives to do superior work, insufficient field and laboratory equipment, and meager operating funds.

ii. Reform of the Research Program

Merger of the Province's research system with the University will greatly increase research productivity and quality. (See Volume II of the Design Team Report.) With AU as the center of crop and livestock research, the entire province will serve as classroom and laboratory. The "new look" in research will require: (1) a problem-solving orientation; (2) a coordinated program made up of carefully designed research projects geared to priority needs; (3) graduate student theses problems designed to

contribute to the research program; and, (4) integrated planning, research implementation, and evaluation for on-campus and field station research. The problem-solving orientation will require a multi-disciplinary approach to the complex farming systems that prevail in the NWFP. The University will provide the leadership and coordination between the provincial research program and such organizations as the Pakistan Agricultural Research Council, the National Agricultural Research Center, the Nuclear Institute for Food and Agriculture, the Veterinary Research Institute, the Pakistan Forest Institute, the Pakistan Tobacco Board Research Farm, and the Fruit and Vegetable Department Board.

The provincial research program will focus on specific problems faced by farmers and the rest of the agricultural sector. The Design Team, in its discussions with AU faculty, agricultural workers, farmers and GONWFP officials, identified the following priority topics, details of which can be found in Chapter 3 of Volume I of the Design Team Report:

(1) Production, Marketing and Processing of Tree Fruits;

(2) Fertilizer Use Effectiveness on Individual Fields and Crops;

(3) Tripling the Yields of Maize in NWFP in Five Years;

(4) Increased Production and Use of Forage;

(5) Breeding Systems for Ruminant Livestock;

(6) Improvement of the Nutritional Level of People in NWFP;

(7) Meeting Provincial Oilseed Needs; and,

(8) Controlling Leaf Blight of Gram

These problems were deemed urgent; a further list of thirty topics was considered highly important. Once TIPAN is operational, further discussions involving researchers, extension specialists, administrators, farmers, and other actors in the agricultural establishment will be required to set the priorities for provincial research.

c. The Outreach Program

Under the present system, agricultural education, research and extension are the responsibility of separate entities with weak linkages. Under TIPAN, with agricultural education and research merged, the purpose of the outreach program will be to forge strong operational linkages with the NWFP Agricultural Extension Department and other organizations such as the Agricultural Development Bank.

The program will be implemented by about 25 percent of the merged research staff who will be designated as outreach personnel. While all researchers will be expected to spend a minimum of 15 percent of their time on outreach activities, these individuals, who will be located throughout the AU/research station network, will devote 75 percent of their time to outreach activities. The rest of their time will be spent in either research or teaching, or a combination of both. Outreach personnel will be responsible for carrying out most of the on-farm adaptation and/or verification trials, and assisting extension workers with designing and implementing demonstration plots. In addition, with assistance from full time researchers, they will provide technical assistance, backstopping and in-service training for field extension workers. In effect, this cadre of outreach personnel will function as subject matter specialists for extension, a category of personnel that currently exists in name only within the Agricultural Extension Department. Therefore, rather than the extension services attempting to build this function into its system, the outreach program of the University will serve as the primary vehicle to unite research aimed at technology development and the dissemination of research finding through field extension personnel, whose abilities are being strengthened by the World Bank's SCARP Project.

In addition to backstopping extension workers, the University's outreach program will maintain a close working relationship with input suppliers and sources of credit (i.e., the private sector, the Agricultural Development Authority and the Agricultural Development Bank). When technical packages of information, based on the latest research findings, are being developed in advance of each growing season, input and credit suppliers in particular should be involved in their formulation. Through their involvement, they can better anticipate farmer demands and/or alert outreach and extension personnel of possible input and credit constraints that might affect the outreach program.

A vital role of the outreach program will be the continual training of field extension workers. TIPAN provides for in-service courses for about 300 agents per year at AU's Continuing Education Center. In addition, the Communications Services Unit at AU will produce video-tape training courses on research designed specifically for use in the outreach program, that will reach even greater numbers of field workers and farmers each year.

The following objectives will guide the activities of the outreach program:

i. to develop a well-integrated system for technology development and transfer, which provides technical assistance, backstopping and training for field extension personnel and provides a feedback mechanism by which farmers' problems are readily brought to the attention of researchers;

ii. to develop a well-trained cadre of outreach personnel to serve as the primary linkage between research and extension at all levels in the system;

iii. to conduct outreach activities including the joint formulation and verification of technical or agro-economic recommendations (package of practices) for each agro-ecological zone in the NWFP; and,

iv. to enhance AU's capacity and reputation as a problem-oriented institution, whose primary goal is to serve the needs of farmers and the agricultural sector of NWFP.

d. The Enrollment of Women

During the design of TIPAN, AU senior officials expressed strong interest in using the period of change inherent in the transformation of the institution, to re-emphasize the importance of the enrollment of female students at the University. In response to this specific request, two consultants with particular expertise in this area were therefore included on the Design Team. As a result, the design of TIPAN includes provision for the enrollment of women at AU.

Specifically, the design calls for: (i) reserving seats for female students; (ii) GOP-financed construction of a women's dormitory with attached dining and recreational facilities; and, (iii) the hiring of a Dean of Women and up to two other female professionals to augment the current women's staff of two. The role of women in NWFP's agriculture and rural development will be one of the research areas undertaken by the new Faculty of Rural Social Sciences. An outreach program is also planned that will focus specifically on the problems and needs of rural women.

2. Support Centers

TIPAN will establish two centers on the AU campus to support the four programs described above and to integrate the new functions of the university with the NWFP agricultural community.

The Continuing Education Center will serve the outreach and research functions as the in-service training center for short courses and conferences to be offered to extension agents, farmers and other agricultural development workers. The Center will be the major link between the university and the farms, rural households, and agro-industrial interests of the province, and thereby keep AU faculty and students alert to the problems of their clientele.

The Learning Resources Center will serve the combined requirements for teaching, research, and outreach. It will include the University Library, a Communication Services Unit, and the Computer Laboratory. The University Library, the basic unit of the Learning Resources Center, will be available to students, faculty, research staff, and in-service trainees of the outreach program. It will serve as the provincial center of agricultural knowledge and will be closely linked with the PARC system of libraries and world agricultural data bases when these have been developed. It will replace the current outdated and wholly inadequate library to serve the teaching, research, and outreach functions of the new Agricultural University. The Communication Services Unit will assist faculty to develop and revise curricula, courses, and teaching aids and will provide editorial and production services for research and outreach publications. A language laboratory will be available to AU students. The Communications Services Unit will be the center of activity for preparation of mass media information and software for the outreach program. The Computer Laboratory will be an integral part of the Center. It will house 25 teaching and 5 research micro-computers in separate rooms. Appropriate carrel installations will be provided for each computer. Computer laboratory staff will be qualified to develop proficiency in the application of computer science to the special needs of faculty researchers as well as providing instruction on computer use.

3. Organizational Structure and Staffing

a. The NWFP-AU University

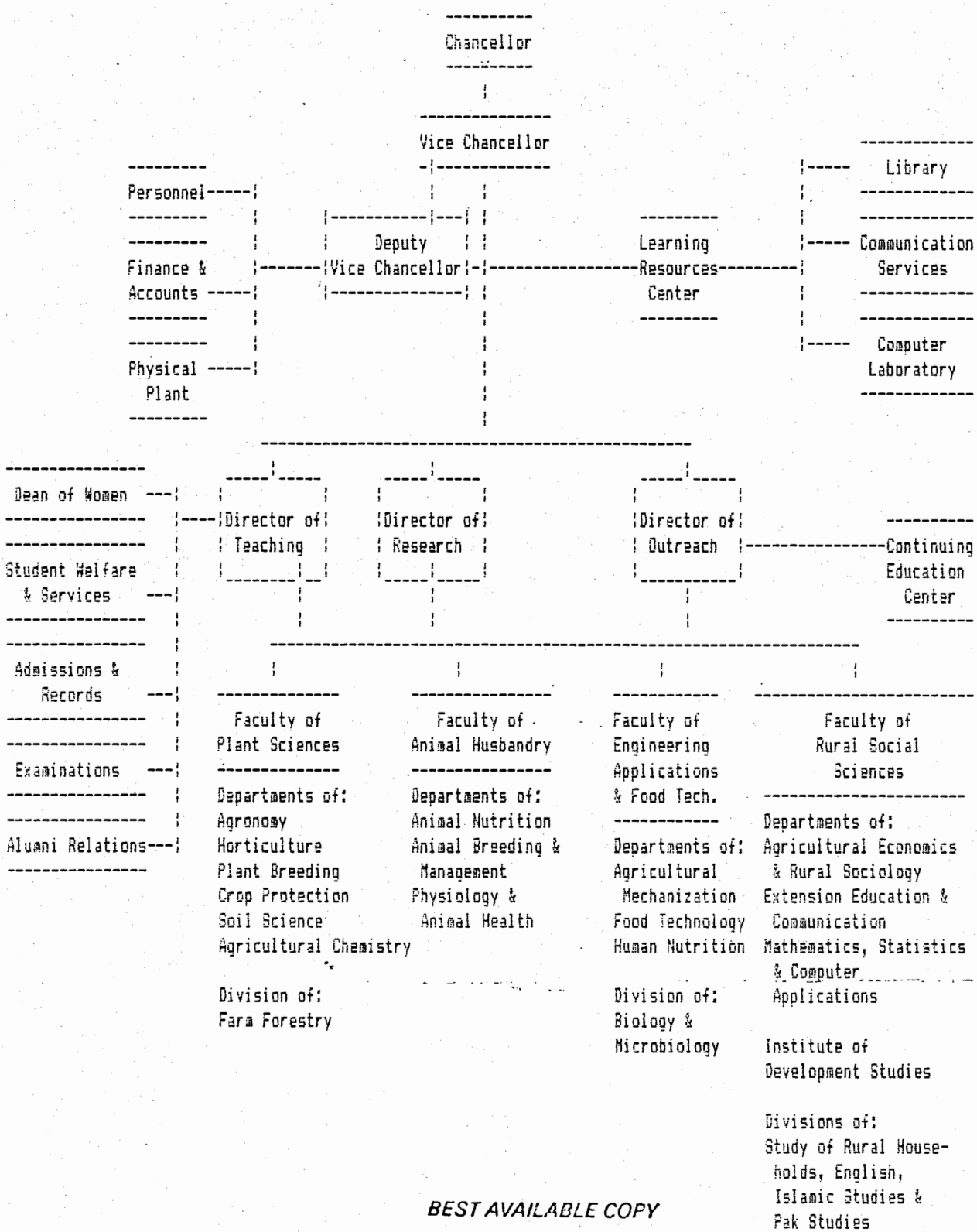
The upgraded and expanded role of the Agricultural University will require a modified organizational structure. The proposed changes reflect the multi-function development thrust of the new institution and the greatly expanded demands placed upon the Vice Chancellor as the chief administrative officer.

As shown in the Organization Chart in Figure 2, the position of Deputy Vice Chancellor is added, with responsibilities for administration and services delegated by the Vice Chancellor. Units that provide services to the total University such as the Learning Resources Center and Library, Physical Plant, Personnel, Finance and Accounts will serve in a staff capacity to the Vice Chancellor and be administered by the Deputy Vice Chancellor.

There will be a Director for each of the three functions of the University: teaching; research; and, outreach. Each Director will be directly responsible to the Vice Chancellor for program planning, implementation, coordination, administration, and evaluation and will coordinate with the Deputy Vice Chancellor on administrative and service matters. The position of Registrar will be eliminated, and his responsibilities will be assumed by the Deputy Vice Chancellor and Director for Teaching.

FIGURE 2

PROPOSED ORGANIZATION CHART OF THE NWFP AGRICULTURAL UNIVERSITY



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There will be four faculties: Plant Sciences; Animal Husbandry; Engineering Applications and Food Technology; and, Rural Social Sciences. The responsibilities and duties of the Dean of each faculty will be upgraded to provide for multi-disciplinary attention to the teaching, research, and outreach functions. Deans will be directly responsible to the Directors for Teaching, Research, and Outreach for their programs in the three functional areas and will work closely with the Deputy Vice Chancellor for staff services. The Deans will be specifically responsible for ensuring coordination among the departments and divisions of the faculties. To ensure efficient use of resources in a structure with some small departments, the Faculty, not the Department, will be the basic unit for support personnel and services.

The academic and administrative head of each department will be responsible to the Dean of the Faculty for the teaching, research, and outreach programs. Heads of Departments will be actively engaged in a combination of teaching, research, and outreach functions and also carry administrative responsibilities.

Staffing requirements have been determined for the faculties, departments, and administrative units in view of the expanded role of the Agricultural University. The campus-based professional staff of the NWFP-AU is projected to increase from the current level of 110 to 208 over the 11-year life of the project. Needs were estimated for each discipline and functional directorate and for the new support units such as the Learning Resources Center and Continuing Education Center. The primary reasons for staff expansion are the major augmentation of the campus-based research program and the establishment of the outreach program. Current staff resources were estimated to be devoted approximately 80 percent to teaching and 20 percent to research. The end-of-project projection of staff balance by functions is 45 percent for teaching, 30 percent for campus-based research, and 25 percent for outreach.

Currently, about 92 faculty members, on a full-time equivalent (FTE) basis, are teaching 683 students for a faculty/student ratio of 1 to 7.4. Eighteen FTEs are devoted to research. Functional assignments for the future 208 faculty members are projected to be 94 for teaching, 62 for research, and 52 for outreach. With an end-of-project projection of 1200 students and 94 teaching faculty, the faculty/student ratio would be 1 to 12.8.

b. Proposed Research Organization

When the provincial research service is merged with AU, the University will acquire 225 new personnel, as well as five agricultural research institutes and their associated stations and substations. With additional research staff being added over the life of the project, the merged and reorganized research system will require strong leadership by the Research Director. He will be assisted by a Deputy Director with special responsibilities for the research conducted at the institutes and stations. (See Figure 3.) A two-dimensional approach to the administration of research has been developed. Faculty Deans and Department Heads will provide leadership and ensure coordination of the research program undertaken by their respective units. Research Task Groups will be formed for each priority problem area. The Task Group will be multi-disciplinary in composition and problem-solving in orientation. All research will be "projectized" with a specified format followed for each project proposal. There will be peer review and approval of each project by an ad hoc committee selected solely for this purpose.

c. Proposed Outreach Organization

Figure 4 shows the proposed organization and staffing of the Outreach Program. The Director of Outreach will give both programmatic and administrative leadership to the outreach program. He will work closely with the Vice Chancellor to establish program objectives and priorities and take the lead for implementing them. Careful attention will be paid to the coordination of the off-campus outreach activities with on-campus programs and resources.

The four on-campus Program Leaders will coordinate and facilitate the outreach activities of their respective Faculties (i.e., Plant Sciences, Animal Husbandry, etc.). They will also coordinate and integrate work among Faculties and will therefore be located not in the Faculties, but in the Continuing Education Center. They will work with research and outreach personnel in their respective faculties to: (i) formulate technical recommendations based on research findings; (ii) have outreach faculty transform these recommendations into appropriate software (bulletins, posters, slide sets, and the like); and, (iii) schedule in-service training workshops both on-campus and off-campus as appropriate, for the clientele to be served. Program Leaders will also coordinate the technical backstopping of off-campus activities of the outreach and research faculty.

The Regional Program Leaders will provide leadership for the overall outreach program in the four major regions of NWFP. They will focus on the major farming systems, integrating research findings from each field of study into an overall outreach program that meets the needs of farmers in their respective regions. They will direct and

FIGURE 3

PROPOSED RESEARCH ORGANIZATION OF THE NWFP AGRICULTURAL UNIVERSITY

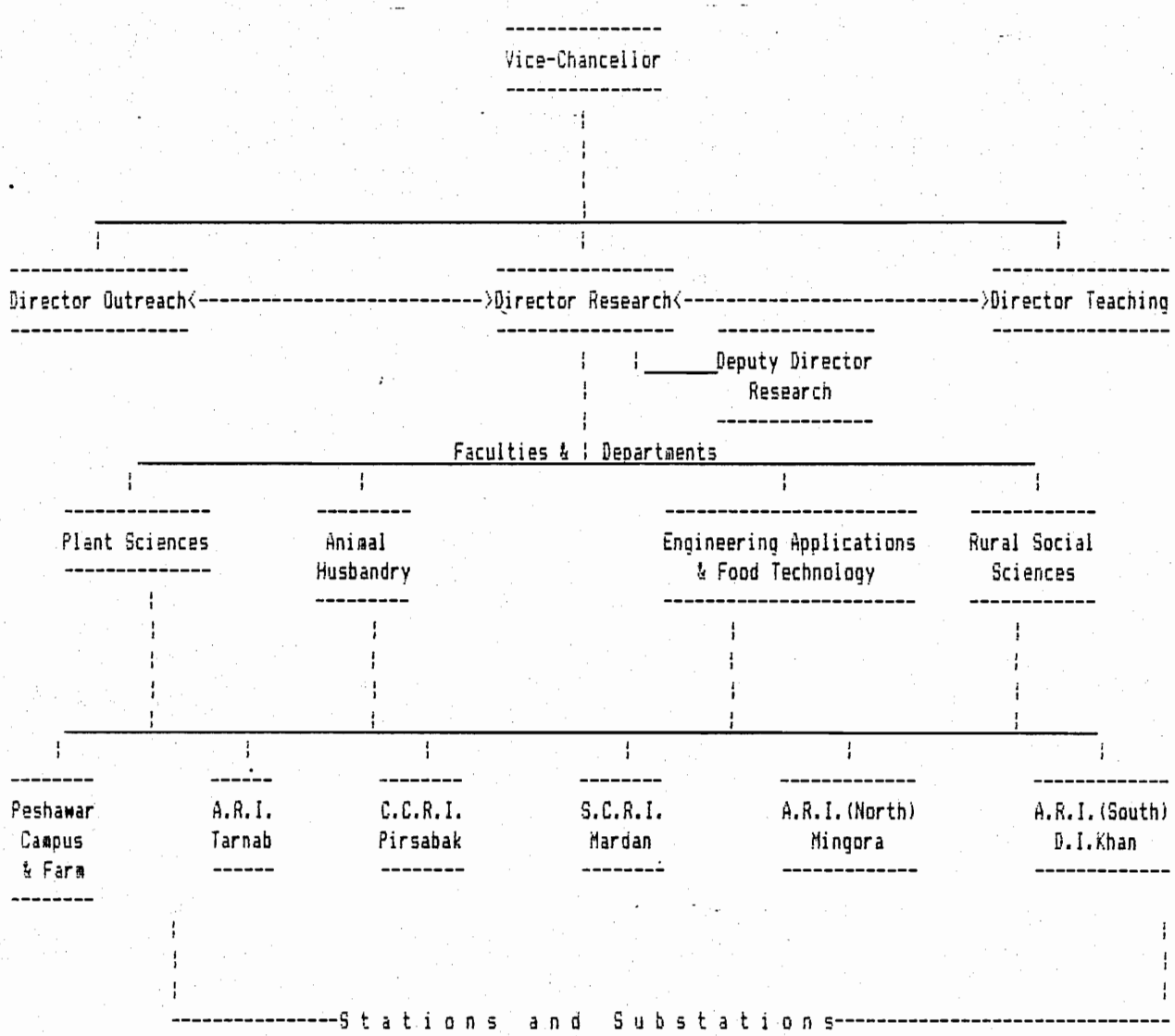

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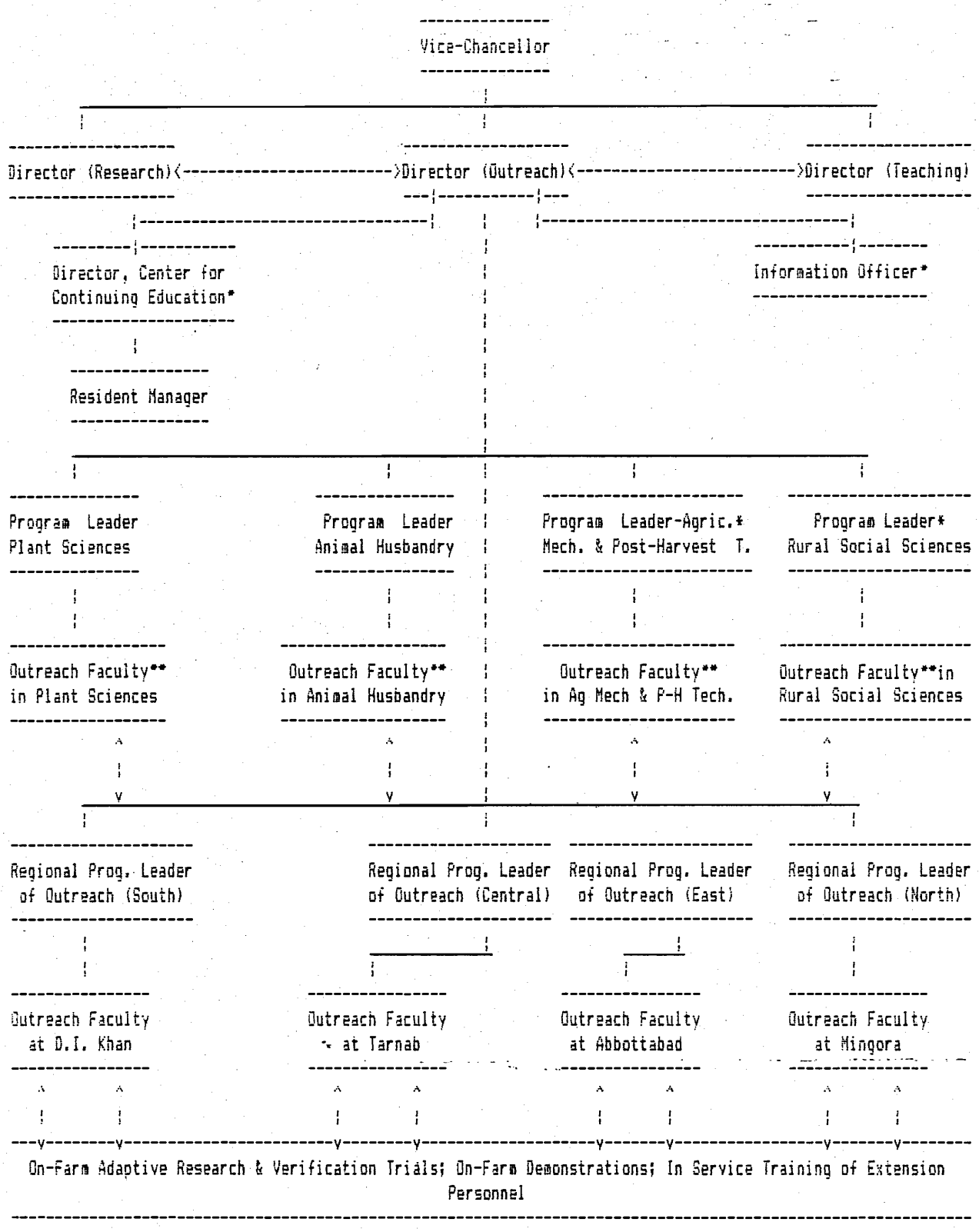
FIGURE 4

PROPOSED OUTREACH ORGANIZATION OF THE NWFP AGRICULTURAL UNIVERSITY



*Director of Outreach, On-campus Program Leaders and the Center staff will all have offices in the Center of Continuing Education.

**Faculty with outreach appointments on campus will be located in their respective departments.

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coordinate the off-station outreach activities, including on-farm adaptive research, verification trials and demonstration plots. Although the primary clientele of the regional outreach faculty will be the Agricultural Officers and Field Assistants in Extension, Regional Program Leaders will also have direct contact with farmers through their on-farm trials and demonstrations, which will include field days held jointly with Extension personnel. In addition, they will maintain regular contact with input and credit suppliers in their regions.

Because the off-campus outreach program will be oriented directly to the major farming systems in the area, the regional outreach faculty will be concerned with commodity and farming systems improvement programs rather than disciplinary topics as will be the case on-campus. Outreach personnel will interact with farmers off-campus, through on-farm adaptive research, field verifications and demonstrations, and on-campus, through activities at the Continuing Education Center. The outreach staff will therefore be a primary vehicle for farmer problem identification.

4. Campus Master Plan

a. Background

The campus of the University of Peshawar is situated on the western side of Peshawar, north of the Grand Trunk road. Islamia College, established in 1913, was the first institution of higher learning in the NWFP. It remains today an important educational facility as well as one of the pre-eminent architectural landmarks of Peshawar. Over the years, the University complex has grown to include Schools of Law, Engineering, Commerce, and Medicine, as well as a number of specialized schools and research institutions. Unfortunately, the architectural quality of later buildings has not matched the charm and character of the original Islamia College buildings. The Agricultural University campus represents an opportunity to return to the high quality design exemplified by Islamia College.

b. The Site

The site of the Agricultural University campus lies at the extreme northwest corner of the greater University of Peshawar campus. The 437-acre site is divided in two by a dry riverbed, or nullah. The eastern portion, approximately 70 acres in extent, contains the existing academic, teaching and student hostel buildings. The western portion, 327 acres, contains the farm center and experimental fields. The nullah, which is occasionally flooded during the monsoon season for short periods of time, contains roughly 40 acres of land. Figures 5 and 6 show the existing layout of the University campus. Figure 7 depicts what the campus will look like at the end of Phase III of the TIPAN Project.

FIGURE 5

EXISTING LAYOUT OF THE ENTIRE CAMPUS OF THE NWFP AGRICULTURAL UNIVERSITY

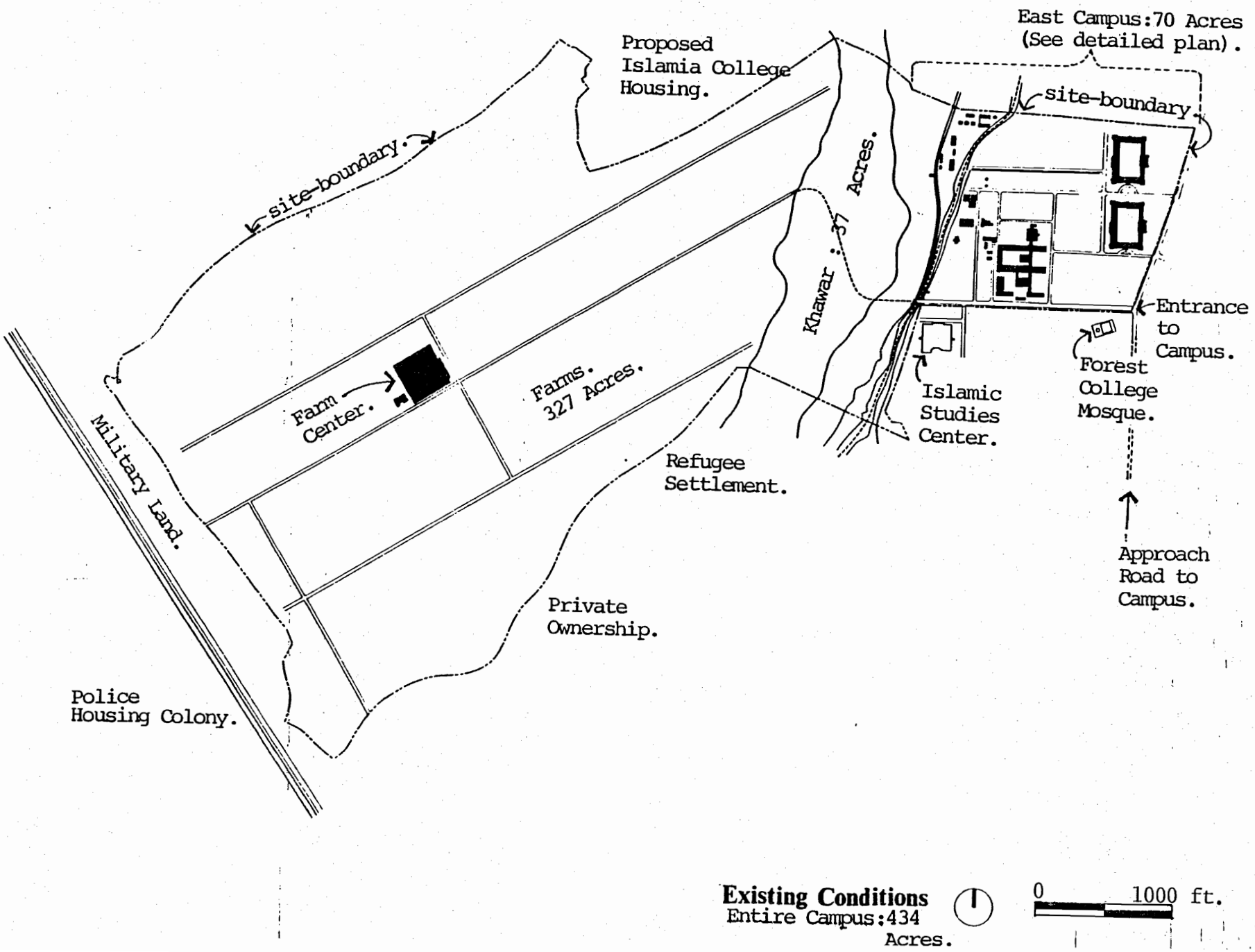
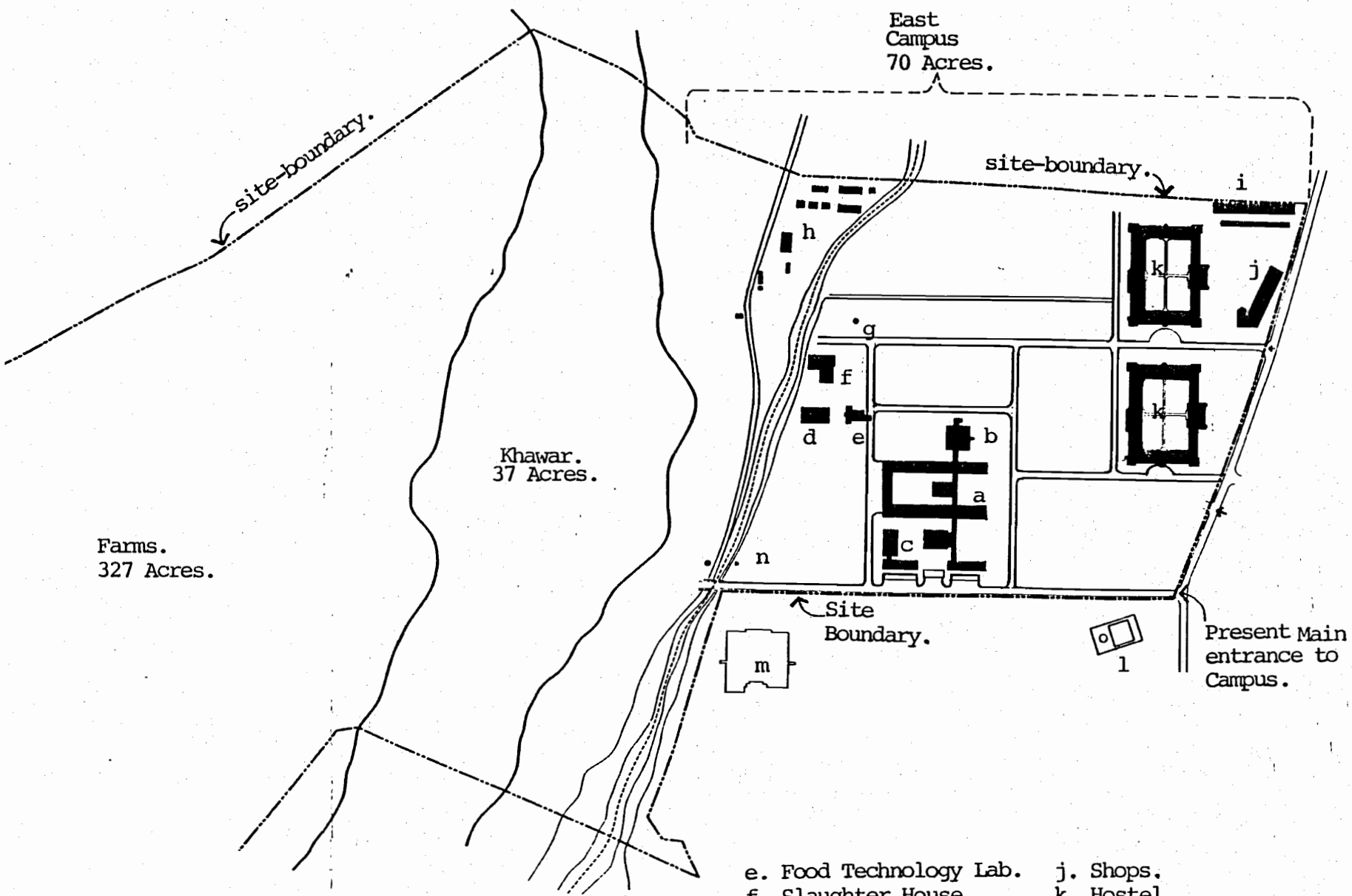


FIGURE 6

EXISTING LAYOUT OF THE EAST CAMPUS OF THE NWFP AGRICULTURAL UNIVERSITY



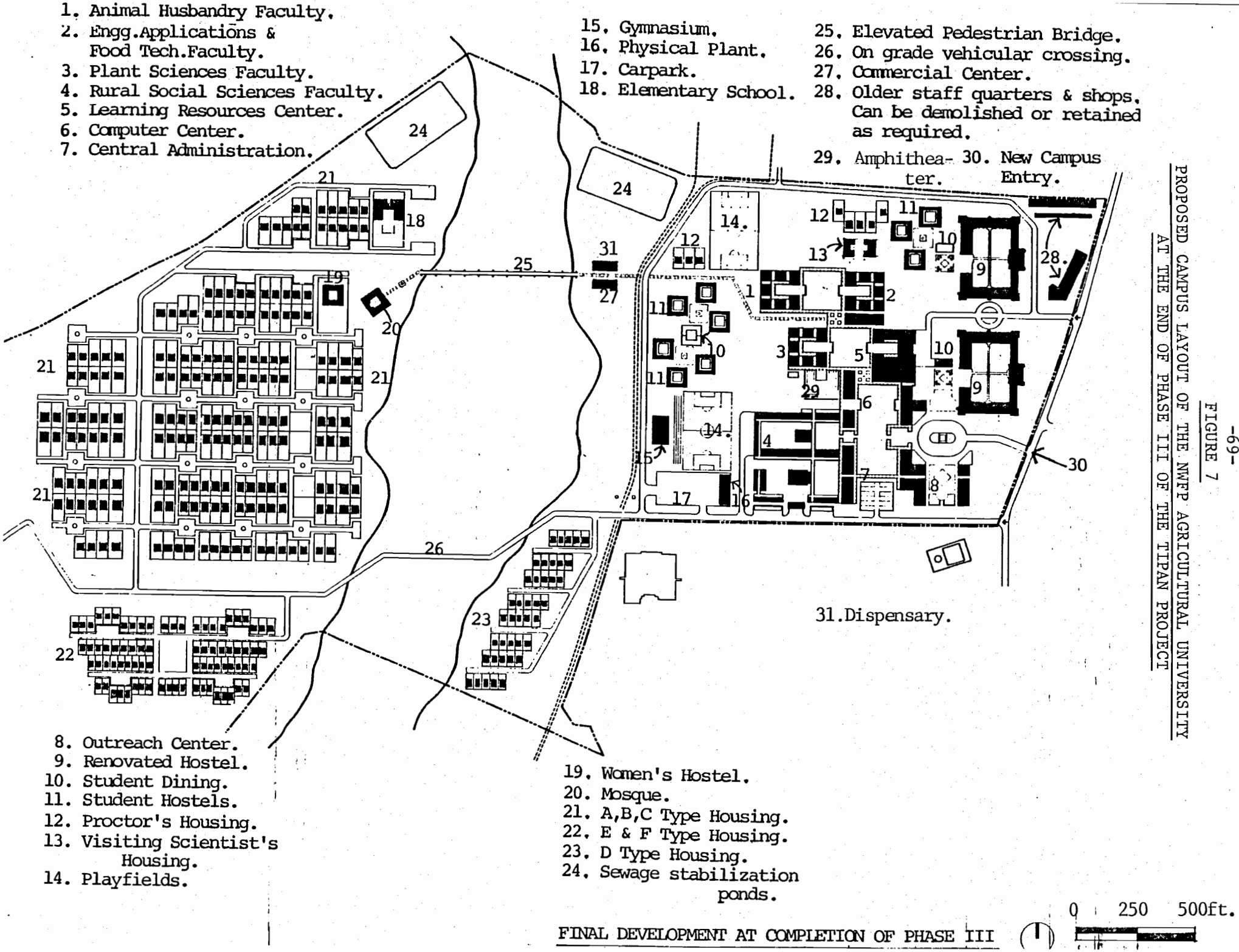
a. Present Academic & Administrative Building.
b. Laboratories & Offices.
c. Institute of Development Studies.
d. Milk Lab.
e. Food Technology Lab.
f. Slaughter House.
g. Water Tower.
h. Animal Science Block.
i. Staff Quarters.
j. Shops.
k. Hostel.
l. Forest College Mosque.
m. Islamic Studies Center.
n. Tube Well.

Existing Conditions
East Campus.

0 250 500 ft.

FIGURE 7

PROPOSED CAMPUS LAYOUT OF THE NWFP AGRICULTURAL UNIVERSITY AT THE END OF PHASE III OF THE TIPAN PROJECT



FINAL DEVELOPMENT AT COMPLETION OF PHASE III

The site is predominantly open, with trees limited to the edges of fields and building sites. Adjacent uses include a mosque, staff housing owned by the Pakistan Forest Institute, the recently constructed Islamic Studies Center, and a strip of commercial development along the northeastern edge of the campus. Although most of the adjoining land is currently undeveloped, rapid urban growth is projected for the future, spurred in part by the development of the campus.

Access to the campus site is provided by existing roadways serving the larger University of Peshawar Campus, to the eastern boundary of the Agricultural University grounds. Limited public bus transit service is also provided to this point.

At present, only an ungraded trail joins the eastern, developed portion of the campus to the experimental fields and farm buildings which lie to the west of the nullah. This trail is occasionally flooded and washed out. The proposed development plan will include improved pedestrian and vehicular access throughout the campus.

Several major existing buildings on campus will be retained, while a number of others will be used on a temporary basis pending demolition and construction of new structures. Principal existing structures to be renovated and retained include two student hostels, capable of housing up to 400 students, and the existing academic/administrative building, containing approximately 74,000 square feet. A new 9,000 square foot office building, designed to house the Institute of Development Studies, is under construction and is scheduled for completion in 1984.

In addition to the above, the present campus includes a variety of smaller buildings of variable age and quality. To the greatest extent feasible, these structures will be retained for interim use, but none will be retained in the ultimate master plan.

c. Programming of Campus Facilities

Although the new and renovated physical facilities are a central component of the overall design strategy, severe budgetary constraints will require construction to be limited to the most necessary and cost-effective facilities. During the master planning effort, a number of technical analyses were undertaken by the Architectural Design Team in collaboration with the University Design Team in order to identify priority program elements and to develop a phased construction plan which would accommodate and be driven by the planned institutional improvements and growth projected over the 11-year development program. The relevant technical analyses included:

i. an inventory and assessment of the condition and use potential of existing structures on-campus;

ii. identification, in cooperation with AU faculty and staff, of current and likely future physical space and equipment needs over the life of the 11-year project;

iii. an assessment of functional interrelationships and "adjacency needs" of the various elements of the campus plan; and,

iv. a review of recent relevant international experience in campus programming and development for universities of similar size and mission.

The Campus Master Plan, as presented and discussed in detail in Volume III of the Design Team Report, will provide the necessary physical framework in which to achieve the multiple goals of the University and accommodate its planned development and growth.

d. Recommended Physical Development Scheduling

Since new construction will be phased in order to spread the fiscal impact of the capital investment program, careful scheduling will be required to ensure the availability of needed space in the interim stages and to minimize disruption and inconvenience to campus users and residents. Elements of the scheduling strategy include:

i. developing basic infrastructure elements (water and sewer service; electrical service; major roadways) early in the project period. Basic systems will be sized to meet ultimate demands and installed during early construction phases, except in situations where logical extensions can be added as part of later phases. This implies a significant investment in the early years for infrastructure, but will reduce the likelihood of undersizing and the need to disrupt areas of the campus where other building activities have been completed. The inflationary effect on construction costs will also be mitigated by this approach;

ii. concentrating each phase of building construction in as small a contiguous area as possible. This will serve to limit the area being disrupted by construction activity at any one time while allowing the finished project to provide maximum effect as an addition to the campus;

iii. providing sufficient newly constructed space at planned time intervals so that anticipated student enrollment and faculty growth can be accommodated and existing

structures can be vacated when substantial renovation is needed. The Phase I construction program will include construction of as much of the facilities as possible for a 915 student enrollment;

iv. allowing for sharing of certain new and renovated space by administrative staff, central support functions, and the four Faculties until such time as the ultimate development is achieved, and all campus users are housed in their final quarters;

v. allowing for the early completion of certain highly symbolic elements which will give definition and character to the entire campus and which cannot be properly housed in any of the existing structures. Such elements include; the Learning Resources Center; the Continuing Education Center; a central reception courtyard; and, a student/faculty campus center; and,

vi. encouraging the early provision of landscaping throughout the campus, in both formal and informal plantings. The splendid plantings at the Islamia College campus attest to the value of landscaping for both aesthetic and micro-climatic ends.

e. Off-Campus Rehabilitation

Merger of the provincial research service with AU will bring 5 research institutes and associated stations and sub-stations directly into the University system. These facilities will require maintenance and rehabilitation to enable scientists to contribute to the overall research program. Accordingly, $ 500,000 has been set aside in the campus development budget to provide for maintenance, rehabilitation and the proper installation and use of off-campus equipment.

5. Technical Assistance Requirements

Long and short-term technical assistance needs were identified by Design Team members working in close collaboration with faculty and administrative staff of the AU. The project will finance a total of 486 person-months of long-term and 388 person-months of short-term expatriate technical assistance. A summary of the technical assistance requirements by faculty is provided in Table 7. In addition, short-term technical assistance to install communications equipment and train AU staff in its use will be provided by a private firm under a sub-contract with the University of Illinois. Details are provided in Section IV.A.3.

TABLE 7

SUMMARY OF TECHNICAL ASSISTANCE REQUIREMENTS BY FACULTY OR UNIT

Faculty/Unit	Long-term	Short-term
	(In Person-Months)	
1. General Administration	258	26
2. Plant Sciences	24	113
3. Engineering Applications and Food Technology	36	70
4. Animal Husbandry	72	94
5. Rural Social Sciences	36	65
6. Learning Resources Center	60	20
	486	388

Long-term technical assistance personnel are programmed in two broad areas: (a) policy and program development and management to effect the structural changes and expanded program thrusts of the project including linkage development to provincial and central government organizations; and, (b) technical and management assistance in particularly weak academic areas.

Technical assistance will be phased over the life of the project. (See Section IV.A.3. for details.) Team members will work most closely with the following individuals at AU: the Vice Chancellor; the Director of Instruction; the Director of Research; the Director of Outreach; the Head of Irrigation and Water Management; the Head of Agricultural Mechanization; the Head of Dairy Production; the Head of Meat Animal Production; the Dean of Rural Social Science; the Director of the Learning Resources Center; the Head of Communications Production; the Head of Research Station Management.

The Technical Assistance Team Leader will work directly with the Vice Chancellor to provide overall policy, strategy and program assistance on all aspects of institutional development and to integrate external project inputs into a complementary and cohesive program. Three team members will concentrate on establishing the structural and program reforms in the teaching, research, and outreach functions. The new Learning Resources Center, which is to serve the entire University program, requires long-term technical assistance in overall program and facility development and in communications production. The need for experimental field development, both at the University campus farm and at the outlying institutes and stations of the merged research system, calls for a specialist in research farm development and management. The policy and program focus and the need for structural and administrative change in the University and its departments and faculties require that these long-term consultants be on board early in the life of the project.

The weak academic areas are: water management and irrigation; agricultural mechanization; animal husbandry; and, rural social sciences. The large faculty of plant sciences receives a relatively small amount of long-term technical assistance because this faculty has a core of experienced faculty members with M.Sc. and Ph.D. level training in the U.S., Canada, and Australia.

Heavy dependence is placed upon short-term technical assistance for three reasons: (a) to discourage overdependence of faculty members and administrators on expatriates; (b) to support program development in specific disciplines; and, (c) to guide the in-country thesis research of participants.

6. Participant Training Requirements

An inventory of current faculty members in terms of numbers and qualifications, compared to requirements anticipated over the life of the project, provided the basis for projecting staff increases and participant training needs. Heavy emphasis was placed on the training component since A.I.D.'s experience in agricultural university development has shown that returns to training inputs are relatively high and long-lasting.

Table 8 summarizes the participant training requirements by administrative units in the University. The numbers include the individuals from the provincial research system who will also be trained, taking into account the faculties to which they will most likely be assigned.

TABLE 8

SUMMARY OF TRAINING REQUIREMENTS BY FACULTY OR UNIT[a]

Faculty/Unit	Degree					
	Ph.D.		M.Sc.		Non-Degree	
	No.	Mos.	No.	Mos.	No.	Mos.
1. General Administration	2	72	1	24	3	9
2. Plant Sciences	35	1260	21	504	29	190
3. Engineering Applications and Food Technology	6	216	9	216	6	37
4. Animal Husbandry	11	396	12	288	12	67
5. Rural Social Sciences	10	360	15	360	9	41
6. Learning Resources Center	1	36	9	216	6	18
7. Continuing Education Center	5	180	3	72	--	--
TOTAL:	70	2,520	70	1,680	65	362

[a] Of the 140 individuals who will receive degree training, 54 will be existing AU staff and 86 will be new hires or individuals from the merged research system.

The Faculty of Plant Sciences, which will replace the current Faculty of Agriculture, will be the largest faculty. Its size is consistent with the importance of the soils and crops of the Province as contributors to food, feed, and fuel output. Those individuals joining AU from the provincial research establishment will be concentrated in the Plant Sciences Faculty. This Faculty, therefore, will receive one-half of the total training. The training emphasis in Rural Social Sciences will be on development of

the new Department of Extension Education and Communications and orientation of some faculty members in the Institute of Development Studies to the applied disciplines of agricultural economics and rural sociology. In the Faculties of Animal Husbandry and Engineering Applications and Food Technology, training will be oriented toward broadening the base of competence in the sub-disciplines of these fields. The Learning Resources Center and Continuing Education Center will require recruitment of new faculty members to be trained to perform their special functions.

Most degree candidates will be sent for training during the first 5 years of the project, while new facilities are being constructed under the first phase of the master plan for campus development. Years 3 through 7 will see the completion of most degree work and the return of the staff to take up their responsibilities at the University. (See Section IV.A.5 for further details.)

The plan to have a high proportion of faculty members from the University complete their graduate course work in U.S. universities and then conduct their thesis/dissertation research in Pakistan is an important mechanism to prepare participants for re-entry into the NWFP research and education system. Not only will this approach ensure the relevance of the overall graduate program, but it also will substantially increase the quantity and quality of agricultural research underway in Pakistan. In-country thesis research often evolves into a long-term research program and thus will provide the recently-returned faculty member with an easy transition from graduate student to university researcher. U.S. university requirements will necessitate thesis/dissertation defense in the U.S. However, the advantages of this approach are sufficiently great to justify its increased cost.

7. Commodity Requirements

Given its expanded mission and increased staff, AU will require additional field equipment, laboratory apparatus, scientific supplies and other commodity support. Table 9 presents a summary of project commodity requirements in two groups. The first group consists of specifically identified items needed immediately to begin implementing the project. The second group includes estimates of equipment requirements by Department or Office, for which lists will be finalized as the project is implemented. The equipment needs shown in Table 9 represent a balance between the identified needs of AU personnel and budgetary and other constraints such as availability of local servicing capability or spare parts. A detailed list of the first group of commodities is presented in Annex I. Illustrative lists of likely future requirements are on file at USAID/Pakistan. (See Section IV.C. and Chapter 9, Volume I of the Design Team Report for further details.)

TABLE 9

SUMMARY OF COMMODITY REQUIREMENTS
(US $ 000)

A. Immediate Commodity Needs	
Telecommunications (Phase I)	237
Farm and Research Center Machinery	157
Instructional Resources and Educational Material	66
University/Extension Equipment	91
Office Equipment - Vice Chancellor	4
Horticulture Department Equipment	5
Agronomy Department Equipment	10
Plant Science Equipment	41
Computer Laboratory Equipment	115
Expatriate Furniture and Equipment	175
Project Vehicles	193
Contingency	109
Sub-Total:	1203
B. Likely Future Needs	
Plant Science	160
Horticulture	200
Soil Science	300
Plant Breeding and Genetics	125
Plant Protection	400
Agricultural Mechanization	100
Food Technology	750
Animal Husbandry	300
Agricultural Chemistry	325
Rural Social Sciences	34
Learning Resources Center	770
Computer Laboratory	120
Continuing Education Center	48
Telecommunications (Phase II and beyond)	228
Tubewells	125
Vehicles	500
Textbooks and Other Educational Materials	312
Sub-Total:	4797
Total:	6000

IV. IMPLEMENTATION PLAN

A. Implementation Schedule

1. New Agricultural University Programs

TIPAN will be implemented over an eleven year period, starting in 1984 and ending in 1995. The Project has been divided into three discrete but overlapping phases. The construction program has been designed to accommodate and reflect the institutional development program's schedule and requirements. However, because of the need to allow time for construction design activities and to properly schedule the construction work so as not to disrupt the on-going University development program, the phasing of both the construction program and the institutional development program is not completely synchronized. Therefore, while the Phase I institutional development program is scheduled to occur over 4 years and end in 1988, the Phase I construction program will not be completed until almost two years later i.e., 1990. Evaluation of the Phase I program will occur toward the end of the proposed 4-year institutional development program in the spring of 1988. If the decision is taken to proceed with Phase II, there will be some overlap in Phase II (and similarly in Phase III) as the construction program under the previous phase ends and the construction program under the succeeding phase begins. The "over-run" in both Phases II and III is reduced to about one year. Thus, the life of TIPAN is projected at 11 years. Figure 7a shows the relationship between the phasing of the institutional development program and the construction program and the planned formal project evaluations.

Each phase is designed to be self-supporting, i.e., activities completed under one phase do not depend on a follow-on to be sustained, although the full potential of those activities may not be realized without the next phase. Activities within each phase have been carefully planned to ensure complementarity with other activities and to allow for the orderly growth and management of the project. The phasing of project activities also takes into account the absorptive capacity of the recipient institutions. Implementation of each follow-on phase will not begin until the preceding phase has been evaluated.

To implement this multi-faceted project and to allow for the Continuing Evaluation and Monitoring Plan described in Section IV.E.1. below, the project will need detailed implementation plans, to be drawn up each year by the Project's Management Advisory Group. (See Section IV.B.3. below.). These plans will cover all elements of the project, broken down into quantitative targets, and will assign responsibilities to individuals/organizations and describe the inter-relationships among all activities and points of required collaboration between participating parties. Identical copies of each annual plan will be used by: (a) the Vice Chancellor; (b) the T.A. Team Leader; and, (c) the USAID Project Officer as a guide for the day-to-day implementation of TIPAN. An illustrative plan for Year 1 is presented in Annex Q. Its details will be finalized, with inputs from the three individuals cited above, in the first three months of the project.

FIGURE 7a

SUMMARY ILLUSTRATIVE IMPLEMENTATION SCHEDULE

	1984-85	1995-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
PHASE I											
Institutional Development Program	(----------(4 years)----------			)							
Construction Program	(----------		(6 years)----------				)				
Formal Evaluation				X							
PHASE II											
Institutional Development Program					(--------(3 years)--------)						
Construction Program					(----------(4 years)----------			)			
Formal Evaluation							X				
PHASE III											
Institutional Development Program								(--------(3 years)--------)			
Construction Program								(----------(4 years)----------			)
Formal Evaluation											X

The narrative in the section which follows highlights the principal activities to be implemented during Phase I. The illustrative implementation schedules in Figures 8-11 show the proposed timing of primary activities to be undertaken over the life of the project in the development of the teaching, research and outreach programs and the Learning Resources Center, respectively.

2. Implementation of Institutional Development Activities in Phase I

Phase I will build the foundation for the implementation and self-sustaining growth of the subsequent two phases. It is the crucial period in which all elements of the transformation of the AU must be introduced and integrated into a coherent program that is functioning towards the achievement of TIPAN objectives.

a. Teaching Program

The Teaching Directorate will be established, and the new B.Sc. curriculum, featuring two-term modules will be introduced, year by year, over the four-year institutional development program in Phase I. An academic advisement system will be established, and a system of internal examinations will also be put in place. Student intern and work programs will be introduced, and a job placement service will be initiated. Faculty development seminars will enhance the teaching, research and communications skills of the staff. The first class under the new B.Sc. curriculum will graduate in June 1988. Attention will be given to enriching the current B.Sc. and M.Sc. curricula, and a new M.Sc. curriculum will be developed for implementation in year one of Phase II. Other activities will include preparations for the enrollment of women, an intensive preparation program for Baluchistan students, institutionalization of a program to evaluate teaching performance, and expansion of the student sports and recreation program.

The content and scheduling of Phase I teaching program activities has been carefully worked out by the Design Team. Details can be found in Annex A of Volume I of the Design Team Report. An illustrative implementation schedule for the Teaching Program is shown in Figure 8.

b. Research Program

Phase I activities will concentrate on the following areas:

i. Organizational Development will include the establishment of the Research Directorate and the transfer of the staff and budgets from the provincial research departments to AU. By the end of Phase I, a unified system of research administration will be in place.

FIGURE 8

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR THE TEACHING PROGRAM

	PHASE I				PHASE II			PHASE III		
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
Establish teaching Directorate	^----^									
Introduce New B.Sc. Curriculum First Year	^----------^	---------->	---------->	---------->	---------->	---------->	---------->	---------->	---------->	---------->
--------> Second Year		^----^	---------->	---------->	---------->	---------->	---------->	---------->	---------->	---------->
--------> Third Year			^----^	---------->	---------->	---------->	---------->	---------->	---------->	---------->
--------> Fourth Year				^----^	---------->	---------->	---------->	---------->	---------->	---------->
Graduate 1st New B.Sc. Class					X					
New Textbook Acquisition	^----------^									
Plan M.Sc. Program		^----------^								
Introduce New M.Sc. Curriculum 1st Yr					^----^	---------->	---------->	---------->	---------->	---------->
--------> Second Year						^----^	---------->	---------->	---------->	---------->
Graduate First New M.Sc. Class							X			
Term (module) System Initiated	^----^	---------->	---------->	---------->	---------->	---------->	---------->	---------->	---------->	---------->
New Examination System	^----^	---------->	---------->	---------->	---------->	---------->	---------->	---------->	---------->	---------->

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FIGURE 8 CONTINUED

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR THE TEACHING PORGRAM

	PHASE I				PHASE II			PHASE III		
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
Introduce Academic Advisement		^----^	---------->							
Introduce Career Counseling			^----^	------>						
Introduce F.Sc. (pre-Engineering) Admission		^----^	---------->							
Women's Program Planning		^----^								
Initiate Women's Program			^----^	---------->						
Plan Baluchistan Student Program	^----^									
Initiate Intensified Baluchistan Program		^----^	---------->							
Plan Student Internship Program	^----------^									
Introduce Student Work Program		^----^		-----	-----	-----	-----	-----	-----	-----
Augment Student Sports/Recreation Program	^----^	----------^				New Facilities	^--^		New Facilities	^--^-------->
Initiate Faculty Developing Seminars	^----^	---------->								
Introduce Job Placement Program			^----------^							

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FIGURE 8 CONTINUED

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR THE TEACHING PROGRAM

	PHASE I				PHASE II			PHASE III		
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
Old Curriculum M.Sc. Thesis Upgrading	^----^	---------->								
Old B.Sc. Program Enrichment	^----^	---------->								
Program for Evaluting Teaching Performance		^----^								
Develop Ph.D. Program in Strong Areas								^----------^		
Initiate Ph.D. Program in Strong Areas										^-----^
Begin Tracking Graduates Employed		^----^	---------->							

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ii. Program Improvement activities will focus on "projectizing" research as described in Section III.C.1.b., developing provincial research priorities, and linking M.Sc. and in-country Ph.D. research to the integrated provincial program.

iii. Research Personnel Upgrading will include provision of in-service training by members of the T.A. Team, and selection of research staff for graduate training abroad.

iv. Physical Improvement efforts will be directed to the development of the AU experimental farm, the improvement of research laboratories and the enhancement of research station farms and facilities.

v. Linkages Development work will feature the development of working relationships with other NWFP research organizations, PARC, other agricultural universities and international agricultural research centers.

Figure 9 provides an illustrative implementation schedule for the Research Program.

c. The Outreach Program

Phase I activities will focus on hiring an outreach Director, allocating AU and research personnel to outreach functions, and recruiting additional staff as needed. The Outreach Directorate will be established, the outreach program planned and working relationships with NWFP Extension Departments formalized. The new AU Department of Extension Education and Communication will be in place by the end of Phase I. Regional outreach leaders will be selected, from within or by outside recruitment, and limited outreach programs will be initiated in plant sciences, animal husbandry and mass media outreach, with full scale efforts to be underway in Phase II. An illustrative implementation schedule for the Outreach Program is found in Figure 10.

d. Learning Resources Center

This facility will be under construction during Phase I, and its staff will have been selected and, where necessary, sent to the U.S. for degree training. Interim program improvement will focus on upgrading the AU library through materials acquisition and cataloguing. The Communications Services Unit will develop improved teaching aids and establish the temporary micro-computer lab. By the end of Phase I, the Learning Resources Center Directorate will have been established, and detailed plans for Phase II activities will have been drawn up. Participants will have returned from overseas training, equipment will have been acquired, and the building completed. An illustrative implementation schedule is provided in Figure 11.

FIGURE 9

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR THE RESEARCH PROGRAM

	PHASE I				PHASE II			PHASE III		
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
Organizational Development										
Establish Research Directorate	^----^									
Planning for Agr. Dept. Research Transfer	^----^									
Transfer Research Staff Budget		^----^								
Establish Two Dimensional System of Administration		^----^								
Program Improvement										
Initiate Projectized Research		^----^								
Develop Provincial Research Priorities		^----^								
Link M.Sc.Research to Research Program		^----^	---------->							
Link In-Country Thesis Research to Research Prog.			^----^	---------->						
Research Personnel Upgraded										
In-Service Training		^-----^	---------->		^--^	^--^	^--^	^--^	^--^	

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FIGURE 9 CONTD.

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR THE RESEARCH PROGRAM

	PHASE I				PHASE II			PHASE III		
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
Post-Graduate Training		^----^	---------->	---------->	---------->	---------->	---------->	---------->	---------->	---------->
Establish Program for Evaluating Research Performance			^----^							
Physical Improvement										
Development University Experimental Farm	^----^	---------->	---------->	Crops ^----^	---------->	---------->	Animal Sc.& Ag. Mech. ^------^	------->	---------->	---------->
Improve Station Farms & Facilities		^----^	---------->	---------->	---------->	---------->	---------->			
Improve Research Laboratories	^----^	---------->	---------->	New Facilities ^----^	---------->	---------->	New Facilities ^----^	---------->	---------->	New Facilities ^-----^
Linkage Development										
Develop Program with NWFP Research Organizations		^----^	---------->	---------->	---------->	---------->	---------->	---------->		
Strengthen PARC Program Linkage	^----^	---------->	---------->	---------->	---------->	---------->	---------->	---------->		
Strengthen Linkages with other Agr. Universities					^----^	---------->	---------->	---------->	---------->	---------->
Develop Linkages with Countries and IARCS					^----^	---------->	---------->	---------->	---------->	---------->

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FIGURE 10

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR THE OUTREACH PROGRAM

	PHASE I				PHASE II			PHASE III		
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
Establish Outreach Directorate	^------^									
Outreach Program Planning		^----------^								
Develop Extension Dept.Relationships		^----^	---------->							
Initiate Technology Package Development			^----------^							
Establish Continuing Education Center Directorate			^----^							
Establish Dept. of Extension Education and Communication				^----^						
Develop Program for Evaluating Outreach Performance			^----^							
Post Regional Outreach Leaders				^----^						
Initiate Outreach in										
Plant Science				^----^	---------->					
Animal Husbandry				^----^	---------->					
Ag Mech/Food Tech							^----^	---------->		
Rural Social Sciences							^----^	---------->		
Women's Program					^----^	---------->				

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FIGURE 10 CONTINUED

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR THE OUTREACH PROGRAM

	PHASE I				PHASE II			PHASE III		
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
Mass Media Outreach				^----^	---------->					
Extension In-Service Training					^----^	---------->				
Workshop/Conference Program					^----^	---------->				

FIGURE 11

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR THE LEARNING RESOURCES CENTER

	PHASE I				PHASE II			PHASE III		
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
Interim Program Improvement										
Library										
Book and Journal Acquisition	^----------	----------	----------	----------^						
Improved Cataloging	^----------	----------	----------	----------^						
Communication Services										
Improved Teaching Aids	^----------	----------	----------	----------^						
Micro-computer Laboratory (temp)			^----------	----------^						

FIGURE 11 CONTINUED

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR THE LEARNING RESOURCES CENTER

	PHASE I				PHASE II			PHASE III		
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
New LRC Development										
Establish LRC Directorate		^----^								
New Construction		^----------	----------	----------^						
Library Expansion								^----------	----------^	
Program Planning		^----------	----------	----------^						
Personnel Recruitment and Upgrading	^----------	----------	----------	----------^						
Equipment Procurement		^----------	----------	----------^						
New LRC Program Operation										
Library Improvement					---------->	---------->	---------->	---------->	---------->	---------->
English Language Laboratory					---------->	---------->	---------->	---------->	---------->	---------->
Multimedia Carrels					---------->	---------->	---------->	---------->	---------->	---------->
Microform Reading Areas					---------->	---------->	---------->	---------->	---------->	---------->
Typing Room						---------->	---------->	---------->	---------->	---------->
Data Bank Terminals						---------->	---------->	---------->	---------->	---------->
Photographic Duplication					---------->	---------->	---------->	---------->	---------->	---------->

FIGURE 11 CONTINUED

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR THE LEARNING RESOURCES CENTER

	PHASE I				PHASE II			PHASE III		
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
Communications Services										
Instruction and Test Design					---------->					
Print Production					---------->					
Graphic Design Services					---------->					
Graphic Services					---------->					
Audio/Video Recording					---------->					
Materials and Equipment Services					---------->					
New Micro-Computer Laboratory										
Research					---------->					
Teaching					---------->					

3. Campus Development

Implementation of the entire Master Plan will occur in three phases over an 11-year period. The original Project Phasing Schedule in the Master Plan prepared by SOM and dated November 1983 has been revised. (See Annex S, Revised Construction Plan.) The major revisions include the following:

a. In Phase I, the following additional program elements will be completed: auditorium renovation and central administration.

b. The student housing for men will be increased from 18 percent to 45 percent of the total program in Phase I.

c. The dispensary, originally to be built up to 54 percent of its total capacity in Phase I will now be completed in Phase I.

d. The cost of Phase I construction has been increased by about $2 million.

e. A.I.D. will finance the construction of classrooms; labs; academic support buildings (Computer Center, Learning Resources Center); student-faculty center; housing for male students, visiting scientists, and outreach personnel; male student dining; and, infrastructure for the above buildings on the eastern side of the campus.

f. The GOP will finance the A,B,C type housing for faculty; student housing for women; landscaping, paving and grading of the total campus; and, the infrastructure for all buildings on the western side of the campus.

g. In Phase II, the central administration, auditorium renovation, and the remaining 46 percent of the dispensary will be deleted (having already been completed in Phase I.)

h. Male student housing will be decreased from 41 percent to 31 percent in Phase II. The new housing cost will include the cost of renovation of both existing hostel buildings as opposed to renovation of a single hostel, as originally proposed.

i. The cost of Phase II construction has been reduced and will be totally funded by the GOP.

j. In Phase III, the male student housing has been decreased from 41 percent to 24 percent of the total program. This corresponds with the increase in the construction of student housing in the earlier phases.

k. The cost of Phase III construction has been reduced and and will be totally funded by the GOP.

The primary objective of the Phase I development program will be to construct buildings considered essential to the expanded functions of the University to serve a 915 student enrollment and to establish a recognizable campus core and entrance point. These structures include: (a) all the academic support buildings, i.e., the Central Administration buildings; the Learning Resources Center; the Continuing Education Center; and, 50 percent of the Farm Center; (b) approximately 40 percent of all academic space, consisting of offices, laboratories and classrooms, including the entire Plant Sciences Faculty Building, Visiting Scientists Housing, and the Student/Faculty Center; (c) 100 percent of the women's student housing, and about 50 percent of new men's student housing (6 units with a capacity of 55 students each with associated dining facilities). In addition, the university auditorium will be renovated. (See Figure 12.)

A proportionate amount of basic infrastructure (60 percent of the total) considered essential to the functioning of the first phase, will also be constructed, in addition to improvement of existing structures and services. This work will include new sanitary sewage, electrical and water-supply systems for added campus buildings during this phase, as well as repair to existing systems. The ford across the dry river bed to the Western side of the campus will be completed. Construction of faculty/staff dwellings will also be initiated.

The estimated cost of the Phase I construction program is $20.0 million. Separable items of construction have been identified for financial support. A.I.D. funds have been allocated for those elements that are critical in terms of the needs of the institutional development objectives of the project. GOP funds will be used to construct the remainder of the elements of the Phase I program. A.I.D. will also directly finance the A&E services. (See V.F., Financial Analysis.)

Phase II construction will begin in mid-1988 and end in mid-1992. The preparation of plans for construction will follow review and evaluation of the first phase scheduled for the spring of 1988. Major additions to the campus during the second phase include another 40 percent of academic space (i.e., classrooms, offices, research and teaching laboratories), including the Engineering Applications and Food Technology Faculty Building, additional Central Administration space, an outdoor amphitheater to accommodate large gatherings, covered parking, a mosque, physical plant building (i.e., Department of Works) and completion of the Farm Center. (See Figure 13.)

FIGURE 12

CAMPUS DEVELOPMENT : PHASE I

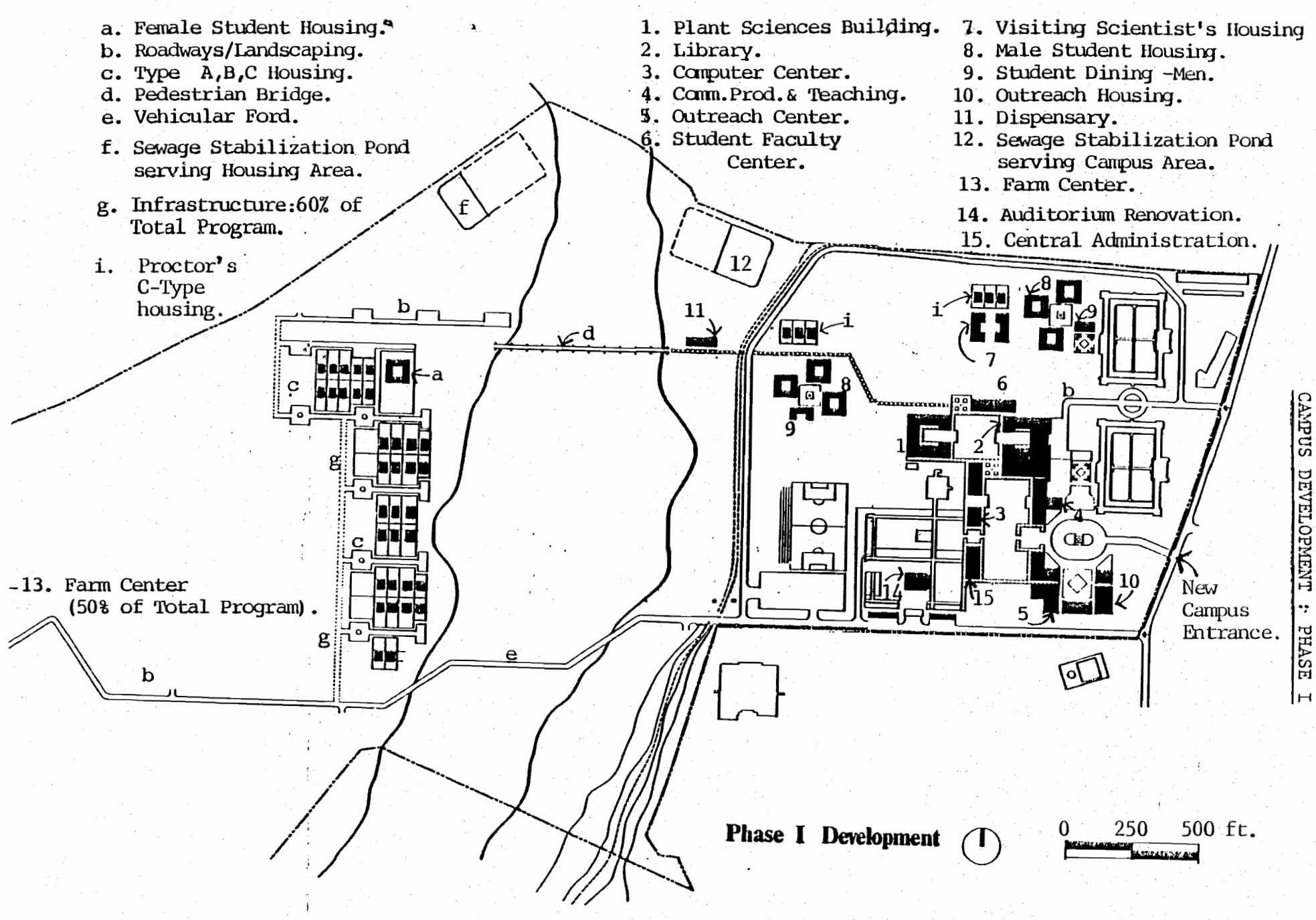

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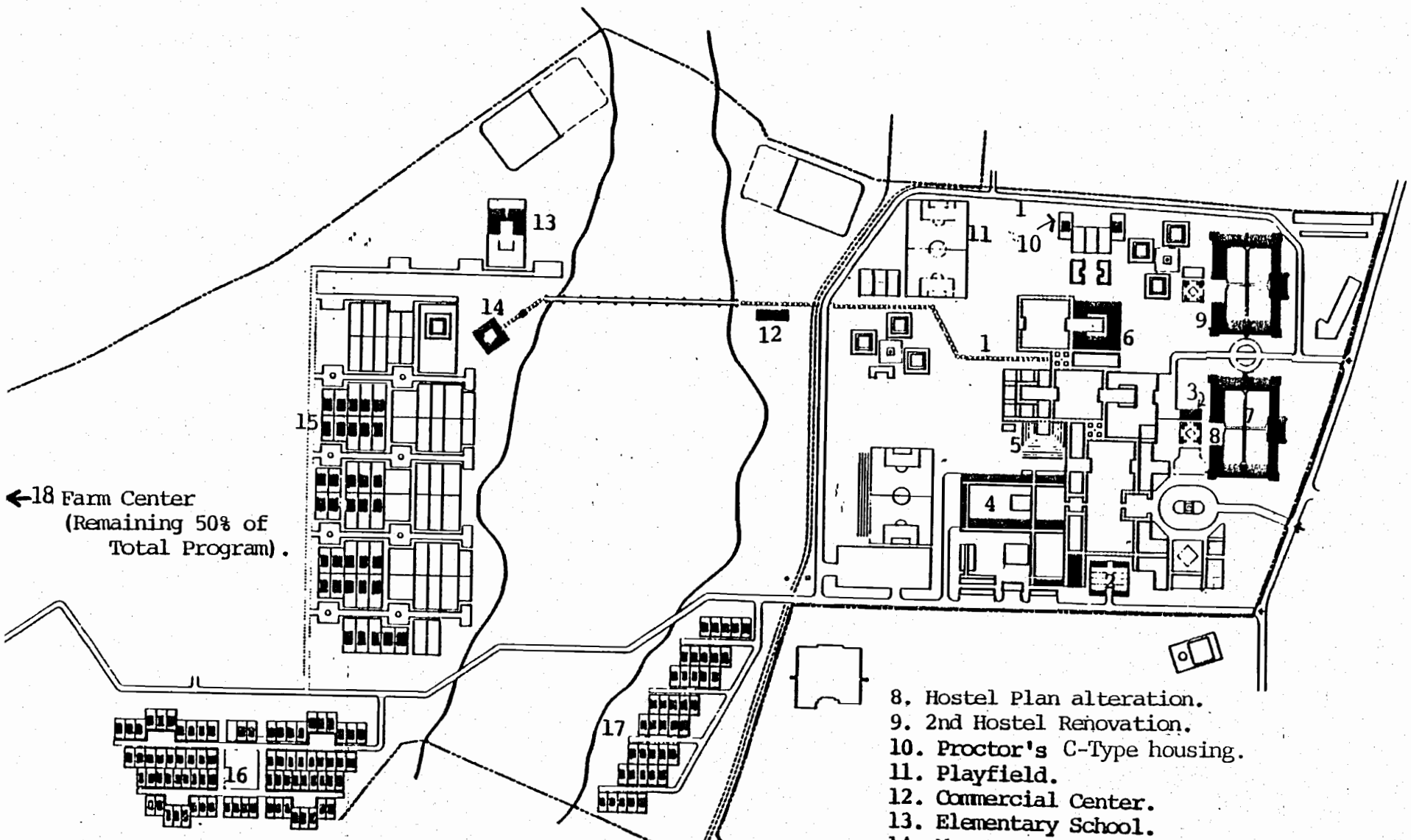
FIGURE 13

CAMPUS DEVELOPMENT : PHASE II



G.O.P. FUNDED CONSTRUCTION :

1. Infrastructure(30% of Total Program).
2. Covered Carparking.
3. Student Dining.
4. Rural Social Science Faculty (Renovated building).
5. Amphitheater.
6. Engg.Applications & Food Tech.Faculty.
7. Hostel(Renovated).
8. Hostel Plan alteration.
9. 2nd Hostel Renovation.
10. Proctor's C-Type housing.
11. Playfield.
12. Commercial Center.
13. Elementary School.
14. Mosque.
15. A,B & C Housing.
16. E,F Housing.
17. D Housing.
18. Farm Center (Remaining 50% of Total Program).

Phase II Development

0 250 500 ft.

An additional 20 percent of faculty housing will be constructed as well as 100 percent of D, E and F category housing for non-teaching support staff. Renovation of the two existing men's student hostels will also take place in Phase II as well as renovation of the existing main campus building. Thirty percent of the infrastructure and related site improvement will also be completed. Phase II construction costs are estimated to be $13.6 million.

Phase III construction activity is scheduled to commence in mid-1991 and to continue until 1995. During this Phase, the final 20 percent of the academic space program will be completed, including the Animal Husbandry Faculty Building, four student residencies to accommodate 220 male students, the remaining 60 percent of A, B and C category faculty housing, the remaining portion of the physical plant building and recreational facilities, and 10 percent of the total infrastructure. (See Figure 14.) The cost for Phase III is estimated at $14.9 million.

Figure 15 shows the potential for physical plant expansion beyond the scope of the present project. Figure 16 provides an illustrative implementation schedule for the campus development program over the life of the project.

4. Technical Assistance

During the first year of the project, long-term consultants will arrive to work with the Vice Chancellor and the Directorates of Teaching, Research and Outreach. A technical specialist in Irrigation/Water Management is also scheduled for assignment during the first year but may be moved to year two, in favor of the assignment of a specialist in Research Farm Management and Operations.

In the second year, technical consultants in Agricultural Mechanization, Dairy Production, and Irrigation/Water Management (if not posted in the first year) will join the team. Policy/management consultants to the Dean of the Faculty of Rural Social Sciences and to the Director of the Learning Resources Center will also come on board. In the latter part of year three, a consultant in Communications Production will arrive in-country, and in the fourth year, a specialist in Meat Animal Production. The schedule of short-term technical assistance supports the in-country thesis research of faculty participants and provides for technical support of the teaching, research and outreach programs of the University. Table 10 shows the proposed implementation schedule for technical assistance.

FIGURE 14

CAMPUS DEVELOPMENT : PHASE III

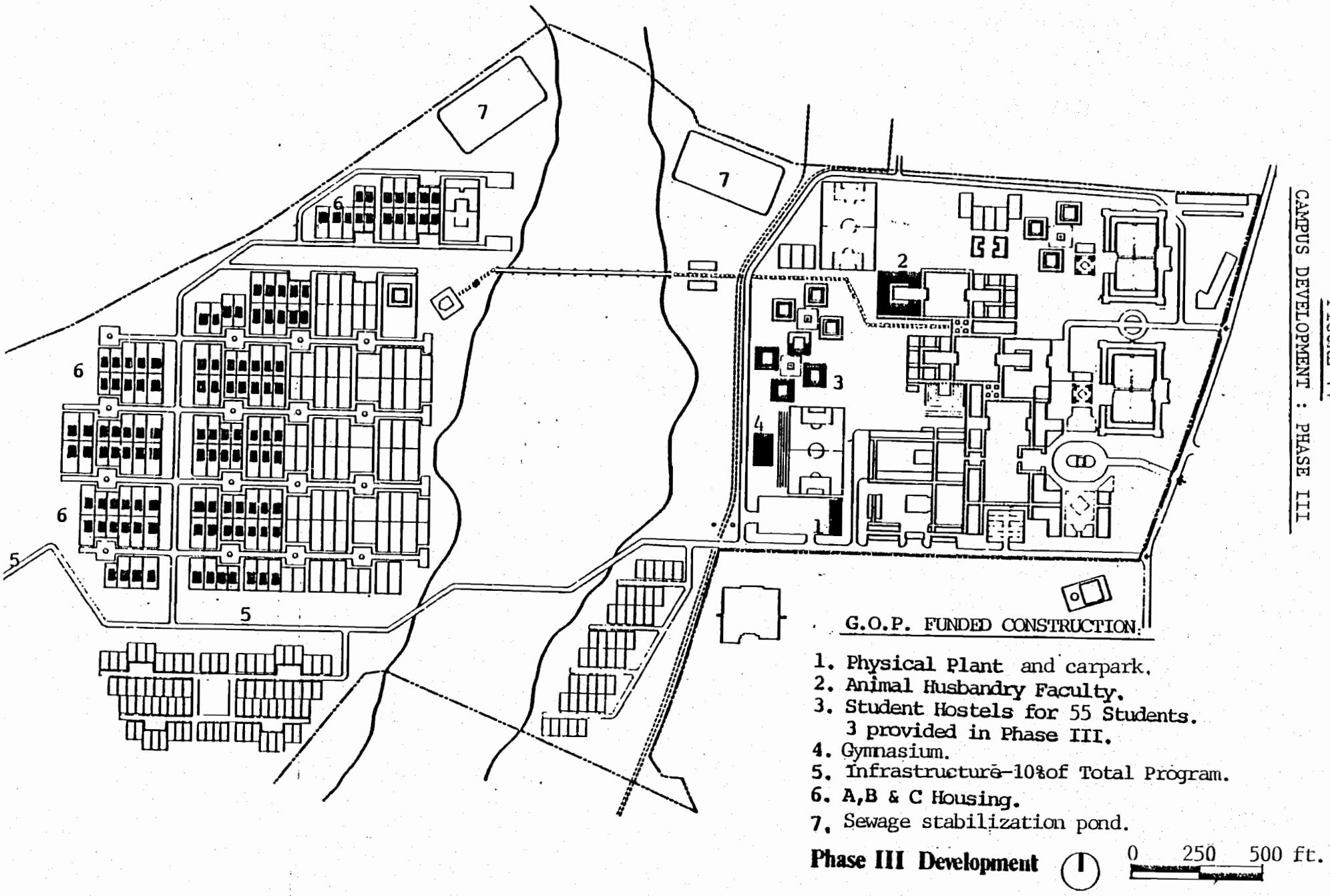


FIGURE 15

CAMPUS DEVELOPMENT - EXPANSION CAPABILITY

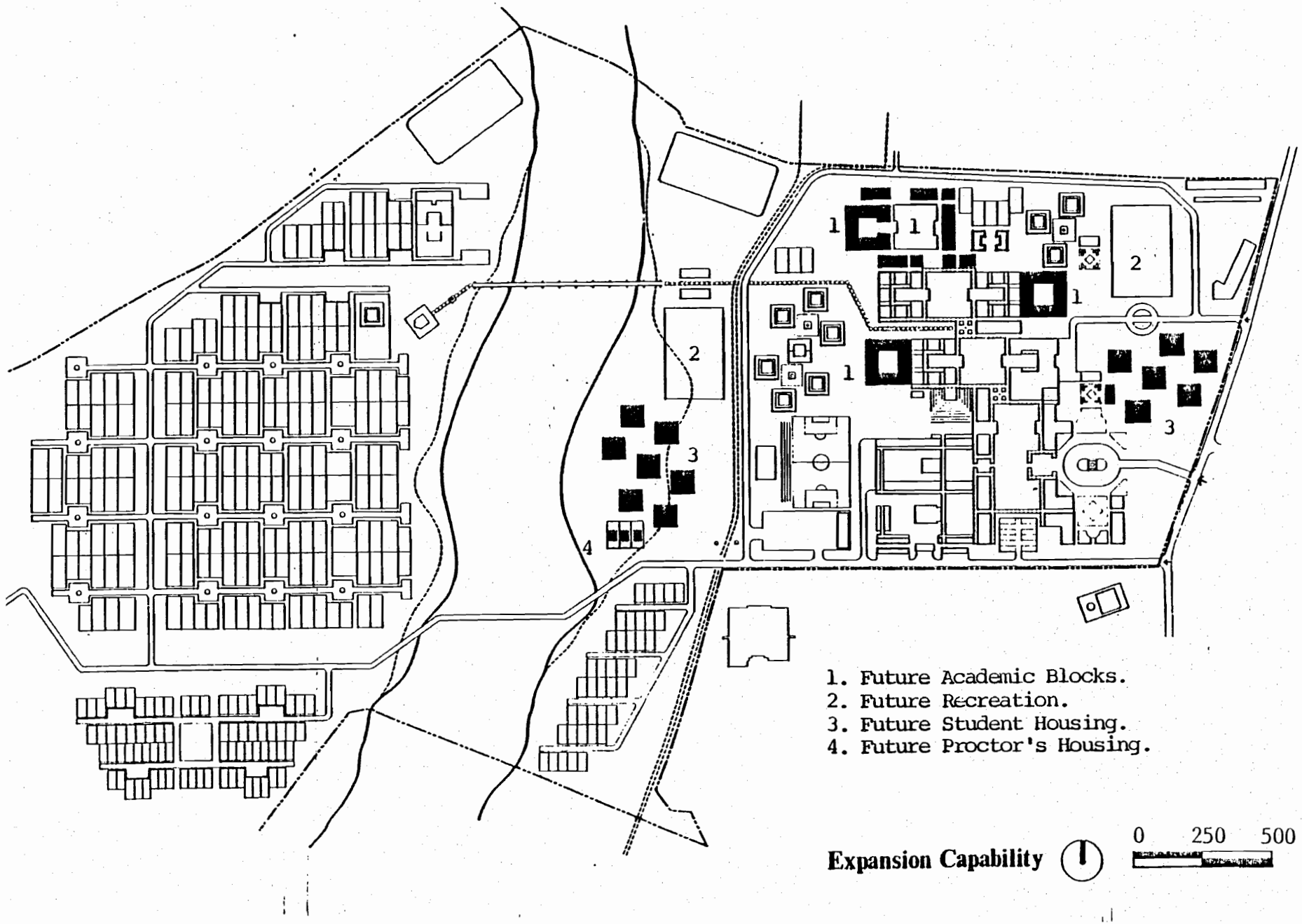


FIGURE 16

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR CAMPUS DEVELOPMENT

	PHASE I				PHASE II			PHASE III			
ACTIVITY	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
Project Evaluation Schedule				X			X				X
PHASE I A&E Design Activity Begins	X										
PHASE II A&E Design Activity Begins					X						
PHASE III A&E Design Activity Begins								X			
PHASE I Construction Contract Awarded		X									
PHASE II Construction Contract Awarded						X					
PHASE III Construction Contract Awarded									X		
Infrastructure		(----	----	----	----	60%	----	90%	----	100%	)
Academic Space (Classrooms, Research and Teaching Labs, Offices)		(----	----	----	----	40%	----	80%	----	100%	)
Learning Resources Center		(----	----	----	----	100%	)				
Student/Faculty Center		(----	----	----	----	100%	)				
Continuing Education Center		(----	----	----	----	100%	)				
CEC Housing			(----	----	----	100%	)				
Visiting Scientist Housing		(----	----	----	----	100%	)				
Farm Center		(----	----	----	----	50%	----	100%	)		
Administration Building		(----	----	----	----	100%	)				
Auditorium Renovation		(----	----	----	100%	)					

FIGURE 16 CONTINUED

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR CAMPUS DEVELOPMENT

	PHASE I				PHASE II			PHASE III			
ACTIVITY	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
Student Housing (New)		(----	----	----	----	330	----	----	----	495	)
Hostel Renovation				(----	----	----	----	100%	)		
Student Dining		(----	----	----	67%	----	----	100%	)		
Student Recreation				(----	----	----	----	33%	----	----	) 100%
Physical Plant Renovation				(----	----	----	----	50%	----	----	) 100%
Covered Parking				(----	----	----	----	100%	)		
Dispensary		(----	----	----	----	100%	)				
Faculty Housing, A, B, C.		(----	----	----	----	20%	----	40%	----	----	100%)
Staff Housing D, E, F.				(----	----	----	----	100%	)		
Mosque				(----	----	100%	)				
Elementary School				(----	----	----	100%	)			
Commercial Center				(----	----	----	----	100%	)		

TABLE 10

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR TECHNICAL ASSISTANCE FOR INSTITUTIONAL DEVELOPMENT PROGRAM

TITLE OF GOP COUNTERPART OR AREA OF SPECIALIZATION	MONTHS	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1. Vice Chancellor (Team Leader)	108										
2. Director Teaching	54										
3. Director Research	48										
4. Director Outreach	48										
5. Irrigation/Water Management	24										
6. Agricultural Mechanization	36										
7. Dairy Production	24										
8. Meat Animal Production	24										
9. Dean Rural Social Sciences	36										
10. Director Learning Resources Center	36										
11. Communications Production	24										
12. Research Station Management	24										
FTE	FTE	.67	6	10	7	7.3	4.67	1.67	1	1	.67
Short Term-Nos.	251	7	25	29	30	27	31	32	30	20	10
Short Term-Months	388	8	49	50	45	42	56	50	46	29	13

5. Participant Training

The Illustrative Implementation Schedule for Participant Degree Training in Table 11 shows the projected flow of 70 M.S. trainees and 70 Ph.D. trainees to the U.S. over the life of the project. As described in Section III.C.6. and Annex P, training in support of TIPAN has already begun under the auspices of USAID's Development Support Training Program, and additional training is programmed to precede project approval. Experience with these early participants has surfaced the problem of lower than expected TOEFL and/or GRE scores. This will necessitate pre-departure refresher courses for potential participants; details for implementing this additional activity on the AU campus are now being developed by AU staff and members of the UI Design Team.

Table 8, shown in Section III.C.6., summarizes the academic areas to be included in the participant training plan. Annex P shows the specific individuals and fields of study for participants scheduled to leave for the US during the first two years of Phase I. Details for participants scheduled to leave in 1986 and 1987 will be developed by AU staff and UI's Training Specialist during year 2.

B. Administrative and Monitoring Arrangements

This project was designated a Title XII activity by A.I.D. to be implemented in the collaborative assistance mode. This presumes a very close collegial working relationship among A.I.D., the U.S. university, the A&E contractor, and the host country implementing institution. The administrative mechanisms proposed for this project are consistent with the establishment of this relationship.

1. A.I.D. Responsibilities

The USAID/Pakistan Office of Agriculture and Rural Development (ARD) will have overall responsibility for managing the project. ARD will assign a senior U.S. direct-hire Agricultural Development Officer, with a technical background in agricultural research and demonstrated capabilities in managing a multi-faceted agricultural development program, to serve as Project Manager. He will work full-time on TIPAN alongwith a full-time FSN engineer, both of whom will be located in Peshawar.

The Project Manager will be assisted in contracting and procurement actions by USAID/Pakistan's Office of Project Development and Monitoring, which will be supplemented by AID/Washington's Offices of Contract Management and Commodity Management; in construction activities by the Office of Engineering; in financial disbursement matters by the Office of Financial Management; in overseas training activities by the Office of Human Resources and Training; in

TABLE 11

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR PARTICIPANT DEGREE TRAINING

Faculty/Unit	Totals	1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		Completions:
		N	C	N	C	N	C	N	C	N	C	N	C	N	C	N	C	N	C	N	C	
1. General Administration	3	-	-	1	-	2	1	-	3	-	3	-	1	-	-	-	-	-	-	-	-	88/2; 89/1
2. Plant Sciences	56	12	-	8	12	8	19	4	25	12	19	3	20	5	16	3	15	1	11	-	1	86/3; 87/9; 88/11; 89/12 90/12 91/2; 92/2; 93/5
3. Engineering App. & Food Tech.	15	1	-	2	1	6	3	2	9	2	9	1	6	-	3	1	2	-	1	-	-	87/2; 88/5; 89/4; 90/1; 91/2; 93/1
4. Animal Husbandry	23	2	-	8	2	4	10	2	13	3	9	-	7	1	4	2	3	1	3	-	-	86/1; 87/6; 88/5; 89/4; 90/2; 91/2; 92/1; 93/2
5. Rural Social Sciences	25	2	-	9	2	2	11	5	13	2	11	3	7	-	5	2	5	-	3	-	-	87/6; 88/6; 89/5; 90/0; 91/4; 92/2; 93/2
6. Learning Resources Center	10	-	-	8	-	-	8	1	8	-	2	1	1	-	1	-	1	-	-	-	-	87/7; 88/1; 89/1; 90/0; 91/1
7. Continuing Education Center	8	-	-	3	-	2	3	1	5	-	4	2	3	-	2	-	2	-	2	-	-	87/2; 88/2; 89/2; 90/0; 91/0; 92/2
TOTALS NEW/CONTINUING	-	17	-	39	17	24	56	15	74	19	57	10	44	6	31	8	28	2	20	-	10	
COMPLETIONS	140	-	-	-	-	4	-	34	-	32	-	24	-	9	-	16	-	11	-	10	-	

N = New Starts

C = Continuing Students

evaluation by the Program Office; in logistical and administrative support activities by the Office of Management; and, in legal matters by the Office of the Regional Legal Advisor. In Peshawar, the Project Officer will also receive support from the Mission's Regional Affairs Officer. Collectively, these staff resources are considered adequate to handle USAID/Pakistan's monitoring and administrative responsibilities under this project.

The Project Officer will provide overall guidance to the Technical Assistance (TA) contractor and will oversee the institutional development aspects of the project. Regarding construction, the Project Officer will be responsible for overall monitoring of physical development activities, while the USAID Office of Engineering will have responsibility for the technical design and construction monitoring aspects, including the monitoring of A&E and construction contracts.

USAID will be responsible for direct contracting of the TA and A&E contractors and will provide their logistical support. The A&E contractor will submit monthly and annual progress reports to USAID and NWFP-AU. The TA contractor will submit quarterly and annual reports to the same groups. Periodic site visits will be made by the Project and Engineering Officers to monitor overall project progress. In addition, ad hoc site visits by members of the Project Committee and other USAID staff will be made as part of the monitoring process. The USAID Engineering office will conduct field inspections as required to monitor performance of the A&E design and construction phases of the project.

In summary, A.I.D. will be responsible for:

a. contracting with all university expatriate consultants and the expatriate architectural and engineering firm;

b. purchasing directly or arranging for the purchase of all vehicles, equipment and other commodities procured outside of Pakistan as well as all equipment and materials required to support the university expatriate consultants and A&E personnel;

c. advance approval of design of civil works, inspections of civil works and certification for payment of all civil works financed by A.I.D. under this project;

d. arranging for long and short-term training in the United States or third countries for selected participants;

e. providing sufficient staff to participate in scheduled project evaluations;

f. financing the construction or rehabilitation of facilities;

g. financing certain agreed upon additional operating costs of the combined research/university system resulting from the project; and,

h. coordinating with appropriate government agencies in the implementation of this project.

2. NWFP-AU, GONWFP and GOP Responsibilities

The NWFP Agricultural University at Peshawar will be responsible for the overall implementation of the Project. The Vice Chancellor (VC) will function as Project Manager, supported by his administrative staff, especially the Deputy Vice-Chancellor and the Directors of Finance and Works. The GONWFP will be responsible for funding the Provincial agricultural research program, while the GOP, through its University Grants Commission in the Ministry of Education, will be responsible for providing Federal funds for AU.

The NWFP-AU will be responsible for: (a) negotiating, awarding, monitoring and administering all construction contracts under the project; (b) procuring locally available commodities such as office and classroom furniture and other items in support of the University program; (c) recruiting and hiring additional staff at the University; (d) identifying suitable candidates for both long-term and short-term overseas training, making arrangements for releasing them as appropriate from their jobs to participate in such programs, and obtaining necessary approvals and clearances from the GONWFP/GOP; (e) arranging for all in-country training programs; (f) providing sufficient staff to participate in the scheduled project evaluations and to serve as counterparts to the expatriate consultants in the implementation of this project; (g) ensuring that the GOP's PC-I is approved; (h) facilitating the merger with the provincial research system and development of effective working relationships with the Directorate of Extension; (i) implementing recommendations on reorganization and curriculum revision; and, (j) arranging for all travel clearances for USAID staff and project-financed consultants.

The budgetary and staffing levels and organization of NWFP-AU as projected under TIPAN as well as the administrative arrangements which will be made, (See Section V.B.) are considered adequate to enable NWFP-AU to undertake its responsibilities under the project.

Other Pakistani entities responsible for project implementation include: the Provincial Departments of Planning and Development, Finance, and Agriculture; the Provincial Agricultural Extension Directorates; the Federal Ministry of Food, Agriculture and Cooperatives; the Ministry of Education; and, the University Grants Commission. The Provincial Department of Agriculture will be

responsible for transferring the provincial research system to the University. The Extension Directorate will be responsible for selecting participants for training at the University and for establishing effective and close working relationships with it. The Provincial Departments of Planning and Development and Finance will be responsible for overseeing and ensuring that the reorganization of the provincial technology transfer system is carried out as well as providing necessary funding to the integrated research/university system. The Ministries of Education and Food, Agriculture and Cooperatives and the University Grants Commission will also provide financial support. In addition, the Ministry of Agriculture, through the Pakistan Agricultural Research Council, will provide scientists to the University on a temporary basis while permanent incumbents are being recruited or trained abroad. And, the University Grants Commission will provide overall guidance and support on the university's reorganization and curriculum development.

3. Management Advisory Group

A Management Advisory Group (MAG) will be established to maintain, during implementation, the collaboration evolved during project design. The group will be responsible for the continuing monitoring and evaluation system described in Section IV.E.1., and will serve as the primary forum for raising and solving all implementation issues. It will be jointly chaired by the Vice Chancellor and the USAID Project Officer. Its composition will be determined by the nature of the particular issues and problems to be considered. At various times, it will draw on the services of the USAID Engineer, the T.A. and A&E Chiefs of Party, key AU administrative, teaching, outreach and research personnel, senior NWFP officials, the chairman of the University Grants Commission, other USAID/Pakistan personnel, and possibly other donor representatives.

4. The University Contractor

The Team Leader will have principal responsibility for the day-to-day administration of technical assistance inputs. He will be supported by a team of resident technical and managerial specialists, augmented by carefully selected short-term consultants. He will interact with the senior AU administrative staff and report regularly to the USAID Project Officer.

Supporting the University contractor's field team will be a Campus Coordinator, experienced in the administration of institutional development projects and located at the University of Illinois. Linkages between the University of Illinois at Urbana-Champaign, the lead institution, and Southern Illinois University at Carbondale will be maintained through the establishment of the TIPAN Project Work Group (PWG), comprised of not more than five persons. To the

extent possible, those who participated in the project design will be selected to serve on the PWG. A PWG representative will participate in the regular assessment conducted in NWFP by the Management Advisory Group. The PWG will link the operational requirements of the project to institutional resources at the respective campuses and such other organizations as may be required, to supply the required inputs in a timely and efficient manner. In addition to providing all long-term and short-term technical assistance for the project's institutional development program, the University contractor will be responsible for the procurement of the majority of project commodities and all participant placement and support services for all overseas training programs.

5. The A&E Contractor

The roles and responsibilities of the A&E contractor are outlined in Sections IV.C.2. and V.A.7., below.

C. Procurement Plan

Implementation of this project will require procurement of technical services, commodities, A&E and construction services.

1. University Contractor Services

The University of Illinois has been contracted under the collaborative assistance mode for project design and will be responsible for implementation of all non-construction aspects of the project. A follow-on contract will be negotiated by USAID based on a Mission-prepared PIO/T, including a detailed plan of work. The contract will include all technical assistance, all participant training in the U.S. and third countries, and procurement of all non-construction commodities, except vehicles and household equipment and furniture.

The University of Illinois has a collaborative relationship with Southern Illinois University at Carbondale, which participated in the design and will be involved in implementation. The University of Illinois will be responsible for procurement of all needed professional/technical services from whatever source, e.g., other universities. In addition, the University of Illinois will place all participants in locations appropriate to the training to be received and administer their programs. Training will be specifically programmed at other institutions located in areas of comparable agro-climatic conditions to NWFP such as California, Arizona, Texas and Florida, to provide the breadth of exposure to the U.S. land-grant university system. For ease of participant management, trainees will be concentrated at relatively few universities. It is expected that around 60 percent of project participants will fall in this category. The remainder are expected

to enroll at the University of Illinois or Southern Illinois University. The Mission will make the final decision on placement of participants, following recommendations from AU and UI.

2. A&E Contractor Services

USAID will contract with a U.S. A&E firm in association with a Pakistani A&E firm to provide A&E and construction supervision services. As in the case of the University contractor, the same firm will be contracted for all three Phases of the Project to maintain continuity throughout the life of the project. Specific tasks include the following:

a. provide general assistance in implementing the Campus Master Plan during each phase of construction;

b. complete final designs and construction plans and specifications for each phase of facilities construction as required;

c. prepare IFB documents, final construction cost estimates, and draft contracts for construction as required;

d. review pre-qualification data from interested construction firms as required and develop recommended list of pre-qualified firms for USAID and AU approval;

e. review bids received for the phased construction as required and recommend award of contracts based on lowest cost qualified and responsive bids;

f. conduct continuous on-site supervision of construction to assure quality construction and prepare monthly progress reports; and,

g. review and recommend approval of construction contractors' requests for payment for work completed.

To reduce costs and support the development of local industry, the U.S. A&E firm will be required to use Pakistani professional staff to the fullest extent possible.

3. Commodities

USAID/Pakistan will procure all vehicles required for project operations, including field vehicles and communications vans equipped with specified audio-visual communications equipment. USAID will also procure household furniture and furnishings for resident TA and A&E staff. The University of Illinois will procure all other non-construction commodities using appropriate source and origin codes and following A.I.D. procurement regulations.

Commodity identification and procurement is divided into two stages. In the first stage, specific items have been identified which are required for early project implementation. These items are expected to be procured within six months after the signing of the Project Agreement. For commodities to be procured in the second stage, cost estimates and illustrative lists have been prepared to adequately equip the various departments and offices of the combined research/university system. These will be further refined and finalized after the technical consultants and their counterparts gain experience with: (a) the new organizational relationships and work responsibilities resulting from the merger; and, (b) the new curriculum and student demand for the various courses. Procurement will be authorized only after the lists have been reviewed and approved by AU and USAID/Pakistan.

The Mission has provisionally programmed $5 million for TIPAN commodities under the Agricultural Commodities and Equipment Program. Another $1 million will be procured under TIPAN. The GOP's $2 million contribution for commodities will be used primarily for local cost items such as office and classroom furniture.

4. Building Construction Contractor

Based on construction plans, specifications and bid documents prepared by the A&E firm and approved by USAID and AU, it is proposed that construction work for each phase be contracted by AU. Invitations for construction bids for each phase will be divided into separate contract packages based on source of funding, i.e., USAID, GOP or other donors. Construction firms will be able to bid on all or part of the work. A.I.D. competitive host country contracting procedures will be followed. Pakistani and U.S. firms will be eligible to bid. Construction contracting will be based on IFBs from a pre-qualified list of firms to be established through formal advertising for each phase.

A preliminary review of the contracting industry in Pakistan indicates that there are as many as five large and well established private sector Pakistani firms with extensive domestic and foreign experience to their credit who are fully capable of handling the proposed construction. USAID experience with construction in Pakistan of the magnitude proposed, however, indicates that high quality contractor field management is sometimes lacking for orderly, timely and quality construction. (See Section II.C.2.c.) Measures to assure quality construction contractor field management will be examined prior to construction contracting. Two examples considered at this time include the provision of bonuses for timely construction completion and the possible requirement that AU and USAID must approve the assignment of (and any replacements) senior contractor field management staff.

The construction activities to be undertaken at AU might provide an opportunity to hire graduates of the trade school that forms part of the A.I.D.-financed Gadoon-Amazai Area Development Project. Once the Pakistani firm has been selected, it will be informed about the availability of Gadoon-trained masons, cement workers, electricians and the like, and will be encouraged to use them in NWFP construction work.

D. Training Plan

The design calls for the overseas training of 70 Ph.D and 70 M.S. students. In addition, 65 faculty and staff will receive non-degree training. The magnitude of this training effort raises the problem inherent in the design of major institution-building efforts: how to get faculty and staff upgraded and still keep the institution functioning effectively.

The training plan addresses this problem in several ways. It is planned to approximately double AU staff over the life of the project. New recruits will be some of the trainees; the training opportunities are expected to be a significant recruitment incentive. Also, the Chairman of PARC has offered the PARC Talent Pool as a source of temporary (2 to 3 years) faculty. The details of this arrangement will be worked out within the first 3 months of the Project. In addition, assuming responsibility for provincial crop and livestock production research will give AU an opportunity to train some of the 225 new staff and incorporate others into Departments to meet planned requirements.

The Design Team has redistributed the participant training activity over 10 years as illustrated in the schedule reproduced in Section IV. A. 4. above. The schedule calls for 95 trainees under Phase I, 38 of whom will complete their training and return to duty by the end of the phase. Over the life of the project, 140 people are scheduled to receive degree training; of these, 38 will be drawn from existing NWFP-AU staff, and 102 from newly hired staff or scientists from the merged research system.

Short-term training for professors and administrators will be concentrated in the June-August period, when their presence at AU is less crucial than during the term. This training will combine academic coursework with on-the-job training as participants spend time with counterparts at American universities. Of the non-degree trainees, 17 will be drawn from present university personnel, while 48 will be new hires or research scientists.

Some participants from AU are already being trained under the A.I.D.-financed Development Support Training Project. A professor in horticulture, and one in agronomy left in the Fall of 1983 for non-degree training. They will be returning to AU in time for the

1984/85 school year. Three professors left in late 1983 and early 1984 to begin Ph.D. studies in Food Sciences, Animal Husbandry and Agricultural Economics. These students will return for duty in 1986/87. More are being sent in late 1984. Details of 1984 and 1985 participant trainees are given in Annex P. The Training Specialist from UI notes that lower than expected TOEFL/GRE scores earned by participants to date indicate that special language training courses will have to be offered on the AU campus for potential participants.

The TA Team will assist the Vice Chancellor in participant selection to meet the training plan for each Department. However, candidate selection will be shaped by GOP/GONWFP foreign scholarship rules and regulations. As discussed above in the Procurement Plan, the University of Illinois will have responsibility for placement of all participants, subject to AU and USAID approval, and the administration of their programs.

A significant feature of the training plan is the arrangements to be made to allow many degree candidates to do their thesis research in Pakistan. This feature not only prepares participants for re-entry into the Pakistan research and education system, but also serves to improve the relevance of the overall graduate program and the quality and quantity of agricultural research in NWFP. In-country research will not be encouraged in the early years of the project, but once basic institutional changes have been established, students in technical fields who could do their research at one of the merged NWFP institutions, AU or other agricultural universities, NARC or PARC or the Arid Zone Research Institute, will be encouraged to do so. The Design Team has examined the potential problems and criteria for success of this element of the project in detail (See Volume I, pp. 123-131, of the Design Team Report) and has concluded that the program is feasible and prospects for success are high.

E. Evaluation Plan

TIPAN's evaluation plan calls for two complementary efforts: an on-going evaluation and monitoring system that allows all parties (AU and research staff, T.A. Team, A&E firm and USAID) to measure progress and identify and solve implementation problems; and, formal external evaluations that will be undertaken toward the end of each phase of the project and will serve as the basis for decisions regarding the continuation of the project.

1. Continuing Evaluation and Monitoring System

TIPAN has been designed according to an institution-building model prepared by UI and SIU. It identifies two sets of variables involved in university development--the

"institution variables" which are concerned with the internal organization and operation of the university itself, and the "linkage variables" which are concerned with external relations, i.e., relationships of the University with other institutional components and with its environment. Early in the project, the T.A. Team will apply the model to TIPAN to develop a set of benchmarks for all institutional variables and environmental linkages involved in the transformation and integration of the agricultural technology transfer network. These benchmarks will be used by the Management Advisory Group, described in Section IV.B.3. above to develop a continual evaluation and monitoring system to be used by the Vice Chancellor, the T.A. Team Leader and the USAID Project Officer to manage and oversee the day-to-day implementation of the project. The elements of the institution-building model, and the applications to AU are presented in Annex L. Annex Q shows institutional variables to be included in the continuing evaluation and monitoring system for year 1.

The existence of the continuing evaluation and monitoring system, supplemented by USAID's quarterly reviews and twice-yearly Project Implementation Reports to AID/W, will obviate the need for a mid-term evaluation during Phase I.

2. Formal Evaluation Plan

The formal evaluation plan follows the three-phase design. Evaluations are scheduled to be conducted during years 4, 7 and 11. Implementation of new activities in each follow-on phase will not begin until the preceding phase has been evaluated.

The first formal evaluation tentatively scheduled for early 1988, will determine whether GOP/GONWFP performance and project progress warrants moving to Phase II of the project. The following elements will be included:

a. The GOP/GONWFP have agreed to certain policy and institutional changes required for success of this project. The evaluation will assess the extent to which the merger of the provincial research system with AU has been effected, looking specifically at:

i. the transfer of appropriate Revenue and Annual Development Plan (ADP) funds from the Department of Agriculture and Ministry of Education through the University Grants Commission to AU;

ii. the transfer of all professional and support staff of the merged units to AU; and,

iii. the transfer of control and use of all physical facilities of the merged units to AU.

The evaluation will also assess the adequacy of GONWFP contributions to operating funds for the merged research system.

b. Under the Phase I campus development program, actual building construction (design activities and pre-implementation work will take about one year) will be about half-way completed. The performance of the local building contractors and the A&E supervision contractor will be evaluated against their terms of reference.

The evaluation will review progress of construction against the implementation schedule, paying particular attention to commodity and labor costs. It is anticipated that 30 percent of infrastructure will be completed at this time; careful evaluation of the adequacy of the water supply, sewage disposal and other elements will be undertaken.

c. Progress by the AU in institutional development and in establishing external linkages will be assessed using the institution-building model described in Annex L.

d. The quantity, quality and orientation of research undertaken or underway will be assessed.

e. The performance of the T.A. Team will be measured against its terms of reference and the detailed plan of work.

f. The inter-relationships between A.I.D. and other donor inputs will be assessed.

g. Progress towards the achievement of project outputs will be measured.

3. Baseline and Other Data Collection Activities

The existing institution and linkage variables for AU are described in Section II.B. and III and will constitute the baseline for assessing institution-building progress for the formal evaluation. Several baseline data collection efforts will be undertaken and used in monitoring and evaluation of the project.

One of the most significant outputs of the project is the graduation of students of substantially higher caliber than at present. The TA Team and AU staff will prepare a testing program that can be readministered annually to assess the quality of each graduating

class. Testing the initial class will provide the baseline. Testing of subsequent classes will provide essential data for project evaluation and for any needed re-design or adjustment of the teaching program.

In addition, a tracer study of each graduating class will be conducted by AU, showing type and location of employment and other relevant variables. This will be followed by additional checks on each graduating class at two or three year intervals throughout the period of A.I.D. assistance.

Another technique for assessing the quality of graduates will be interviews with employers who have experience with both pre-project and post-project graduates. A plan for this activity will be developed by AU for implementation in the fifth year of the project. Data on the level of technology currently in use on NWFP farms and the socio-economic status of farmers will be collected. A few farm surveys that have been conducted by the Institute of Development Studies (IDS) may be used as part of the baseline data. The IDS and TA Team will assess these surveys and possibly reanalyze existing raw data. To fill the gaps, IDS will plan and conduct additional research to provide an adequate socio-economic baseline. Funds are allocated for this purpose in the Financial Plan.

4. Monitoring and Evaluation of Project Impact

The goal of the project is to increase NWFP's agricultural yields, agricultural productivity, farmer income and rural employment. Using socio-economic and agricultural technology data generated early in the project as a baseline, the T.A. Team will devise a system for continual monitoring of the impact of the project on the province's agricultural community.

It is recognized that impact on these goal level targets during Phase I may not be significant since project efforts in this Phase will be focused on constructing and establishing new entities. However, the existence of the impact monitoring system will ensure that project leaders do not lose sight of the ultimate goal of their endeavors.

An assessment of project impact will be included in the second formal evaluation in year 7; during year 11 an impact evaluation will be conducted as part of the End-of-Project Evaluation. This impact evaluation will be designed and implemented in collaboration with the GOP/GONWFP. Funds for this purpose are included in the A.I.D. project budget.

V. PROJECT ANALYSES

This section presents summary analyses of the engineering, administrative, social, technical, economic and financial feasibility of the project. More details on the engineering analysis can be found in the Campus Master Plan, Volume III of the Design Team Report. Additional material on all other analyses is available in various chapters of both Volumes I and II of the Design Team Report.

A. Engineering Analysis

The proposed construction program is based on a Master Plan (Volume III) prepared by the U.S. A&E firm of Skidmore, Owings and Merrill (SOM) in close consultation and cooperation with the University of Illinois Design Team and AU staff. The 437-acre campus provides adequate space for all required buildings, the experimental farm fields, and other functions of the University. The existing layout, the three proposed construction phases over the life of the project, and the general architectural concept for the buildings are shown in the schematic drawings in Section IV.A.3. of this Project Paper.

The Master Plan was developed to accommodate the needs of the institutional development component of the project, and takes into account the university's projected growth, land use, vehicular access and circulation, building use, space and functional requirements, landscaping and open spaces, equipment needs, and utility service requirements. It also reflects socio-cultural values prevailing in NWFP, climatic considerations, and the availability of construction materials, labor and expertise in Pakistan. A variety of building design and technology issues were explored in a preliminary fashion during the preparation of the Master Plan in order to develop the proposed phased construction framework.

1. Building Safety and Architecture

The new campus will be designed and constructed in accordance with the U.S. Uniform Building Code (UBC) Zone 2 seismic requirements. A correlation between the U.S. Seismic Risk Map and the Pakistan Seismic Zone Map based on horizontal acceleration indicates that the AU campus would be placed in Zone 1 of the UBC; however, due to the approximate method of correlating the Pakistan zones with the UBC, it is recommended that structural design be based on UBC Zone 2. Reinforced concrete framed construction is proposed for the two and three-story structures with brick infill non-structural partition walls. Single-story buildings would consist of load bearing walls.

The architectural design will be based on a selective combination of some of the best attributes of the local architectural tradition and practice, including:

a. the predominantly horizontal scale of one to three story development in a rural village or town;

b. the use of exterior arcades to shade a building and to provide shaded walkways between buildings;

c. the use of brick, concrete and other locally available building materials and trades;

d. development of temporary (i.e., canvas) or semi-permanent (i.e., trellises) shading devices to mitigate the effects of direct sunlight on otherwise unprotected indoor and outdoor spaces;

e. the use of courtyards as an outdoor "room" and as an organizing device for adjoining buildings;

f. the use of landscape material, paving and water features to create interesting and attractive outdoor spaces, and to achieve climate control objectives;

g. proper solar orientation to augment daylighting of building interiors and to take advantage of solar heating during winter months; and,

h. the use of natural ventilation in buildings which do not require climate control.

2. Water Supply

The water supply for the University will be obtained from on-site tubewells. Several wells already exist on campus. One existing well produces water exceeding Phase III average daily water demand requirements by more than 50 percent. A chemical analysis of the water indicates it is of potable quality and meets recognized health standards; thus no treatment other than residual chlorine treatment is required.

3. Sewage Disposal

The existing campus currently uses a leach-pit for sewage disposal which would appear to have the potential for aquifer contamination. Under the Master Plan, sewage treatment facilities will be provided for 90 percent biological oxygen demand (BOD) removals and 95 percent suspended particles removal. Two methods of treatment will be considered for the final design; either stabilization ponds or package sewage plant treatment will be used. The treated effluent (with possible additional sand filtration and

chlorination) would be discharged into the nullah (dry river bed) which bisects the campus or into leach pits along or in the nullah, depending on the possibility of ponding of the discharges on the nullah. Ponding of discharges will not be allowed in order to prevent human contact and/or use of the water downstream. Borings are currently being conducted by SOM to determine and test soil types in the area for the final design.

4. Construction Material Availability

The materials required for the proposed construction are generally available in-country in adequate supply. The importation of materials, if any, would be limited to pumps and controls, aerating equipment, transformers, and other miscellaneous items of relatively small value.

5. Environmental Impact

An Initial Environmental Examination (IEE) recommending a negative determination was originally submitted with the PID for this project (See PID entitled Agricultural Education, Research and Extension - 391-0477). Because of the changes that have occurred in the project since PID approval, a revised IEE is being submitted and is attached as Annex J. A negative determination is again recommended for the project as it will not have a significant effect on the human environment. The environmental impact is primarily related to sewage disposal for which adequate provisions will be made, as described above.

The Master Plan will serve as the basic framework for detailed design and implementation of all campus facilities. The Plan is considered technically and environmentally sound in all respects. The Plan provides all the requisite academic and support facilities for a projected student enrollment of 1,200, including housing for 80 percent of students and senior faculty and staff, and incorporates the philosophical, teaching, research, and outreach objectives of the project.

6. Construction and A&E Costs

Construction costs for different building types are based on a careful analysis of prevailing rates for similar buildings in Pakistan. An inflation factor of 12 percent compounded annually has been applied to all construction costs based on an analysis of local construction inflation rates.

Estimation of A&E fees for design and supervision of the phased construction program assumed a contract with a U.S. A&E firm in association with a Pakistani firm. For Phase I design services only, i.e., preparation of designs, plans, drawings and specifications, a basic cost of 6 percent of construction has been estimated (excluding fee or profit) as per statutory limits. Additionally, other direct costs related to U.S. and local

consultant preparation of bid documents, review of bids, a basic design fee and related travel for planning and coordination amount to an additional 2 percent of construction costs. Therefore, the total A&E Phase I design services are estimated to be 8 percent of construction. The design requirements for Phases II and III will be less due to the fact that some work is repetitious and basic utility services will have been designed in Phase I. Thus A&E design costs for Phases II and III are estimated at 5 percent of construction, based on average local and U.S. engineering association recommended rates.

Based on the above, the estimated total project A&E costs for design services amount to about 6.5 percent of construction costs. The estimate assumes a heavy involvement of Pakistani A&E design personnel particularly for Phases II and III; a larger percentage would be indicated if Pakistani involvement is not high as U.S. professional staff costs are at least 2.5 times local professional staff costs.

The construction supervision services assume one long-term on-site expatriate project engineer with on-site Pakistani technical and administrative staff support, and limited U.S. home office support. Based on the estimated supervisory personnel requirements, direct and indirect costs, and the like, the costs for full-time construction supervision by the A&E firm average out to about 12.5 percent for all three Phases.

The total estimated A&E costs for both design and supervision amount to about 19 percent of construction costs. These cost estimates are considered reasonable and adequate for the project.

The above percentages were calculated with all costs estimated in 1983 dollars (See Annex S). The actual rates will vary, depending upon the inflation rates for dollar and rupee costs and the currency exchange rate because construction and A&E costs are made up of different proportions of dollars and rupees. For example, using the inflation and exchange rates adopted in estimating overall project costs (See Financial Plan), the total estimated A&E costs for both design and supervision amount to about 21.7 percent.

7. Conclusion

Based on the summary analysis presented above, and the work of the A&E firm on the Campus Master Plan (Volume II), the Mission has determined that the engineering aspects of the project are feasible.

B. Administrative Analysis

TIPAN has been designed to effect a complete transformation of the agricultural technology transfer network of the NWFP. As such, it places a heavy burden on the implementing agency, NWFP-AU. The analysis concludes that the authority, budget process,

administrative structure and construction contracting and maintenance capability are adequate to implement the project. Further, with sufficient, carefully timed in-country and overseas training, and a critical mass of technical assistance in Phase I, NWFP-AU, after an initial 12-18 month project start-up period will have the administrative staff capability to adequately institutionalize the changes involved in TIPAN's implementation.

1. Authorities of NWFP-AU

The legal Ordinance establishing the Agricultural University sets forth 25 separate powers (See Annex D of Volume I of the Design Team Report) which give it all the necessary authority to implement the project. The Governor of the NWFP is the Chancellor of the University. It is the Vice Chancellor, however, who is responsible for day-to-day administration. He is the principal executive and academic officer of the University and holds all powers necessary to control and enforce discipline over all officers, teachers and other employees and students of the University.

Authority for various aspects of AU's administration is vested in several groups, the most important of which are the following:

a. The Syndicate, chaired by the Vice Chancellor, is the executive body of the University and exercises supervision over the affairs and property of the University--building, staffing above BPS 17, contracting, and other executive and administrative matters.

b. The Academic Council, chaired by the Vice Chancellor, is the academic body of the University and is responsible for proper standards of instruction, research, and examinations, and for regulating and promoting the academic life of the University.

c. The Selection Board, chaired by the Vice Chancellor, has the responsibility for review of candidate qualifications for BPS 17 and above level positions and for making recommendations to the Syndicate for approval.

d. The Planning and Finance Committee, chaired by the Vice Chancellor, is responsible for long range programming and budgeting and for annual budget preparation; both are sent to the Syndicate for approval before their annual transmission to the University Grants Commission (UGC) and into the Federal budgetary process.

Any other University-wide "authority" that may be created is also chaired by the Vice Chancellor. The Vice Chancellor clearly has the authority and responsibility for all aspects of University development and administration. He will serve as manager of this project.

2. Budgeting Systems

The Agricultural University is a provincial institution, but like other institutions of higher education, it derives much of its financing from the University Grants Commission (UGC), a body of the Federal Ministry of Education. Although by statute the University can receive funds or other assets from any source, UGC provides most of the funding. Changes in staff size or composition are generally done in consultation with UGC. The UGC also funds major capital outlays.

The Agricultural University budget is based on a fiscal year from July 1 to June 30. Some months before the fiscal year begins, Departments develop requests which are forwarded to the Finance and Planning Committee, chaired by the Vice Chancellor, which is responsible for the development of the University budget. Upon approval by the Syndicate, the budget is transmitted to the Federal Ministry of Education through UGC, which carefully reviews the budget request, normally sending a representative to the AU campus for detailed (line-item by line-item) review. After resolution, UGC folds the AU budget request into its overall budget and requests an allocation from the Federal Ministry of Education. UGC allocates funds directly to the AU, releasing the recurrent budget in quarterly installments. The annual budget process is satisfactory, well understood by those at AU who prepare, defend, and administer it, and can fully accommodate the requirements of the expanded program.

The University also receives other funds to support its activities. UGC and the Federal Ministry of Education may make special grants for specific projects. For example, in PFY 1982/83, the University received Rs 225,000 in non-recurring special grants from UGC, as well as a special grant from the Pakistan Science Foundation. Additionally, the University realized over a million rupees from its own resources, e.g., tuition, farm produce sales, fees, and other income. The total income of the University in PFY 1982/83 was about Rs 12.2 million. The UGC regular and additional grant totalled approximately Rs 9.9 million or about 80 percent of the total.

With respect to the merged research system, AU will be linked directly to the Secretary, Department of Agriculture, for provincial funds. The University will submit a research budget, including both revenue and Annual Development Plan, to the Department of Agriculture which, after appropriate discussions, will incorporate it into the Department's overall budget for submission to the Provincial Department of Finance. When a research budget is approved, a grant will be provided to the University through the Provincial Department of Agriculture to carry out the approved research program. The University will report to the Department of Agriculture on the use of the research grant.

3. Administrative Structure

The project design calls for the establishment of several senior administrative positions. These include a Deputy Vice Chancellor, Directors for Teaching, Research and Outreach, and Directors of the two new units to be established, the Learning Resources Center and the Continuing Education Center. The University has statutory authority to take these actions. Chapter II, Section 4, "Powers of the University" provides authority "to create posts in connection with teaching, research, extension, administration, training, and for any other purposes related thereto and appoint persons thereto." Further, Chapter III, Section 10, "Vice Chancellor," cites among the Vice Chancellor's powers "to delegate, subject to such conditions, if any, as may be prescribed, any of his powers under this ordinance, direct teachers, officers and other employees of the University to take up such assignments in connection with teaching, research, examination and administration, and such other activities in the University, as he may consider necessary for the University." The VC regularly exercises these authorities. Thus, there are no constraints to the establishment of such posts or the delegation of authority to act.

The administrative structure of the Agricultural University, then, will be quite similar to the structures of many Colleges of Agriculture in the United States adapted to conditions at AU. (See Organization Chart in Section III.C.3.) The chief academic and executive officer will work through a deputy and senior administrative officers for the principal functions of the University. Deans of Faculties will report to the Vice Chancellor through the Directors for Teaching, Research and Outreach and work closely with the Deputy Vice Chancellor. Department Heads will be responsible for individual faculty members within their departments and will report directly to Deans of Faculties. This system of administration will involve faculty and staff in the decision-making process at appropriate levels. It will insulate senior staff from having to be consulted on relatively minor matters which can be handled at lower levels. It will free the time of the senior administrative staff to concentrate on policy issues as opposed to day-to-day operational matters.

4. Directorate of Works

The University Directorate of Works has overall responsibility for maintenance, water, electricity, physical planning and new construction of the University facilities. The present organization and staffing of the Directorate includes the Director of Works, a Planning and Maintenance Office staffed by one sub-engineer and 14 staff, and a Complaint Office with eight staff.

A new Director of Works was appointed in July 1983, and since then, substantial improvement has been evident in buildings maintenance. The University PFY 1983/84 budget calls for the addition of 12 new positions, including one assistant engineer to assist the Director

in planning and execution of new construction as well as maintenance work; one additional sub-engineer (giving the Directorate two sub-engineers, one responsible for maintenance supervision, and the other for project inspection/supervision); and 10 additional technical staff. These additions appear to cover the basic requirements of existing maintenance and construction work. The proposed Master Plan construction program, however, will require additional staff increases to manage contracts and maintain the new facilities.

The TA contractor for A&E services will provide periodic short-term assistance to the Directorate of Work in planning and implementing maintenance, including the establishment of a staffing plan, the training of old and new staff, and the preparation of maintenance budgets.

The University Syndicate has full authority for contracting construction services, and with the addition of a sub-engineer to the Directorate staff in the PFY 1983/84 budget, the University should be able to manage the construction contracting. The A&E design/supervision contractor will be responsible for preparing all plans and specifications, IFB documents and draft contracts; reviewing bids; and providing recommendations for awards, continuous on-site supervision of construction, and general assistance in implementing the Master Plan, for both A.I.D. and GOP-financed construction. Thus the Directorate of Works' involvement during construction will be limited to administrative approvals, in-house processing of contracts, and review and approval of payments to construction contractors as recommended by the consultants.

5. Administrative Staff

The proposed reorganization of AU will place responsibility for General Administration in the hands of five senior officers: the Vice Chancellor, his Deputy and the three Directors of Teaching, Research and Outreach. Currently, only the position of Vice Chancellor is filled. While it is possible that one or more of these posts will be filled from current AU or merged research staff, it will probably be necessary, and perhaps desirable, to fill some positions with outside recruitment. The availability of improved facilities, equipment and training opportunities under TIPAN should enable AU to attract superior candidates for these crucial positions.

It will be important to find the right people to administer TIPAN. Realistically, it will take between 12-18 months to recruit, select and provide in-country or overseas short summer course training for individuals for the senior positions. During this project start-up period, as the T.A. Team members are arriving and construction is starting, it is planned to fill the administrative positions with

temporary Pakistani incumbents who will be acting as Deputy Vice Chancellor, Director of Teaching, Director of Research and Director of Outreach unless any of these positions are to be permanently filled from within. Acting administrators may be drawn from the current staff who are close to retirement, or from the Pakistan Agricultural Research Council (PARC) Talent Pool. PARC's Director has been approached in this connection and has expressed his willingness to second temporary staff for administrative posts, as well as to fill academic and research positions while the incumbents are in the U.S. for long-term training. Details of specific personnel to be seconded will be obtained from PARC within the first three months of the project. (See Section VI.A.3.)

6. Administrative and Management Training

a. Degree Training

The illustrative participant training schedule shows the Director of Teaching receiving a Ph.D. in Educational Administration from 1984-87; the Deputy Vice Chancellor receiving a similar degree from 1986-89 and the Director of Outreach studying for an M.S. in Extension Education from 1986-88. This illustrative schedule will be amended, early in the project life, to fit the qualifications of individuals selected to fill the administrative positions, and the availability of candidates to fill the positions while the incumbents are receiving training.

b. Short-Term Overseas Training

An interesting option for training for administrators is being explored. The International Council On Education for Teaching (ICET), an affiliate of the American Association of Colleges for Teacher Education, offers a practical internship program in all aspects of educational administration under a contract with A.I.D. Students are placed as assistants to college and university administrators and learn to handle problems through a mixture of on-the-job training and actual work experience. These internships are tailored to individual needs, cover registration, financial management and academic administration issues, and vary in length from 3 to 9 months. This option may prove most feasible for ensuring continuity at AU during Phase I of the project. The University of Illinois will offer similar internships on the Champaign-Urbana or South Illinois University (SIU), Carbondale campuses.

c. In-Country On-The-Job Training

An important role for the T.A. Team, especially the four General Administration Advisors, will be the provision of intensive, on-going, on-the-job training for AU administrators at

all levels. This training must cover the transition of all elements of University administration. Some of these elements are: admissions policy, registration, advance academic scheduling, examination procedures, grading schemes and academic advisement. A first effort in this connection took place in May 1984, when a workshop on proposed changes was offered to all teachers and administrators of AU as a project pre-implementation activity. The trip report of the Design Team's Curriculum Specialist and Associate Dean of Instruction is found in Annex N.

7. The Merger

Merger of the provincial research system with the University is not expected to present any unusual problems. However, as with any activity of this type, a period of time will be required to plan and then to execute the merger. It is expected that the merger will require approximately one year to complete. During recent years, similar mergers to the one proposed have been accomplished in Pakistan. They include: merger of the Electricity Department with the Water and Power Development Authority; transfer of the National Health Laboratories to the National Institute of Health; and merger of the Ministry of Food, Agriculture and Cooperatives and the Pakistan Agricultural Research Council. These mergers will be examined to identify those elements that were critical to effecting the smooth transfer of staff and facilities as well as to identify the pitfalls to be avoided.

Transfer of staff members in the NWFP research system with M.Sc. or Ph.D. degrees to the University should be the least difficult since such qualifications are typical for University staff. However, among professional staff members in Agricultural (Crops) Research, 40 percent have only a B.Sc. degree, and six percent have no university degree. For these persons and possibly others who have no teaching responsibilities, a series of professional (rather than academic) titles will be used. Appropriate job descriptions and standards of performance will be established for professional staff, but they will differ in some respects from academic criteria in which teaching is an important element. The same grades can be used for both professional and academic staff members in the University, but their titles will be different.

It is anticipated that a small committee composed of representatives from the University and the research units to be merged will be organized to work out detailed arrangements for transfer of staff. Transfer of physical plant and funding will be worked out between the University and the NWFP Department of Agriculture. Throughout the merger process, University of Illinois staff will be providing advice and assistance to the Agricultural University and the Department of Agriculture to ensure that the transition is smooth, timely, and efficient.

8. Conclusion

Based on the above analysis and with the commitment from PARC to supply temporary personnel to AU, the Mission has concluded that the TIPAN project is administratively feasible.

C. Social Analysis[8/]

This section analyzes the major assumption of the project, namely the likelihood of significant, positive attitudinal and behavioral change occurring in members of the key groups to be affected by the implementation of TIPAN. To this end, the affected groups are identified, their relationship to the project described, and their anticipated response to project activities examined. The analysis concludes that it is reasonable to expect many of the necessary changes to occur, and that the project is socially feasible.

1. Project Beneficiaries and Participants

The following groups will be both participants and direct beneficiaries of the project:

a. NWFP farmers and their families.

b. Workers in the NWFP agricultural community.

i. Employees of the Department of Extension.

ii. Research Scientists in institutions to be merged with AU.

iii. Public and private suppliers of credit and other inputs.

c. Potential AU students, from NWFP, Tribal Areas and Baluchistan.

d. Current AU students.

e. Current Faculty and Administration Personnel of AU.

[8/]Much of the material in this section comes from the Social Soundness Analysis work done by the University of Illinois Design Team, and reproduced in Volume I, Annex F, pp 316-333. The Team, in turn, drew heavily on a full Social Soundness Analysis undertaken by consultants from Development Alternatives, Inc. for the Gadoon-Amazai Area Development Project Paper (See Annex footnote p 319)

There are other beneficiaries of the project (the range of potential employers of improved graduates from the reformed AU, for example,) whose response to the project will not require significant attitudinal or behavioral change. A discussion of their participation does not form part of this analysis. The Women's Program poses some special problems in the socio-cultural context of Pakistan. These issues are addressed in a separate section of the analysis.

2. Description of Beneficiaries, Their Relationship to the Project and the Nature of Their Anticipated Response

a. NWFP Farmers and Their Families

i. Description

The NWFP is characterized by considerable economic and agronomic variety. Agro-ecological adaptations range from nomadic pastoralism among the Gujjar and Kohistanis of the highlands in the north of Swat to settled field crop agriculture in areas of Mardan and date and banana cultivation in D. I. Khan and Bannu. The socio-cultural context of agricultural production is equally varied. Within the Pathan social structure, conditions vary considerably from one clan, or sub-tribe to another and even between the settled and tribal members of the same clan. There are areas, for example, such as parts of Upper Swat, where the majority of farms are small and owner-cultivators live in extended families whose women work alongside of men in potato production. In other areas, there are a number of very large landowners who employ hired labor or share-croppers and keep their wives in seclusion.

Most of the Frontier is characterized by unequal access to productive assets. Despite several land reform acts, land ownership remains skewed, with 80-90 percent of the farms being less than 12 acres. Although there is a legal ceiling on individual farm size, registration of land through a number of family members and other mechanisms allow very large landowners, Khans or Nawabs, to continue to control vast acreages. Increasingly, many landlords are turning toward modern farming methods and evicting tenants whose only option, if they wish to remain in the area, is to work as paid agricultural laborers. In some areas, however, landlords are leasing their land to tenants through various shared input/cost and output/profit arrangements.

Despite the establishment of union and district councils, to which members were elected in 1979 and 1983, the traditional village-level jirgas or meetings of the clan and/or sub-tribal elders are still the main bodies of local community decision-making. Jirgas make decisions about water use in irrigated areas, may form the base for the organization of cooperatives and generally act to resolve community conflicts of all kinds.

These generalizations about Pathan social and political structure apply in Dir, Swat, Mardan, Charsadda, parts of the plains immediately surrounding Peshawar City and some of the southern districts, including Kohat. However, they do not apply to Chitral or those parts of Hazara and D.I. Khan where the population is non-Pathan and where traditional social organization is characterized by less hierarchical relationships.

The impact and interpretation of Islam varies throughout NWFP. There are observable distinctions between Khans and Mians and Pirs—the descendants of Saints. There are also keenly-felt divisions between Sunnis and Shias in the southern districts in Kurrum Agency and in Peshawar City. In Chitral, the Ismaeli-Sunni distinction has become a fact.

ii. Relationship to the Project

The response of farmers to the project will be the crucial variable in achieving TIPAN's goal of improved agricultural production and incomes. If farmers are not willing to adopt new technologies developed by the project's transformed research effort, and disseminated through its initiatives in outreach, the goal for the project cannot be achieved.

iii. Anticipated Response

Experience shows that despite their remote locations and often archaic and divisive traditions, farmers in the Frontier are open to new ideas. Many NWFP families have a member who has worked or is working in the Gulf States; this travel has aroused new expectations and widened many farmer's horizons. Even in the absence of an effective agricultural extension service, new technologies, and especially new crops, are catching on very rapidly. This may result in part from progressive large farmers introducing new practices to their tenants, but there is also a readiness among small farmers to try anything new that looks promising. This has been demonstrated by the eager adoption by small farmers of new seeds and practices in the INM-financed poppy-eradication project in Malakand Agency. Similar attitudes are being observed under the A.I.D.-financed Gadoon-Amazai Area Development Project. From potatoes to pears, persimmons to apples or oilseed, producers all over NWFP are experimenting with whatever appears to be profitable at the time. Hundreds of acres in Mardan and Charsadda have recently been taken out of tobacco and put under fruit tree saplings. This is both a result of the expected increased consumption and the perceived high costs of agricultural labor.

There is also evidence that tenants and small farmers have responded favorably to radio broadcasts in which farmers give advice on appropriate use of inputs and improved farming practices. Researchers interviewed at Tarnab indicate that once news of a new, improved variety has reached the community, the response from farmers of all types usually outstrips the available supply of seed.

It is reasonable to expect, therefore, that when the project has generated technologies that will benefit farmers and disseminated the information in appropriate ways, farmers throughout the province will quickly and willingly respond.

b. Workers in the NWFP Agricultural Community

i. Description

There are three main groups of agricultural workers who will be affected by the project. These are the employees of the two departments of agricultural extension (described in Section II. B. 5., above), the research scientists of institutions to be merged with AU under the project (described in Section II. B. 4., above) and the public and private suppliers of credit and other inputs. Throughout the province, but especially in the Settled Areas and concentrated around Peshawar, there are intermediary organizations such as private fertilizer, pesticide and insecticide dealers, nurserymen and seedling growers, and representatives of the Agricultural Development Bank and Agricultural Development Authority, who play a crucial role in supplying inputs to the farmers of the province.

ii. Relationship to the Project

As discussed in Section III. C. 1. d., the employees of the two departments of extension are to receive in-service training, refresher courses, and video-tape training under the project to enhance their ability to transfer newly developed technologies to farmers. This group will not benefit as much as researchers from the opportunities offered by TIPAN-financed equipment, physical plant improvements, and participant training; yet their acceptance of the new AU outreach effort, and their enthusiastic participation in its implementation will help ensure project success.

About 225 staff members from the provincial research system are to be merged with AU and will become an integral part of the project. The details of this relationship are described in Section III. C.1.c. To contribute their part to the achievement of project outputs, researchers will have to accept major changes in their professional lives. To varying extents, they will all be asked to spend from 15 percent to 75 percent of their time on outreach activities. This implies field travel to remote areas, which will be new to most participants. Scientists who have previously concentrated on single discipline, traditional mono-crop research will be required to reorient their work to multi-disciplinary farmer-focused, problem-solving topics. Their research topics will be approved and scrutinized by their peers in ways that are completely new to them. All this will require significant attitudinal and behavioral change.

The varied groups of agricultural input suppliers will be linked to the project by outreach efforts emanating from AU's Continuing Education Center. They must be ready to supply inputs associated with newly developed technologies in a coordinated and timely fashion. They must understand and accept the concept that AU will become the center for NWFP's agricultural development and that they can benefit from full and enthusiastic participation in its efforts.

iii. Anticipated Response

Project designers who have interviewed NWFP extension workers[9/] report that skill level is low, mission uncertain, attrition high, support weak and morale low. By developing a cadre of outreach personnel to function as subject specialists for the extension system, the project will supply field workers and their supervisors with direct technical advisors for the first time. This attention, and the opportunity for on-the-job training, should improve both morale and performance. Attendance at Continuing Education Center courses will reinforce these improvements. As the additional benefits of the IBRD project in agricultural extension make themselves felt in the province (see Section II. D. 4.), it is reasonable to expect that this group of project participants will play their part in disseminating TIPAN-developed research to the farming community.

The research scientists of the provincial organizations to be merged with AU were eager participants in the project design. One third of them have earned their highest degree outside Pakistan. Those who have experienced the integrated instruction/research/outreach approach adopted at US Land Grant Universities were particularly enthusiastic about TIPAN's concept. Through their access to improved facilities, equipment and training opportunities, the researchers are among the groups with the most to gain and the least to lose. Virtually all the research personnel have studied at the University of Peshawar or Islamia College, and have a strong sense of identity with AU that will make the merger easily acceptable. It is reasonable to expect that outward-looking scientists, who already have a farmer and problem-solving orientation will respond dynamically to the implementation of the project. On the other hand, there will certainly be some individuals who will drag their feet before accepting the diversified work and peer scrutiny and interaction implied in inter-disciplinary research, and the added outreach component. These people will need attention and encouragement from the Director of Research, senior research personnel in AU's faculties and departments and the agricultural research centers before their participation becomes whole-hearted.

9/ See especially the Working Paper No. 4 for the Gadoon-Amazai Area Development project, quoted above in Section II. B. 5.

Over time, as the concept becomes concrete, the job satisfaction of being a vital part of agricultural development becomes apparent, and career mobility is improved by new opportunities in the teaching and/or outreach programs, it is reasonable to expect that even traditional research scientists will play a vigorous part in TIPAN's evolution.

It is difficult to assess the response of input suppliers, since they did not participate in the project design. Individuals interviewed suggest that Agricultural Development Bank representatives and private fertilizer and pesticide suppliers enjoy closer working relationship with farmers (especially the more prosperous) than do extension workers. It is reasonable to expect that if AU keeps this group informed of its progress in research through outreach linkages provided by the Continuing Education Center and mass media programs, and if farmers express a demand for their products and services, that input suppliers will be willing and able to play their part in ensuring the transfer of technologies and their translation into increased productivity and incomes.

c. Potential AU Students

i. Description

An important group of direct beneficiaries will be the young people of NWFP who wish to study agriculture and pursue agricultural careers; between 600-1200 students per year will be accommodated. Of these places, a specific number will be reserved for students from the Tribal Areas and Baluchistan, and this number will grow along with the University. This is particularly important for Baluchistan because even though the province is predominantly agricultural and covers over 40 percent of the total land area of the country, it currently has no agricultural university to educate its promising young scientists.

Little data are available on the career attitudes and aspirations of the province's youth. However, given the weaknesses of the agricultural extension service, it is unlikely that at present, a career in the extension service is especially attractive. The University of Illinois Design Team suggested in its Report that medicine and engineering are the most prestigious college training and career choices of young men. It is widely believed, however, that admission to medical or engineering studies is inequitable, based to a significant degree on social position. As the quality of instruction at AU improves, stimulating demand for its graduates, interest in studying at the University should increase.

In a paper written for the Report by the then Vice Chancellor, G. M. Khattak, on the Agricultural University Student, he notes: "The great majority of our students... hail from rural areas. The average freshman is rustic, generally respectful to elders, keen to

learn. The student of this university typically comes from a poor family, and his most important concern is to obtain his degree and secure a job where he can earn his living and help his family". (pp. 161-162 of Volume I).

ii. Relationship to the Project

The new students at AU will be faced with a curriculum and teaching method that is very different from what they have been used to. They must not only accept but respond positively to such innovations as internal examinations, field work, internships and electives. They will face a new grading system, a different timetable and a need to attend all classes, and study continuously, not just for the June finals. A vital assumption of the project is its anticipation of producing higher caliber graduates who will staff the agricultural service agencies of the province. For the project to succeed, the new students must accept the new system, and see it as an avenue for their career development and ability to support their families.

iii. Anticipated Response

The instructional program of TIPAN has been carefully designed to create an atmosphere in which studies and a career in agriculture becomes more exciting. Many elements of the reformed curriculum are focused on encouraging the student to work towards a fulfilling career with improved status, earning capacity and employment choices: the introduction of academic advisement, the courses on job opportunities, the internship program. The new timetable and use of new audio-visual materials allow for more variety in each day; in the past, students were required to spend over 4 hours in the same room, with a chalkboard being the only teaching aid.

If the faculty and administrative staff of AU can capitalize on those characteristics of "respect for elders" and "keenness to learn" mentioned above, it is reasonable to expect that the new students will be eased through the initial shock of the new system into a positive and productive use of the excellent new facilities, more and better books, equipment, teaching and extra-curricular opportunities. Experience with similar projects in other countries reinforces this view.[10/] The fact that the innovations are being introduced one year at a time to each freshman class will ease the transition, since new students will have no experience with which to compare the new programs.

[10/] See, for example, Hadley Read, Partners with India: Building Agricultural Universities, University of Illinois, 1974, that describes the institution building programs in nine Indian Agricultural Universities with assistance from 6 U.S. colleges from 1952 to 1973.

d. Current AU Students

i. Description

A total of 485 sophomores, juniors and seniors are currently enrolled at AU. In addition, there are 195 graduate students. These students have experienced the "examinations are not till June" mentality that leads to poor lecture attendance and a lack of motivation for sustained study that, according to the Design Team report, contributes to the students' willingness to participate in protests, strikes and ad hoc holidays. In fact, however, AU itself has had comparatively few discipline problems; its students did not become involved in recent disturbances at adjacent campuses, and have never initiated strikes or demonstrations.

ii. Relationship to the Project

These students are expected to complete their degrees under the old curriculum. Theoretically, their relationship to the project will be as passive observers, who will be able to benefit from some of the new equipment, books and the like without any need to accommodate to the changed teaching program.

iii. Anticipated Response

In fact, it is anticipated that as the new curricula and teaching methods become established, the students under the old system will become envious and will demand changes in their own programs. Should this occur, there is provision in the instructional program design for making some innovations (such as new course electives, computer training and internships) available to this group of students also. Again, the sensitivity of faculty and administrative staff will be crucial to the smooth integration of the new system with the phasing out of the old.

e. Current AU Faculty and Administrative Personnel

i. Description

There are currently 110 professionals working at AU, two of whom hold administrative appointments in addition to their departmental ranks. About two-thirds have their highest degree from institutions inside Pakistan while one-third have their highest degree from foreign institutions. Of those who received their highest degree outside Pakistan, approximately one-half were from U.S. universities. Eight of the department heads have M.S. or Ph.D. degrees from a U.S. university, most of them received during the time that USAID provided assistance to the

University of Peshawar from 1954 to 1965. A small proportion of the staff (less than 15 percent) has earned Ph.D.s, thus hampering efforts in guidance of the work of M.Sc. level graduates and in faculty planned and conducted research.

Most of the staff are from the Province with at least B.Sc. training from the Agricultural University or its predecessors, and the bulk of their experience in the NWFP. Eighteen faculty members are on study leave. Of those, six are in U.S. institutions, and the rest are either studying in Pakistani institutions or other institutions abroad. Two faculty members will return in August 1984 from one-year non-degree study programs in the U.S., in time to contribute to the implementation of the new B.Sc. curriculum. In addition, nine faculty are scheduled to commence Ph.D. programs in the U.S. during the 1984/85 academic year and ten faculty will receive short-term (3 to 12 months) specialized non-degree training.

The average age of the faculty is approximately 40. Many faculty were appointed to the staff of the AU or its predecessor institutions at an early age and have relatively long years of service. Approximately 90 percent of the current faculty have 10 to 20 years of service to give to the University prior to normal retirement at age 60.

ii. Relationship to the Project

Of all the groups affected by the project, the faculty and staff of AU will be most crucial in determining the smooth introduction of the inter-linked elements of TIPAN and in building the new Agricultural University. They are also the group who will experience the most changes in their professional situations. At present, few professors undertake research; under TIPAN, it is contemplated that faculty members will spend about one-third of their time in research activities. Deans and Department Heads will be responsible for research, instruction and outreach activities in their respective areas; their duties and workloads will be drastically altered. All personnel will have to learn to work within the two-term, internal examination, grade point average teaching system that will be especially foreign to personnel who have not studied under the American approach. The new policy with respect to promotions and salary raises puts more emphasis on accomplishments and productivity, and less on seniority; this will be a radical change for some personnel to accept. The merger with provincial research will bring over 200 professionals into competition with the old AU staff. For everyone, TIPAN will mean more work as new courses are prepared and more problems as students adjust, new buildings go up and expatriate colleagues arrive.

iii. Anticipated Response

The University of Illinois Report (Volume I, pp 159-160) suggests that the anticipated response will be positive:

> "Fortunately, many faculty members have 15 to 20 years of loyal service to the University; several of the senior faculty members have experience in the multi-missioned U.S. Land Grant University system. They welcome the changes to be made possible by the... project. There is the potential of the younger faculty members to get advanced training and experience to grow into a wide range of leadership positions; and no evidence of lack of support for the changes in mission, programs, and projected operational means of attaining long range goals and intermediate objectives."

Elsewhere (pp 146-147), the Report notes:

> "There was extensive involvement of faculty in the design process. General agreement was reached on the weaknesses in the system, and the faculty exhibited a positive attitude toward the changes proposed. Many have been involved with similar procedures at U.S. universities or at the American University, Beirut, which are on the semester system and utilize internal examinations. Many faculty believe that it was a mistake to drift back to the old system after semesters were tried during the AID/Colorado State University assistance period. Since the University is now autonomous, changes will be more manageable than when it was a part of the University of Peshawar."

It is one thing for staff to be enthusiastic at the design phase, and another for individuals not to be resentful when, in implementation, they are personally required to put in extra work and accommodate change. However, given the institutional and provincial cohesiveness of the faculty members, the potential benefits that they can see accruing to them and their institution and the excitement of being in a growing, dynamic, adequately funded university, it is reasonable to expect that although the acceptance of change will not be trouble-free, it will occur over the life of the project.

3. The Enrollment of Women

Admission to AU is, and has been, open to female students. In the past, female students were enrolled in the predecessor Faculty of Agriculture at the Peshawar University. The faculty and administration appear to have just let women "slide out"

of the AU program. The AU administration has proposed a positive effort under TIPAN to recruit women students and has said it will take responsibility for making the program work. GOP project funding will assist through construction of housing, dining, recreation, and other facilities specifically for women and consistent with cultural and religious norms in the NWFP.

The introduction of female students to AU will doubtless involve social and cultural problems. However, the Mission and Design Team are particularly supportive of this initiative because of the importance of women's role in provincial agriculture.

Eighty-two percent of the 280 rural women surveyed by the Pakistan Academy for Rural Development in the 5 districts of NWFP[11/] said they participate in agro-based activities. These women spend up to 45 percent of their time in agricultural work. In terms of productivity, women's labor is responsible for 25 percent of the production of the major crops, and household incomes were found to rise proportionately to women's quantity of agricultural labor. In NWFP, farmer's wives may be responsible for agricultural tasks related to animal husbandry, food storage and processing, seed selection, crop production and many other activities. For economic reasons, in many farm families, cultural or religious constraints are therefore relaxed to allow women to work outside the house. However, farmers' wives have little or no access to technologies that could improve the quality of their contributions.

One problem is the low rate of literacy, which for rural females is only 5 percent. NWFP is ahead of other provinces in its emphasis on educating girls; two A.I.D.-funded projects currently underway in the province are including girls' schools at the request of the GONWFP. The President of Pakistan has frequently referred to the importance of increasing female literacy, and his views are echoed in the Sixth Five Year Plan which states that the government is "truly committed to the cause of women's education." Educators agree that the most appropriate method of increasing the rural literacy rate, especially among women, is to begin with methods that relate to the everyday tasks of these individuals. Therefore, educating rural women in improved methods of agriculture could also provide an appropriate approach to literacy classes. Using women in AU's outreach arm could start to break down the cultural barriers to women working in the field, albeit slowly. Female graduates of AU could help generate and then transfer technologies to women, particularly in the fields of food preservation and processing.

[11/] Studies on Rural Women in NWFP and Studies on Rural Women in Sind, 1980; Women's Division, Cabinet Secretariat, Government of Pakistan, Islamabad

A number of religious and cultural practices have been interpreted as barriers to the involvement of women in higher education programs. However, such interpretation has been recognized as detrimental to national development by the Government of Pakistan, and steps are being taken to address them. Dr. Mahbubul Haq, Federal Minister for Planning and Development specified some of the targets for the development of programs for women in the Sixth Five Year Plan. These include the enhancement of female literacy, reservation of seats for female students in medical colleges, targets for numbers of female workers in offices and higher grades in the civil service, and extensive job opportunities for women in agro-based industries.

Under the project, it is suggested that the number of female faculty members, currently two, be increased, and that a Dean of Women be added to the AU administrative staff. Eventually some 30 percent of places would be reserved for women. The Design Team has prepared a detailed program for women at AU, the desired outputs of which are presented in Volume I, pp 102-106, of its report.

If AU were to produce female graduates, there would be no lack of employment opportunities. There are civil service openings for at least 100 to 200 women graduates to be placed at grade 17 level positions or above within the next five years. A variety of community-based organizations and agencies exist which could act as linkages for the University in its effort to recruit, educate and place its women graduates. These include the Pakistan Academy for Rural Development in NWFP, which has one female economist on its staff and employs 11 women supervisors as teachers and local health advisors/midwives. The Agricultural Extension Department at the moment employs one women in its Peshawar office, while Punjab province currently employs at least 38 female field assistants trained in both agriculture and livestock development. In addition, all of the local research institutes contacted either now employ or are willing to employ qualified women as research assistants in their laboratories. The Agricultural University itself can employ qualified women on its teaching, research and outreach staffs and in the future can employ some of its female graduates. Experience in Pakistan shows women to be especially successful in laboratory work and administration.

With respect to the Women's Program, therefore, it is reasonable to conclude that: (a) employment opportunities will exist for women graduates; (b) enrolling and educating women at AU and appointing women to the faculty can be accomplished as an initiative of the AU administration if carefully implemented; and, (c) success of the initiative is not a "make-or-break" issue for achievement of overall project objectives.

4. Conclusion

This analysis has outlined the many behavioral and attitudinal changes necessary for the achievement of project objectives and has concluded that it is reasonable to expect the needed changes on the part of major participants and beneficiaries to occur. The discussion has not highlighted the positive motivators inherent in the project. The challenge and excitement of the TIPAN concept fired the imagination of many AU members, who worked closely with the Design Team in developing the project. Their commitment to change is evidenced by the fact that after two full years of design effort, enthusiasm and motivation are still high and widespread.

D. Technical Analysis

This section provides justifications for the technical approaches chosen for the achievement of project outputs. Specifically, it addresses three issues. First, the rationale for the overall strategy of strengthening the Agricultural University rather than adopting alternative approaches is examined. Then the choice of the new B.Sc. curriculum is justified. Finally, a justification for the recommended approach to outreach activities is given.

1. Institutional Approach

TIPAN's technical approach is designed to create a mission-oriented agricultural university with a balance of complementary teaching, research, and outreach functions. Project funds have not been specifically allocated to these three functions. However, a general target allocation of resources was made, based on U.S. experience as applied to the particular circumstances at AU, and consists of teaching (45 percent), research (30 percent), and outreach (25 percent). These are guidelines, not specific allocations and will probably be modified as TIPAN evolves. However, targeting resource allocations in this manner reflects the balanced development of the Agricultural University deemed necessary to achieve the project goal of increased agricultural productivity and incomes in NWFP.

The question addressed here is whether there is some institutional combination of only one or two of the three functions that would be more cost-effective, while still achieving desired project outputs.

Teaching alone. Concentration on the teaching function would permit faculty members to devote their time to upgrading the curricula and the teaching-learning process. Fewer personnel resources would be required and the costs of research and outreach would be eliminated.

The disadvantages of this approach are demonstrated by the current status of the NWFP Agricultural University. Classroom instruction reflects outdated syllabi and textbooks. Faculty members are not challenged by problem-solving research, and the new ideas that flow from research and technology development are unavailable to students in the classrooms and laboratories. Without substantial faculty research involvement, graduate students drift toward library research and do not get the experience of collecting primary data with rigorous research methodology. Thus, M.Sc. degree holders are ill-prepared to enter the agricultural research system of the province. Without an outreach function, meaningful problem identification is difficult.

The option of having the Agricultural University concentrate on teaching for another few years and add the research and outreach functions at a later time was, however, considered. This approach was deemed inappropriate and ill-advised to achieve the objective of a well-balanced and integrated teaching-research-outreach program. The revised and improved teaching program must be developed since it will incorporate and is dependent on the proposed developments and changes in both of the latter two programs.

Combination of teaching and research functions. The teaching and research functions are clearly complementary to one another. Research contributes strongly to the M.Sc. level training for those that are to enter the research system and become future faculty members of AU or other agricultural faculties and universities. The B.Sc. level teaching program is also strengthened by faculty members being involved in mission-oriented research.

The University could make major improvements by emphasizing the teaching and research functions, but without the outreach function, strong linkages with farmers and rural households, agri-business concerns, and government organizations serving the rural sector would not be made. Without an established aggressive outreach program, it would be difficult to develop and maintain adequate linkages for problem identification. The University would be wholly dependent on other organizations to transmit the results of research to potential users. Thus the University would be handicapped in its ability to undertake relevant research, to provide practical training in its teaching program, and in disseminating appropriate technologies to farmers and other client groups to achieve NWFP agricultural production goals.

Combination of teaching and outreach functions. If two of the three functions are to be combined, this combination would be less effective than combining teaching and research. The outreach function would contribute less to the teaching program than would

the research function. Without a research program, the University would not have research results and technology packages to disseminate to decision-makers in the agricultural sector. And without a research program, thesis work would be little more than library research.

Historical justification. The history of strengthening agricultural universities in developing countries clearly shows the importance of research being a strong function of the university. History also demonstrates that the most successful agricultural universities have responsibility either for agricultural extension or an outreach arm that interacts with the government agency responsible for agricultural extension. Experience in many countries shows the importance of the complementary relationships among teaching, research, and extension.

2. Choice of the B.Sc. Curriculum

The Design Team in close collaboration with AU professors has put together a detailed curriculum for the B.Sc. degree. It is reproduced in full in Appendix A Volume I of the Design Team Report. This section outlines the rationale for the course content and structure of the new curriculum, which represents a significant departure from existing coursework.

a. A common core course followed by specialization was chosen because the solution to agricultural problems usually is not limited to applying concepts from a single discipline or narrow field of disciplines. Resolving a problem in livestock production may require the understanding or application of concepts from agronomy, agricultural mechanization, forestry, agricultural economics, rural sociology, and food technology - as well as the basic social, natural and biological sciences and even the humanities. The desirability of a wide breadth of agricultural knowledge is particularly important in Pakistan and especially the NWFP where geographic and climatic features present opportunities for such a wide variety of agricultural enterprises, not only in the province in general but also on an individual farm. Thus, the educated agriculturalist, in addition to specialized training in a chosen discipline, needs broad training to have a general understanding of the whole range of agricultural knowledge and technology and how discipline-oriented concepts are interrelated and intra-active within the system.

b. There are some courses that have implied or specifically stated prerequisites and thus must follow a logical sequence. For example: mathematics precedes chemistry; chemistry precedes soils and animal nutrition; soils precedes crop production; biochemistry precedes animal hygiene and disease prevention and introduction to food technology.

c. The specified curriculum should include only a reasonable credit load per term. The Design Team has limited the number of separate courses per term to 6 and, in most terms, the number of credit hours to 15. This per-term limitation then limits the total B.Sc. curriculum.

d. A student should not be forced or enticed into making a choice of specialization which literally becomes a single track without opportunity to change, until: (i) the student has had a general introduction to all the specializations through course work, through academic advancement, and through personal investigation; and, (ii) the student has attained adequate maturity to understand the implications of the choice. The University has the responsibility to present the opportunity for choice; it is the student's prerogative to exercise that choice.

e. To provide a basis for reasonably unbiased advice prior to the time a student must make a choice of specialization, two 1-credit courses are offered - one in Year 1 and one in Year 2. These courses will provide information on agricultural career opportunities and on the specializations which the University offers as a choice to the student. They will also, through presentations by individuals in representative professions, give the students an opportunity to interact with potential role models before making a career choice and, in turn, the implied choice(s) of academic specialization.

f. In the past, the National Pay Scale regulations required an M.Sc. degree (of the type then granted in the NWFP-AU) for an agriculturalist to qualify for grade 17, the lowest professional grade. Thus, under the University's "old" curriculum (the only curriculum which has thus far produced graduates), all students aspired to the M.Sc. degree, and very little selection occurred between the undergraduate program and the graduate program.

The "new" curriculum which the University is now using (but which will not produce B.Sc. graduates until 1985) and also the curriculum recommended herein will culminate in a B.Sc. degree which will qualify the graduate for NPS grade 17 employment. Thus there will be a reduced compulsion for students to pursue an M.Sc. and less reason for a liberal policy on admission to graduate study. This provides the basis for offering the two options in the fourth year: one for those students who anticipate entering career employment upon completion of the B.Sc. degree; and one for those students who desire, and have the academic ability, to enter graduate study or research.

g. The required internship was included as a part of a more complete solution to the assertion (by, among others, the Director of the Extension Department, a major employer of the AU graduates) that the graduates "don't know how to do anything." One of the primary objectives of the internship is to give the student an opportunity to perform in an agricultural job or position. It will also give the student experience to which he can relate his past and future academic training. To further counter the charge of insufficient practical experience in the curriculum, the "practicals" of all classes will be, as the name implies, practical or real-life oriented, and opportunities for additional practical experience will be provided through student employment programs, through special project electives, and the like.

3. Approach to Extension

As its name states, TIPAN will consist of an integrated network of agricultural activities designed to increase productivity in NWFP. The activities fall into the three categories of teaching, research and outreach. Each is equally important to the achievement of project success. As designed, TIPAN will make significant institutional transformations in teaching and research; extension, however, is approached in a different way.

The upgrading of the NWFP extension service is a major component of an on-going World Bank-financed project, Salinity Control and Reclamation Project (SCARP), described in Section II.D.4. above. The TIPAN Design Team, therefore, proposed an outreach program tailored to complement the IBRD initiatives. While SCARP will train the Field Assistants (FA), Agricultural Assistants (AA) and Agricultural Officers (AO), and will increase the quality of their work through improved incentives (salary increases and housing improvements) and transportation, TIPAN will create, at the AU campus, and at the research institutes to be merged with AU, a network of outreach personnel to provide support to the AOs, AAs and FAs.

The TIPAN outreach program has three main elements. Firstly, the project will establish a Continuing Education Center at AU, which will be a site for in-service and refresher training for extension personnel. The Center will be available for SCARP-financed training and will offer complementary courses to be designed and taught by AU personnel. Secondly, at the Communications Unit of the Center, video-tape programs of technological packages developed by AU's research scientists will be designed. Using specially equipped vehicles, AU outreach staff will show these programs in the districts of NWFP to extension staff and farmers directly. Thirdly, the program will train a cadre of subject matter specialists -- outreach staff with expertise in crop protection, soils, water

management, and the like — who will work with SCARP-trained extension workers in the.transfer of technologies to farmers' fields.

The combination of SCARP and TIPAN initiatives in upgrading extension services in NWFP is considered the most technically appropriate and resource-efficient approach toward ensuring that technologies developed at AU are quickly and effectively made available to the province's agricultural community.

4. Alternative Ways to Meet Manpower Requirements

Appendix E and Chapter I. of Volume I of the Design Team Report describe the professional agricultural manpower requirements in NWFP and NWFP's contribution to the overall requirements for Pakistan; a substantial gap exists. In the NWFP alone, over 100 vacant posts requiring university-trained agricultural scientists exist at the present time. In addition, the NWFP will be expected to supply another 100 post-graduate trained agricultural scientists to the PARC Talent Pool, which is currently being established and staffed. The demand will grow as NWFP and Pakistan attempt to achieve the growth targets for agriculture in the Sixth Five-Year Plan. No country, developed or developing, can achieve its agricultural development objectives, however modest, without an adequate corps of well-trained agricultural scientists.

Three alternatives for filling the manpower gap and assuring a continuing flow of qualified manpower into the NWFP agricultural sector were considered:

a. create more seats for NWFP students in the agricultural universities in Punjab and Sind Province;

b. send candidates for higher education to quality institutions in Asia or the West; or,

c. strengthen the ability of the NWFP-AU to educate more and better quality B.Sc. and M.Sc. graduates.

Alternative (a) was rejected on quality grounds because of the inappropriateness of the education that NWFP students would receive in the Sind and Punjab and because of the lack of space at both Universities to absorb the required number of NWFP students. Furthermore, the teaching and research offered at these institutions are, at best, marginally acceptable. They do not currently provide the quality of education required particularly for research scientists. In addition, with their focus on Indus Plain irrigated agriculture, the training offered is not appropriate for the varied and different ecological conditions found in the NWFP. Based on

past experience, it is very unlikely that graduates from these universities would return with the tools and motivation needed to improve NWFP agricultural production.

Alternative (b) was rejected as a means of meeting the entire training need, but at the same time was recognized as necessary for meeting specific training requirements. Significant quantities of Ph.D. and M.Sc. training in the U.S. will be essential over the next decade and required at the Ph.D. level into the indefinite future. Training in Asian institutions in the Philippines, Malaysia, and Thailand can also meet part of the requirement for quality training in some disciplines. Training at these institutions could be an excellent screening mechanism for the selection of Ph.D. candidates. One weakness of these institutions and Western universities is that the training provided does not automatically equip students for coping with the varied ecological conditions and the diverse mixed farming systems of the NWFP. In-country thesis research will help address this problem.

Alternative (c) was considered the most logical means of expanding the pool of trained manpower available, particularly at the B.Sc. and M.Sc. levels, to improve teaching, research and extension in the NWFP. It is more cost-effective than any of the other alternatives and provides a set of complementary services and impacts not possible using other alternatives. The presence of a dynamic teaching, research, and outreach institution, available and able to serve all parts of the Province, will provide the leadership, ideas, and innovation needed to help transform NWFP agriculture. The University staff and facilities will be used for in-service training for all provincial agricultural agencies and for continuing education and other community services.

5. Conclusion

The analysis has outlined the alternative technical approaches and methodologies that were considered, and finally selected during the design of TIPAN. The design reflects careful work by a 26-person Design Team with inputs from virtually every potential academic and research beneficiary. (See Annex O) Together, the designers have clearly identified the available and additional resources required to effect the transformation and integration of the provincial technology transfer network. The results of their work are reflected in a closely linked, phased and scheduled combination of inputs that are considered sufficient and appropriate to achieving the desired outputs. The Mission has determined, therefore, that the project as designed, is technically feasible.

E. Economic Analysis

1. Introduction

Agriculture is the primary economic activity in Pakistan. More than half the labor force is engaged directly in agriculture and the agricultural sector accounts for more than one-quarter of gross domestic production. Agricultural outputs such as cotton, wheat, rice, oilseeds and sugar are important raw materials for the manufacturing sector. Yarn and textiles comprise by far the largest manufacturing sector; food processing is the second largest. Cotton and cotton-blended textiles account for a large part of manufactured exports which generate more than half of Pakistan's exports. Raw cotton and rice are the largest single export items. It is clear that the economy of Pakistan and its financial health depend upon good performance in the agricultural sector.

Agriculture in the NWFP also is very important. Approximately half the work force is engaged in agriculture, but agriculture probably accounts for a somewhat lower proportion of total income in the Frontier, mainly due to low productivity. However, the potential for improvement of agriculture in the Frontier is quite high, in part because the climate (more temperate than in the southern areas of Pakistan) permits the production of high value horticultural crops. Farmers in the Frontier could benefit greatly from efforts to increase their productivity through changes in technology and farming systems. Large areas of irrigated land are used for producing sugar, wheat and rice because these are the most profitable crops, given current pricing policies, technology and marketing opportunities. Most of this land could produce more income through higher yields or conversion to other crops. Similarly, existing orchards in the Frontier could yield much higher incomes with better management and marketing. NWFP also has the potential to serve as the seed producing area for the rest of Pakistan. It is especially important to increase the level of agricultural production and income in the Frontier because of the competitive disadvantage from which it suffers in the industrial sector. Most of the Frontier is relatively isolated from markets and sources of raw materials and intermediate goods.

2. Returns to Higher Education

The improvement of the Agricultural University in Peshawar will increase output and income through the activities of its graduates who will engage in research, extension and administration for the government and the private sector. Some of them will be involved directly in the production and processing of agricultural commodities. Additional professionals in the agricultural area are necessary to carry out the planned expansion of research and extension activities. The university itself will be intimately involved in the research network and the performance of research.

The problem of benefit attribution characterizes studies which attempt to determine the benefits of agricultural research. Such studies often attribute some or all the benefits (increased yields, income) to the expenditures that are made on research activities. In fact, some of these benefits stem from the investments made in the education and training of agricultural professionals. Research expenditures build on the knowledge imbedded in these people. Investment in people yields returns to society if these people are able to use their knowledge and skills. Some benefits of investment in people are captured by the individuals in the form of higher income. In the 1960's, beginning with the work of Theodore Schultz and Gary Becker, a number of economists calculated the returns to investment in education from the private point of view. It was clear at that time that the private expenditures of money and time (earnings foregone) in higher education produced substantial returns to the individual in the form of higher income. These private benefits are a part of the social benefits, which tend to be much higher.

Investment in higher education is generally believed to yield higher social returns from the technical, scientific and engineering disciplines. Graduates from these fields are more likely to be employed in developing countries than those from the humanities and social sciences. Furthermore, the skills and knowledge required at the university level usually are critical to their job performance. These jobs also are frequently more important in terms of increasing production and income than those jobs filled by liberal arts graduates. Although studies have not been done on the private and social returns to expenditures on various types of education in Pakistan, the labor market is a good indicator of the relative value of different types of higher education: engineers and agriculturalists are able to find jobs rather easily whereas literature and political science graduates do not. Furthermore, beginning salaries are considerably higher on average for the former group.

A World Bank study shows that the returns from investments in higher education in developing countries are greater than for physical infrastructure investments -- 14.9 percent for higher education and 12.8 percent for physical infrastructure projects. The 14.9 percent is an average for 11 developing countries with a range from 8.0 percent in Colombia to 23.0 percent for Mexico and Venezuela; Pakistan was not included in the World Bank study.12/

12/ George Psacharopoulos, "Higher Education in Developing Countries: A Benefit-Cost Analysis". Staff Paper No. 440, World Bank Education Department, November, 1980.

3. Returns to Research and Extension

Rates of return to research and extension in other parts of the world have been assembled by Ruttan.[13/] Rates of return for developing countries run, for the most part, in the range of 40 to 60 percent. Of 24 separate studies reported on, one-third reported rates of return of 75 percent or higher, half were 50 percent and below, with the remainder in the 50 to 75 percent range. Clearly, investments in agricultural research and extension throughout the world have shown high rates of return.

Some results are available from Pakistan on returns to investments in agricultural research and extension. Carl Pray[14/] has calculated the social rate of return on investments in crops research in Punjab Province during the period between 1947 and 1975 to be over 30 percent.

There is no reason to believe that the rates of return on investments in research and extension in NWFP would be significantly different from those reported by Ruttan for other developing countries. Even accepting rates of return on the lower side - 25 to 40 percent - still yields a very significant return on investment. Pakistan cannot invest in research in NWFP, however, unless there are agricultural professionals to do the work.

The proposed project is much more than an education or research project. It represents the integration of agricultural research in the NWFP with agricultural education at the university level. There also will be an outreach program and a close relationship with the extension service in order to increase the relevance of the research. This overall integration makes possible a quasi-quantification of the potential benefits from the project.

Economists have investigated agricultural research in great detail in attempting to calculate the returns from investment in research. A review of agricultural productivity studies carried out between 1958 and 1980 included 62 annual internal rates of return ranging from 11 percent on wheat research in Colombia to 110 percent on farm

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13/Vernon W Ruttan, Agricultural Research Policy, University of Minnesota Press, 1982.

14/Carl Pray, "The Economics of Agricultural Research in British and Pakistani Punjab, 1905-1975," Ph.D Thesis, University of Pennsylvania, 1978.

management research and agricultural extension in the USA.[15] Only four were below 20 percent; nine were in the 20 to 30 percent range, 14 in the 30 to 40 percent range, and 35 exceeded 40 percent. These findings may overstate the returns because such studies often fail to include the costs and benefits of other inputs such as additional water, fertilizer, pesticides and farmers' labor. Nevertheless, there is little doubt that research results, if disseminated to farmers and adopted by them, lead to yield increases and a growth in net income that more than offsets the cost of research. Careful studies of the returns from research in Pakistan are few. Carl Pray in his Ph.D. thesis estimated that the social rate of return in the Punjab for the period 1947 to 1975 ranged from 17 to 49 percent; the internal rate of return, based on the most realistic assumptions, ranged from 30 to 37 percent. A recent article avoided many problems by quantifying the effects of new varieties on yields of wheat after accounting for fertilizer usage and weeding practices.[16] On-farm trials of high yielding varieties of wheat under irrigated conditions showed yield increases of 45 to 50 percent depending upon the specific treatments. These yield advantages are as good or better than those in Colombia and India. Similar trials of maize in the Punjab and NWFP resulted in yield increases of 12 to 24 percent. Actually, the improved maize varieties with the recommended practices yielded 67 percent more than the traditional variety associated with farmers' practices. A similar comparison with wheat showed improvements of 65 percent.

4. Returns to TIPAN - Methodology

The proposed project will increase the probability of implementing already known research results and will produce the research that is necessary to sustain and increase the gains from new technology. Separating the contribution of each input is difficult and calculating the rate of return from each expenditure is almost impossible. For example, one would have to consider the costs of and determine the returns to investments in the following: training agricultural researchers; training extension workers; education for farmers; the body of existing knowledge; carrying out new research; extension activities; new seed varieties; fertilizer; pesticides; additional water; additional farmer labor; and, improved marketing facilities (e.g., roads).

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[15] Robert E. Evenson, "Economic Dimensions of Agricultural Research Programs," presented at the International Seminar on Science and Agriculture, National Agricultural Research Center, Islamabad, March 28, 1984.

[16] Joseph G. Nagy, "Estimating the Yield Advantages of High Yielding Wheat and Maize: The Use of Pakistani On-Farm Yield Constraints Data," Pakistan Development Review, Vol. XXII (Autumn, 1983), pp 179-190.

All of the above items are necessary to some degree in order to introduce new technologies. Attributing a percentage of yield increases to the major activities of this project would necessarily be arbitrary, and the calculation of internal rates of return would be subjective. Nevertheless, it is possible to demonstrate that the potential for increased agricultural output in NWFP is so high that the attribution to the project of even a small percentage of the increased output would justify the project.

The NWFP is considered a backward province in Pakistan, and the state of agriculture reflects this backwardness. TIPAN is expected to energize the entire agricultural sector, transform it and substantially increase output and income. The Nagy paper suggested that the new varieties themselves accounted for between one-third and two-thirds of the observed yield increases. We can assume that one-half is a good average to use. Then the university education, research and extension activities might be considered to account for half of the effect of the varieties when they are adopted. Extension and existing services might account for the other half. Thus one-fourth of the yield increases would be attributed to the university/research complex. Of course there are additional costs such as farmers' labor and purchased inputs that offset some of the revenue benefits of the new, higher yields. The following sections will apply this share to several planned activities.

5. Returns to TIPAN - Estimates

The Mission examined the major crops in the NWFP in order to identify suitable candidates for yield increases. A number of crops were excluded because there already is a mechanism for research and extension or one is in prospect. Excluded crops consist of sugar cane, tobacco, fruits and vegetables. It is possible that the TIPAN project will have a major impact on fruits and vegetables but, to assure a conservative estimate of benefits, they were excluded. The six crops chosen for this analysis are maize, wheat, rice, gram, sorghum, and oilseeds. Table 12 sets out the average yields in PFY 1979/80 for these crops. The yields are given for NWFP, Punjab, Sind and Pakistan as a whole. The NWFP yields were compared to the others, and in each case, a potential yield increase was selected and placed in the last column. In four cases, the difference between the Punjab or Pakistan average yield was selected as being realistic. The Sind figure for rice was used because NWFP already exceeds the Punjab average yield in rice. Because the maize yields in NWFP are already relatively high, the figure chosen was the yield obtained in farmers' field trials. This represents a 63 percent increase, which is still far below levels obtained at the Cereal Crops Institute (6 MT/HA) and experiments in the Swat Valley (8 MT/HA). This target yield is equivalent to about 30 bushels per acre, which is low for maize grown under irrigated conditions. All the target yields are quite low and well within reach over a short period of time.

Table 12

AVERAGE YIELDS OF SELECTED CROPS IN PAKISTAN, PFY 1979/80
(In Kg/Hectare)

	Pakistan	Punjab	NWFP	Sind	Potential Yield Increases[a]
Maize	1,248	1,291	1,261	564	794[b]
Sorghum (Jawar)	588	555	497	649	91
Oilseed (Rape)	604	642	481	613	161
Wheat	1,563	1,598	1,088	1,802	510
Rice (78/79)	1,615	1,494	1,532	1,825	293[c]
Gram (77/78)	558	550	403	699	155

a/ Difference between NWFP yields and Pakistan/Punjab yields
b/ Difference between NWFP yields and yields from farmer trials in NWFP
c/ Difference between NWFP yields and Sind yields

Source: Ahmad M. Khalid, Pakistan: Agriculture Data Book. USAID/Pakistan, June 1982, pp 27-34

In Table 13, the additional yields were multiplied by the cultivated area for each of these crops in order to estimate the additional production. Additional production was multiplied by prices prevailing in early 1984 in order to calculate the value of additional output. This additional output is equivalent to $110 million. As noted above, the additional production cost was assumed to be equal to one-third of the value[17] and one-fourth of the remainder was attributed to the TIPAN project. Thus the TIPAN contribution to the additional output is 16.75 percent or $18.4 million per year.

17/ World Bank, "Salinity Control and Reclamation Project (SCARP) Mardan, IBRD Appraisal Report No. 2179a - PAK, January 1979, Annex 1.

Table 13

POTENTIAL PRODUCTION AND VALUE OF SELECTED CROPS IN THE NWFP

	Additional					
	Area a/ (000 ha)	Yields (Kg/ha)	Production (000 MT)	Price (Rs/Mt) b/	Value (000 Rs)	Value (000 $) c/
Maize	336	794	266.8	2,180	581,624	43,083.3
Wheat	716	510	365.2	2,050	748,660	55,456.3
Rice	67	293	19.6	2,120	41,552	3,077.9
Gram	117	155	18.1	4,275	77,378	5,731.7
Sorghum	33	91	3.0	1,800	5,400	400.0
Oilseeds	49	161	7.9	4,000	31,600	2,340.7
						110,089.9

a/ Average for 1977 - 1980 from Ahmad M. Khalid, Pakistan : Agriculture Data Book, pp 13-14

b/ Prices March 31, 1984 Karachi, from Monthly Economic Letter, National Bank of Pakistan

c/ $1.00 = Rs 13.5

Table 14 contains a comparison of the additional output and the additional cost of the TIPAN project. The additional costs consist of construction, technical assistance, training, commodities, A & E services, additional operating costs, evaluation, and contingency. The cost data in Table 14 are in 1984 dollars.

The additional output attributed to the project was assumed to begin in the fourth year of the project when one-third of the additional yields would occur. A second third of the additional yields was assumed to occur in the fifth year and the total additional yields were assumed to occur in the sixth year. It is very likely that

yield increases would continue to rise as a result of the project beyond the levels set forth in Table 12. Nevertheless, we have used conservative assumptions for this analysis.

Table 14 also contains the present value for the additional project costs and the value of the additional output based on a 12 percent discount factor. The table demonstrates that at the end of 20 years, the present value of the total additional output attributed to the TIPAN project exceeds the present value of the additional cost of the TIPAN project. At the 12 percent discount level, the benefit cost ratio is 1.13. The internal rate of return, based on the benefits and costs in 1984 dollars, is 14.8 percent. To reinforce the conservative approach to the projection of project returns, the production base (area) against which the benefits of TIPAN are to be applied has been held constant.

6. Conclusion

The above analysis demonstrates that a small percentage of the potential yield increases in NWFP agriculture would exceed the cost of the TIPAN project. This analysis, although speculative, indicates that the magnitude of the project is justified on the basis of the size of the agricultural sector in NWFP and the room for improvement in yields to which the project will contribute. Given the relatively good incentive prices for most agricultural products in NWFP and the very high prices for maize, sugar cane, fruits, vegetables and some other crops, and given the poor performance of extension services in Pakistan, it is clear that some other approach is necessary in order to stimulate yield increases. The TIPAN project is seen as a way to energize the entire agricultural sector in NWFP by increasing the number of trained agriculturalists, improving the knowledge base of existing agricultural workers, strengthening the agricultural research capability, improving connections among extension, research and training, and providing materials for the extension effort. It is expected that this new institution will play a key role in agriculture in NWFP. Furthermore, it will train additional agriculturalists who will work in other parts of Pakistan and contribute to yield increases in those places. Finally, if it is successful, it can serve as a model for agricultural universities in Sind and Punjab which themselves now recognize the need to improve and wish to do so. Because of the large agricultural base in these provinces, small improvements in these institutions as a result of the TIPAN example would result in substantial additional output.

Table 14

ADDITIONAL COSTS OF TIPAN PROJECT
AND ADDITIONAL CROP PRODUCTION ATTRIBUTED TO ITa/
(Millions of 1984 dollars)

	Project Costs			Present	Present	Revenues	
Year	Const-ruction	Other	Total	Value Factor 12 percent	Value of Costs	Attributed to TIPAN	Present Value
1	-	6.0	6.0	.893	5.36	-	-
2	2.2	9.0	21.2	.797	16.90	-	-
3	3.5	9.5	13.0	.712	9.26	-	-
4	5.0	7.1	12.1	.636	7.70	6.1	3.88
5	6.6	8.3	14.9	.567	8.45	12.2	6.92
6	4.1	7.6	11.7	.507	5.93	18.4	9.33
7	3.4	6.5	9.9	.452	4.47	18.4	8.32
8	3.1	5.8	8.9	.404	3.60	18.4	7.43
9	2.6	5.0	7.6	.361	2.74	18.4	6.64
10	2.6	4.6	7.2	.322	2.32	18.4	5.92
11	-	3.2	3.2	.287	.92	18.4	5.28
12	-	3.2	3.2	.257	.82	18.4	4.73
13	-	3.2	3.2	.229	.73	18.4	4.21
14	-	3.2	3.2	.205	.66	18.4	3.77
15	-	3.2	3.2	.183	.59	18.4	3.37
16	-	3.2	3.2	.163	.52	18.4	3.00
17	-	3.2	3.2	.146	.46	18.4	2.69
18	-	3.2	3.2	.130	.41	18.4	2.39
19	-	3.2	3.2	.116	.37	18.4	2.13
20	-	3.2	3.2	.104	.33	18.4	1.91
					72.54		81.91

a/The project costs used in this table were based on earlier Mission estimates using different inflation and exchange rates as explained in Section V.F.1. The revised estimates which appear in Section V.F. represent a 32 percent reduction in total project costs from the earlier estimates. Therefore, the benefit cost ratio and IRR would be even higher than what was obtained using the earlier figures.

F. Financial Analysis

1. Cost Assumptions

The initial cost estimates for this project assumed an inflation rate over the life of the 11-year project of 20 percent for all local currency costs and 10 percent for all foreign exchange costs. An exchange rate of Rs 13.00 = U.S. $1.00 was also used in converting local currency costs into dollars. During final project design, the Mission carefully analyzed these assumptions and concluded that they should be revised. A review of current economic trends and actual contracting experience on other projects revealed that annual rates of inflation of 5 percent and 10 percent for all dollar costs and local costs, respectively, except for construction, should be utilized. The Mission also concluded that construction costs in Pakistan, as elsewhere, are subject to inflation rates that are higher than the average inflation rate for the economy as a whole. To determine what rate should be used, a study of past trends in Pakistani construction costs was conducted by the Office of Engineering. (See Annex R.) That study found that over the last 5 years, construction costs increased at a rate of 11 to 12 percent. Therefore, a rate of 12 percent was adopted for all construction costs. For A&E costs, a rate of 10 percent was adopted because of the anticipated mix of dollar and local costs.

The Mission also examined the trend in exchange rates over the last 5 years. Up to January 1982, the exchange rate was fixed by the Government of Pakistan at Rs 9.90 = U.S. $1.00. Since that time, the rate has climbed to Rs 13.91 = $1.00 (as of June 26, 1984) which is equivalent to a rate of increase of almost Rs 2.00 annually. Based on this trend, the Mission has adopted an exchange rate of Rs 14.00 = $1.00 in converting local costs to dollars for the first year of the project and increased this rate by Rs .50 every year thereafter for the life of the project.

In estimating total project costs, the Mission has included estimates for recurrent and capital development costs that would have occurred at the University and the provincial research centers without the project. This amounts to $15.3 million by the end of Phase I and $47.0 million for the life of the project. It is equivalent to 52.5 percent of all project costs financed by the GOP in Phase I and 39.2 percent of total costs financed by the GOP over the life of the project. USG Fiscal Years (FY) were utilized in all financial tables except Table 18 which follows the Pakistani Fiscal Year (PFY). For purposes of this project paper, U.S. Fiscal Year 1985 corresponds to PFY 1984/85, U.S. FY 1986 to PFY 1985/86, and so on.

2. General

At the present time, financial resources for the project are forseen as coming from A.I.D. and the GOP. However, the Japanese Government has expressed strong interest in the project and is carrying on negotiations with the GOP for a contribution of approximately $10 million. The Canadian International Development Agency has also expressed interest in the project and has begun examining the project proposal.

The total cost for Phase I of the project is $67.5 million, and the total life-of-project (LOP) cost is $180.0 million. A.I.D. will provide a total of $38.5 million for Phase I, consisting of $35.5 million under the TIPAN project and $3.0 million in commodities under the Agricultural Commodities and Equipment Program (ACE) (391-0468). A.I.D.'s LOP funding levels are projected at $55.0 million under TIPAN and $5.0 million under ACE. The Mission is requesting authorization only for Phase I funding. Authorization for the later phases will be sought after an evaluation of the preceding phase has been completed and a favorable finding has been made. The GOP will contribute $29.0 million in Phase I and $120.0 million over LOP. Any additional resources provided by other international donors will be applied to the GOP's contribution.

The A.I.D. LOP contribution is equivalent to 33.3 percent of total project cost while that of the GOP is equivalent to 66.7 percent. The equivalent of 26.1 percent of the total life-of-project cost would be expended by the GOP without the project.

Three summary tables are provided on the following pages. Table 15 provides a summary of project costs by fiscal year, phase and source of funding; Table 16 depicts costs by expense category, phase and source of funding; and Table 17 summarizes A.I.D. funding by expense category, fiscal year and phase. The budget tables show the $5.0 million earmarked under the Agricultural Commodities and Equipment Program as a non-add line item.

Project costs are defined as anticipated sub-obligations or commitments of funding through, e.g., PIOs, contracts, purchase orders or PILs. Project costs have been adjusted for inflation and exchange rates as noted in section F.1. above. A contingency factor of 10 percent was built into the commodity, construction and A&E costs and is included as a separate line item for all other costs.

3. Summary Cost Estimates and Financial Plan

a. Life of Project

i. A.I.D. Contribution

The A.I.D. contribution will come from two sources: (a) $55.0 million from the TIPAN project; and, (b) $5.0 million under ACE. The fiscal year allocations under the ACE

TABLE 15

SUMMARY OF PROJECT COSTS

BY FISCAL YEAR AND SOURCE OF FUNDING[a/]

SOURCE OF FUNDING	1984	1985	1986	1987	PHASE I TOTAL	1988	1989	1990	PHASE II TOTAL	1991	1992	1993	1994	PHASE III TOTAL	PROJECT TOTAL[b/]
AID Grant (TIPAN)															
FX	1401	5672	4150	3922	15145	3144	2676	2698	8518	2087	1443	1364	800	5694	29357
LC	824	1682	4683	12963	20152	982	828	1164	2974	576	736	629	390	2331	25457
Sub-Total:	2225	7354	8833	16885	35297	4126	3504	3862	11492	2663	2179	1993	1190	8025	54814
GOP	4404	5443	7711	11485	29043	11747	13885	16119	41751	14078	16445	17033	1724	49280	120074
Total:[b/]	6629	12797	16544	28370	64340	15873	17389	19981	53243	16741	18624	19026	2914	57305	174888
Planned A.I.D. Obligations[c/]	5000	10000	10000	10500	35500	5000	4000	2500	11500	3000	2000	2000	1000	8000	55000

a/ See Section V.F.1. for inflation and exchange rate assumptions

b/ Does not include $3 million in Phase I and $2 million in Phase II or a total of $5 million in commodities under the A.I.D.-financed ACE Program (391-0468)

c/ Totals are rounded.

TABLE 16

SUMMARY OF PROJECT COSTS
BY EXPENSE CATEGORY, PHASE AND SOURCE OF FUNDING[a]
(In $ 000)

EXPENSE CATEGORY	PHASE I				PHASE II				PHASE III				LIFE OF PROJECT			
	AID FX	Grant LC	GOP Contribution	Total	AID FX	Grant LC	GOP Contribution	Total	AID FX	Grant LC	GOP Contribution	Total	AID FX	Grant LC	GOP Contribution	Total
A. Direct Project Costs																
1. Technical Assistance																
a. Short-term	1217	807	-	2024	1383	1004	-	2387	932	762	-	1694	3532	2573	-	6105
b. Long-term	3315	1547	200	5062	2035	848	150	3033	430	134	150	714	5780	2529	500	8809
c. Home Office Backstopping	430	106	-	536	438	117	-	555	379	154	-	533	1247	377	-	1624
Total:	4962	2460	200	7622	3856	1969	150	5975	1741	1050	150	2941	10559	5479	500	16538
2. Training																
a. Short-term	968	125	-	1093	304	41	-	345	123	18	-	141	1395	184	-	1579
b. Long-term	3899	357	620	4876	1638	190	500	2328	569	89	280	938	6106	636	1400	8142
Total:	4867	482	620	5969	1942	231	500	2673	692	107	280	1079	7501	820	1400	9721
3. Commodities																
a. Vehicles	700	-	-	700	-	-	-	-	-	-	-	-	700	-	-	700
b. Other	300	-	2000	2300	-	-	-	-	-	-	-	-	300	-	2000	2300
c. ACE	(3000)	-	-	(3000)	(2000)	-	-	(2000)	-	-	-	-	(5000)	-	-	(5000)
Total:	1000	-	2000	3000	-	-	-	-	-	-	-	-	1000	-	2000	3000
4. Infrastructure																
a. Construction	-	14133	5820	19953	-	-	13599	13599	-	-	14851	14851	-	14133	34270	48403
b. A&E Services	3136	840	-	3976	2070	550	-	2620	2854	1060	-	3914	8060	2450	-	10510
Total:	3136	14973	5820	23929	2070	550	13599	16219	2854	1060	14851	18765	8060	16583	34270	58913
5. Other Costs																
a. Additional Operating Costs	-	1764	4386	6150	-	-	11945	11945	-	-	15019	15019	-	1764	31350	33114
b. Evaluation	90	-	-	90	60	-	-	60	150	-	-	150	300	-	-	300
Total:	90	1764	4386	6240	60	-	11945	12005	150	-	15019	15169	300	1764	31350	33414
6. Contingency	1090	473	721	2284	590	224	1260	2074	257	114	1545	1916	1937	811	3526	6274
Total Direct Project Costs:	15145	20152	13747	49044	8518	2974	27454	38946	5694	2331	31845	39870	29357	25457	73046	127860
B. Projected Operating/ Development Costs Without Project																
1. Ag. University	-	-	5389	5389	-	-	5035	5035	-	-	6138	6138	-	-	16562	16562
2. Research	-	-	9907	9907	-	-	9262	9262	-	-	11297	11297	-	-	30466	30466
Total Costs W/O Project:	-	-	15296	15296	-	-	14297	14297	-	-	17435	17435	-	-	47028	47028
C. Total Project Costs Plus Operating Costs W/O Project	15145	20152	29043	64340	8518	2974	41751	53243	5694	2331	49280	57305	29357	25457	120074	174888[b]

[a] See Section V.F.1 for inflation and exchange rate assumptions

[b] Plus $5.0 million worth of commodities under the ACE Program

TABLE 17

SUMMARY OF AID FUNDING
BY EXPENSE CATEGORY, FISCAL YEAR AND PHASE[a]
(In $ 000)

EXPENSE CATEGORY	PHASE I 1984	1985	1986	1987	PHASE I TOTAL	PHASE II 1988	1989	1990	PHASE II TOTAL	PHASE III 1991	1992	1993	1994	PHASE III TOTAL	PROJECT TOTAL
1. Technical Assistance															
a. Short-term	102	606	663	653	2024	644	883	860	2387	845	573	276	-	1694	6105
b. Long-term	331	1626	1640	1265	4862	1561	1007	315	2883	201	213	150	-	564	8309
c. Home Office Backstopping	71	146	155	164	536	174	185	196	555	167	177	189	-	533	1624
Sub-Total:	504	2378	2458	2082	7422	2379	2075	1371	5825	1213	963	615	-	2791	16038
2. Training															
a. Short-term	55	510	380	148	1093	169	99	77	345	82	29	30	-	141	1579
b. Long-term	760	1599	1055	842	4256	983	529	316	1828	532	99	27	-	658	6742
Sub-Total:	815	2109	1435	990	5349	1152	628	393	2173	614	128	57	-	799	8321
3. Commodities															
a. Vehicles	200	300	200	-	700	-	-	-	-	-	-	-	-	-	700
b. Other	-	150	150	-	300	-	-	-	-	-	-	-	-	-	300
c. ACE	(1000)	(1000)	(1000)	-	(3000)	(1000)	(1000)	-	(2000)	-	-	-	-	-	(5000)
Sub-Total:	200	450	350	-	1000	-	-	-	-	-	-	-	-	-	1000
4. Infrastructure															
a. Construction	-	-	3129	11004	14133	-	-	-	-	-	-	-	-	-	14133
b. A&E Services	-	1430	560	1986	3976	243	531	1846	2620	654	980	1090	1190	3914	10510
Sub-Total:	-	1430	3689	12990	18109	243	531	1846	2620	654	980	1090	1190	3914	24643
5. Other Costs															
a. Additional Operating Costs	464	448	433	419	1764	-	-	-	-	-	-	-	-	-	1764
b. Evaluation	40	-	-	50	90	-	-	60	60	-	-	150	-	150	300
Sub-Total:	504	448	433	469	1854	-	-	60	60	-	-	150	-	150	2064
6. Contingency	202	539	468	354	1563	352	270	192	814	182	108	81	-	371	2748
Total Project Costs:	2225	7354	8833	16885	35297	4126	3504	3862	11492	2663	2179	1993	1190	8025	54814[b]

[a] See Section V.F.1 for inflation and exchange rate assumptions
[b] Plus $5.0 million worth of Commodities under the ACE Program.

program reflect the proposed implementation and construction schedules for TIPAN and assume that the ACE Program will continue beyond its current program life of FY 1982 - 1986. If funds for the $2.0 million worth of commodities for Phase II are not available under the ACE Program, A.I.D. would seek to increase the currently projected A.I.D. contribution under TIPAN for Phase II by $2.0 million.

Allocation of the total A.I.D. contribution of $60.0 million by expense category is as follows: 41.2 percent for construction costs, A&E services and contingency related to these items; 26.8 percent for technical assistance; 13.9 percent for training; 10 percent for commodities (including ACE funding); 4.6 percent for contingencies for costs other than commodities, construction and A&E services; 3.0 percent for additional operating costs of the integrated university/research system; and. 0.5 percent for evaluation. A.I.D. will finance the international travel costs of all participants enrolled in U.S. and third country training programs. A participant training travel waiver, which exempts the GOP from having to cover these costs, has been signed by the USAID/Pakistan Mission Director and is included as Annex H.

Approximately $34.5 million (including ACE), or about 57.4 percent of the A.I.D. contribution will finance foreign exchange costs; the remaining $25.5 million or about 42.6 percent will cover local costs. A.I.D. dollar grant funds used to finance local costs will, to the maximum extent possible, and in particular for the construction activity, be disbursed in U.S. dollars in order to maximize the balance of payments impact of this program in accordance with the overall objectives of the renewed USG/GOP economic assistance program. A FAA Section 612(b) certification has been signed by the USAID/Pakistan Mission Director and is included as Annex C.

The planned obligation schedule for Phase I is as follows: FY 1984 = $5.0 million; FY 1985 : $10.0 million; FY 1986 : $10.0 million; and, FY 1987 : $10.5 million. Proposed obligation schedules for Phases II and III are presented in Table 15. The project's obligation schedule reflects the facts that: (1) the technical assistance which will be provided through a contract under the collaborative assistance mode with the University of Illinois will be incrementally funded each year with the funding level based on the project's annual technical assistance requirements; and, (2) the construction program under each phase will not be started and finished in complete synchronization with the institutional development activity. Construction starts and ends later in each phase because additional time is required to complete designs and to properly schedule work. Therefore, e.g., while the Phase I institutional development program is scheduled to occur over 4 years and end in 1988, in fact, Phase I construction activities will not

be completed until two years later i.e., 1990. The phases in the budget tables have been geared to the institutional development activities but funding for the construction "carryover" has been included in the last year of Phases I and II. This will enable the GOP and the Mission to complete the construction program for Phase I in the event that the Phase II program is not approved. If, as contemplated, however, the Phase II program is approved, there will be some overlap in Phase II (and similarly in Phase III) as the construction program under the previous phase ends and the construction program under the succeeding phase begins.

ii. GOP Contribution

The GOP will provide the equivalent of $120.0 million of the total cost of the project. The GOP allocation by expense category is as follows: 39.2 percent for operating and development costs that would occur without the project; 28.5 percent for construction and construction contingency; 26.1 percent for the additional operating costs of the integrated university/research system resulting from the project; 2.9 percent for contingencies other than for construction; 1.7 percent for commodities; 1.2 percent for training; and, 0.4 percent for local technical assistance costs. Table 18 presents a summary of GOP funding by expense category, fiscal year and phase.

b. Project Phasing

Due to the magnitude of the overall effort, the Mission has adopted a phased approach to project implementation as described in Sections I.B.7. and IV.A. Throughout the project, USAID's strategy will be to use the resources directly under its control to assure a minimum threshold program that includes significant institutional development and the construction program necessary to support that development. Summary costs by fiscal year, expense category and source of funding for Phases I, II and III are presented in Tables 19, 20 and 21, respectively.

i. Phase I

The total cost of Phase I is $67.5 million, with A.I.D.'s share equal to $38.5 million and that of the GOP equal to $29.0 million. A.I.D. costs for Phase I are made up of the following: technical assistance ($7.4 million); training ($5.3 million); commodities ($4.0 million including $3.0 million from ACE); A&E services ($4.0 million); construction ($14.1 million); university/research operating costs ($1.8 million); evaluation ($90,000) and contingency ($1.8 million). The bulk of GOP costs is represented by the operating costs of the university/research system ($15.3 million would be expended without the project and an additional $4.4 million with the project); construction ($5.8 million); and, commodities ($2.0 million).

TABLE 18

SUMMARY OF GOP CONTRIBUTION
BY EXPENSE CATEGORY, FISCAL YEAR AND PHASE [a]
(In $ 000)

EXPENSE CATEGORY	PFY	PHASE I 1984/85	1985/86	1986/87	1987/88	PHASE I TOTAL	PHASE II 1988/89	1989/90	1990/91	PHASE II TOTAL	PHASE III 1991/92	1992/93	1993/94	1994/95	PHASE III TOTAL	PROJECT TOTAL
Direct Project Costs																
Technical Assistance	50	50	50	50	200	50	50	50	150	50	50	50	-	150	500
Training	-	-	260	360	620	220	40	240	500	120	20	140	-	280	1400
Commodities	500	500	500	500	2000	-	-	-	-	-	-	-	-	-	2000
Construction	-	-	1551	4269	5820	3039	4641	5919	13599	3328	5063	4736	1724	14851	34270
Additional Operating Costs	288	1040	1213	1845	4386	3591	3987	4367	11945	4673	4998	5348	-	15019	31350
Contingency	84	159	202	276	721	386	408	466	1260	484	507	554	-	1545	3526
Total Direct Project Costs:	922	1749	3776	7300	13747	7286	9126	11042	27454	8655	10638	10828	1724	31845	73046
Projected Operating/Development Costs Without Project																
Ag. University	1226	1300	1387	1476	5389	1568	1678	1789	5035	1909	2044	2185	-	6138	16562
Research	2256	2394	2548	2709	9907	2893	3081	3288	9262	3514	3763	4020	-	11297	30466
Total Costs W/o Project:	3482	3694	3935	4185	15296	4461	4759	5077	14297	5423	5807	6205	-	17435	47028
Grand Total:	4404	5443	7711	11485	29043	11747	13885	16119	41751	14078	16445	17033	1724	49280	120074

[a] See Section V.F.1. for inflation and exchange rate assumptions

TABLE 19

PHASE I SUMMARY COSTS BY FISCAL YEAR, EXPENSE CATEGORY AND SOURCE OF FUNDING[a]
(In $ 000)

EXPENSE CATEGORY	1984 AID	1984 GOP	1985 AID	1985 GOP	1986 AID	1986 GOP	1987 AID	1987 GOP	Phase I Total AID	Phase I Total GOP
A. Direct Project Costs										
1. Technical Assistance										
a. Short-term	102	0	606	0	663	0	653	0	2024	0
b. Long-term	331	50	1626	50	1640	50	1265	50	4862	200
c. Home Office Backstopping	71	0	146	0	155	0	164	0	536	0
Total:	504	50	2378	50	2458	50	2082	50	7422	200
2. Training										
a. Short-term	55	0	510	0	380	0	148	0	1093	0
b. Long-term	760	0	1599	0	1055	260	842	360	4256	620
Total:	815	0	2109	0	1435	260	990	360	5349	620
3. Commodities										
a. Vehicles	200	0	300	0	200	0	0	0	700	0
b. Other	0	500	150	500	150	500	0	500	300	2000
c. ACE	(1000)	0	(1000)	0	(1000)	0	0	0	(3000)	0
Total:	200	500	450	500	350	500	0	500	1000	2000
4. Infrastructure										
a. Construction	0	0	0	0	3129	1551	11004	4269	14133	5820
b. A&E Services	0	0	1430	0	560	0	1986	0	3976	0
Total:	0	0	1430	0	3689	1551	12990	4269	18109	5820
5. Other Costs										
a. Additional Operating Costs	464	288	448	1040	433	1213	419	1845	1764	4386
b. Evaluation	40	0	0	0	0	0	50	0	90	0
Total:	504	288	448	1040	433	1213	469	1845	1854	4386
6. Contingency	202	84	539	159	468	202	354	276	1563	721
Total Direct Project Costs:	2225	922	7354	1749	8833	3776	16885	7300	35297	13747
B. Projected Operating/ Development Costs Without Project										
1. Ag. University	0	1226	0	1300	0	1387	0	1476	0	5389
2. Research	0	2256	0	2394	0	2548	0	2709	0	9907
Total Costs W/O Project:	0	3482	0	3694	0	3935	0	4185	0	15296
C. Total Project Costs Plus Operating Costs W/O Project	2225	4404	7354	5443	8833	7711	16885	11485	35297	29043

a/See Section V.F.1. for inflation and exchange rate assumptions

TABLE 20

PHASE II SUMMARY COSTS BY FISCAL YEAR, EXPENSE CATEGORY AND SOURCE OF FUNDING[a]
(In $ 000)

EXPENSE CATEGORY	1988 AID	1988 GOP	1989 AID	1989 GOP	1990 AID	1990 GOP	Phase II Total AID	Phase II Total GOP
A. Direct Project Costs								
1. Technical Assistance								
a. Short-term	644	0	883	0	860	0	2387	0
b. Long-term	1561	50	1007	50	315	50	2883	150
c. Home Office Backstopping	174	0	185	0	196	0	555	0
Total:	2379	50	2075	50	1371	50	5825	150
2. Training								
a. Short-term	169	0	99	0	77	0	345	0
b. Long-term	983	220	529	40	316	240	1828	500
Total:	1152	220	628	40	393	240	2173	500
3. Commodities								
a. Vehicles	0	0	0	0	0	0	0	0
b. Other	0	0	0	0	0	0	0	0
c. ACE	(1000)	0	(1000)	0	0	0	(2000)	0
Total:	0	0	0	0	0	0	0	0
4. Infrastructure								
a. Construction	0	3039	0	4641	0	5919	0	13599
b. A&E Services	243	0	531	0	1846	0	2620	0
Total:	243	3039	531	4641	1846	5919	2620	13599
5. Other Costs								
a. Additional Operating Costs	0	3591	0	3987	0	4367	0	11945
b. Evaluation	0	0	0	0	60	0	60	0
Total:	0	3591	0	3987	60	4367	60	11945
6. Contingency	352	386	270	408	192	466	814	1260
Total Direct Project Costs:	4126	7286	3504	9126	3862	11042	11492	27454
B. Projected Operating/ Development Costs Without Project								
1. Ag. University	0	1568	0	1678	0	1789	0	5035
2. Research	0	2893	0	3081	0	3288	0	9262
Total Costs W/O Project:	0	4461	0	4759	0	5077	0	14297
C. Total Project Costs Plus Operating Costs W/O Project	4126	11747	3504	13885	3862	16119	11492	41751

[a] See Section V.F.1. for inflation and exchange rate assumptions

TABLE 21

PHASE III SUMMARY COSTS BY FISCAL YEAR, EXPENSE CATEGORY AND SOURCE OF FUNDING[a]
(In $ 000)

EXPENSE CATEGORY	1991 AID	1991 GOP	1992 AID	1992 GOP	1993 AID	1993 GOP	1994 AID	1994 GOP	Phase III Total AID	Phase III Total GOP
A. Direct Project Costs										
1. Technical Assistance										
a. Short-term	845	0	573	0	276	0	0	0	1694	0
b. Long-term	201	50	213	50	150	50	0	0	564	150
c. Home Office Backstopping	167	0	177	0	189	0	0	0	533	0
Total:	1213	50	963	50	615	50	0	0	2791	150
2. Training										
a. Short-term	82	0	29	0	30	0	0	0	141	0
b. Long-term	532	120	99	20	27	140	0	0	658	280
Total:	614	120	128	20	57	140	0	0	799	280
3. Commodities										
a. Vehicles	0	0	0	0	0	0	0	0	0	0
b. Other	0	0	0	0	0	0	0	0	0	0
c. ACE	0	0	0	0	0	0	0	0	0	0
Total:	0	0	0	0	0	0	0	0	0	0
4. Infrastructure										
a. Construction	0	3328	0	5063	0	4736	0	1724	0	14851
b. A&E Services	654	0	980	0	1090	0	1190	0	3914	0
Total:	654	3328	980	5063	1090	4736	1190	1724	3914	14851
5. Other Costs										
a. Additional Operating Costs	0	4673	0	4998	0	5348	0	0	0	15019
b. Evaluation	0	0	0	0	150	0	0	0	150	0
Total:	0	4673	0	4998	150	5348	0	0	150	15019
6. Contingency	182	484	108	507	81	554	0	0	371	1545
Total Direct Project Costs:	2663	8655	2179	10638	1993	10828	1190	1724	8025	31845
B. Projected Operating/ Development Costs Without Project										
1. Ag. University	0	1909	0	2044	0	2185	0	0	0	6138
2. Research	0	3514	0	3763	0	4020	0	0	0	11297
Total Costs W/O Project:	0	5423	0	5807	0	6205	0	0	0	17435
C. Total Project Costs Plus Operating Costs W/O Project	2663	14078	2179	16445	1993	17033	1190	1724	8025	49280

[a] See Section V.F.1. for inflation and exchange rate assumptions

The total estimated GOP contribution of $4.4 million during Phase I for "additional" operating costs, over and above what the costs would have been without the project, is programmed for additional research operations for the merged research system and for staff expansion and outreach operating costs by the University. The $1.8 million A.I.D. input for operating costs in Phase I only will permit program expansion during the early years while the GOP is arranging budget increases to cover those costs.

Priority construction items have been identified for Phase I. A.I.D. funds have been earmarked for the central campus structures and supporting infrastructure essential for the new program thrusts of the University. These structures will also establish a new identity for AU through creation of a recognizable campus entrance and core of buildings. A.I.D.-financed construction will include:

(1) one major academic building which will be constructed to provide teaching and research laboratories, classrooms designed for up-dated teaching aids, and offices for faculty members. This structure will serve the interim needs of the four faculties and, when the campus is fully developed, will house the Faculty of Plant Sciences. This building is essential to support faculty and graduate student research and the new curricula and teaching-learning process;

(2) the Learning Resources Center which includes the library, communications production and teaching facilities, and the computer center. This facility is essential to replace the present inadequate library and to serve the three major functions of the new University--teaching, research, and outreach;

(3) the Continuing Education Center which is a high priority building that will serve as the administrative and program center for the outreach functions of the University. This building, with the Learning Resources Center, will facilitate the establishment of the outreach program in the project; and,

(4) men's student housing for 330 students which will relieve overcrowding in the existing hostels and permit later renovation of those housing facilities.

In addition, A.I.D. will finance infrastructure construction that will be concentrated in the central campus area where the existing main building and the new buildings identified above are located as well as a small portion of the farm center. This investment will provide better services for the expanded and upgraded program and provide the basic central core of infrastructure for academic buildings to be added later.

The high priority construction items identified for GOP support are focused on improvement of student and faculty housing, infrastructure and landscaping. These include faculty housing, student housing for women, roads, lighting, landscaping of campus housing as well as a vehicular ford and pedestrian bridge over the nullah. Most of these facilities are on the outer rim of the central campus and on the experimental farm side of the nullah that divides the University land; therefore, the infrastructure extensions and improvements to serve these areas are included.

The Phase I financial package covers all the funds for the technical assistance, participant training, and commodities required to build the AU into a viable teaching, research, and outreach institution. A.I.D. financing in Phase I for the construction program, including A&E services, will assure that the basic infrastructure is developed according to the Campus Master Plan and will provide the key academic buildings. This financial package is designed to leave in place an institutional and physical development program that is viable and self-contained, even if financing after Phase I is not available.

ii. Phase II

Project financing proposed for Phase II will bring the institutional development program to a stage where major aspects of teaching, research, and outreach have been sufficiently well established to leave a greatly improved, but still not completed, university in place in the NWFP.

The bulk of the GOP costs of $41.8 million in Phase II are for construction and AU operating costs. A.I.D.'s proposed contribution of $13.5 million will be allocated as follows: technical assistance ($5.8 million); training ($2.2 million); commodities ($2.0 million from ACE); A&E services ($2.6 million); evaluation ($60,000); and, contingency ($0.8 million). A.I.D. will finance A&E services for the life of the project to ensure that construction is carried out in a coordinated manner and to maintain consistent design and engineering standards. However, A.I.D. will not finance any construction in Phases II and III.

iii. Phase III

The GOP contribution of $49.3 million for Phase III is also concentrated in construction and AU operating costs. The remaining faculty/staff housing and other development on the west side of the nullah as well as additional student housing, academic space, and support facilities on the east side will be constructed in this phase. The proposed A.I.D. contribution of $8.0 million is for technical assistance ($2.8 million); training ($799,000); A&E services ($3.9 million); evaluation ($150,000); and, contingency ($371,000).

c. GOP Resource Allocations and Recurrent Costs

The design of the project will give the GOP ample opportunity to make the necessary provisions in its budget for project-related costs. In real terms, project costs are not nearly as great as they appear from the tables in this Project Paper. For example, the tables in this Project Paper show that the total GOP contribution for construction amounts to $34.3 million. In 1984 dollars, this is equivalent to $22.4 million. At the end of the institutional development component of the project (PFY 1993/94), the financial tables show the annual additional operating costs resulting from the project amounting to $5.3 million. In 1984 dollars, this is equivalent to $3.0 million. Both the construction costs and the recurrent cost increase are spread out over the 11-year life of the project. The GOP does not even begin to incur construction costs until the third year of the project, and the majority of its construction costs are not scheduled to occur until Phases II and III. Also, A.I.D. will provide $1.8 million over the project's first four years to assist the GOP in adjusting to the increased operating costs. Therefore, there is little likelihood that the project will result in other activities in the educational or agricultural sectors losing resources to the integrated university/research system. In addition, over the long-run, the economic benefits resulting from the project (see Section V.E.) will provide greater income to farmers and others working in the agricultural sector which in turn will provide greater revenue to the GOP and NWFP which will more than offset those resources devoted to the university/research system.

d. Other Donors

As noted previously, discussions are underway between the Government of Japan and the GOP regarding possible Japanese participation in the Project. These discussions are expected to result in a Japanese financial contribution to the project of approximately $10 million. This contribution to the Phase I program would permit more to be done in the early years of the Project. To the extent that project activities are accelerated, it would also decrease total project costs by reducing the effects of inflation. Contributions from other donors would be applied to and thus reduce the GOP portion of project funding. However, to the extent that other donors express interest in financing elements of the Phase I program currently identified for A.I.D. assistance, A.I.D. would seek to reallocate its contribution to cover some of the costs (in particular, elements of the construction program) currently programmed for GOP funding.

4. Methods of Implementation and Financing

Table 22 provides a summary of the proposed methods of implementation and financing for the subject project in accordance with A.I.D.'s Project Verification Policy Implementation Guidance dated December 30, 1983. No departures from the three preferred methods of financing are contemplated for this project.

TABLE 22

METHODS OF IMPLEMENTATION AND FINANCING
(A.I.D. CONTRIBUTION ONLY)

Method of Implementation	Method of Financing	Estimated Amount ($ 000)
TA Collaborative Assistance Mode with University of Illinois (UI)	FRLC	16,038
Participant (Overseas) Training[a] Through UI	FRLC	8,321
TA Direct A.I.D. A&E Contract	Direct Payment	10,510
Construction - HC Contract	HC Reimbursement or Direct Payment	14,133
Commodities (Educational Equipment and Materials) - UI Procurement[b]	FRLC	5,000
Commodities (Vehicles and Household/Office Equipment) A.I.D. Procurement	Direct Payment	1,000
Commodities (Telecommunications) A.I.D. Procurement	Direct Payment	450
University/Research System Operating Costs (PILs to earmark funds)	HC Reimbursement	1,764
Other Costs (Evaluation)	Direct Payment	300
Contingency	FRLC, Direct Payment or HC Reimbursement	2,484
TOTAL:		60,000

[a] The University of Illinois will be responsible for all overseas participant training under its technical assistance contract.

[b] The University of Illinois will be responsible for procurement of all educational equipment and materials under its technical assistance contract.

G. Narcotics Impact Statement

TIPAN is not designed specifically to reduce the supply of or demand for illicit drugs in Pakistan. Nonetheless, the Project may be expected to provide significant support to efforts directed at reducing opium poppy acreage and production. The production of raw material for conversion into illicit drugs is based largely on economic advantage within a sociological and environmental context typical of the arid or minor irrigated zones of Pakistan. Since wheat, maize and animal husbandry are the principal land use alternatives to poppy cultivation in most of the opium production areas, this Project will reinforce the eradication campaign by increasing the productivity of wheat and maize through research. The introduction of farming systems research and the establishment of a strong farmer-oriented problem-solving outreach program at the University may also provide a better understanding of the problems and constraints faced by farmers so that additional interventions may be identified as alternative production options in the future. Technology developed through research and adapted to the socio-economic context of poppy-growing areas may also provide the necessary incentives for decreasing the number of new starts in poppy production.

VI. CONDITIONS, COVENANTS AND NEGOTIATING STATUS

A. Conditions Precedent to Disbursement

1. Conditions Precedent to First Disbursement

Except as A.I.D. may otherwise agree in writing, prior to any disbursement of funds by A.I.D. under this Project, or to the issuance by A.I.D. of documentation pursuant to which such disbursement will be made, the Grantee shall furnish to A.I.D., in form and substance satisfactory to A.I.D.:

a. a written opinion of Counsel acceptable to A.I.D. that this Agreement has been duly authorized and/or ratified by, and executed on behalf of the Grantee, and that it constitutes a valid and legally binding obligation of the Grantee in accordance with all of its terms; and,

b. a written statement setting forth the names and titles of the persons holding or acting in the Office of the Grantee and representing that the named person or persons have the authority to act as the representative or representatives of the Grantee, together with a specimen signature of each such person certified as to its authenticity.

2. Conditions Precedent to Disbursement for Construction

Except as A.I.D. may otherwise agree in writing, prior to the disbursement of funds by A.I.D. under this Project or to the issuance by A.I.D. of documentation pursuant to which such

disbursement will be made for construction activities, except for the procurement of architectural and engineering (A&E) services, the Grantee, through its Government of the Northwest Frontier Province (GONWFP), shall furnish to A.I.D., in form and substance satisfactory to A.I.D. written assurance that:

a. the merger of the NWFP Agricultural University at Peshawar and the NWFP's agricultural research system, the latter specifically including the Directorate of Agricultural Research and the Livestock Production Research Units (Animal Production Division of the Veterinary Research Institute and the Livestock Experiment Station, Jaba) of the Department of Agriculture, has been completed. Such assurance shall indicate that the following has occurred: (i) that the research system's revenue and Annual Development Program (ADP) budgets have been transferred to the University; (ii) that all of the research system's professional and support staff have been reassigned to the University; and, (iii) that all physical facilities under the control of or used by the research system have been transferred to the University; and,

b. the NWFP Agricultural University of Peshawar and the NWFP Directorate of Extension have formally adopted an operating agreement which clearly delineates the areas of responsibility for each organization. The operating agreement shall include, at a minimum, decisions regarding such issues as: location of staff and demonstration activities; type, number, and illustrative schedule of training courses to be offered by the University for field extension personnel; the mechanism and procedures to be followed to ensure the participation of field extension personnel in the identification and selection of priority research topics to be studied by the University's research staff and the development of technological information packages produced by the University's outreach staff; and, such other issues as A.I.D. may, from time to time, establish in Project Implementation Letters (PILs).

3. Condition Precedent to Disbursement for Participant Training Commenced After the First Six Months from the Date of the Signing of the Project Agreement

Except as A.I.D. may otherwise agree in writing, prior to the disbursement of funds by A.I.D. under this Project or to the issuance by A.I.D. of documentation pursuant to which such disbursement will be made for participant training activities commenced after the first six months from the date of the signing of this Agreement, the Grantee, acting through its Chairman of the Pakistan Agricultural Research Council (PARC) shall furnish to A.I.D., in form and substance satisfactory to A.I.D., the names and dates of availability of personnel from the PARC Talent Pool who will be seconded to the Agricultural University at Peshawar during Phase I of the Project to fill positions on a temporary basis, while permanent incumbents are either being recruited or trained overseas.

B. Covenants

1. Phase I Funding

The Government of Pakistan agrees to budget, in its Annual Development Programs (ADPs) for Pakistani Fiscal Years 1984/85 through 1989/90, or the life of Phase I of the Project, whichever is longer, for sufficient funds to cover all projected costs for Phase I of the Project. The ADP funding levels shall include all resources provided by both the Government of Pakistan and donor agencies.

2. Operations and Maintenance (O&M) Costs

The Grantee agrees to:

a. provide budgetary allocations required to cover the operating and maintenance costs of all on-going activities and those initiated under the Project in the areas of research, teaching and outreach at the NWFP Agricultural University at Peshawar; and,

b. maintain in good operational condition all physical facilities constructed or rehabilitated, in whole or in part, under the Project and all commodities and equipment procured under the Project.

3. Post-Training Employment

Except as the Parties may otherwise agree in writing, the Grantee, acting through its NWFP Agricultural University at Peshawar, shall make every reasonable effort to require that each person trained under this Project works in activities related to agricultural education, research, or extension in Pakistan for not less than three times the length of time of his or her training program provided, however, that in no event shall such an individual be allowed to work in such activities for less than one year, nor be required to work in such activities for more than five years from the date of that individual's completion of training. The Grantee shall, further, not approve extensions in the trainee's permitted time abroad if such extension shall allow the trainee to remain abroad beyond that time required for his or her training program.

C. Negotiating Status

The Project as described in this Project Paper has been fully discussed with appropriate GOP officials. The GOP supports the Project as designed, and there is no reason why the Project cannot proceed to implementation as soon as the Project Agreement is signed. The merger between the Agricultural University and the provincial research system has been approved by the Government of the NWFP. No legislation is necessary to implement the Project as described.

TRANSFORMATION AND INTEGRATION OF THE PROVINCIAL AGRICULTURAL NETWORK IN THE NWFP (TIPAN) PROJECT

(391-0488)

VII. A N N E X E S

ALE10 INFO AMB DCM ECON CHRON

ANNEX A
Page 1 of 3 Pages

VZCZCIL0718
PP RUEHIL
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BT
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CN: 03182
CHRGE: AID

AIDAC

0800 11/18/82
OFF.FILE: PDM
ACTION: PDM
Info:D,DD,PRO,PRI
FM,RLA,E&E,R
CH.

E.O. 12356: N/A
TAGS:
SUBJECT: APAC REVIEW - AGRICULTURAL EDUCATION, RESEARCH AND EXTENSION PID (391-0477)

1. SUMMARY: APAC REVIEWED AND APPROVED THE PID NOVEMBER 4. BECAUSE OF MAJOR CONCERNS REGARDING LONG-TERM VIABILITY OF THE UNIVERSITY PROPOSAL, APPROVAL OF THIS COMPONENT IS CONDITIONAL ON THE FINDINGS OF A SEPARATE PRE-DESIGN ASSESSMENT TO BE CARRIED OUT BY INDEPENDENT EXPERTS FAMILIAR WITH INSTITUTIONAL DEVELOPMENT OF THIS TYPE IN THE SUBCONTINENT. TEAM WILL BE FIELDED ASAP TO AVOID DELAYING THE OVERALL PROJECT DESIGN, AND PREPARATIONS FOR OTHER DESIGN ACTIVITIES MAY PROCEED IN PARALLEL WITH THIS EFFORT. FOR EXAMPLE, PREPARATION AND CIRCULATION OF REI FOR TITLE XII TEAM WILL PROCEED IMMEDIATELY ALTHOUGH WE WOULD EXPECT THE SPECIAL ASSESSMENT TO BE COMPLETED PRIOR TO ARRIVAL IN PAKISTAN OF TITLE XII TEAM. SPECIAL STUDY IS DESCRIBED BELOW, PARA 5, AND HAS ALSO BEEN ELABORATED IN A SEPTEL LISTING QUESTIONS TO BE EXAMINED.

2. MANAGEMENT PROGRAM FOR TECHNOLOGY DEVELOPMENT: APAC RECOGNIZED IMPORTANCE OF THIS COMPONENT AS MECHANISM FOR ESTABLISHING FORMAL AND INFORMAL LINKAGES AMONG AGRICULTURAL INSTITUTIONS. DISCUSSION FOCUSSED ON DIFFICULTIES INHERENT IN PROCESS GIVEN THE CURRENT DISAGGREGATED SYSTEM. SUCCESS IN LINKING EDUCATION, RESEARCH AND EXTENSION WOULD SEEM TO REQUIRE THAT A DECISION FOR CHANGE BE MADE BY THOSE IN AUTHORITY; THAT A STRUCTURE FOR LINKAGES BE DEVELOPED; AND THAT LEVERAGE AND INCENTIVES FOR CHANGE EXIST THROUGHOUT THE SYSTEM. PP SHOULD CLEARLY RELATE THE PROPOSED INPUTS TO THE OBJECTIVES, I.E., HOW WILL RESEARCH PROPOSALS RESULT IN INTER-DISCIPLINARY AND INSTITUTIONAL LINKAGES? HOW WILL THE PROJECT HELP THE GOP ORGANIZE AND MANAGE THE TOTAL SYSTEM?

3. APAC DISCUSSED THE FARMING SYSTEMS APPROACH. PP SHOULD DEFINE THE ORGANIZATIONAL AND MANAGEMENT ASPECTS OF THIS APPROACH AND SPELL OUT IN DETAIL HOW THE EFFORT WILL AIM AT STRENGTHENING RESEARCH AND EXTENSION SYSTEMS AT THE REGIONAL LEVEL AS WELL AS BUILDING MODELS THAT

CAN BE APPLIED NATIONWIDE. THE APPROACH SHOULD CAREFULLY SHOW HOW THE INSTITUTIONS INVOLVED WILL BE ORCHESTRATED TO INTERACT WITH CLIENT FARMERS AND/OR-FARMER ORGANIZATIONS. PP SHOULD DISCUSS HOW THE APPROACH SELECTED CAN SIGNIFICANTLY ALTER CURRENT PROCESSES RELATED TO TECHNOLOGY TRANSFER AND WHY THE APPROACH SELECTED IS PERCEIVED TO BE THE MOST APPROPRIATE ONE FOR PAKISTAN. PP SHOULD SPELL OUT THE SPECIFIC SEQUENCE OF EVENTS THAT SHALL OCCUR IN ORDER THAT THE RESEARCH DEVELOPED AT THE RESEARCH SITE WILL BE ADOPTED AT THE FARM LEVEL. SIMILARLY, BENCHMARKS FOR ASSESSING PROGRESS ON INSTITUTIONAL DEVELOPMENT OBJECTIVES SHOULD BE INCLUDED.

4. UA-NWFP: APAC CONCERNS RELATED TO FEASIBILITY OF LINKING A UNIVERSITY TO OTHER KEY INSTITUTIONS IN THE AG SECTOR WHEN THE HISTORICAL, POLITICAL AND ADMINISTRATIVE CONTEXT IS CHARACTERIZED BY ETHNIC AND BUREAUCRATIC DIVISIONS, ISOLATION AND TERRITORIAL JEALOUSIES. THE REWARD SYSTEM HAS NOT SUPPORTED EFFECTIVE RESEARCH LINKED TO FARMERS' NEEDS. NOT ONLY THE UNIVERSITY, BUT OTHER INSTITUTIONS MUST BE WILLING TO CHANGE IF DESIRED LINKAGES ARE TO OCCUR AND AN EFFECTIVE UNIVERSITY CAPABLE OF EXERCISING A-DEVELOPMENT IMPACT IS TO BE LEFT AT PROJECT END. BECAUSE THIS CONCERN RELATES TO THE BASIC FEASIBILITY OF THE UNIVERSITY COMPONENT,-IT WAS DECIDED THAT AN INDEPENDENT ASSESSMENT BY A HIGHLY EXPERIENCED TEAM OF PROFESSIONALS SHOULD PRECEDE FULL SCALE DESIGN OF THIS COMPONENT BY THE TITLE XII TEAM. SUCH PEOPLE AS RALPH CUMMINGS AND GORDON MCLEAN ARE BEING CONTACTED AS HAS BEEN INDICATED IN SEPTEL. IT IS HOPED THAT SUCH A STUDY COULD BE COMPLETED BY FEBRUARY 1.

5. A NUMBER OF MAJOR ISSUES TO BE EXAMINED DURING THE DESIGN PROCESS HAVE BEEN TRANSMITTED BY SEPTEL. THE EXTENT TO WHICH THESE QUESTIONS SHOULD BE COVERED BY THE SPECIAL STUDY GROUP AS DISTINGUISHED FROM THE DESIGN TEAM ITSELF IS STILL UNDER DISCUSSION, AND THE QUESTIONS THEMSELVES MAY BE FURTHER REFINED. IN SOME CASES, IT IS LIKELY THAT THE SPECIAL STUDY GROUP WOULD MAKE INITIAL JUDGMENTS, BUT IN DEPTH ANALYSIS WOULD BE LEFT TO THE DESIGN TEAM.

6. OTHER DESIGN ISSUES:

(A) CONTRACTUAL RELATIONSHIP WITH ICARDA: MISSION SHOULD BE AWARE THAT SINCE AN ORIGINAL PROPOSAL WAS MADE BY ICARDA A GRANT OR COOPERATIVE AGREEMENT (WHICH AS YOU KNOW PERMITSMORE USAID INVOLVEMENT IN IMPLEMENTATION THAN A GRANT) CAN BE MADE WITHOUT COMPETITION, BUT THIS MODE GIVES LESS MISSION CONTROL THAN A CONTRACT. IF A CONTRACT IS PREFERRED, IT WILL BE NECESSARY TO JUSTIFY AND OBTAIN A WAIVER OF COMPETITION. IF ICARDA IS

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ULTIMATELY SELECTED TO DESIGN AZRI COMPONENT, MUST HAVE ASSURANCE THAT COMPETENT RANGE MANAGEMENT AND LIVESTOCK TECHNICAL CAPABILITY IS AVAILABLE. ICARDA SHOULD BE ENCOURAGED TO GO OUTSIDE ITS CORE STAFF FOR THIS EXPERTISE, PREFERABLY TO WESTERN U.S. UNIVERSITIES. FYI: MISSION SHOULD BE AWARE THAT APAC HAD A NUMBER OF FEASIBILITY QUESTIONS ABOUT THIS COMPONENT (AZRI) ALSO, BUT WAS REASSURED BY FACT THAT PRE-DESIGN TEAM NOW IN PAKISTAN WILL HAVE A HARD LOOK AT ALL ASPECTS OF THE FEASIBILITY OF THIS COMPONENT. END FYI.

(B) CRITERIA FOR RESEARCH PROPOSALS UNDER COMPONENT TWO NEED TO BE DEVELOPED TO ASSURE THEY FOCUS ON APPLIED RESEARCH AND INCLUDE POTENTIAL IMPACT ON INSTITUTIONAL OBJECTIVES AND PRAGMATIC DEVELOPMENTAL OBJECTIVES.

(C) A AND E SERVICES: IT WAS DECIDED THAT A U.S. A AND E FIRM WOULD BE CONTRACTED AS SOON AS POSSIBLE THROUGH A COMPETITIVE PROCESS, TO PARTICIPATE IN BOTH PROJECT DESIGN AND PROJECT IMPLEMENTATION. APPROPRIATE CAVEATS CONCERNING THE NEED FOR PROJECT APPROVAL WILL BE INCLUDED IN REQUESTS FOR PROPOSALS. OUR THOUGHTS ON ;SEQ-ENCING OF THIS CONTRACT AND THE REI FOR TITLE XII TEAM, TO ENSURE NECESSARY CLOSE COORDINATION, WILL BE SUBJECT SEPTEL.

(D) THE EXTENT TO WHICH HIGH TECHNOLOGY EQUIPMENT SHOULD BE INCLUDED IN THE UNIVERSITY COMPONENT SHOULD BE CARE-- FULLY EXAMINED AND JUSTIFIED.

(E) GIVEN THE SIGNIFICANCE OF THE PROJECT AND POTENTIAL DIFFICULTY IN IMPLEMENTING IT, THE NEED FOR A COMPREHENSIVE MONITORING AND EVALUATION PLAN WITH APPROPRIATE BENCHMARKS OF PROGRESS IS ESPECIALLY IMPORTANT. PP SHOULD INCLUDE A MONITORING ANDEVALUATION PLAN AS OUTLINED IN STATE 270149. IN ADDITION, ASIA/DP WILL POUCH TO USAID RECENT EVALUATIONS AND STUDIES OF OTHER AGRICULTURAL RESEARCH PROJECTS. PP SHOULD REFLECT THE RELEVANT FINDINGS OF THESE REPORTS.

(F) SER/COM HAS ADVISED THAT SOURCE AND ORIGIN OF COMMODITIES SHOULD BE U.S. ONLY. LOCAL COST FINANCING MAY ALSO BE AUTHORIZED IN ACCORDANCE WITH HANDBOOK 1B, SECTION 5A1D3; BOTH OCEAN AND AIR TRANSPORTATION SHOULD BE LIMITED TO U.S. FLAG ONLY. A SER/COM MEMO ON PROCUREMENT WAS HAND CARRIED BY CARPENTER.

(G) A PPC MEMO WITH SUGGESTIONS FOR PP DESIGN IS BEING POUCHED. SHULTZ
BT
#3277

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PROJECT CHECKLIST

Listed below are statutory criteria applicable generally to projects with FAA funds and project criteria applicable to individual funding sources: Development Assistance (with a subcategory for criteria applicable only to loans); and Economic Support Fund.

CROSS REFERENCE:	IS COUNTRY CHECKLIST UP TO DATE?	Yes
	HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?	Yes

A. GENERAL CRITERIA FOR PROJECT

1. Continuing Resolution Unnumbered; FAA Sec.634A; Sec.653(b)

   (a) Describe how authorizing and appropriations Committees of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that amount)?

   (a) Congressional Notification and Congressional Presentation.

   (b) Yes, assistance is within the FY 1984 operational year budget.

2. FAA Sec.611 (a) (1): Prior to obligation in excess of $100,000, will there be (a) engineering, financial other plans necessary to carry out the assistance, and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

   (a) Yes

   (b) Yes

(2)

3.	FAA Sec.611 (a) (2): If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?	No further legislative action is required.
4.	FAA Sec.611 (b) : Continuing Resolution Sec.501. If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973?	N.A.
5.	FAA Sec.611 (e). If Project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?	Yes, Mission Director's 611(e) certification is included in the Project Paper.
6.	FAA Sec.209. Is project susceptible of execution as part of regional or multi-lateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.	This project is highly Pakistan-specific and hence is not susceptible to executio as a part of a regional project, nor wil it likely encourage regional development programs. Nevertheless, other international donor agencies have been invited to participate in the project. If any so decide, the Mission is ready to make necessary alterations in project implementation plans to accommodate their special requirements.

7.	FAA Sec.601 (a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competion; (c) encourage development and use of cooperatives, and credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and, (f) strengthen free labor unions.	(a) Yes (b) Yes (c) No (d) No (e) Yes (f) No	This project is intended to have a major impact on improving the quality of human resources working in the agricultural sector.
8.	FAA Sec.601 (b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	U.S. private enterprises will participate as suppliers of both goods and services under this project.	
9.	FAA Sec. 612 (b), 636 (h) : Continuing Resolution Sec. 503. Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.	This is an ESF-funded project. Nevertheless, the GOP and Provincial Governments will contribute t equivalent of $120.0 million over the life of th project, or about 66.7 percent of total project costs, to help finance local costs. The Mission Director has certified the disbursement of U.S. dollars in lieu of U.S. Treasury-owned excess rupees to cover some of the local costs under th project. This action is consistent with one of t major objectives of the renewed economic assista program to Pakistan which is to maximize the balance of payments impact of the program.	
10.	FAA Sec.612 (d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?	U.S. owned excess Pakistani rupees have been fully programmed in support of other projects.	

(4)

11.	FAA Sec.601 (e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?	Yes
12.	Continuing Resolution Sec.522. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?	N.A.
13.	FA Appropr. tion Sec.525: Will the funds for this project be used to lobby for abortion?	No

FUNDING CRITERIA FOR PROJECT

1.	Development Assistance Project Criteria	This is an ESF-financed project.
	a. FAA Sec.102 (b), 111, 113, 281(a). Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technolog, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better	N.A.

(5)

life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economics of developing countries and the improvement of women's status; and, (e) utilize and encourage regional cooperation by developing countries. N.A.

b. FAA Sec.103, 103A, 104, 105, 106, 107. Is assistance being made available: (including only applicable paragraph which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source). N.A.

(1) [103] for agriculture, rural development of nutrition; if so (a) extent to which activity is specifically designed to increase productivity and income of rural poor; 103A if for agriculture research, full account shall be taken of the needs of small farmers, and extensive use of field testing to adapt basic research to local conditions shall be made; (b) extent to which assistance is used in coordination with programs carried out under Sec.104 to help improve nutrition of the people of developing countries through encouragement of increased production of crops with greater nutritional value, improvement of planning, research, and education with respect to nutrition, particularly with reference to improvement and N.A.

(6)

expanded use of indigenously produced foodstuff; and the undertaking of pilot or demonstration of programs explicitly addressing the problem of malnutrition of poor and vulnerable people; and (c) extent to which activity increases national food security by improving food policies and management and by strengthening national food reserves, with particular concern for the needs of the poor, through measures encouraging domestic production, building and national food reserves, expanding available storage facilities, reducing post harvest food losses, and improving food distribution.	N.A.
(2) [104] for population planning under Sec.104(b) or health under Sec.104(c); if so, (i) extent to which activity emphasizes low-cost, integrated delivery systems for health, nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research.	N.A.
(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens non-formal education, makes formal education more relevant, especially for rural families and urban	N.A.

(7)

poor, or strengthens management capability of institutions enabling the poor to participate in development; and (ii) extent to which assistance provides advanced education and training of people in developing countries in such disciplines as are required for planning and implementation of public and private development activities.	N.A.
(4) [106; ISDCA of 1980, Sec.304] for energy, private voluntary organizations, and selected development activities; if so, extent to which activity is: (i) (a) concerned with data collection and analysis, the training of skilled personnel, research on and development of suitable energy sources, and pilot projects to test new methods of energy production; (b) facilitative of geological and geophysical survey work to locate potential oil, natural gas, and coal reserves and to encourage exploration for potential oil, natural gas, and coal reserves; and (c) a cooperative program in energy production and conservation through research and development and use of small scale, decentralized, renewable energy sources for rural areas;	N.A. N.A.
(ii) technical cooperation and development, especially with U.S. private and voluntary or regional and international development, organizations;	N.A.
(iii) research into, and	

(8)

evaluation of, economic development process and techniques;	N.A.
(iv) reconstruction after natural or manmade disaster;	N.A.
(v) for special development problems, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;	N.A.
(vi) for programs of urban development, especially small labor intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.	N.A.
c. [107] is appropriate effort placed on use of appropriate technology? (relatively smaller, cost-saving, labor using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor.)	N.A.
d. FAA Sec.110 (a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the better cost-sharing requirement been waived for a "relatively least developed" country)?	N.A.
e. FAA Sec.110 (b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"?	N.A.

(9)

f. FAA Sec.281 (b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental processes essential to self-government.	N.A.
g. FAA Sec.122 (b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?	N.A.
2. Development Assistance Project Criteria (Loans Only).	
a. FAA Sec.122 (b). Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest.	N.A.
b. FAA Sec.620 (d). If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?	N.A.
3. Project Criteria Solely for Economic Support Fund	

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(10)

a. FAA Sec.531 (a). Will this assistance promote economic or political stability? To the extent possible, does it reflect the policy directions of FAA Section 102?	Yes. This project has as its prime goal to increase agricultural yields and production, as well as the incomes and welfare of farmers which will clearly promote both economic and political stability. The project also reflects the policy directions of FAA Section 102.
b. FAA Sec.531 (c). Will assistance under this chapter be used for military, or paramilitary activities?	No

ANNEX C.1

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO PAKISTAN

Cable : USAIDPAK

HEADQUARTERS OFFICE
ISLAMABAD

Office of the Director

TRANSFORMATION AND INTEGRATION OF THE PROVINCIAL AGRICULTURAL NETWORK PROJECT (TIPAN) (391-0488)

FAA SECTION 611 (e) CERTIFICATION

I, Donor M. Lion, the principal officer of the Agency for International Development in the Islamic Republic of Pakistan, having taking into account, among other things, the maintenance and utilization of projects in the Islamic Republic of Pakistan previously financed or assisted by the United States, do hereby certify, pursuant to Section 611 (e) of the Foreign Assistance Act of 1961, as amended, that, in my judgement, the Islamic Republic of Pakistan has both the financial capability and the human resources capability to effectively implement, utilize, and maintain the proposed Transformation and Integration of the Provincial Agricultural Network Project (TIPAN) 391-0488.

This judgement is based upon the project analyses as detailed in the Transformation and Integration of the Provincial Agricultural Network Project Paper and is subject to the conditions imposed therein.

Donor M. Lion

Donor M. Lion
Director
USAID/Pakistan

July 6, 1984

Date

ANNEX C.2

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO PAKISTAN

Cable : USAIDPAK

HEADQUARTERS OFFICE
ISLAMABAD

Office of the Director

TRANSFORMATION AND INTEGRATION OF THE PROVINCIAL AGRICULTURAL NETWORK PROJECT (TIPAN) (391-0488)

FAA SECTION 612 (b) CERTIFICATION

A major purpose of the $1.625 billion economic assistance program negotiated between the Governments of the United States of America and Pakistan, acknowledged by both governments and a primary reason for both governments having decided to develop an economic assistance package, is to provide balance of payments assistance to Pakistan.

I have carefully reviewed the advisability of disbursing United States dollars in lieu of United States-owned excess foreign currency to pay for local costs of projects being implemented in Pakistan. In light of the United States Government's objectives concerning the program, I have determined that it would be prejudicial to U.S. interests and goals to pay for all local currency costs with United States-owned rupees. Such a procedure would prevent the U.S. from providing the maximum amount of balance of payments support under the economic assistance package, and would consequently undercut one of the basic objectives of the program. The objective of providing balance of payments assistance to Pakistan can best be achieved by disbursing United States dollars to pay for local costs of the program. Section 612(b) of the Foreign Assistance Act of 1961, as amended, authorizes the administrative official approving the voucher to determine that local costs will be funded with direct payment of dollars for the program. Pursuant to this provision, Handbook 19 requires that the Mission Director (or his designee) make a determination as to the reason in any instance where United States dollars are used (disbursed) when United States-owned foreign currency is available. Where dollars are used for local cost financing, USAID/Pakistan will, therefore, make disbursement to the Government of Pakistan in U.S. currency.

ANNEX C.2

FAA SECTION 612(b) CERTIFICATION (Continued)

In view of the above rationale, I, Donor M. Lion, Principal officer of the Agency for International Development in Pakistan, pursuant to Section 612(b) of the Foreign Assistance Act of 1961, as amended, do hereby certify the need to disburse United States dollars to cover local currency costs in lieu of using United States-owned excess rupees under the Transformation and Integration of the Provincial Agricultural Network Project.

Donor M. Lion

Donor M. Lion
Director
USAID/Pakistan

JULY 6, 1984

Date

ANNEX D

GOP LETTER OF REQUEST

PROJECT DESIGN SUMMARY: LOGICAL FRAMEWORK

Project Title and Number: Transformation and Integration of the Provincial Agricultural Network (TIPAN) (391-0488)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Program or Sector Goal: The broader objective to which this project contributes: -To increase NWFP's agricultural yields, agricultural production, farm income and rural employment -To transform the agricultural technology transfer network in the NWFP	Measures of Goal Achievement: -Increased production and availabilities of food and fiber -Decreased food imports -Improved foreign exchange situation -Increased per capita income	-Published data on agricultural production, yields, and rural employment -GOP planning budget documents -Basic socio-economic data -AID project reports -Field observations	Assumption for Achieving Goal Targets: -Continued GOP commitment to the agricultural sector in general and to agricultural education and research in particular as evidenced by adequate budgetary allocations and favorable policies -Required inputs for agricultural production are consistently available at affordable prices -Farmers adopt new technologies -Weather conditions are favorable
Project Purpose: -To integrate agricultural research in the NWFP with agricultural education at the University level, improve the quality of education offered and research undertaken by the University, and strengthen linkages with agricultural extension through a problem-solving, farmer-oriented outreach program at the University.	Conditions That Will Indicate Purpose Has Been Achieved: (EOPS) -AU is a dynamic force for improved agricultural development in the NWFP -AU is producing high quality graduates who are staffing the public and private agricultural sector -the AU-directed provincial research program is generating improved technology packages which are relevant to NWFP farmers and their problems	-Project evaluations -Special surveys, studies and reports -Published agricultural area and production data -AID and GOP project records -Field observations	Assumptions for Achieving Purpose and Outputs: -GOP continues to accord high priority to agricultural education and research in terms of policy support and financial commitment specifically to AU -AU's mandate in agricultural education and research is supported and reinforced both Federally and provincially -Adequate numbers of qualified local staff are recruited and hired

PROJECT DESIGN SUMMARY: LOGICAL FRAMEWORK (CONTINUED)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
	-AU outreach activities are integrated with Provincial extension efforts, and new technologies are being effectively delivered to farmers and other client groups.	-Provincial research reports and records and scientific publications -Employer interviews and AU student testing program -Extension Department Reports	-Students and staff of AU respond positively to new curricula and other changes at AU -Merged research staff respond positively to initiatives by AU's research program -Provincial extension service responds positively to initiatives by AU's outreach program -Technologies developed are socially and economically appropriate to farmers -AU successfully fosters research and extension dialogue

Outputs	Magnitude of Outputs	Means of Verification	Assumptions
-AU staff strengthened and expanded	-Increase from 110 to 208	-Project evaluations -Special surveys, studies and reports -Published agricultural area and production data -AID and GOP project records -Field observations -Provincial research reports and records and scientific publications -Employer interviews and AU student testing program -Extension Department records	-Sufficient staff and resources will be made available within the merged university-research system -Project consultants are successful in transferring skills and technology to AU staff -GOP prepares and approves PC-1s as needed -Qualified staff are selected for training -Necessary skills and materials are available locally for construction program -Adequate numbers of qualified personnel can be hired and retained to staff AU -Student enrollment demand projections are realized
-Quality of AU teaching, research and outreach staff improved	-70 Ph.D.'s and 70 M.Sc.'s trained		
-AU administration improved	-5 new senior administrative positions established and 6 academic and 12 short-term training programs in administration and management completed		
-Curricula, courses and teaching techniques for the B.Sc. and M.Sc. programs upgraded and expanded resulting in higher quality graduates	-12 curricula for fields and sub-fields of specialization and 8 new courses for core program developed and institutionalized		
-Student body expanded	-From 683 to about 1200 by end of Phase III.		
-Research program merged and improved	-225 Dept. of Agriculture professional staff merged into AU and research program refocused and projectized		
-Learning Resources Center established	-One		
-Department of Extension Education and Communications established	-One		
-Continuing Education Center established	-One		
-Improved technological packages for each agro-ecological zone developed and disseminated	-Packages developed for each agro-ecological zone in the NWFP		
-Extension agents trained	-300-400/year		
-AU Campus physical plant expanded	-See Implementation Plan		

PROJECT DESIGN SUMMARY: LOGICAL FRAMEWORK (CONTINUED)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Inputs:	Implementation Target: (Type and Quantity)		Assumptions for Providing Inputs:
1. A.I.D.			
-Short and long-term technical assistance -Short and long-term academic and non-academic training in U.S. and Third Countries -In-country training -Vehicles, computers, research equipment and other commodities -Field studies and demonstrations -Evaluation -Construction -Operating expenses	-See financial analysis, implementation schedule, and commodity, TA and training plans in the project paper	-AID and GOP project records and financial documents -Project evaluations	-AID and GOP funding levels proposed are approved and disbursements are made on a timely basis -Appropriate overseas training programs can be identified -Construction is undertaken according to agreed upon standards and practices and is certified for payment by AID and the GOP -GOP meets the conditions precedent -Appropriate consultants can be recruited to provide required technical assistance
2. GOP			
-Staff salaries and operating expenses -Operating and maintenance costs for newly constructed/rehabilitated facilities -Vehicle operating costs -Construction -Commodities -In-Country Training			

DRAFT PROJECT AUTHORIZATION

Name of Country:	Pakistan
Name of Project:	Transformation and Integration of the Provincial Agricultural Network Project
Project Number:	391-0488

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended, I hereby authorize Phase I (of the proposed three phases) of the Transformation and Integration of the Provincial Agricultural Network Project for the Islamic Republic of Pakistan, involving planned obligations not to exceed U.S. Dollars Thirty-Five Million Five Hundred Thousand (U.S. $ 35,500,000) in ESF grant funds over a four (4) year period from the date of authorization, subject to the availability of funds in accordance with the A.I.D./OYB allotment process, to help in financing foreign exchange and local currency costs for Phase I of the Project. Funding for phases II and III of the Project may be provided through amendments to this authorization, subject to the successful completion of Phases I and II, respectively.

2. The project will assist the Government of Pakistan (Grantee) to integrate the Northwest Frontier Province (NWFP) into the socio-economic mainstream of the country and to improve the quality of life for NWFP inhabitants. Its primary goal is to increase NWFP's agricultural yields, agricultural production, farm income and rural employment. The secondary goal is to transform the agricultural technology transfer network in the NWFP. While the project focuses on the NWFP, it is likely to serve as a model for eventual adaptation and replication in other parts of Pakistan. The purpose of the project is to integrate agricultural research in the NWFP with agricultural education at the University level, improve the quality of education offered and research undertaken by the NWFP Agricultural University at Peshawar, and strengthen linkages with agricultural extension through a problem-solving, farmer-oriented outreach program at the University. A.I.D. will finance technical assistance, training, commodities, architectural and engineering services, construction, some of the operating costs of the integrated university/research system, and evaluation activities to, amongst other things: (a) completely revise and modernize the curriculum and introduce new teaching techniques into the instruction program at the university; (b) upgrade and expand the University's physical plant; (c) improve the quality of

agricultural research undertaken by the combined University/research system by training research scientists, introducing new systems of planning and implementing research, and improving experimental farm and laboratory facilities; and, (d) establish strong operational linkages between the merged University/research system and the provincial extension department through the creation of a problem-solving, farmer-oriented outreach program at the University with the capability to provide in-service training for provincial extension workers and to produce and disseminate relevant technological packages to farmers and other client groups in the NWFP community.

3. The Project Agreement(s) which may be negotiated and executed by the officers to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority shall be subject to the following essential terms and covenants and major conditions as A.I.D. may deem appropriate.

a. Source and Origin of Goods and Services

Goods and services financed by A.I.D. under this project shall have their source and origin in the Cooperating Country or in the United States except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the project shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States and the Cooperating Country.

b. Conditions Precedent to Disbursement for Construction

Except as A.I.D. may otherwise agree in writing, prior to the disbursement of funds by A.I.D. under this Project or to the issuance by A.I.D. of documentation pursuant to which such disbursement will be made for construction activities, except for the procurement of architectural and engineering (A&E) services, the Grantee, through its Government of the Northwest Frontier Province (GONWFP), shall furnish to A.I.D., in form and substance satisfactory to A.I.D. written assurance that:

i. the merger of the NWFP Agricultural University at Peshawar and the NWFP's agricultural research system, the latter specifically including the Directorate of Agricultural Research and the Livestock Production Research Units (Animal Production Division of the Veterinary Research Institute and the Livestock Experiment Station, Jaba) of the Department of Agriculture, has been completed. Such assurance shall indicate that the following has occurred: (1) that the research system's revenue and Annual Development Program (ADP) budgets have been transferred to the University; (2) that all of the research system's professional and support staff have been reassigned to the University; and, (3) that all physical facilities under the control of or used by the research system have been transferred to the University; and,

ii. the NWFP Agricultural University of Peshawar and the NWFP Directorate of Extension have formally adopted an operating agreement which clearly delineates the areas of responsibility for each organization. The operating agreement shall include, at a minimum, decisions regarding such issues as: location of staff and demonstration activities; type, number, and illustrative schedule of training courses to be offered by the University for field extension personnel; the mechanism and procedures to be followed to ensure the participation of field extension personnel in the identification and selection of priority research topics to be studied by the University's research staff and the development of technological information packages produced by the University's outreach staff; and, such other issues as A.I.D. may, from time to time, establish in Project Implementation Letters (PILs).

c. Condition Precedent to Disbursement for Participant Training Commenced After the First Six Months from the Date of the Signing of the Project Agreement

Except as A.I.D. may otherwise agree in writing, prior to the disbursement of funds by A.I.D. under this Project or to the issuance by A.I.D. of documentation pursuant to which such disbursement will be made for participant training activities commenced after the first six months from the date of the signing of this Agreement, the Grantee, acting through its Chairman of the Pakistan Agricultural Research Council (PARC) shall furnish to A.I.D., in form and substance satisfactory to A.I.D., the names and dates of availability of personnel from the PARC Talent Pool who will be seconded to the Agricultural University at Peshawar during Phase I of the Project to fill positions on a temporary basis, while permanent incumbents are either being recruited or trained overseas.

d. Covenant as to Phase I Funding

The Government of Pakistan agrees to budget, in its Annual Development Programs (ADPs) for Pakistani Fiscal Years 1984/85 through 1989/90, or the life of Phase I of the Project, whichever is longer, for sufficient funds to cover all projected costs for Phase I of the Project. The ADP funding levels shall include all resources provided by both the Government of Pakistan and donor agencies.

e. Covenant as to Operations and Maintenance (O&M) Costs

The Grantee agrees to:

i. provide budgetary allocations required to cover the operating and maintenance costs of all on-going activities and those initiated under the Project in the areas of research, teaching and outreach at the NWFP Agricultural University at Peshawar; and,

ii. maintain in good operational condition all physical facilities constructed or rehabilitated, in whole or in part, under the Project and all commodities and equipment procured under the Project.

f. Covenant as to Post-Training Employment

Except as the Parties may otherwise agree in writing, the Grantee, acting through its NWFP Agricultural University at Peshawar, shall make every reasonable effort to require that each person trained under this Project works in activities related to agricultural education, research, or extension in Pakistan for not less than three times the length of time of his or her training program provided, however, that in no event shall such an individual be allowed to work in such activities for less than one year, nor be required to work in such activities for more than five years from the date of that individual's completion of training. The Grantee shall, further, not approve extensions in the trainee's permitted time abroad if such extension shall allow the trainee to remain abroad beyond that time required for his or her training program.

Signature: _____
M. Peter McPherson
Administrator

_____
Date

DRAFT

VEHICLE WAIVER

ACTION MEMORANDUM FOR THE USAID/PAKISTAN MISSION DIRECTOR

FROM: Dr. Linda N. Lion, Chief/PDM

SUBJECT: Source/Origin/Nationality Vehicle Procurement Waiver for The Transformation and Integration of the Provincial Agricultural Network Project (391-0488)

I. Problem: You are being requested to waive the requirements of Section 636(i) of the Foreign Assistance Act and to waive source/origin/nationality requirements from AID Geographic Code 000 (U.S. only) to AID Geographic Code 935 (Special Free World).

II. Background:

A.	Cooperating Country	: Pakistan
B.	Authorizing Document	: Project Authorization
C.	Project	: Transformation and Integration of the Provincial Agricultural Network Project 391-0488
D.	Geographic Code of Project	: 000 and Pakistan
E.	Importer of Commodity	: USAID/Pakistan on behalf of the Agricultural University of Peshawar.
F.	Description of Commodity	: Three Toyota right-hand drive Cressida Station Wagons, Model RX60RG-XWKDS 4 cyl gasoline engine. 4 speed manual floor-shift transmission. Spare parts for the above vehicles (approximately 20% of cost of the vehicles)
G.	Approximate Value	: $ 23,400
H.	Nature of Funding	: ESF Grant
I.	Procurement Source	: Japan

III. Discussion and Justification

The purpose of the project is to reform the NWFP's agricultural technology transfer system through the development of the recently created Agricultural University at Peshawar, the integration of provincial crops and livestock production research operations with the University, and the upgrading of extension service cadre through training and the use of mass media outreach methods.

This project is composed of several complementary elements which are described below:

A. Teaching Program

This element of the project will assist the University to completely revise its admissions policy and curriculum as well as to introduce new teaching methods. In addition, a new system of student evaluation will be introduced.

B. Research Program

This element will assist the GONWFP to carry out the merger of its crop and livestock research system with the University and to establish a new coordinated research program which has a problem-solving orientation.

C. Outreach Program

This component will establish close and effective operational linkages between the University's merged research system and the NWFP's agricultural extension operations. As a result of this component, the University will have the capability to supply technology packages for major crops and animal husbandry to extension workers and to provide technical assistance and training to those workers.

The Research and Outreach elements will require AID-financed consultants to conduct extensive field visits to research stations and extension facilities located through out the NWFP in order to carry out their assignments. The project will also require frequent travel by the consultants to Islamabad to maintain close contact with Federal Government officials. Vehicles are required for these purposes.

Required vehicles must have right-hand drive, a critically important safety factor in Pakistan where traffic moves on the left hand side of the road. It is expected that project vehicles will travel long distances on frequently used routes where right-hand drive is essential in passing situations to ensure maximum visibility and safety. Air-conditioning is also required because of the extreme temperatures (exceeding 100 degrees Farenheit) which are experienced

several months of the year in project areas. Consistent with A.I.D. Handbook 1, Chapter 4C2A.5(B), the USAID/Pakistan Mission Director has examined the need for austerity and economy in project accomplishment and has determined that air-conditioning is justified.

The requested Toyota right-hand drive station wagon required for this project has the necessary capacity to transport 5 adults, plus luggage, and the durability suitable for its expected use on long trips. An added advantage is that parts availability and maintenance and repair capability are generally superior to that available for vehicles of other manufacturers. There are no U.S. vehicles manufactured with the specifications required.

IV. Authority

Section 636(i) of the Foreign Assistance Act of 1961 requires AID to procure U.S.-manufactured vehicles but also provides that the requirements may be waived under special circumstances. AID Handbook 1, Supplement B, Chapter 4C2d(1)(a) describes some of the special circumstances which may support a waiver, including the "inability of U.S. manufacturers to provide a particular type of needed vehicle, e.g.,... right-hand drive vehicles... etc." Handbook 1, Supplement B, Chapter 4Cd(3) and Delegation of Authority No. 40 authorize the USAID/Pakistan Mission Director to waive source/origin/nationality requirements in this instance where the value of the procurement is less than $50,000.

V. Certification

In approving this waiver request, you will be certifying that exclusion of procurement from Free World Countries other than the Cooperating Country and Geographic Code 941 countries would seriously impede attainment of U.S. foreign policy objectives and the objectives of the Foreign Assistance Program.

VI. Recommendation

That you approve a waiver of Section 636(i) of the FAA and a source/origin/nationality waiver to permit procurement of the required vehicles from AID Geographic Code 935 (Special Free World).

Approved: _____

Disapproved: _____

Date: _____

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO PAKISTAN

Cable : USAIDPAK

HEADQUARTERS OFFICE
ISLAMABAD

THE DIRECTOR

USAID/PAKISTAN MISSION DIRECTOR'S WAIVER FOR A.I.D. PAYMENT OF INTERNATIONAL PARTICIPANT TRAVEL COSTS

A.I.D. Handbook 10, Chapter 15B1, provides that the cost of international travel, including incidental costs en route as well as the cost of travel between the participant's city and the points of departure and return in the participant's home country, shall be paid by the host government or other sponsor unless, in the case of Mission-funded programs, the Mission Director has justified and authorized full or partial waivers and has so notified S&T/IT.

Training and institution-building are important components of the $1.625 billion economic assistance program negotiated between the Governments of the U.S. and Pakistan. USAID/Pakistan's experience, however, has been that the Government of Pakistan (GOP), due to serious foreign exchange and budgetary constraints, has been historically unable to fund international travel costs for both short and long term training programs. The consequence has been that Pakistani participants have, on numerous occasions, been denied worthwhile and much needed training, inhibiting the achievement of project targets. Provinces and the Federal Government have been developing, or not developing, training priorities and nominations on the basis of availability of travel funds rather than on a basis of future projected, anticipated, and objective human resources development needs and requirements.

I have carefully reviewed the advisability of requiring full GOP funding for travel costs for participant training and the alternative of funding such travel with grant and loan funds provided through USAID/Pakistan to the GOP. Recognizing the objectives of many of our projects and the fact that project success will be enhanced by encouraging opportunities for both short and long term training, I have determined that it would be prejudicial to U.S. development interests to require at this time that the GOP pay the international participant travel costs for GOP/USAID program training. Other donors in Pakistan, including the UK, CIDA, UN, IBRD, Germany, etc., pay round-trip transportation costs for their long and short term participants.

Therefore, on all Mission-funded training programs, USAID/Pakistan shall be responsible for the cost of the round-trip economy class air ticket and other necessary incidental costs en route. Where a PIO/P has been originally written for a program of one year or less, but, after the participant has initiated his or her program, the program is extended so that it exceeds one year in total, USAID/Pakistan shall also fund the round-trip ticket. The justification for funding programs that are extended is to minimize administrative problems which are otherwise likely to occur.

On the basis of the above justification and pursuant to Handbook 10, Chapter 15B1a, I, Donor M. Lion, principal officer of the Agency for International Development in Pakistan, do hereby waive the requirement that the host government fully fund international travel for training courses and authorize payment with USAID/Pakistan loan and grant funds for travel costs as specified above for all USAID-financed projects in Pakistan.

Donor M. Lion
Director
USAID/Pakistan

4/24/84
Date

PROJECT DESCRIPTION FOR INCLUSION IN PROJECT AGREEMENT

A. Project Goal and Purpose

1. Goal

The primary goal of the Transformation and Integration of the Provincial Agricultural Network (TIPAN) Project is to increase NWFP's agricultural yields, agricultural production, farm income and rural employment. The secondary goal is to transform the agricultural technology transfer network in the NWFP. While the Project focuses on the NWFP, it is likely to serve as a model for eventual adaptation and replication in other parts of Pakistan.

2. Purpose

The purpose of the Project is to integrate agricultural research in the NWFP with agricultural education at the University level, improve the quality of education offered and research undertaken by the University, and strengthen linkages with agricultural extension through a problem-solving, farmer-oriented outreach program at the University. Achievement of the project purpose will be demonstrated by the existence of the following conditions upon the completion of the 11-year project:

a. The NWFP Agricultural University at Peshawar (AU) is a dynamic force for improved agricultural development in the NWFP;

b. AU is producing high quality graduates who are staffing the public and private agricultural sector;

c. the AU-directed provincial research program is generating improved technology packages which are relevant to NWFP farmers and their problems; and,

d. AU outreach activities are integrated with Provincial extension efforts, and new technologies are being effectively delivered to potential users and other client groups.

The Project design calls for the NWFP's various research operations and the University to be merged into a modern, integrated system oriented towards solving problems relevant to the agriculture sector in the NWFP. Under the project, the University's faculty will be provided advanced training in their fields of specialization as well as in new teaching techniques; the University's curriculum will be

completely revised and modernized with emphasis placed on giving students a practical experience in agriculture; and, the University's physical plant will be upgraded and expanded. Research staff will be trained, a new system of planning and implementing research introduced, and farm and laboratory improvements carried out. In addition, an outreach capability will be developed within the merged system and a close working relationship established with the provincial agricultural extension department in order to better serve the Province's farmers. Finally, a capacity to provide in-service training to extension workers will be developed within the University. The objective is to create, at the NWFP Agricultural University (AU), a dynamic, outward-looking, problem-solving, farmer-oriented center of teaching, research and outreach linked together to increase agricultural yields, agricultural production, farm income and rural employment in the NWFP.

1. The Teaching Program

The teaching program will include a revised admissions policy that expands the sources of entering freshmen and reserved seats for various ethnic, geographic, and social groups. The enrollment of women will be encouraged to increase the numbers of female agricultural professionals in the province. The curriculum will be completely revised to include core courses for all students during the first two years, some specialization in the third year, and complete specialization in the fourth year. New courses will be added, some existing courses will be dropped, and many will be strengthened. A two-term system involving internal examinations and a grade point average scheme will be adopted. Students will choose to be educated either for the research and educational systems of the province and nation or for employment in the provincial extension service, other public agencies serving agriculture, or the private sector. The M.Sc. courses will be offered to superior students who intend to work in agricultural research, education and extension. All graduates will have marketable skills and practical experience gained through summer internships and work/study programs.

2. The Research Program

The crop and livestock research staff of the NWFP Department of Agriculture will be merged with AU, and their research work will be coordinated with on-campus research to be conducted by faculty, students and participant trainees. The new research program will have a problem-solving orientation and will require a multi-disciplinary approach in view of the complex farming systems that characterize the

province. A number of priority problems currently facing NWFP farmers has been identified; these will comprise the research program which will be planned, coordinated, supervised and evaluated under the leadership of AU's Director of Research. AU academic staff will be expected to spend one third of their time working on research topics. Graduate student theses will contribute to the overall program.

The University will also provide the leadership and coordination of the provincial research program with other provincial and national research organizations such as the Pakistan Agricultural Research Council, the National Agricultural Research Center, the Veterinary Research Institute, the Nuclear Institute for Food and Agriculture, the Pakistan Tobacco Board Research Farm, the Fruit and Vegetable Development Board and the Pakistan Forest Institute. The last four of these are located within a few miles of the AU campus, which will facilitate coordination and the conduct of collaborative activities.

3. The Outreach Program

About 25 percent of the personnel and other resources of the University will be devoted to an outreach program to ensure that technologies developed under the research program are transferred to the agricultural community. The outreach program will link AU and its merged research capability with NWFP's agricultural extension system in a number of ways. AU will develop technology packages for major crops, animal husbandry practices and the farming systems of the province for transfer by extension workers. AU will also develop a cadre of outreach personnel to serve as subject matter specialists for the extension services. At its Continuing Education Center, AU will offer in-service and refresher courses for agricultural officers, field workers and farmers and develop mass media programs for reaching a larger number of extension personnel and other members of the agricultural community. All research scientists will be expected to spend at least 15 percent of their time on outreach activities. Those that spend 75 percent of their time in this way will be designated as outreach personnel. They will be located at research stations throughout the province and will serve as a bridge between the University and its clientele throughout NWFP.

4. Support Centers, Physical Facilities and Equipment

The Teaching, Research and Outreach Programs will be supported by the establishment of two new centers. The Learning Resources Center will house a new and expanded library, computer facilities and a language laboratory. The Continuing Education Center will be the heart of the Outreach Program, and house a Communications Unit producing mass media programs and audio-visual instructional aids

as well as facilities for short courses, seminars and workshops. In addition to these suport centers, the project will finance construction of classrooms, laboratories, and dormitories. Many existing buildings will be physically improved. The project will also finance needed textbooks, research equipment, experimental farm tools, and other commodities. An improved telecommunications system will be installed.

5. New Personnel, Faculties and Organizational Structure

The new role and orientation of AU will require many staffing and administrative innovations. The Vice Chancellor will serve as Project Manager. He will be supported by a Deputy, a new position to be created to direct the administration and financial management of the institution. Directors for Teaching, Research, and Outreach will be appointed with direct responsibility for program planning, coordination, evaluation, and administration in their respective functional areas.

The faculty structure will be reorganized to comprise four new faculties: Plant Sciences, Animal Husbandry, Engineering Applications and Food Technology, and Rural Social Sciences. The duties and responsibilities of the Dean of each faculty will be upgraded to provide for multi-disciplinary attention to teaching, research, and outreach. They will be specifically charged to prevent fragmentation within departments of their faculties. Units such as the Learning Resources Center and Library, Physical Plant, Personnel, Finance and Accounts, will serve in a staff capacity to the Vice Chancellor and his Deputy.

6. Project Phasing

The project will be implemented in three phases. The implementation of successive phases will be preceded by comprehensive evaluations of activities under the prior phase. At the end of Phase I, key features of AU's institutional development will have been put into place and construction of the most needed campus physical facilities will be completed or on the way to completion. At the end of Phase II, institutional development will be at a stage where major aspects of the teaching, research, and outreach programs have been sufficiently well established to leave a greatly improved, but still not completed, agricultural university in the NWFP. Most academic and other physical facilities will be in place. Phase III will concentrate on quality improvements in the teaching program and in research administration. The outreach program and external program linkages will be fully developed. Campus development will focus on student and faculty/staff housing and support facilities.

C. Illustrative Implementation Plan

1. A.I.D. Responsibilities

A.I.D. will be responsible for:

a. contracting with all university expatriate consultants and the expatriate architectural and engineering (A&E) firm;

b. purchasing directly or arranging for the purchase of all vehicles, equipment and other commodities procured outside of Pakistan as well as all equipment and materials required to support the university expatriate consultants and A&E personnel;

c. advance approval of design of civil works, inspections of civil works and certification for payment of all civil works financed by A.I.D. under this project;

d. arranging for long and short-term training in the United States or third countries for selected participants;

e. providing sufficient staff to participate in scheduled project evaluations;

f. financing the construction or rehabilitation of facilities;

g. financing certain agreed upon additional operating costs of the combined research/university system resulting from the project; and,

h. coordinating with appropriate government agencies in the implementation of this project.

2. NWFP-AU, GONWFP and GOP Responsibilities

The NWFP Agricultural University at Peshawar will be responsible for the overall implemention of the Project. The Vice Chancellor (VC) will function as Project Manager, supported by his administrative staff, especially the Deputy Vice-Chancellor and the Directors of Finance and Works. The GONWFP will be responsible for funding the Provincial agricultural research program, while the GOP, through its University Grants Commission in the Ministry of Education, will be responsible for providing Federal funds for AU.

The NWFP-AU will be responsible for: (a) negotiating, awarding, monitoring and administering all construction contracts under the project; (b) procuring locally available commodities such as office and classroom furniture and other items in support of the University program; (c) recruiting and hiring additional staff at the University; (d) identifying suitable candidates for both long-term and short-term overseas training, making arrangements for releasing them as

appropriate from their jobs to participate in such programs, and obtaining necessary approvals and clearances from the GONWFP/GOP; (e) arranging for all in-country training programs; (f) providing sufficient staff to participate in the scheduled project evaluations and to serve as counterparts to the expatriate consultants in the implementation of this project; (g) ensuring that the GOP's PC-I is approved; (h) facilitating the merger with the provincial research system and development of effective working relationships with the Directorate of Extension; (i) implementing recommendations on reorganization and curriculum revision; and, (j) arranging for all travel clearances for USAID staff and project-financed consultants.

Other Pakistani entities responsible for project implementation include: the Provincial Departments of Planning and Development, Finance, and Agriculture; the Provincial Agricultural Extension Directorates; the Federal Ministry of Food, Agriculture and Cooperatives; the Ministry of Education; and, the University Grants Commission. The Provincial Department of Agriculture will be responsible for transferring the provincial research system to the University. The Extension Directorate will be responsible for selecting participants for training at the University and for establishing effective and close working relationships with it. The Provincial Departments of Planning and Development and Finance will be responsible for overseeing and ensuring that the reorganization of the provincial technology transfer system is carried out as well as providing necessary funding to the integrated research/university system. The Ministries of Education and Food, Agriculture and Cooperatives and the University Grants Commission will also provide financial support. In addition, the Ministry of Agriculture, through the Pakistan Agricultural Research Council, will provide scientists to the University on a temporary basis while permanent incumbents are being recruited or trained abroad. And, the University Grants Commission will provide overall guidance and support on the university's reorganization and curriculum development.

3. Management Advisory Group

A Management Advisory Group (MAG) will be established to maintain, during implementation, the collaboration evolved during project design. The group will be responsible for a continuing monitoring and evaluation system and will serve as the primary forum for raising and solving all implementation issues. It will be jointly chaired by the Vice Chancellor and the USAID Project Officer. Its composition will be determined by the nature of the particular issues and problems to be considered. At various times, it will draw on the services of the USAID Engineer, the U.S. University and A&E Chiefs of Party, key AU administrative, teaching, outreach and research personnel, senior NWFP officials, the chairman of the University Grants Commission, other USAID/Pakistan personnel, and possibly other donor representatives.

ILLUSTRATIVE

SUMMARY OF PROJECT COSTS BY EXPENSE CATEGORY AND SOURCE OF FUNDING (PHASE I ONLY)
(In 000s)

Expense Category	FY 1984		Life of Phase I Funding a/	
	A.I.D. Grant (In $)	GOP (In Rs)	A.I.D. Grant b/ (In $)	GOP c/ (In Rs)
1. Technical Assistance	2,160	700	7,422	2,950
2. Training	900	-	5,349	9,480
3. Commodities	400	7,000	1,000	29,500
4. A&E Services	1,000	-	3,976	-
5. Construction	-	-	14,133	89,435
6. Operating Costs	500	52,780	1,764	292,108
7. Evaluation	40	-	90	-
Sub-Total	5,000	60,480	33,734	423,473
Contingency	-	1,176	1,766	10,790
TOTAL	5,000	61,656	35,500	434,263

a/ Subject to the availability of funds to A.I.D. for this purpose and to the mutual agreement of both parties to proceed at the time of each subsequent increment.

b/ Does not include approximately $3.0 million under the Agricultural Commodities and Equipment Program (391-0468) for the importation of agricultural research commodities and equipment, subject to the availability of funds to A.I.D. for this prupose.

c/ For Pakistan Fiscal Year 1984/85 (July 1, 1984 - June 30, 1985).

INITIAL ENVIRONMENTAL EXAMINATION (IEE)

PROJECT LOCATION	:	Pakistan
PROJECT TITLE	:	Transformation and Integration of the Provincial Agricultural Network Project
LIFE OF PROJECT	:	FY 1984 - FY 1995
FUNDING	:	A.I.D. = $55,000,000 ESF Grant * GOP = the equivalent of $120,000,000 in Rupees
IEE PREPARED BY	:	Office of Engineering USAID/Pakistan
ENVIRONMENTAL ACTION RECOMMENDED	:	Negative Determination. No further environmental studies are required
MISSION DIRECTOR'S CONCURRENCE	:	Signature Donald R. Lim Date JULY 6, 1984
ENVIRONMENTAL OFFICER BUREAU FOR ASIA	:	Approved _____ Disapproved _____ Date _____

* Plus $5.0 million worth of commodities under the A.I.D.-financed Agricultural Commodities and Equipment Program (391-0468)

A. Project Description

The project will assist the Government of Pakistan to integrate the Northwest Frontier Province (NWFP) into the socio-economic mainstream of the country and to improve the quality of life for NWFP inhabitants. The primary goal of the project is to increase NWFP's agricultural yields, agricultural production, farm income and rural employment. The secondary goal is to transform the agricultural technology transfer network in the NWFP. While the TIPAN Project focuses on the NWFP, it is likely to serve as a model for eventual adaptation and replication in other parts of Pakistan. The purpose of the project is to integrate agricultural research in the NWFP with agricultural education at the university level, improve the quality of education offered and research undertaken by the University, and strengthen linkages with agricultural extension through a problem-solving, farmer-oriented outreach program at the University.

The project will: (1) establish an integrated agricultural research and higher education system in the NWFP made up of that province's agricultural research system and the Agricultural University at Peshawar; (2) strengthen the provincial extension network through the development of formal linkages between the integrated research/university system and the extension network based on outreach and training programs established at the University; (3) introduce new curricula and teaching methods at the University; and, (4) improve the integrated research/university system's physical facilities.

B. Identification and Evaluation of Environmental Impact

This is primarily an institution-building project which places emphasis on technical assistance and training. To achieve project objectives, it also includes a considerable amount of construction activity. The training and technical assistance provided will ultimately enhance the Province's capability to utilize its resources in environmentally sound ways through the introduction of improved agricultural technologies. Research activities supported by this project will take place under controlled conditions and will not have a significant impact on the environment.

The construction activities will produce an enlarged physical plant at the University capable of supporting greater numbers of students. As a result, a major environmental concern of the project is sewage disposal. Currently, the University uses a back-pit for sewage disposal which has a potential for aquifer contamination. Under the project, modern sewage disposal facilities providing proper sewage treatment will be constructed which will result in major improvement over the present method of sewage disposal. The project will also provide all other support facilities required by the enlarged student body.

Regarding construction, a Master Plan prepared by an established architectural and engineering firm (Skidmore, Owings and Merrill) will serve as the basic framework for detailed design and construction of all campus facilities. The plan has taken into consideration environmental concerns related to the site and to construction activities. The placement and design of buildings and other structures take into account the present environment of the area as well as the architecture of buildings both in the vicinity of the campus and in the surrounding countryside. Construction activities will be completed in phases and each phase's activities will be limited to as small a contiguous area as possible in order to minimize disruptions to the University.

C. Recommendations

The project will have little or no adverse effect on the environment. Therefore, it is recommended that a negative determination be made.

IMMEDIATE COMMODITY NEEDS

A. TELECOMMUNICATIONS SYSTEM REQUIREMENTS - PHASE I

1. Mitel SX200 (20 trunks x 144 stations)
   Required components:

Basic system		$ 5,400
Common control		2,600
Generic 216		7,700
Electronic Printer		2,090
Console		3,360
EIA 232 Cable		100
2 equipment shelves and cable		2,140
18 line cards (8 stations per card) @ 1,260		22,680
5 trunk cards (4 trunks per card) @ 1,480		7,400
2 quad receiver cards @ 2,040		4,080
144 Touch-Tone telephone sets @ 80		11,520
Thermostatically-controlled air conditioner		1,200
Complete set of engineering manuals		160
Complete set of tools - test set		500
Subtotal	$70,930	

   Spare components:

Quad receiver card		$ 2,040
2 line cards @ 1,260		2,520
Trunk card		1,480
Tone card		960
Console card		850
RAM/COS card (16K)		2,400
Static board		200
Console face mate		200
Console hand set		90
Complete set of engineering manuals		160
Complete set of tools - test set		500
10 Touch-Tone telephone sets @ 80		800
Subtotal	$12,200	
Total Mitel equipment cost		$ 83,130

2. Cable:

Buried		$ 17,600
Inside wiring		8,900
Telephone closets, punch down blocks & pedestals		4,300
Subtotal	$30,800	

3. Air freight and shipping estimate:

Air		$ 7,500
Sea		5,000
Subtotal	$12,500	

4. TA for installation and operation $109,300

Total Costs Phase I $236,730

B. FARM AND RESEARCH CENTER MACHINERY

Item	Specs.	Source (If known)	Unit Cost	No.	Total Estimated U.S.$
Tractors	65HP, MF265 or equivalent		$11,000	2	$22,000
	45HP, MF245 or equivalent		8,000	2	16,000
Truck, tipping type	Diesel		24,000	1	24,000
Pickup Truck	Diesel		12,000	1	12,000
Disc plow, three	26" diam. two-way		3,000	2	6,000
Tandem disc	8 feet		2,400	1	2,400
Offset disc, mounted	6 feet		2,000	1	2,000
Reversible plow, three bottom			3,000	1	3,000
Field cultivator, spring loaded			1,600	2	3,200
Bedder, lister or ridger			2,400	1	2,400
Seed/Fertilizer drill	8 ft.		4,000	1	4,000
Fertilizer spreader	8 ft.		2,500	1	2,500
Planter, 2 row J. Deere or equiv. (two core planter units for above)			400	2	800
Cultivator, 2 row			2,400	1	2,400
Land leveler (scraper)	6 ft.		1,600	1	1,600
Land plane (Eversman 1000)	10 ft.		5,000	1	5,000
Seed broadcaster, tractor mount			1,600	1	1,600
Manure spreader			3,000	1	3,000
Roto vater	3-4 ft.		2,400	1	2,400

Continued.

B. FARM AND RESEARCH CENTER MACHINERY

Item	Specs.	Source (If known)	Unit Cost	No.	Total Estimated U.S.$
Ditcher			800	1	800
Post hole digger	5 ft. MTP		1,600	1	1,600
Trailer, tipping type	3 ton		2,500	1	2,500
Tractor mounted power loader			1,000	1	1,000
Field Sprayer	16 ft. boom 200 gal. tank and pump		1,800	1	1,800
		LARGE EQUIPMENT SUB-TOTAL			127,000
Plot seeder/drill, trow, 3 pt. hitch hoe openers		Seedboro	3,000	1	3,000
Plot planters		Planet Tr or equivalent	50	3	150
Duster			1,525	1	1,525
Mower (Rotary) Front Mt.			1,600	1	1,600
Mower (sicle bar)		Jerri or equivalent	2,400	1	2,400
Plot cutter		Seedboro	3,000	1	3,000
Plot thresher		Vogel or Seedboro	1,500	1	1,500
Plot thresher	7HP, Diesel	Seedboro 20	1,500	2	3,000
Single head thresher	230, 50HZ	Seedboro Mod. KMT	900	2	1,800
Garden cultivator	5 tine	Seedboro	400	3	1,200
Seed Cleaner, Large cap.			1,200	1	1,200
Seed Cleaner, Sm. cap.	230, 50HZ	Seedboro	700	2	1,400

Continued.

B. FARM AND RESEARCH CENTER MACHINERY

Item	Specs.	Source (If known)	Unit cost	No.	Total Estimated U.S.$
Scale, Toledo, platform		Seedboro Model 4181C	450	2	900
Scale, Toledo grain scale		Seedboro No. 4000	1,200	1	1,200
plus set gram weights		No.32440	50	1	50
Scale, Pelouze dairy	30 Kg	No.S-30	40	2	80
Grain moisture meter (Steinlite 500 RCT-B)	220V, 50HZ	Seedboro PT2-B	850	1	850
Crop tester (Koster or equiv.) for forages	220V	Seedboro Deluxed Mod C	150	1	150
Balance, torsion	500 gram cap.	Seedboro DWNS + TM142	380	1	380
Soil Moisture tester (Aquaprobe)		Seedboro Model APS-13	110	1	110
+ 13L Ind. Probes			15	2	30
Soil testing kit (La Motte)		Seedboro No.STH-5	80	1	80
Refill Kit		No.STH-5R	35	1	35
Bag trucks	12-18" nose length	Seedboro	200	2	400
Large Vacuum cleaner (fits 55 gal drum)	220V, 50HZ 2-1/2 HP motor	Seedboro	400	1	400
Measuring tapes (Fibreglass, 165')	Metric and foot	Seedboro	50	3	150
5 Protective masks, gloves for using crop pesticides		Seedboro	200	2 sets	400

Continued.

B. FARM AND RESEARCH CENTER MACHINERY

Item	Specs.	Source (If known)	Unit Cost	No.	Total Estimated U.S.$
Germinator, Seed	220V	Seedboro No.549	350	1	350
Kimpack Germ. Paper (100)		No.397	20	2 sets	40
Seed Counter	220V, 50HZ	Seedboro Model 77	2,000	1	2,000
Waste Truck (10 bu)		Seedboro	200	2	400
		SMALL EQUIPMENT SUB-TOTAL			$ 29,780
	Plus				
		LARGE EQUIPMENT SUB-TOTAL			$127,000
University Farm and Service Center		GRAND TOTAL			$156,780

C. INSTRUCTIONAL RESOURCES AND EDUCATIONAL MATERIAL

Item	Specs.	Source (If known)	Unit Cost	No.	Total Estimated U.S.$
Screens, wall-mounted with offset brackets mat white surface	96"x96"		$ 200	2	$ 400
Screens, wall-mounted with offset brackets mat white surface	70"x70"		150	6	900
Projectors, overhead, on carts	International models		500	4	2,000
Slide projector, Kodak SAV 2050	w/zoom lens and carrying case		750	1	750
16 MM Motion picture projector Supplies (acetates for transparencies, slide trays, spare lamps)					1,000
Microform Readers w/spare parts and lamps				4	2,500
Back copies of major research journals and continuing subscriptions					7,500
		SUB-TOTAL			$ 16,550
Text books					50,000
		TOTAL			$ 66,550

D. AGRICULTURAL UNIVERSITY/EXTENSION EQUIPMENT

Item	Unit Cost	No.	Total Estimated U.S.$
Utilization Van	12,000	1	$ 12,000
w/25" color monitor/receiver 3/4" U-Matic videotape player w/public address audio system			5,000
Utilization/Production Van	12,000	1	12,000
w/playback system as above			5,000
field production package (camera, portable recorder, portable monitors, microphones, spare batteries, etc.)			10,000
Editing System		1	20,000
Consumable supplies (videotapes, cabling)			2,000
Equipment package (key camera, special effects generator, test equipment, camera controls, and additional camera and slide chain)			25,000
	TOTAL		$ 91,000

E. OFFICES OF THE VICE CHANCELLOR

Item	Unit Cost	No.	Total Estimated U.S.$
Dictating Units	400	4	1,600
Portable Units w/ chargers	300	4	1,200
Transcribing Units	400	2	800
Micro cassettes		4 dozen	100
	TOTAL		$3,700

F. HORTICULTURE DEPARTMENT

(Teaching Needs)

Item	Possible Vendor	Number to Purchase	Total Cost
Slide Projector, Kodak Ektographic B-2	SW3979Q	1	$ 240.00
Slide Trays for Kodak Ektographic B-2	SW3979J-02	5	35.00
Lamp, replacement, Type ELH	SW3979L-01	5	85.00
Overhead Projector, Kalart Victor Apollo 6	SW3918	1	265.00
Film Roll Attachment	SW3918A	1	18.00
Acetate Roll	SW3923U	5	50.00
Replacement Lamp	SW3918L	5	80.00
Projector Table, 42" high	SW79481-30	1	100.00
Portable Projection Screen on tripod 50"x50"	SW2928A	1	60.00
Projection Screen, pull-down, 84"x84"	SW3932B	1	120.00
Plastic models or large posters showing typical fertilization with pollen, pollen tube and embryo sac	N	2	100.00
Posters showing representative inflorescences of strawberry, apple, peach, fig, banana, citrus, tomato, carrot, onion, cucumber	N	2 of each fruit or vegetable	100.00
Posters showing fruit bearing habits of apple, peach, fig, banana, citrus, apricot, plum	N	2 of each fruit	100.00
Pocket Lens, 10X	BM or FS or N		
Plant tissue dissecting set	SW27089-10	15	90.00
Grafting knives, fixed blade, right hand	BM, FS, or N	20)	
Grafting knives, fixed blade, left hand	BM, FS, or N	5)	
Budding knives, fixed blade	BM, FS, or N	20)	
Sharpening stones, 1 coarse side, 1 fine side	BM, FS, or N	5)	
Patch budding tool	BM, FS, or N	2)	300.00

Continued.

Symbols: SW = Sargent Welch Co. BM = Ben Meadows Co., Atlanta Ga.
FS = Forestry Suppliers, Jackson, Miss.
N = NASCO

F. HORTICULTURE DEPARTMENT

(Teaching Needs Continued)

Item	Possible Vendor	Number to Purchase	Total Cost
Hand Pruners	BM, FS, or N	20)	
Lopping Shears, 18"	BM, FS, or N	5)	
Lopping Shears, 24"	BM, FS, or N	5)	
Pole Pruner, 8'	BM, FS, or N	5)	
Pruning Saw, curved blade	BM, FS, or N	10)	500.00
Prepared Projection slide sets showing commercial practices of culture, harvesting, gardening of fruits and vegetables	NASCO or ASHS	As many sets as necessary to show all operations	200.00
Seed boxes with transparent sides and compartments to show 50 kinds of horticultural seeds	N		200.00
Electric illuminators for student compound microscopes	SW57745	15	450.00
Stereo binocular microscope, zoom B&L model Z45L	SW54985-20	2	1085.00
Illuminator for B&L model Z45L	SW58232	2	150.00
Measuring Disk, Eyepiece	SW58385	2	50.00
Measuring Scale, stage	SW58436	1	50.00
Microscope Slides, 3"x1"	SW58776	1 case of 10 gross	85.00
Microscope Slide cover glasses, rectangular, 22mm x 40mm	SW58755B	10 pkg.	40.00
Grafting tape, 1/2" wide	BM, FS, N	10 rolls)	
Grafting tape, 1" wide	BM, FS, N	10 rolls)	
Grafting wax, compounded beeswax, kneadable	BM, FS, N	10 lbs in 1 lb. bars)	
Grafting wax/wound dressing asphalt emulsion type	BM, FS, N	20-1 qt. cans)	
Budding rubbers, 3" long	BM, FS, N	3 lbs.)	
Budding rubbers, 6" long	BM, FS, N	5 lbs.)	300.00
		TOTAL	4853.00

G. AGRONOMY

(Special Teaching and Immediate Needs)

Item	Spec.	Source (If known)	Unit Cost	No.	Total Estimate U.S.$
Triers, bag	15cm	Seedboro No.239 Chicago, IL No.80	$ 21	2	42
Grain probe	40 in.	-do- No.20-OH	80	1	80
Grain probe	63 in.	-do- No.22P	100	1	100
Sample, pans, alum.	3 qt. cap.	-do- No.31	18	6	108
Wt. per bu tester		-do- No.51M	800	1	800
Boerner divider w/pans		-do- No.34	375	1	375
Dockage Sieves	USDA specs	-do- Set 4 No.10	50	1	50
		Set 2 No.17	30	1	30
		Set 2 No.9	30	1	30
		Set 3 No.13	50	1	50
Official sample pans, triangular, tin	10"x10"x2"	-do- No.64	7	10	70
Official sample pans , triangular, alum.	5"x6"x7/8"	-do- No.7	4	6	24
Official sample pans, round	2 qt.	-do- No.44-2	1.20	30	36
Germinators	30-80^{C} 220V	-do- No.549	350	2	700
Germinator light/dark	220V	-do- No.548-L	450	1	450
Hand tally to 999		-do- No.AB-2	13	2	26
Weed Seed Booklet		-do- P.51	-	48	50

Continued.

G. AGRONOMY

(Special Teaching and Immediate Needs Continued)

Item	Spec.	Source (If known)	Unit Cost	No.	Total Estimate U.S.$
Steinlite all-purpose moisture tester (includes chart, funnel and comp. block)	220V	-do- Model 4006	760	1	760
Triple beam balance		-do- No.860-S	90	1	90
Weights	2-lb/1-lb	No.807	15	1	15
Poly scoop & counterweight		No.703S	18	1	18
O'haus Ind. balance		-do- No.1900	280	1	280
Scoops and weight		No.131	75	1	75
Peanut and Rice Trier	33cm	-do- No.76	30	1	30
Office Clipper		-do- No.400	650	1	650
Export Unit	230V 50HZ				
Petri Dishes, Pyrex	4"x1/2"	-do- No.296	150/case	2	300
Petri Dishes, Plastic disposable	100x20mm	Sargent-Welsh	60/case	2	120
Drying oven, up to 107C	220V 50HZ	S-64079	500	1	500
Low temp. oven 0-60C	But with 22V	Unknown	300	1	300
Dessicator	220V 50HZ	Unknown	300	1	300
Wiley Mill, sm, table	220V 50HZ	NASCO	300	1	300
Hand Refractometer in sugar content		NASCO or other	25	2	50

Continued.

G. AGRONOMY

(Special Teaching and Immediate Needs Continued)

Item	Spec.	Source (If known)	Unit Cost	No.	Total Estimate U.S.$
Climate Growth Chamber		?	2500	1	2500
Soil Ph and moisture meter		?	100	1	100
Weather Station, complete) will be spec. later for) Univ. Expt. Farm) Service Center)		Sargent-Welsh or Other			
Weather Station w/clock temp., etc.	220V 50HZ		500	1	500
Small plastic rain gauge (Place in field for irrig.)			8	6	48
Large standard rain gauge			200	1	200
		AGRONOMY TOTAL			$10157

(Plus Weather Station for Service Centre)

H. PLANT SCIENCE

Item	Specs.	Source (If known)	No.	Total Estimated U.S.$
Overhead projector table model	285x285mm working surface		1	450
Spare halogen lamps	24V, 250W		10	360
Blank transparency rolls			10	154
Insect Pins			5 Boxes	50
Point punch			5	10
Killing jars			50	250
Potassium cyanide		Fisher P-226	Case of 500 gm	70
Petri dishes	22hx95mm dia	Fisher 8-756	3 cases of 72	300
Innoculating needles	13-090	Fisher 13-095B	Box of 12 2 pks.	50
Innoculating loop		Fisher 13-103	Box of 10	25
Culture tubes		14-925H	1 case	110
		14-2925E	1 case	80
Flasks		Fisher 10-090B	1 case	85
		10-090C	1 case	80
		10-090D	1 case	95
Beakers		Fisher 2-540H	1 case	65
		2-540K	1 case	60
		2-540N	1 case	65
		2-540P	1 case	85
Hemocytometer		Fisher 2-672-5	2 sets	60
Micrometer discs		Baush & Lamb		
		31-16-45		40
		31-16-04		40
		31-16-42		40

Continued.

H. PLANT SCIENCE
(Continued)

Item	Specs.	Source (If known)	No.	Total Estimate U.S.$
2x2 Projectors			2	450
Projection Screens			2	200
Projection bulbs			12	120
220 converters			2	200
Slides and covers		Fisher 12-540A	1 case	60
		12-550-100	5 gross	65
		12-560A	2 pks.	24
Micro-doser		Fisher 21-197	1	100
		21-917-2B	2 pks.	40
35mm camera with close-up and regular lenses				750
Teaching slide sets Weed Sci. of Amer. Ent. Soc. Assoc. Phytopathology				500
Journals (current 1983 subscriptions and preceding years if possible)				10,000
Phytopathology Plant Disease Ann. Rev. of Plant Pathology Journal of Econ. Entomol. Annals of Entomological Society Environmental Entomology Weed Sci. (Journal of Weed Sci. Soc.) J. of Invertebrate Pathology Fungicide--Nematicide Tests Insecticide--Acoicides Tests				
Auto-clave	900x660x760mm	American Sterilizer	1	20,000
Single plot			1	3,500
Refrigerator for cold storage			2	1,000
Shaker bath		Fisher 15-455	1	1,500
		TOTAL		$41,133

I. COMPUTER LABORATORY

Item	Unit Cost		No.	Total Estimated U.S.$
Teaching Computers w/ accessories IBM PCs w/2-320KB double-side floppy disc drives; 128 KB of RAM memory; graphics quality printer	7,500		10	75,000
Research Computers w/ accessories IBM PCs w/1-10 megabite hard disc drive; 1-320KB double-sided floppy disc drive; 320 KB of RAM memory; graphics quality printer	8,000		5	40,000
		TOTAL		115,000
Furniture and Equipment to support the technical advisors				175,000
Project Vehicles				193,000

INSTITUTION BUILDING MODEL

1. Background

The following summarizes the approach that will be utilized to design and implement project activities, convey an understanding of the overall strategy proposed for integrating the University's teaching functions with research and extension, and conceptualize and perceive the overall purpose of the design.

The project focuses on making the Northwest Frontier Province Agricultural University (NWFP-AU) a viable and innovative university, with strong linkages to the overall national and provincial agricultural teaching, research, and extension system. Strengthening of the currently inadequate agricultural university will require an organized, systematic, and sustained effort. A model for developing innovative institutions has been developed from organizational management principles, study of experiences in building institutions in developing countries, and field testing of the model in planning, development, and evaluation of agricultural research and educational institutions. Experience in the complex process of university development shows that this model provides an excellent framework and useful guidelines for those giving leadership to the process.

The institution-building model or framework is particularly applicable to the task of development of NWFP-AU as it explicitly identifies two groups of variables, the "institution variables," which are concerned with the internal organization and operation of the University itself and the "linkage variables," which are concerned with external relations, i.e., relationships of the university with other institutional components and with its environment. The current NWFP-AU has both internal weaknesses and weak external linkages, particularly to the national and provincial agricultural research subsystem, the provincial extension system and to farmers of the NWFP.

This institution-building framework will be used to begin the process of developing understanding of this model among the leadership of NWFP-AU, and set the stage for use of this model by NWFP-AU leadership and the technical assistance implementation team.

The following is a brief description of the institution-building model that will be followed by illustrations of some of the institution variables and environmental linkages as they apply to NWFP-AU.

2. The Institution Building Model

Institution		Environment
Institution variables Doctrine Leadership Programs Internal structure Resources	Relationships	Environmental linkages Enabling Functional Normative Diffused

Doctrine has been described as "the most elusive of the organization variables. It is an expression of what the organization stands for, what it hopes to achieve, and the styles of action it intends to use." It is the body of objectives, values, and operational methods of the organization.

Leadership is the group of persons, committed to innovations, who are actively engaged in the formulation of programs, structuring the organization, and implementation of activities. Leadership includes persons at several levels in a complex organization some of whom are concerned with external environment relationships as well as internal organizational and administrative matters.

Programs are those actions that are related to performance of functions and services, i.e., production of the outputs of the institution. Programs are designed to fulfill the goals of the organization as set forth in legal mandates and needed and demanded by the environment to be served.

Internal structure is the organization of resources into formal and informal patterns of authority, division of responsibility among the different units of the organization, channels of communication, and means of resolving differences and formulating consensus on priorities, policies and procedures.

Resources are the inputs of the organization that are converted into products or services and into increases in institutional capability. It includes not only financial resources that can be used for construction of physical plant, equipment and facilities and employment of personnel services, but also such intangibles as legal and political authority and information about technologies and the external environment.

Every organization has relationships with individuals and other organizations. These organizations, individuals and social groups make up the environment with which the institution reacts. Some of the relationships arise from the process of acquiring resources, and others from the outputs supplied to individuals and other organizations within the environment to be served. The network of inter-organizational relationships has been designated as environmental linkages, of which four kinds have been identified.

Enabling linkages are the linkages with organizations and social groups which control the allocation of authority and resources needed by the institution to function. Functional linkages provide the inputs that are needed and take the outputs of the institution. Normative linkages are relationships with other organizations which have overlapping interest in the objectives or methods of the institution even though no enabling or functional relationships may exit. Diffused linkages are relationships with individuals and groups who are not aggregated into formal organizations but influence the standing of the developing institution in its environment.

3. The Institution-Building Model Applied to the Northwest Frontier Province--Agricultural University

The following illustrates how the institution variables and types of environmental linkages (and their relationships, one to the other) apply in design and implementation of efforts to make NWFP-AU an innovative institution to meet the agricultural development needs of NWFP and Pakistan more generally. The institution-building concepts take on more meaning if examples are used to illustrate the several institution variables and types of environmental linkages application to a particular institution. The project paper and project description suggest important elements of the institution variables and environmental linkages; undoubtedly, others will be identified in the collaborative planning with the leadership of NWFP-AU. Other elements will be identified by the associated efforts to plan and implement the Innovative Management Program for Technology Development, the Joint Pakistan/American team efforts to propose changes in integration and coordination of agricultural education,

research, and extension at both the federal and provincial levels, and the strengthening of the Arid Zone Research Institute (AZRI) with a substation in the NWFP.

Doctrine. The doctrine of the "new" agricultural university at Peshawar will be reflected in its goals, objectives, values, and methods. The changed doctrinal elements must be reflected in the way the leadership designs and implements programs and the internal structure and quantity and quality of resources must be appropriate to attaining the objectives reflected by the doctrine. The doctrinal goals can be attained only if appropriate and strong linkages are developed and maintained beyond the physical environments of NWFP-AU itself. The project paper and project description suggest strong elements of institutional doctrine. Readily identifiable examples are: the focus on developing an institution that takes pride in its ability to help the farmer, improve yields, and improve incomes; the values to be attained through integration and complementarity of research, teaching, and extension functions; the curriculum based on "modules" designed to improve student learning and faculty efficiency; the spirit of cooperation with provincial and national teaching, research, and extension organizations.

Leadership. The leadership group of an agricultural university bears responsibility for moving the institution toward the attainment of its goals (largely embodied in its doctrine), at the same time maintaining the ability of the university to sustain growth into new areas of services, to attain public support from the environment served, and to be innovative in its program and internal structure as needs arise. The leadership group includes many persons at university, college, and departmental levels; it is not confined to those holding administrative posts. Individual faculty members, and indeed students, may play positive or negative roles in leadership. Likewise, those beyond the day-to-day management of university affairs are an important part of the leadership, e.g., the leadership quality shown by members of boards of management and leaders in organizations with enabling and functional linkages may be crucial to the viability and growth of the agricultural university. During the design process, the important elements of the leadership structure and their roles will be clearly identified and mechanisms will be developed to encourage leadership styles and consensus conducive to attainment of institutional goals.

Programs. The programs of an agricultural university can be illustrated by the teaching, research, and extention education activities that are to produce the outputs of the institution. The teaching program produces graduates for service in provincial and national agricultural extension services, for research positions in

agricultural universities and research institutes, the agricultural input supply industries, farming and other private employment, or for postgraduate study. The postgraduate program produces more highly educated scientists for service in research and educational institutions including the strengthening of the faculty capability of the agricultural university itself as well as other universities in the country. Research programs are the source of improved technology to be transmitted to cultivators and input supply and marketing organizations through extension programs. At NWFP-AU the new Department of Extension, Education, and Communications and the Continuing Education Center have special roles to play in training both students and farmers. Other sections of this proposal contain more detail on the development of these two new programs.

Internal structure. The internal structure of an agriculture university is concerned with such matters as organization into such units as colleges and departments; the organization and procedures to be followed by the board of management, academic council, boards of studies, and committees; and the university level officers and their relationships to academic units. The leadership of the new university must be concerned with building its internal structure and methods of operation and communication to form a cohesive unit at the same time that outputs and services are provided for those to be served.

At NWFP-AU special attention must be given to the way the new Department of Extension, Education, and Communication and the Continuing Education Center fit into the structure. The current internal structure at all levels will be reviewed to insure that it encourages the integration of teaching and research extension as well as it supports the provincial extension service functions. Similarly, recognizing the nearly universal tendency for universities to be structured along disciplinary lines, the current structure will be reviewed and mechanisms developed to encourage a problem-solving approach that demands multidisciplinary attention to research, teaching, and extension activities.

Resources. The quantity and quality, in terms of advanced training, of faculty resources have been identified as constraints on development of NWFP-AU. A faculty development plan will be developed in collaboration with university leadership. The quality of incoming students and their orientation toward serving provincial and national agricultural development needs is a determinant of graduate quality. Therefore, there will be a review of the potentials for increasing the quality as well quantity of entering students. Special attention will be paid to mechanisms to encourage enrollment of students who, upon graduation, will make a direct contribution in serving rural development in the NWFP and Pakistan generally.

The review of current programs and planning for program changes, including the new Department of Extension, Education, and Communications and the Continuing Education Center will identify capital needs, thereby contributing to the assessment of need for physical plant expansion. Similarly, commodity needs to support the renewed and expanded program of NWFP-AU will be identified. The need for expanded financial resources, and their sources, will also be identified.

As indicated earlier the linkages of an agricultural university with other organizations and individuals is of paramount importance. This is particularly so with NWFP-AU with its mission of influencing farmer productivity, directly or indirectly, and sharing of teaching, research, and extension functions with other provincial and national organizations. The model role NWFP-AU is to play within the national system makes it imperative that the university development effort be successful both in terms of its internal capabilities to train students and its capabilities to relate to other organizations and individuals, particularly farmers, in the agricultural system.

Enabling Linkages. The authority and responsibility vested in NWFP-AU by provincial and federal bodies need to be clearly identified and understood, particularly in view of shared responsibilities with other organizations. It is anticipated that the Joint Pakistan/American Team and the planning for the Management Program for Technology Department will assist in clarifying authorities and responsibilities.

Functional Linkages. The linkages to organizations that supply resources and take the outputs (personnel and services) must be clearly identified and established for NWFP-AU to serve farmers of the Province and other clientele groups effectively. Examples of important linkages at the federal level are the Federal Ministry of Education and its subsidiary, the University Grants Commission, and the Pakistan Agricultural Research Council. The provincial government must be an important source of financial and other support. Insofar as external assistance is involved, linkages to those assistance organizations are important. The secondary schools that supply incoming students are functionally linked to the university. There will be a host of functional relationships through the outputs of the university: to organizations of several types through the graduates of the university; to provincial research and extension departments, farmers, credit and input suppliers, and agricultural processing and marketing organizations through the research findings and extension education organizations and activities. During the design process, and continuing through implementation, these linkages must be identified and nurtured.

Normative Linkages. The relationships with organizations that have overlapping interest, or perceive that they have overlapping interest, are extremely important. If properly managed by university leadership, these institutions may serve in a complementary way to NWFP-AU; on the other hand, this segment of the environment is likely to contain the seeds of competition for resources and stature. The leadership of other universities and colleges in the province, as well as other provinces, may view the new, innovative NWFP-AU as competitive for resources and threatening to their stature if the outputs of the new university are perceived to be more effective than is the case of other educational institutions. Agricultural research and extension organizations both within and outside the province, with whom the relationships are intended to be highly functional, may view the research and extension functions of the new university as being threatening. This emphasizes the importance of clear identification of authority and responsibility and close working relationships among the leadership of the several organizations with overlapping interest. Examples of important normative linkages are the University of Peshawar, the NWFP Agricultural College, the NWFP Extension Service, and the Arid Zone Research Institute substation at D. I. Khan.

Diffused Linkages. The new NWFP-AU will have many important diffused linkages to individuals and informal groups. Examples are farmers and agribusiness men; the families of current and prospective students and graduates; the teachers in primary and secondary school; and informal relationships with political and government leaders at local, provincial, and federal levels. While these linkages are "diffused," they must be considered extremely important; indeed, the success of the new NWFP-AU is likely to depend, to a large degree, on these persons and groups recognizing that the outputs and services of NWFP-AU are contributing to their incomes and general welfare. If this is the case, they will, in turn, have important influences upon the leadership of other organizations within the linkage system.

The above general framework for the work of the design team, to be carried through in the implementation stage, draws heavily on the work of others, particularly Milton J. Esman and Hans C. Blaise, as reported in several publications. The proposed design team leader used this methodology at Punjab Agricultural University, Ludhaiana, Punjab, India as a framework for developing a method of assessing progress of agricultural universities in India following which he used the methodology in evaluating the National Institute for Development and Administration, Bangkok, Thailand.

FINANCIAL ANALYSIS ANNEX

The tables in the Financial Analysis of the PP (Section V.F.) are based on program information contained in the Report of the Design Team (June 1983), the Report on Merger of Agricultural Research in NWFP (October 1983), and the Master Plan for the NWFP Agricultural University (November 1983). Minor inconsistencies may be found due to revisions made during the latter stages of the design process primarily to accommodate an 11-year project and concentration of AID funded construction in Phase I.

The design team first made physical estimates for required inputs. Cost estimates were then developed for each input using current dollars. Afterwards inflation was factored in as well as currency exchange rates for local costs. The process is described, with supporting material, in the following sections corresponding to the expense categories shown in the financial tables.

A. Technical Assistance

Using as guidelines University of Illinois salary estimates and current institutional rates for fringe and indirect costs and Mission standardized rates on preparation of project financial plans and budgets, estimates for short and long term TA and project backstopping were developed to provide a 1984 cost base. The costs were apportioned to FX and LC expense and inflation rates of 5 percent x FX and 10 percent x LC were compounded over the life of the project. Support Documents (SD) 1-3 provide the TA cost estimates.

A summary of long and short term TA requirements (SD-4) was developed from an analysis of unit TA personnel needs (SD-5). The summary showed body-count, FTE numbers and months of service for short term TA.

An assumption, based on UI experience in backstopping similar projects, was made on the FTE level of backstopping support required over the LOP. It called for a level of 1.0 FTE in FY 84-90, dropping back to .5 FTE in FY 91-93.

A spread sheet (SD-6) for all TA showing FX and LC costs by FY was developed from which information was taken for the tables in the financial analysis.

B. Training

Using the same procedure described above, cost estimates for various types of training were developed (SD-7) using UI data and Mission guidelines. Inflation factors of 5 percent for FX and 10 percent for LC were compounded over the LOP. A schedule of participant degree training (SD-8) was derived from unit personnel upgrading schedules (SD-9). Training costs for degree students were calculated and were fully budgeted in the year in which training was planned to commence. For example a Ph.D. trainee to be trained over a three year period commencing in FY 85 was budgeted at $53,200 FX (using compounded costs for 85, 86 and 87).

Short term training costs were determined by applying the number of months of training in a given year times the compounded monthly rate for the given year.

A spread sheet showing the numbers and costs of participants by FY, FX and LC was developed (SD-10) from which information was taken for the tables in the financial analysis.

C. Commodities

In this cost category certain assumptions were made, based upon the level of commodity support suggested in the PID. The PID provided $7.0 million apportioned between AID and GOP. During PP preparation this level was increased to $8.0 million. $1.0 million in FX will be made available from the project, $5.0 million from ACE funds and $2.0 million from GOP funds. The $1.0 million was subdivided into subcategories for vehicles and "other" and disbursement divided equally between the second and third years of Phase I. ACE inputs were programmed for Phases I and II with $ 3.0 million in Phase I and $2.0 million in Phase II. GOP inputs of $2.0 million were distributed equally over the four years of Phase I.

D. Infrastructure

1. Construction Estimates (in 1983 dollars) were provided by the A&E firm of Skidmore, Owings and Merrill (SOM). Of the total construction program AID inputs will be limited to the critical infrastructure and building construction necessary to provide essential elements of the new academic and research program. All of this will be provided in Phase I. The balance of the construction program, including all faculty housing, was reserved for GOP or other donor financing. After careful study, the construction program shown in Annex S to the PP was adopted by the Design Team and USAID.

2. A&E Services

A&E cost estimates were developed using standard rates for construction costs. These were then modified to fit the particular circumstances of this project. Expatriate personnel were held to a minimum throughout the LOP in order to reduce costs.

E. Other Costs

1. Agricultural University Operations requirements were derived from current budgets of the NWFP Agricultural University and the NWFP Department of Agriculture Research Division. Assumptions on normal incremental growth without the project were made as well as estimates of additional budgetary resources necessary to conform to the Design Team recommendations. To assist the Agricultural University meet their expanded needs, an input of approximately $1.8 million of project funds was allocated to the four year first phase to permit program expansion while the GOP arranged budget increases to cover the costs of an expanding program.

2. Evaluation was programmed into the cost estimates at different points in the project cycle. A total of $300,000 was allocated for the following activities and years, and factored into the financial tables:

	Activity	Year	Amount ($ 000)
1.	Socio-economic baseline study	84	40
2.	First external evaluation (5 external: 2 AID/W)	88	50
3.	Second external evaluation	91	60
4.	Socio-economic resurvey	94	60
5.	End of project impact evaluation (5 external: 2 AID/W)	94	90
		Total:	300

F. Estimates of GOP or Other Donor LC contributions were prepared and entered on a spread sheet (SD-11). Some GONWFP support for long term TA, assumed to be in-kind support such as office space, utilities, etc. was programmed at a constant level equivalent to $50,000 annually.

Training Support includes the international transportation of long term degree participants (derived from SD-7 and SD-9), and in-country research support for participants (and their U.S. thesis advisors) who return to NWFP for field research as part of their graduate program. This latter support is allocated entirely to GOP and block allocations conforming to anticipated levels of in-country research activity were entered for years 86-93.

Construction costs, less those assumed under AID funding, were expressed at levels suggested in the SOM Master Plan, adjusted for inflation and exchange rates. These costs were then modified to allow for all of AID's construction input to take place in Phase I.

From these materials the summary tables of inputs including SD-12-AID Inputs by Expense Category and those in Section V.F. of the project paper were prepared. The process used to prepare the materials was rigorous and the cost tables derived from them are considered credible and reliable.

SD-1

ESTIMATES FOR SHORT-TERM TA—MONTHLY COSTS, 84 RATES

		($)	Rs
A.	Recurrent dollar costs		
	1. Salary	4,200	
	2. Fringe Benefits	625	
	3. Sunday differential	140	
	4. Other direct costs	600	
	5. Indirect costs (24.3% of 1-4; rounded)	1,350	
		6,915	
B.	Recurrent local costs		
	1. In-country		5,000
	2. Local per diem		27,500
C.	One-time dollar and local costs		32,500
	1. International travel		45,000
	2. International per diem	400	

ADJUSTMENT FOR INFLATION
(In $ 000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
FX-5%	7.7	8.0	8.5	8.9	9.3	9.8	10.3	10.8	11.3	11.8
LC 10%	2.8	3.0	3.3	3.7	4.0	4.4	4.9	5.4	5.9	6.5
INTERNATIONAL TRAVEL 5%	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.2	5.4	5.6
	6.5	6.9	7.4	8.0	8.5	9.1	9.8	10.6	11.3	12.1

3. R & R travel		162,500
4. Housing expense (furniture, drapes, TLE, misc.)		381,000
Total one-time costs		1,014,500
Total cost for long-term TA	153,300	1,322,500 ($102,000)

Long-Term TA

ADJUSTMENTS FOR INFLATION (In $ 000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
FX = 5% ANNUAL	115	121	127	134	140	147	155	162	170	178
ONE TIME	45	47	50	52	55	58	61	64	67	70
	160	168	177	186	195	205	216	226	237	248
LC = 10% ANNUAL	26	29	32	35	38	42	46	51	56	61
ONE TIME	76	83	92	101	111	122	134	148	163	179
INTERNATIONAL TRAVEL = 5%	9	10	10	11	11	12	12	13	14	15
	111	122	134	147	160	176	192	212	233	255

SD-3

PROJECT BACKSTOPPING

ADJUSTMENT FOR INFLATION
(In $ 000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	199
FX = 5%										
1.0 fte LEVEL	120	126	132	139	146	153	161	169	178	18
.5 fte LEVEL	90	94	99	104	109	115	120	126	133	14
LC = 10%	26	29	32	35	39	43	47	51	56	6
INTERNATIONAL TRAVEL = 5%	9	10	10	11	11	12	12	13	13	1
	35	39	42	46	50	55	59	64	69	7

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR TECHNICAL ASSISTANCE FOR INSTITUTIONAL DEVELOPMENT PROGRAM

TITLE OF GOP COUNTERPART OR AREA OF SPECIALIZATION	MONTHS	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1. Vice Chancellor (Team Leader)	108										
2. Director Teaching	54										
3. Director Research	48										
4. Director Outreach	48										
5. Irrigation/Water Management	24										
6. Agricultural Mechanization	36										
7. Dairy Production	24										
8. Meat Animal Production	24										
9. Dean Rural Social Sciences	36										
10. Director Learning Resources Center	36										
11. Communications Production	24										
12. Research Station Management	24										
FTE	FTE	.67	6	10	7	7.3	4.67	1.67	1	1	.67
Short Term-Nos.	251	7	25	29	30	27	31	32	30	20	10
Short Term-Months	388	8	49	50	45	42	56	50	46	29	13

SD-5

U. S. TECHNICAL ASSISTANCE PERSONNEL NEEDS

Unit (Area) General Administration

Administrative unit, discipline, etc.	Months	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
1. Team Leader/Advisor to V.C.	108	—	—	—	—	—	—	—	—	—	—	
2. Advisor to Director of Instruction	54	—	—	—		—	—	—		2	2	
3. Advisor to Director of Research	48		—	—		—	—	—				
4. Advisor to Director of Outreach	48		—			—		2	2			
5. Unspecified Short-Term TA	10	—	—	—	—	—	—	—	—	—	—	
6. Research Station Management	24	2		—	—			2				
7.												
8.												
9.												
10.												
11.												
12.												
13.												
14.												
15.												

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U. S. TECHNICAL ASSISTANCE PERSONNEL NEEDS

it (Area) Plant Sciences

ministrative unit, discipline, etc.	Months	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
Irrigation and Water Management	24											
Soil Science	6		1	1	1	1	1	1				
Entomologist - Research	6			1	1	1	1	1	1			
Plant Pathologist - Research	4			1		1		1	1			
Seed Scientists - Research	4			1		1		1	1			
Entomologist - Outreach	4		1		1		1			1		
Plant Pathologist - Outreach	3		1		1		1					
Seed Scientist - Outreach	3		1		1		1					
Horticultural Outreach - Fruits	8		2		2		2		2			
Horticultural Outreach - Vegetables	8			2		2		2		2		
Research Farm Mgt. - Horticulture	9		9									
Horticultural Research - Fruits	8				2	2		2		2		
Horticultural Research - Vegetables	8			2	2		2		2			
Agronomist - Seed Technology	5			1	1	1	1	1				
Agronomist - Biometrician	5			1	1		2					

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U. S. TECHNICAL ASSISTANCE PERSONNEL NEEDS

rea) Plant Sciences (continued)

trative unit, discipline, etc.	Months	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
nomist - Forage or Range Mgt.	6						2	2		1	1	
t Breeder - Wheat	3			1		1		1				
t Breeder - Maize	3			1		1		1				
t Breeder - Soybeans	5					1			2	2		
t Breeder - Oilseed Crops	5				1			2	1	1		
ecified Short-Term TA	10	–	–	–	–	–	–	–	–	–	–	

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U. S. TECHNICAL ASSISTANCE PERSONNEL NEEDS

(Area) Engineering Applications and Food Technology

...trative unit, discipline, etc.	Months	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
...isor to Head, Ag. Mech.	36		—	—	—	—						
...er and Machinery	2						2					
...igation and Drainage	2							2				
...d Microbiology	12		2	2		2	2		2	2		
...d Processing Technologist	10			2		2	2	2	2			
...an Nutritionist	8		2		2		2		2			
...ssblower	6				2	2		2				
...ipment/Instrumentation	20		4	3		2	2		2	2		
...pecified Short-Term TA	10	—	—	—	—	—	—	—	—	—	—	

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U. S. TECHNICAL ASSISTANCE PERSONNEL NEEDS

(Area) Animal Husbandry

...trative unit, discipline, etc.	Months	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
...isor to Dean/Dairy Production	24							2	2		2	
...isor to Dean/Meat Animal Prod.	24		2		2					2		
...nal Breeder	10		2	2		2		2	2			
...ltry Nutrition	10		2	2	2	2		2				
...roductive Physiology	10			2	2		2	2	2			
...erinary Clinician.	10			2	2		2	2	2			
...age Utilization	8		2		2		2		2			
...t Science	8				2		2		2	2		
...ry Herd Management	4		2	2								
...ep/Goat Herd Management	4				2		2					
...ge Management	8			2			2		2		2	
...pecified Short-Term TA	10	—	—	—	—	—	—	—	—	—	—	

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U. S. TECHNICAL ASSISTANCE PERSONNEL NEEDS

(Area) Rural Social Sciences

Administrative unit, discipline, etc.	Months	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
Advisor to Dean, Rural Social Sci.	36											
Advisor to Women's Outreach	18		3		3	4	5	3				
Agric. Econ. - Program Development	8		1	1	1	1	1	1	1	1		
Agric. Econ. - Research	7			1	1	1	1	1	1	1		
Extension Education	10		2	2		2	2		2			
Mathematics, Statistics, & Computers	12		2	2	2	2	2	2				
Unspecified Short-Term TA	10	—	—	—	—	—	—	—	—	—	—	

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U. S. TECHNICAL ASSISTANCE PERSONNEL NEEDS

(Area) Learning Resources Center

ıistrative unit, discipline, etc.	Months	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
ıdvisor to Director, LRC	36											
.ibrary Advisor	10		2	2		2	2	2				
:ommunications Production	24											
ınspecified Short-Term TA	10	–	–	–	–	–	–	–	–	–	–	

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COST CALCULATION FOR TA BY FY, FX + LC
(IN $ 000)

EXPENSE CATEGORY	1984		1985		1986		1987		1988		1989		1990		1991		1992		1993	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
Short-term TA																				
1. No cost x No. Nos.	58	-	377	-	400	-	382	-	373	-	520	-	490	-	473	-	313	-	146	-
2. Local travel/P.D. x No. Nos.	-	20	-	137	-	150	-	148	-	155	-	224	-	220	-	225	-	156	-	76
3. Int. Travel x No. Trips	-	24	-	92	-	113	-	123	-	116	-	139	-	150	-	147	-	104	-	54
Sub-Total:	58	44	377	229	400	263	382	271	373	271	520	363	490	370	473	372	313	260	146	130
Long-term TA																				
Annual FX x FTE/Yr	73	-	690	-	1210	-	889	-	978	-	653	-	245	-	155	-	162	-	113	-
One Time FX x No. Arrivals	86	-	270	-	47	-	50	-	104	-	55	-	-	-	-	-	-	-	-	
Annual LC x FTE/Yr	-	16	-	156	-	290	-	224	-	255	-	177	-	70	-	46	-	51	-	37
One Time LC x No. Arrivals		156	-	510	-	93	-	102	-	224	-	122	-	-	-	-	-	-	-	-
Sub-Total:	159	172	960	666	1257	383	939	326	1082	479	708	299	245	70	155	46	162	51	113	37
Backstopping																				
Annual FX	37	-	120	-	126	-	132	-	139	-	146	-	153	-	120	-	126	-	133	-
One Time FX	15	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Annual LC	-	12	-	26	-	29	-	32	-	35	-	39	-	43	-	47	-	51	-	56
One Time LC	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-Total:	52	19	120	26	126	29	132	32	139	35	146	39	153	43	120	47	126	51	133	56

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ESTIMATES FOR TRAINING EXPENSE--84 RATES

	($)	Rs
1. Recurrent costs		
a. Academic/long-term	14,600/yr	
b. Short course/study tour	3,400/mo	
c. Third country	1,200/mo	
2. One-time costs		
a. International air fare		32,500 ($2,500)

ADJUSTMENTS FOR INFLATION
(In $ 000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
FX = 5% ACADEMIC	15	16	16	17	18	19	20	21	22	23
SHORT-TERM	3.6	3.7	3.9	4.1	4.3	4.5	4.8	5.0	5.3	5.5
THIRD COUNTRY	1.3	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.9	1.9
INTERNATIONAL TRAVEL = 5%	2.6	2.7	2.9	3.0	3.2	3.4	3.5	3.7	3.9	4.0

FORWARD FUNDING - CHARGE ENTIRE AMOUNT IN YEAR DEPUTED

	1984	1985	1986	1987	1988	1989	1990	1991	1992
PH.D.	46	47	49	51	54	57	60	63	-
M.S.	30	31	32	33	35	37	39	42	43

ILLUSTRATIVE IMPLEMENTATION SCHEDULE FOR PARTICIPANT DEGREE TRAINING

Faculty/Unit	Totals	1984 N	1984 C	1985 N	1985 C	1986 N	1986 C	1987 N	1987 C	1988 N	1988 C	1989 N	1989 C	1990 N	1990 C	1991 N	1991 C	1992 N	1992 C	1993 N	1993 C	Completions:
1. General Administration	3	-	-	1	-	2	1	-	3	-	3	-	1	-	-	-	-	-	-	-	-	88/2; 89/1
2. Plant Sciences	56	12	-	8	12	8	19	4	25	12	19	3	20	5	16	3	15	1	11	-	1	86/3; 87/9; 88/11; 89/12 90/12 91/2; 92/2; 93/5
3. Engineering App. & Food Tech.	15	1	-	2	1	6	3	2	9	2	9	1	6	-	3	1	2	-	1	-	-	87/2; 88/5; 89/4; 90/1; 91/2; 93/1
4. Animal Husbandry	23	2	-	8	2	4	10	2	13	3	9	-	7	1	4	2	3	1	3	-	-	86/1; 87/6; 88/5; 89/4; 90/2; 91/2; 92/1; 93/2
5. Rural Social Sciences	25	2	-	9	2	2	11	5	13	2	11	3	7	-	5	2	5	-	3	-	-	87/6; 88/6; 89/5; 90/0; 91/4; 92/2; 93/2
6. Learning Resources Center	10	-	-	8	-	-	8	1	8	-	2	1	1	-	1	-	1	-	-	-	-	87/7; 88/1; 89/1; 90/0; 91/1
7. Continuing Education Center	8	-	-	3	-	2	3	1	5	-	4	2	3	-	2	-	2	-	2	-	-	87/2; 88/2; 89/2; 90/0; 91/0; 92/2
TOTALS NEW/CONTINUING	-	17	-	39	17	24	56	15	74	19	57	10	44	6	31	8	28	2	20	-	10	
COMPLETIONS	140	-	-	-	-	4	-	34	-	32	-	24	-	9	-	16	-	11	-	10	-	

N = New Starts

C = Continuing Students

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PERSONNEL UPGRADING SCHEDULE

a) General Administration

pline or sub-area	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
r of Instruction											36 mos. Ph.D. Education Administration
r of Research											3 mos. non-degree study tour
r of Outreach											3 mos. non-degree study tour 24 mos. M.S. Extension Admin.
Vice Chancellor											3 mos. non-degree study tour 36 mos. Ph.D. Education Admin.

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PERSONNEL UPGRADING SCHEDULE

a) Plant Sciences

pline or sub-area	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
ulture - M. Ishtaq											36 mos. Ph.D. Tropical Fruits
ulture - A. H. Shah											36 mos. Ph.D. Major area to be determined
ulture - A. F. Lodhi											4 mos. non-degree Department Administration
ulture - W. Mohammed											24 mos. M.S. Vegetable Production/Outreach
ulture - S. Mohammed											24 mos. M.S. General Horticulture/Outreach
rotection/Entomology - M. Shahid											12 mos. nondegree; Post Doc. with dept., Administrative Component
rotection/Entomology - Karimullah											12 mos. non-degree Post Doc.
rotection/Entomology - M. Naeem											36 mos. Ph.D. Integrated Pest Management (IPM)
rotection/Entomology - S. Jan											36 mos. Ph.D. Insect Pests Affecting Soybeans
rotection/Entomology - S. Khan											12 mos. non-degree Post Doc. Insect Pathology
rotection/Entomology - M. A. Shah											12 mos. non-degree; Post Doc. Insect Pest Management/Stored Crops
rotection/Entomology											36 mos. Ph.D. Apiculture
rotection/Entomology											36 mos. Ph.D. Insect Taxonomy
rotection/Entomology											24 mos. M.S.; General Entomology with Extension minor
rotection/Entomology											3 mos. non-degree Field Trials

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PERSONNEL UPGRADING SCHEDULE

) Plant Sciences (continued)

line or sub-area	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
rotection/Plant Pathology - Anad Gul											12 mos. non-degree Post Doc. Nematology
rotection/Plant Pathology - A. Rasi											36 mos. Ph.D. Phytobacteriology
rotection/Plant Path. - M. Ahmed											24 mos. M.S. General Crop Protection/Outreach
rotection/Plant Pathology											36 mos. Ph.D. Fungal Diseases
rotection/Plant Pathology											36 mos. Ph.D. Seed Pathology
rotection/Plant Pathology - M. Khan											24 mos. M.S. Fungal Diseases
rotection/Weed Sci. - K. B. Manwot											36 mos. Ph.D. Taxonomy/Systemics
rotection/Weed Sci. - M. Jamal											36 mos. Ph.D. Herbicide Physiology and Biochemistry
rotection/Weed Sci. - M. Farid											36 mos. Ph.D. Biotic Control of Weeds
rotection/Weed Sci. - Q. Nwaz											36 mos. Ph.D. Chemical Control of Weeds
rotection/Weed Science											36 mos. Ph.D., Biochemistry of Herbicides/Soil Residues
rotection/Weed Science											24 mos. M.S., General Weed Control/Extension Minor
rotection/Weed Science											24 mos. M.S., General Weed Control/Extension Minor
y - M. Salim											3 mos. non-degree Study tour of Department Organization
y - M. I. Shah											4 mos. non-degree Research Farm Management and Operation

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PERSONNEL UPGRADING SCHEDULE

Plant Sciences (continued)

ne or sub-area	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
- S. Ahmad											36 mos. Ph.D. Seed Technology with Extension minor
- P. Shah											36 mos. Ph.D. Oilseed Crops
											36 mos. Ph.D. Forage Production/Range Management
- P. H. Taj											12 mos. non-degree Post Doc. Soybeans and Oilseed Crops
eding & Genetics - Z. Ahmad											36 mos. Ph.D. Wheat/Barley Rust/Drought Resistance
eding & Genetics - H. Rahman											36 mos. Ph.D. Maize and Other Cross-Pollinated Crops
eding & Genetics - S. Hassan											12 mos. non-degree Post Doc. Protein Quality in Wheat
eding & Genetics - M. Attaullah Khan											3 mos. non-degree Department Admin.
eding & Genetics - M. Ashraf											24 mos. M.S. Breeding Oilseed Crops
eding & Genetics - K. Ahmad											24 mos. M.S. Soybean Breeding
eding & Genetics - A. Iftikar											24 mos. M.S. Evaluation/Testing Measurements
nce - J. K. Khattak											3 mos. non-degree Soil Test Response/Program Development
nce - A. Bhattim											36 mos. Ph.D. Soil Physics or Microbiology
nce - Miss S. Parveen											36 mos. Ph.D. Soil Analysis
nce											36 mos. Ph.D. Soil Physics

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PERSONNEL UPGRADING SCHEDULE

Plant Sciences (continued)

ine or sub-area	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
nce											36 mos. Ph.D. Soil Genesis and Classification
nce											36 mos. Ph.D. Soil Microbiology
nce											24 mos. M.S. General Soils with Extension minor
nce											24 mos. M.S. General Soils with Extension minor
stry - P. Iqbal											36 mos. Ph.D.; Nutrition with minor in Chemical Analysis
stry - H. Shah											36 mos. Ph.D. Analytic Chemistry
stry - R. Bakshi											4 mos. non-degree Develop Animal Colony
stry - T. Hussain											12 mos. non-degree Post. Doc. Human Nutrition
Directorate Ph.D			(3 Ph.D)		(3 Ph.D)				(3 Ph.D)		324 mos - Ph.D for 9 staff DTBD*
Directorate MS		(2 MS)		(2 MS)		(2 MS)		(2 MS)		(1 MS)	216 mos MS for 9 staff DTBD.
Directorate Non Degree	1	2	2	2	2	1	1	1	1	1	70 mos New Degree for 14 staff; DTBD

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PERSONNEL UPGRADING SCHEDULE

Engineering Applications and Food Technology

ine or Sub-area	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
Water Mgt. - M. Arshad											24 mos. M.S. Ag. Mechanization & Extension Methods
S Machinery											36 mos. Ph.D.
op Skills											24 mos. M.S. Vocational Technology
ures											24 mos. M.S. Farm Structures
ocessing-Electric - M. Tariq											12 mos. non-degree Ag. Mechanization Program Development
ocessing-Electric											24 mos. M.S.
chnology - Rafiullah											36 mos. Ph.D. Food Engineering Unit Operations
chnology - J. Mohammad											24 mos. M.S. Food Processing
chnology - M. Shamsul											24 mos. M.S. Food Processing
istry											36 mos. Ph.D.
h Directorate - PH.D			(1 Ph.D)			(1 Ph.D)			(1 Ph.D)		108 mos-Ph.D for 3 staff; DTBD*
h Directorate- MS			(1 MS)		(1 MS)		(1 MS)				72 mos MS for 3 staff; DTBD
h Directorate-Non Degree		1	1	1	1	1					25 mos-New Degree for 5 staff; DTBD

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PERSONNEL UPGRADING SCHEDULE

rea) Animal Husbandry

ipline or sub-area	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
nant Nutrition - S. I. Shah											6 mos. non-degree
y Cattle Nutrition - M. Amjad											36 mos. Ph.D. Large Ruminants
Management - T. Mohammed											36 mos. Ph.D. Sheep & Goats
try Management - M. Ali											36 mos. Ph.D. Poultry Disease
y Farm Management - N. Ahmad											24 mon. M.S.
y Production - B. A. Shah											9 mos. non-degree Dairy Processing/Department Admin.
al Breeding & Genetics											36 mos. Ph.D. Dairy Cattle
ductive Physiology											36 mos. Ph.D. Dairy Cattle
al Hygiene											24 mos. M.S. Clinical and Preventive Medicine
Science											24 mos. M.S. Beef/Mutton
ge Utilization											24 mo... M.S. Dairy Feeding
rch Farm Mgt. - Sheep & Goats											6 mos. non-degree Supervised Exper.
rch Farm Mgt. - Poultry											6 mos. non-degree Supervised Exper.
e/Buffalo Management											24 mos. M.S. - Reproduction with Extension minor
/Goat Management											24 mos. M.S. - Range Management with Extension minor
ry Management											24 mos. M.S. - Nutrition with Extension minor
rch Directorate - Ph.D			(2 Ph.D)			(2 Ph.D)			(1 Ph.D)		80 mos - Ph.D for 5 staff OTBD
rch Directorate-MS		(1 MS)		(1 MS)		(1 MS)		(1 MS)		(1 MS)	120 mos-MS for 5 staff; OTBD
rch Directorate - Non Degrees											

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PERSONNEL UPGRADING SCHEDULE

Rural Social Sciences

ine or sub-area	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
ural Economics											24 mos. M.S. Farm Management/Farming Systems
ural Economics - Ikramullah											36 mos. Ph.D. Marketing & Prices
ural Economics											24 mos. M.S. Marketing & Prices
ural Economics											24 mos. M.S. Marketing & Prices
ural Economics											24 mos. M.S. Farm Management
ural Economics											24 mos. M.S. Marketing & Prices
ural Economics - J. Siddiqi											3 mos. non-degree Dept. Admin.
ciology - J. Khan											36 mos. Ph.D. Sociology of Development
ciology - M. Akram											24 mos. M.S. General Rural Sociology
ciology											36 mos. Ph.D. Communication and Social Change
cience - Dean of Faculty											3 mos. non-degree Faculty Organization and Operation
n Education - Dept. Head											36 mos. Ph.D.
n Education - Asmatullah											36 mos. Ph.D.; M.S. in Extension Education then finish in Vo. Tech.
n Education											24 mos. M.S. Adoption Process
n Education											36 mos. Ph.D.

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PERSONNEL UPGRADING SCHEDULE

Rural Social Science (continued)

ne or sub-area	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
											24 mos. M.A. English as a Second Language
											24 mos. M.A. English as a Second Language
ics, Statistics & Computer											24 mos. M.S. Statistical Methods
ics, Statistics & Computer											24 mos. M.S. Computer Science
Directorate - Ph.D			(2 Ph. D)			(1 Ph. D)			(1 Ph.D)		144 mos Ph.D for 4 staff; DTBD*
Directorate- MS			(1 MS)		(1 MS)		(1 MS)		(1 MS)		96 mos-MS for 4 staff; DTBD
Directorate Non Degree		1	1	1	1	1	1	1			35 mos-New Degree for 5 staff; DTBD

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PERSONNEL UPGRADING SCHEDULE

a) Learning Resources Center

pline or sub-area	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
ry Science											24 mos. M.L.S.
ry Science											24 mos. M.L.S.
ry Science											24 mos. M.L.S.
Carrel Operator											2 mos. non-degree Study Tour
age Lab Operator											2 mos. non-degree Study Tour
mm./Ext. Ed. - Dir. of Division											36 mos. Ph.D.
Communication											24 mos. M.S.
Communication											24 mos. M.S.
Media											24 mos. M.S.
ations Editor											24 mos. M.S.
Visual Specialist											24 mos. M.S.
cs Design											3 mos. non-degree Study Tour
Video Support											3 mos. non-degree Study Tour
nance Engineer											4 mos. non-degree; Tour manufacturers in U.S./Japan
rapher											4 mos. non-degree Study Tour
er Lab											24 mos. M.S. Professional Program in Computer Sci.

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PERSONNEL UPGRADING SCHEDULE

a) Continuing Education Center

pline or sub-area	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Remarks
sion Educ., Dir. of Outreach											36 mos. Ph.D. Extension Education/Vo. Tech.
Management, Dir. of CEC											24 mos. M.S.; Hotel Management plus tour of U.S. CEC's
Management, Res. Mgr. of CEC											24 mos. M.S.; Hotel Management plus tour of U.S. CEC's
sion Education, Information Off.											24 mos. M.S. Extension Education
l Husbandry Program Leader											36 mos. Ph.D. Animal Science with Extension minor
Sciences Program Leader											36 mos. Ph.D. Agronomy with Extension minor
Appl./Food Tech. Prog. Leader											36 mos. Ph.D. Ag. Eng. or Food Tech. with Ext. minor
Social Sciences Prog. Leader											36 mos. Ph.D. Agricultural Economics with Ext. minor
's Outreach Program Leader											36 mos. Ph.D. in appropriate area with Extension minor

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ESTIMATES OF NUMBERS AND COSTS OF PARTICIPANTS BY FY ($ 000)

TYPE OF TRAINING/SUPPORT	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Short Term (No/Mons)	3/14	22/126	15/92	7/33	6/37	4/20	3/15	3/15	1/5	1/5
a. FX	47	453	340	128	151	86	67	72	25	26
b. LC	8	57	40	20	18	13	10	10	4	4
Sub Total	55	510	380	148	169	99	77	82	29	30
Long Term (No. starts)										
a. Ph.D.	(13)	(18)	(11)	(2)	(12)	(6)	(1)	(7)	-	-
1) FX	598	846	539	102	648	342	60	441	-	-
2) LC (Int. Travel)	32	47	30	6	36	19	3	24	-	-
3) Extra Trip for Thesis Research	-	-	35	52	33	7	41	21	6	27
b. M.S. (No. starts)	(4)	(21)	(13)	(19)	(7)	(4)	(5)	(1)	(2)	-
1) FX	120	651	416	627	245	148	195	42	86	-
2) LC (Int. Travel)	10	55	35	55	21	13	17	4	7	-
Total Long Term Costs	760	1599	1055	842	983	529	316	532	99	27
In-Country Res. Supt. (GOP Contrib)			260	360	220	40	240	120	20	140

SD-11

ESTIMATES OF GOP OR OTHER DONOR RUPEE CONTRIBUTIONS ($ 000)

EXPENSE CATEGORY	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
TA - LT Support - In Kind	50	50	50	50	50	50	50	50	50	50
TRAINING - In Country Research Support			260	360	220	40	240	120	20	140
Commodities	500	500	500	500						
Other costs										
a. Construction										
b. Additional AU Operating Costs	288	1040	1213	1845	3591	3987	4367	4673	4998	5348

SD-12

AID INPUTS BY EXPENSE CATEGORY, FY, FX + LC
((IN $ 000)

EXPENSE CATEGORY	1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
Technical Assistance																						
a. Short-term	58	44	377	229	400	263	382	271	373	271	520	363	490	370	473	372	313	260	146	130	-	-
b. Long-term	159	172	960	666	1257	383	939	326	1082	479	708	299	245	70	155	46	162	51	113	37	-	-
c. Backstopping	52	19	120	26	126	29	132	32	139	35	146	39	153	43	120	47	126	51	133	56	-	-
Total:	269	235	1457	921	1783	675	1453	629	1594	785	1374	701	888	483	748	465	601	362	392	223	-	-
Training																						
Short-term	47	8	453	57	340	40	128	20	151	18	86	13	67	10	72	10	25	4	26	4	-	-
Long-term	718	42	1497	102	955	100	729	113	893	90	490	39	255	61	483	49	86	13	-	27	-	-
Total:	765	50	1950	159	1295	140	857	133	1044	108	576	52	322	71	555	59	111	17	26	31	-	-
Commodities																						
a. Vehicles	200	-	300	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b. Other	-	-	150	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
c. (ACEP)	(1000)	-	(1000)	-	(1000)	-	-	-	(1000)	-	(1000)	-	-	-	-	-	-	-	-	-	-	-
Total:	200	-	450	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Infrastructure																						
a. Construction	-	-	-	-	-	3129	-	11004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b. A&E Services	-	-	1430	-	380	180	1326	660	243	-	531	-	1296	550	654	-	660	320	740	350	800	390
Total:	-	-	1430	-	380	3309	1326	11664	243	-	531	-	1296	550	654	0	660	320	740	350	800	390
Other Costs																						
a. Evaluation	40	-	-	-	-	-	50	-	-	-	-	-	60	-	-	-	-	-	150	-	-	-
b. AU Operations	-	464	-	448	-	433	-	419	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total:	40	464	-	448	-	433	50	419	-	-	-	-	60	-	-	-	-	-	150	-	-	-
Contingency - 10%	127	75	385	154	342	126	236	118	263	89	195	75	132	60	130	52	71	37	56	25	-	-
Grand Total:	1401	824	5672	1682	4150	4683	3922	12963	3144	982	2676	828	2698	1164	2087	576	1443	736	1364	629	800	390

PRE-IMPLEMENTATION ACTIVITIES AT AU

Excerpts from a Report of the March 1984 Consultancy at the NWFP Agricultural University

By: William A. Doerr, Associate Dean for Instruction, School of Agriculture, Southern Illinois University, Carbondale, and Curriculum Specialist on the TIPAN Design Team.

This is a summary report of: (1) those things which were accomplished during this particular consultancy, relative to the implementation of the Design Team's recommended new program of instruction at NWFP Agricultural University; (2) the tentative plans which have been made for a May 1984 workshop for faculty development; and (3) other activities requisite to a successful implementation of the new program in September 1984.

I. CURRICULUM COMMITTEE ACTIONS TOWARD IMPLEMENTING THE NEW CURRICULUM IN 1984

The committee agreed that the new instructional program should be implemented, for first year students, in September 1984. Carrying out recommendations of the Design Team will involve many changes in policy, procedure, and practice. The changes for this fall, as agreed by the committee are as follows:

A. Changes in Admissions

1. Admissions to be open to both male and female students providing:

   a. Hostel accommodations for women students can be arranged at a nearby college or university, or;

   b. The admitted women can live in their respective homes, and;

   c. At least 5 women are admitted.

2. Admissions to be open to both FSc (Pre-med) and FSc (pre-eng).

3. To increase the number of openings by 15 - from 114 to 129.

   a. five reserved for women.

   b. ten added to competitive category.

4. To receive applications for admission for ten calendar days after the Declaration of the Peshawar Board of Results for FSc.

5. To utilize appropriate means of advertising these changes so as to attract the new clientele.

B. Changes in the Curriculum

It was agreed that the first year program of studies, as listed on page 188 of the Report of the Design Team, be utilized in 1984-85, with one exception (also as provided in the Report): Since the computer laboratory will not be available in 1984-85, Islamic studies, from the third year program, will be substituted for Introduction to Computers.

C. Changes in the Annual and Daily Schedules

1. The 1984-85 academic year, for first year students, will consist of two separate periods or semesters of sixteen weeks each;

a. Fifteen weeks for instruction

b. One week for final examinations

c. Each semester to be complete in itself - courses initiated, instruction completed, examinations given and grades reported to the registrar.

2. Although it appears to present special problems, the committee insists that the daily schedule for year one students be as recommended in the Design Team Report (50 minute periods with 10 minute breaks) while the rest of the campus remains on the current schedule. Careful checking of the availability of classroom and laboratory space at the required times may prove this decision impractical.

D. Changes in Grading Procedure

This is perhaps the greatest change, the one needing the most planning and supervision for acceptable adoption. In the new system, examinations and grading will be an integral part of the teaching program. Examinations and grading will be the prerogative and responsibility of the assigned teacher. No outside examinations will be given.

E. Appointing Teachers and Assigning them Initial Responsibility for the First Year Courses

The curriculum committee consulted the respective Deans and Department Chairmen and received the nomination(s) of the teacher(s) for each of the first year courses for 1984-85. The nominees were then instructed to prepare course outlines and submit them to the registrar by March 13. These outlines are to be used to fulfill the university's statute requirements for course approval.

It is anticipated that these outlines will be refined and incorporated into course syllabi during or following the May workshop.

II. PLANS FOR A WORKSHOP

To provide the teachers the necessary information, skills and attitudes to prepare them to adopt the above described changes and to successfully implement the new program, the following tentative plans have been made for an intensive workshop for faculty development.

A. Schedule

1. 2 weeks (May 20-24 and May 27-31)

2. 3-4 hours of group activity per day, plus outside reading or projects.

B. Personnel

1. Coordinator/teachers/resource person

a. William A. Doerr, Coordinator and Assistant Teacher/leader.

b. E. S. Wood (or other), principal Teacher/leader.

c. A faculty member from Faisalabad University as resource person to report on in-Pakistan success with the semester system.

2. Participants

a. Open to all teachers and administrators of the University. Attendance to be encouraged by the administration. Anticipated attendance - 80.

b. Required of all teachers of the first-year courses.

3. Topics to be included in the program (others may be added as plans are further developed)

a. Preparing a detailed syllabus for a course.

b. Writing teaching objectives.

c. Teaching methods and procedures. (Lecture, demonstration, discussion, use of instructional aids, etc.)

d. Preparing examination questions.

e. Preparing a scoring key for an examination.

f. Techniques in grading/scoring an examination.

g. Other forms of materials/activities to be graded.

h. Reporting to the students.

i. Keeping a record of grades.

j. Calculating final grades, assigning letter grades, reporting to the registrar.

k. Instructor and course evaluation by the students.

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Mr. Malik Arshad Salim	Deputy Registrar
Mr. Ahmad Din Khan	Deputy Director Finance
Mr. Attaullah	Librarian
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Mr. Muhammed Tariq	Head Department of Management
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Mr. M. Attaullah Khan	Head Department of Plant Breeding and Genetics
Mr. Jahangir Khan Khattak	Head Department of Soil Science
Mr. Mohammad Iqbal	Senior Farm Manager
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Mr. Zuhan Siddiq	Professor, Protocol Officer
Mr. Abrar H. Gillani	Director of Research
Mr. C. Shakat Ali	Professor and Head of the Department of of Animal Reproduction

ANNEX P

PARTICIPANT TRAINEES PROGRAMMED FOR 1984 AND 1985

The following are the names, field of study and schedules of participant trainees to begin their studies in 1984 and 1985:

1984 Non-degree Training

1. Mir Hatam - Soybean Agronomy - May 25 to August 25, 1984
2. S. Basit Ali Shah - Administration and Dairy - June 1 to August 30, 1984
3. A.F. Lodhi - Horticulture - June 1 to September 30, 1984
4. Saeed-ul-Hassan - Genetics - July 1 to September 30, 1984
5. Mohammad Tariq - Agricultural Mechanization - August 1, 1984 to July 30, 1985
6. Rasool Bakhsh - Nutrition and Biochemistry - September 1 to December 30, 1984

1985 Non-degree Training

1. Tajammul Hussain - Human Nutrition - January 1 to December 31, 1985
2. S. Iqbal Shah - Ruminant Nutrition - March 25 to September 25, 1985
3. A. Jameel Siddiqi - Rural Sociology - May 1 to July 30, 1985
4. Jehangir Khattak - Soil Chemistry - June 1 to August 30, 1985

Degree Students to enroll in August 1984

1. Asmatullah Khan - Extension Education
2. Marwat Khan Bahadar - Weed Science
3. Swati Zahoor Ahmad - Wheat Breeding

Degree Students to enroll in January 1985

Paigham Shah - Oilseed Crops Production

The following will enroll for degree study in January 1985 if their English Scores (TOEFL) improve:

1. Wazir Mohammad - Horticulture
2. Mohammad Naeem - Entomology
3. Jan Mohammad Miankhel - Food Technology
4. Mohammad Amjad - Dairy Cattle Nutrition
5. Mir Kalam Shah - Agricultural Economics/Rural Sociology

Degree Students to enroll in August 1985

Hidayatur Rahman - Maize Breeding

Degree Students to enroll in January 1986

Mukhtar Ahmad - Plant Pathology

ILLUSTRATIVE

DETAILED IMPLEMENTATION PLAN FOR YEAR 1

DESCRIPTION	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
TEACHING PROGRAM				
New Curriculum.	Plan new courses (2nd year) Identify teachers.		Begin second class students.	
New Team and Exam system.	Plan Teaching Workshop.	Conduct teaching workshop.	Initiate for 2nd class.	Evaluate progress to date.
New Admission policy.	Present to Syndicate.		Admission F.Sc. Eng.	
Baluchistan Students.	Plan for 3rd quarter admission.	Recruit and select.	Admit expanded numbers.	Evaluate efforts to date.
Admission of Women.	Plan for Admission of Women.	Recruit and select.	Admit women for year 1.	Plan for year 2.
Course Time Table.	Prepare Time Table.	Distribute to faculty and students.	Registration for courses.	Critique effectiveness.
New texts and refs.	Select and Order.	Follow up on procurement.	Receive and begin use.	Plan for year 2.
New teaching aids.	Select and Order.	Follow up on procurement, develop maintenance plan.	Receive and begin use.	Plan for year 2.
RESEARCH PROGRAM				
Research Integration.	Develop Transfer Plan.	Initiate transfer plan.	Facilities transfer.	Personnel transfer.
Research Station development.			Needs assessment.	Begin development.
Personnel Development.			Evaluate Personnel.	Select trainees for year 2.
Program Development.	Identify priority research areas.	Form research task groups.	Develop project outlines.	Initiate new projects.
Research Equipment.	Inventory current equipment.	Identify priority needs.	Order new equipment.	Develop maintenance program.
OUTREACH PROGRAM				
Extension Department linkages.	Form working group.	Identify areas of responsibility.	Finalize memo of understanding.	Initiate Cooperative work.
Package of practices.		Identify priority areas.	Develop packages of practices.	Prepare releases for media.
Personnel.	Prepare job descriptions.	Recruit for learning resources center.	Recruit for faculty and off-campus.	Select personnel.

DETAILED IMPLEMENTATION PLAN FOR YEAR 1

CONTINUED

DESCRIPTION	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
ADMINISTRATIVE STRUCTURE				
Functional directors (research, teaching, outreach).	Prepare job descriptions.	Evaluate personnel available.	Recruit & appoint (if qualified).	Begin new duties.
Deputy Vice Chancellor.	Prepare job description.	Evaluate personnel available.	Recruit & appoint (if qualified).	Begin expanded duties of registration.
Faculties and departments.	Identify faculty and department roles.	Plan support staff needs.	Plan administrative management workshop.	Conduct management workshop. Plan in-service training for support staff.
LIBRARY DEVELOPMENT				
Current library improvement.	Begin new classification system.	Reference procurement.	Expand space for student use.	Complete year 2 plans.
PERSONNEL DEVELOPMENT				
External degree training.	Finalize 3rd quarter starts.	Preparation for departure.	Orientation of those returning from training.	Finalize plans for year 2.
Non-degree training.	Finalize 2nd and 3rd quarter starts.	Preparation for departure.		Finalize plans for year 2.
In-country training.		Identify in-country opportunities.	Begin in-country training.	Plan for year 2.
CAMPUS DEVELOPMENT				
Facility planning.	Form working group for each facility.	Prepare detailed requirements.	Refinements with A&E representatives.	Finalize design. Plan year 2 activities.

CONSTRUCTION INFLATION COSTS IN PAKISTAN

Introduction

This report is the result of a study completed by the USAID/Pakistan Office of Engineering to determine a reasonable inflation factor for budgetting construction costs for the Transformation and Integration of the Provincial Agricultural Network (TIPAN) Project - Peshawar Agricultural University Construction.

The study was based on data and information obtained from the following sources.

1. Published Reports:

   a) National Engineering Services (Pakistan) Ltd., (NESPAK), a public sector A&E consultant firm, has been issuing bi-annual construction cost report since July 1974, NESPAK PRICE INDEX REPORTS. The reports contain price data for selected construction inputs such as labor, steel, cement, bricks, etc., over six month periods. Twenty two reports have been published to date, the latest issue being that of February, 1984.

   b) The Federal Bureau of Statistics publishes a monthly bulletin listing the prevailing prices of various commodities, including construction inputs. The bulletin has been published since March, 1952. A summary of price trends in a given decade is also published separately, the last such publication being "10 years of Pakistan in Statistics, 1972-1982".

   c) The Planning Commission issued a July 23, 1980 report regarding construction cost escalation rates for various types of buildings during the period from June, 1975 to December 1979. The report was prepared by the Physical Planning and Housing Division, based on construction price data obtained from 5 locations in Pakistan, including Peshawar.

2. Visits to construction projects in Peshawar to obtain data on field costs of materials and other construction inputs over time to verify data in published reports. The projects visited included the following:

Project	Estimated Cost	Construction Period
N.W.F.P. High Court	$5,000,000	1976 to 1984
Benevolent Fund Building	$2,000,000	1979 to 1984
Institute of Development Studies	$1,300,000	1982 to 1984

3. Visits to private and GOP offices engaged in project planning to obtain inflation cost data for different types of projects being undertaken. The following offices were contacted for information:

a. Pakistan Environmental Planning and Architectural Consultants Ltd., (PEPAC), a public sector A&E firm.

b. MacDonald Layton & Company (MLC), Ltd., Contractors.

c. Peshawar Development Authority (PDA).

d. Pakistan Public Works Department, Islamabad.

e. Planning Commission, Islamabad.

f. Federal Bureau of Statistics, Islamabad.

Methodology and Analysis of Data

The data and information obtained from the above-mentioned sources were analyzed in terms of lump-sum construction cost inflation for similar types of buildings per-square-foot construction. In addition, inflation rates of the more important construction inputs, i.e. labor, cement, bricks, mild steel, reinforcement bars, and timber, were also analyzed in terms of percentage of construction inputs for similar types of buildings in order to verify correlation between materials costs inflation and building per-square-foot construction inflation rates.

Prices of construction inputs stated in the NESPAK reports were spot-checked by the O/Eng. with cost data obtained from manufacturers, retailers, the Federal Bureau of Statistics and construction contractor records. The NESPAK report prices generally match data obtained from other sources and are therefore considered accurate.

The latest NESPAK Price Index (February, 1984) contains graphs indicating the trend in prices from June, 1978 up to December, 1983. The graphs were analyzed to obtain inflation factors for overall construction costs, and for inflation costs of individual inputs such as cement, steel, labor, etc., affecting construction costs (see Attachment No. 1).

The average annual inflation rate for overall construction costs in Peshawar as per the NESPAK data is 11.5% during the period June, 1978 to December, 1983. The average annual inflation rate for the period 1973 through 1983 is 18.3%. Inflation rates for the major construction inputs during the last 5 and 10 year periods are as follows:

Construction Input	Average Inflation Rates	
	1978-1983	1973-1983
a. Skilled Labor	15%	22%
b. Unskilled Labor	13.48%	19%
c. Bricks	10%	18.7%
d. Cement	10%	20%
e. Mild Steel Bars	5.5%	10.3%
f. Timber	10%	14.6%

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The reason for the higher inflation rate during the 1973 to 1983 period is considered to be primarily attributable to the major oil price increases of 1973 and 1978.

With reference to major changes in construction input costs depicted on the graphs in Attachment No. 1, the large drop in the cost of mild steel bars between 1980 and 1981 was due to the completion of a local steel manufacturing plant. Another reason for the drop in steel costs was due to the increase in supply of scrap steel to local mills from the Ship Breaking Industry based in Karachi. The rate of inflation in brick prices was high during the period from 1978 to 1979 while it decreased in later years. This was due to a general shortage of brick kilns in the Peshawar area from 1978 to 1979, after which many new kilns were constructed to meet anticipated demand from the Hayatabad Satellite Town construction. The increase in supply of bricks from 1980 onward reduced the cost of bricks. The price of timber decreased during the period 1977 to 1980 due to increased supply resulting from the issue of new timber leases by the Government. Timber prices again decreased during the 1981-82 period as a result of savings in processing costs from the development of a timber processing industry in Dir, NWFP.

Analysis of data in the aforementioned July, 1980 Planning Commission Report shows an average annual inflation rate of 11.5% (1975-1979) for frame type construction in the Peshawar Area. The proposed Agricultural University construction will be frame type construction.

Price increases in construction costs of the 3 projects visited in Peshawar showed an average annual inflation rate of 12%. This figure was calculated based on cost increases of construction inputs as a percentage of total construction cost over the last 4 years (see Attachment 2).

Information on construction inflation costs was also obtained from Peshawar Development Authority (PDA), which is responsible for construction of major public sector construction projects in Peshawar. The PDA cost data relating to the Hayatabad Satellite Town construction, a planned housing community for 120,000 residents on 2300 acres, situated near the Peshawar University Campus, was especially relevant. The Hayatabad construction data showed an annual average inflation factor of 12% through 1981, after which the inflation factor decreased to about 7% annually for subsequent years. The PDA authorities assume the decrease was due to the Afghan influx which lowered labor rates. An Afghan refugee camp is located near Hayatabad from which most of the unskilled labor is recruited. On other PDA projects where no refugee labor is employed the average annual inflation rates are about 12 percent.

Conclusion

The analysis of data and information on construction inflation rates

indicate an average annual inflation of 11 to 12 percent over the last five years. The average inflation rate over the last ten years is higher, but this higher rate is primarily due to the global oil price increases of 1973 and 1978. A comparison of price increases in Peshawar with NESPAK data for Karachi, Lahore, Rawalpindi and Quetta indicates that, while prices of construction inputs are different for each city, the rate of inflation is similar and equal to 12%. Assuming continued recent economic trends in Pakistan an average annual inflation factor of 12% is recommended for all construction costs planning.

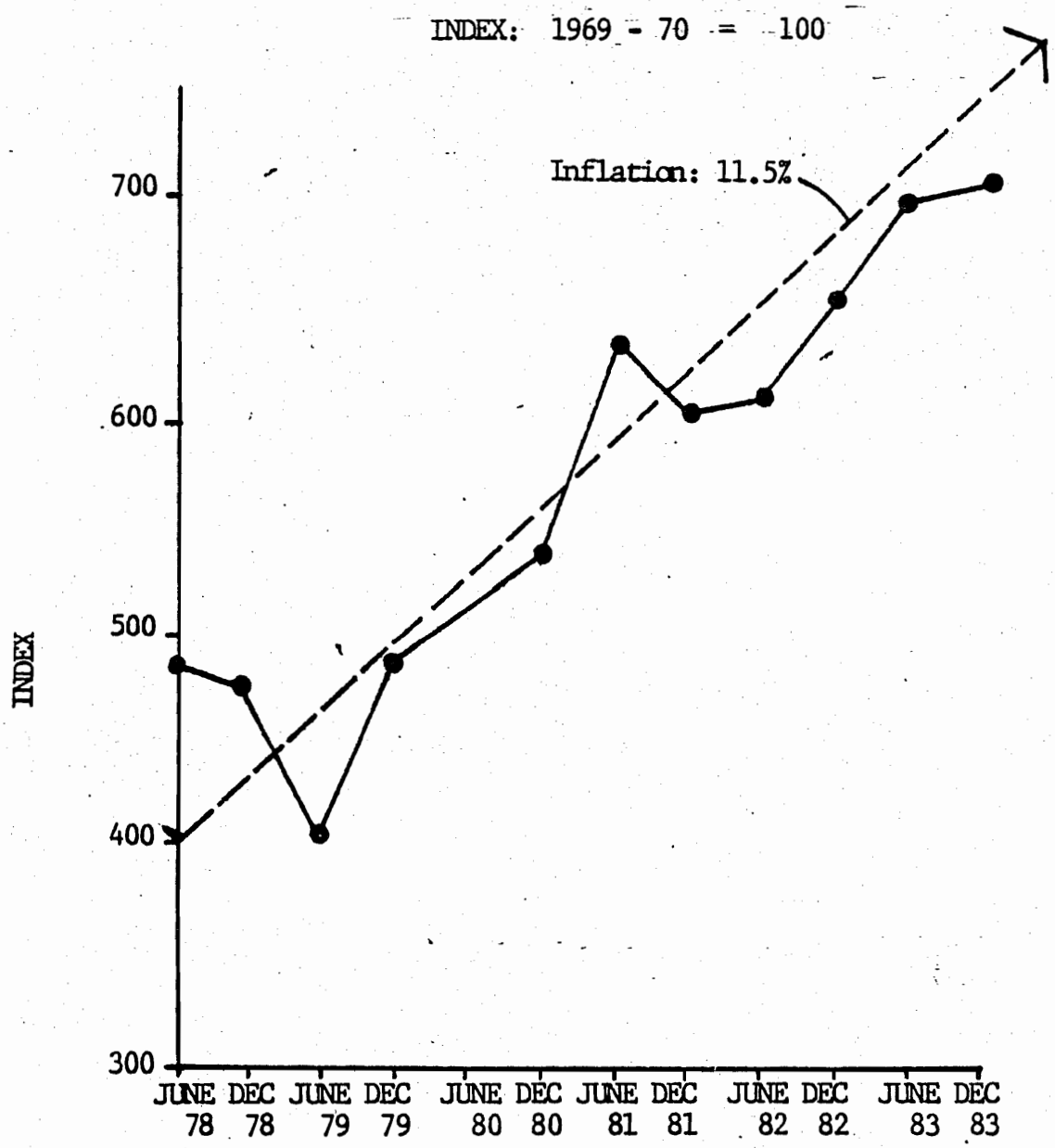
It should be noted that the annual 12% figure is higher than the inflation rate recommended by the GOP Planning Commission. The Planning Commission suggests the use of the following inflation factors for project planning by all GOP departments.

Inflation Factor

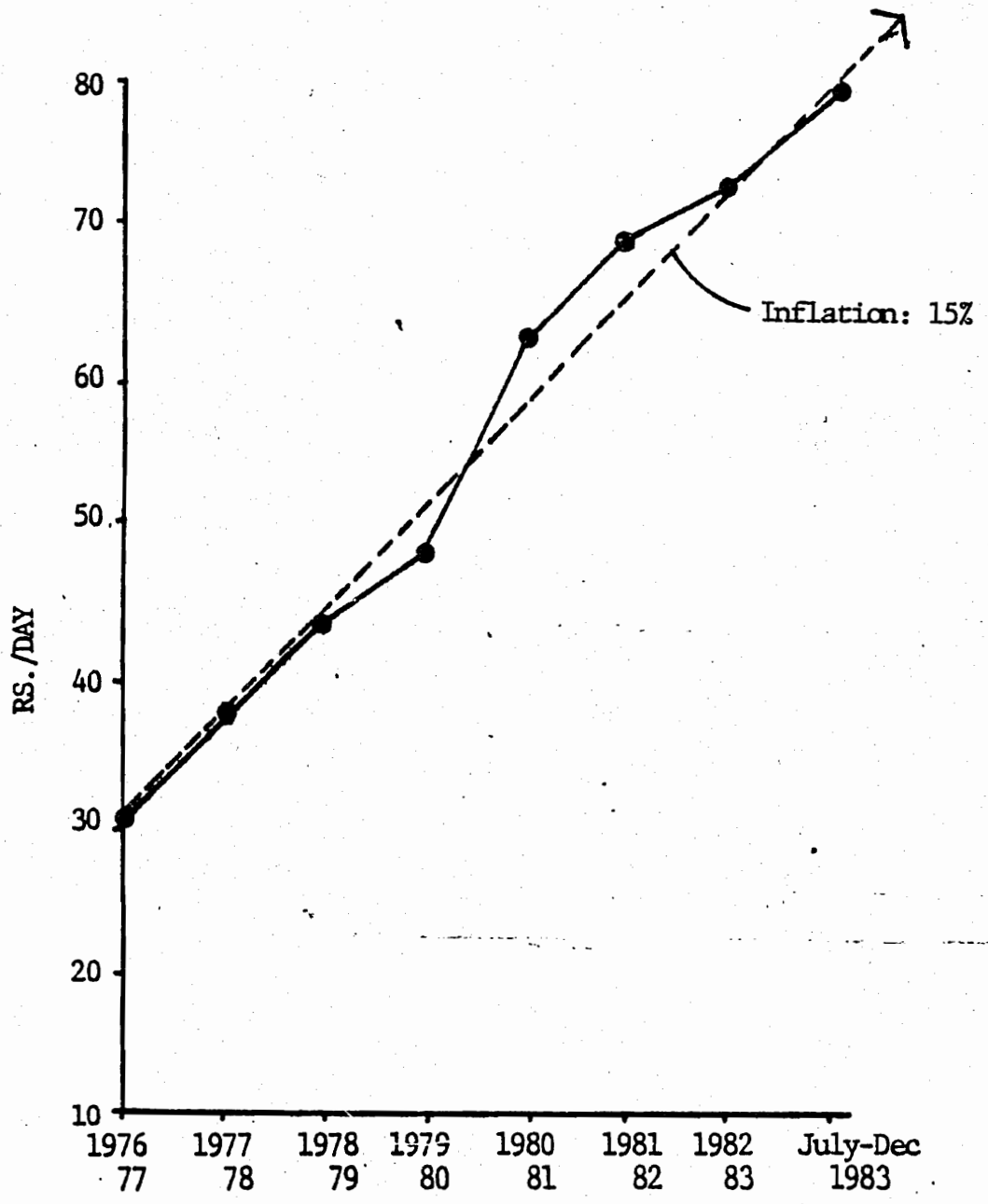
1st year	-	0%	(This apparently refers to construction within the same planning year).
2nd year	-	6.5%	
3rd year	-	13.5%	
4th year	-	20%	

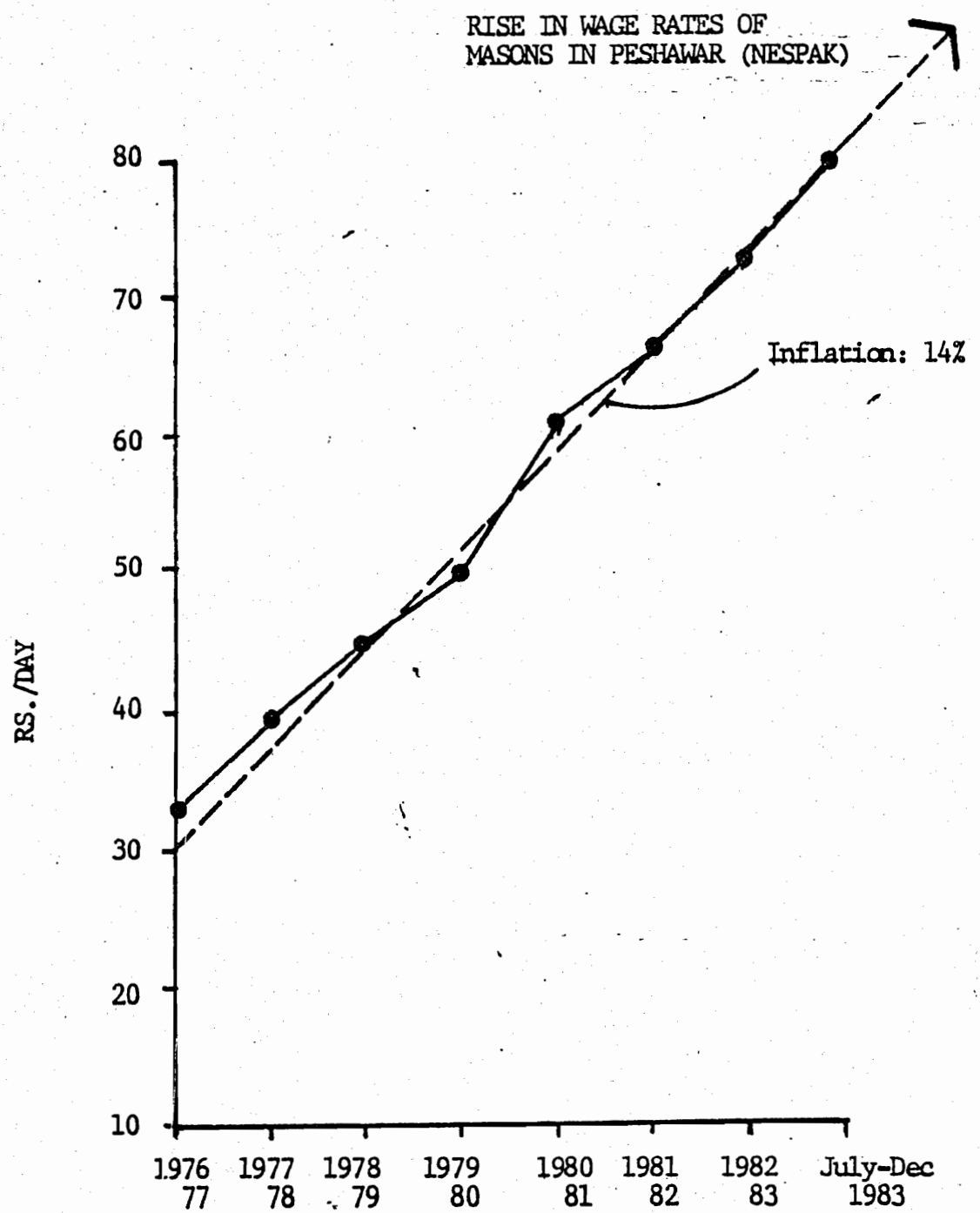
The above Planning Commission table assumes an average annual inflation rate of about 6.5%. The basis for the Planning Commission inflation factor could not be established.

RISE IN CONSTRUCTION COSTS
FOR PESHAWAR (NESPAK)
INDEX: 1969 - 70 = 100

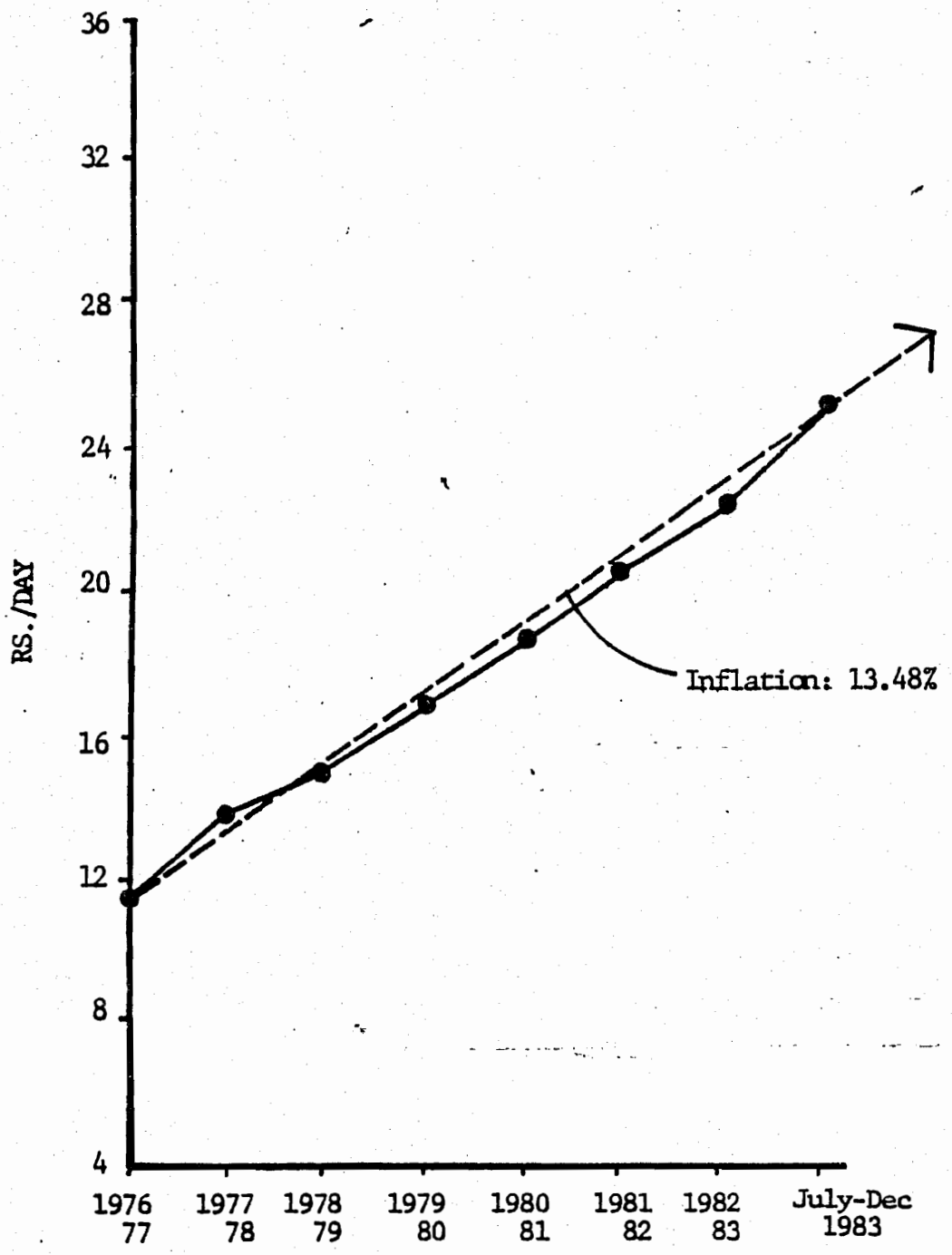


RISE IN WAGES OF CARPENTERS
IN PESHAWAR (NESPAK)

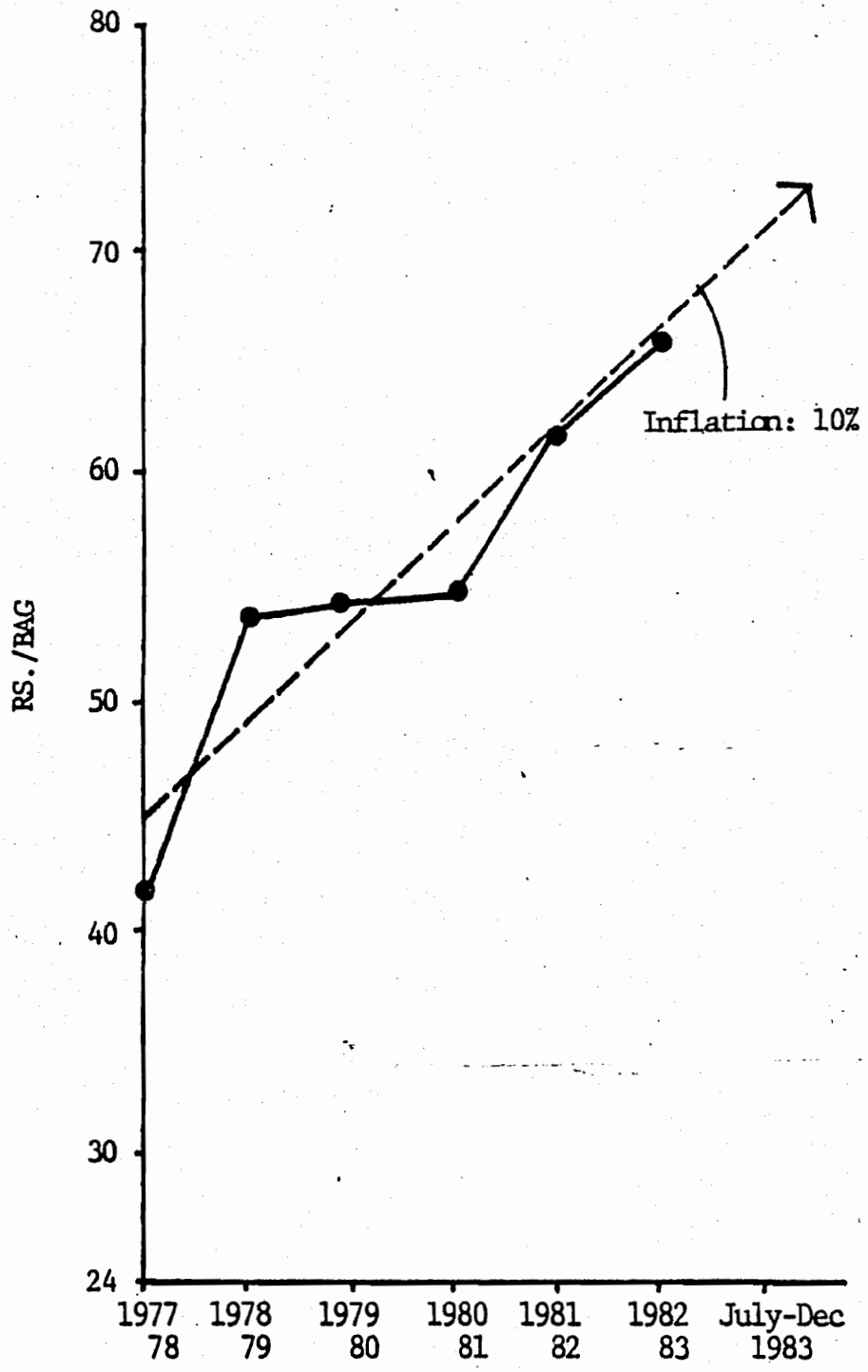



RISE IN WAGE RATES OF
MASONS IN PESHAWAR (NESPAK)
Inflation: 14%
RS./DAY
80
70
60
50
40
30
20
10
1976 77
1977 78
1978 79
1979 80
1980 81
1981 82
1982 83
July-Dec 1983

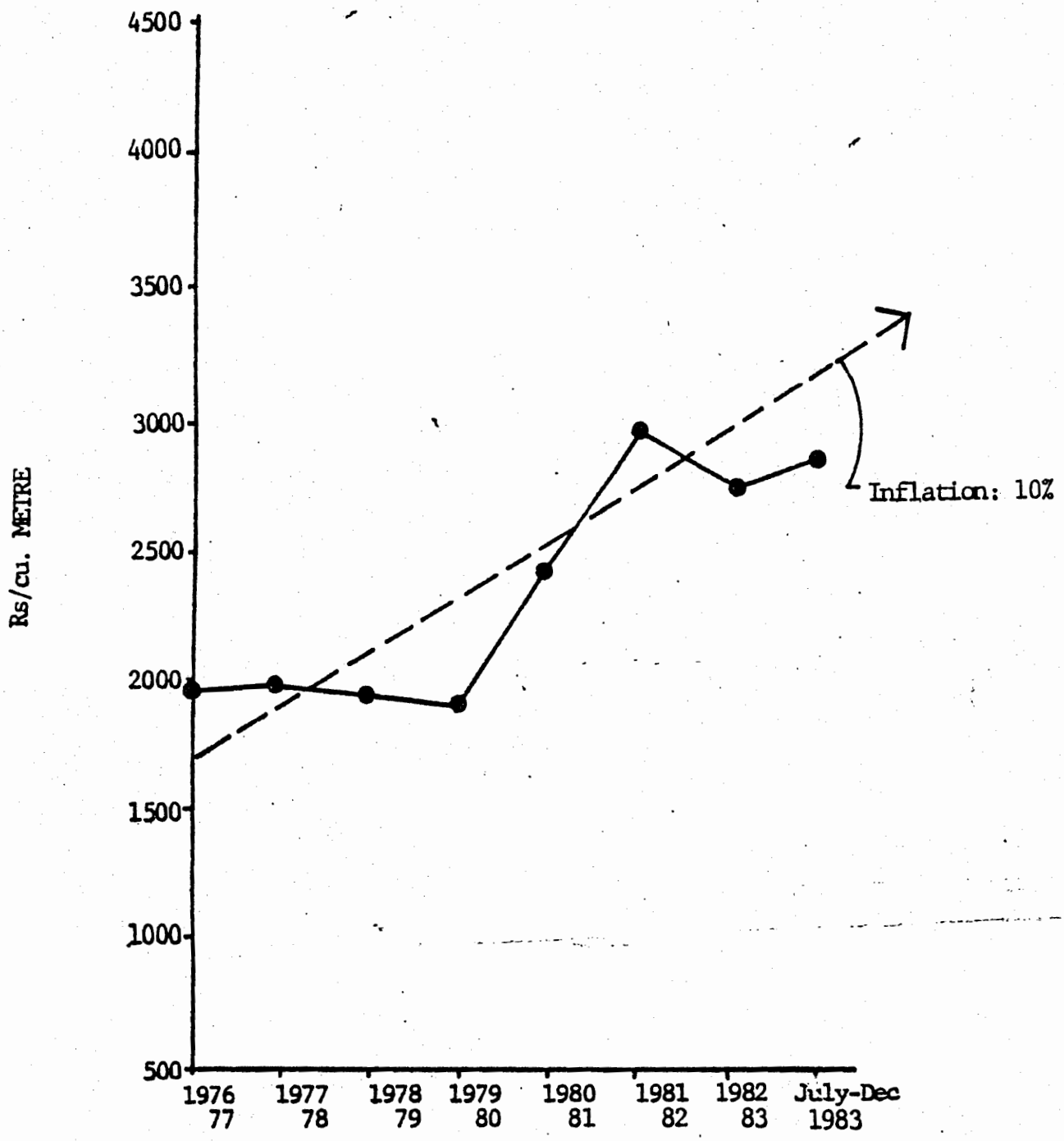
RISE IN WAGE RATES OF UNSKILLED LABOR IN PESHAWAR (NESPAK)



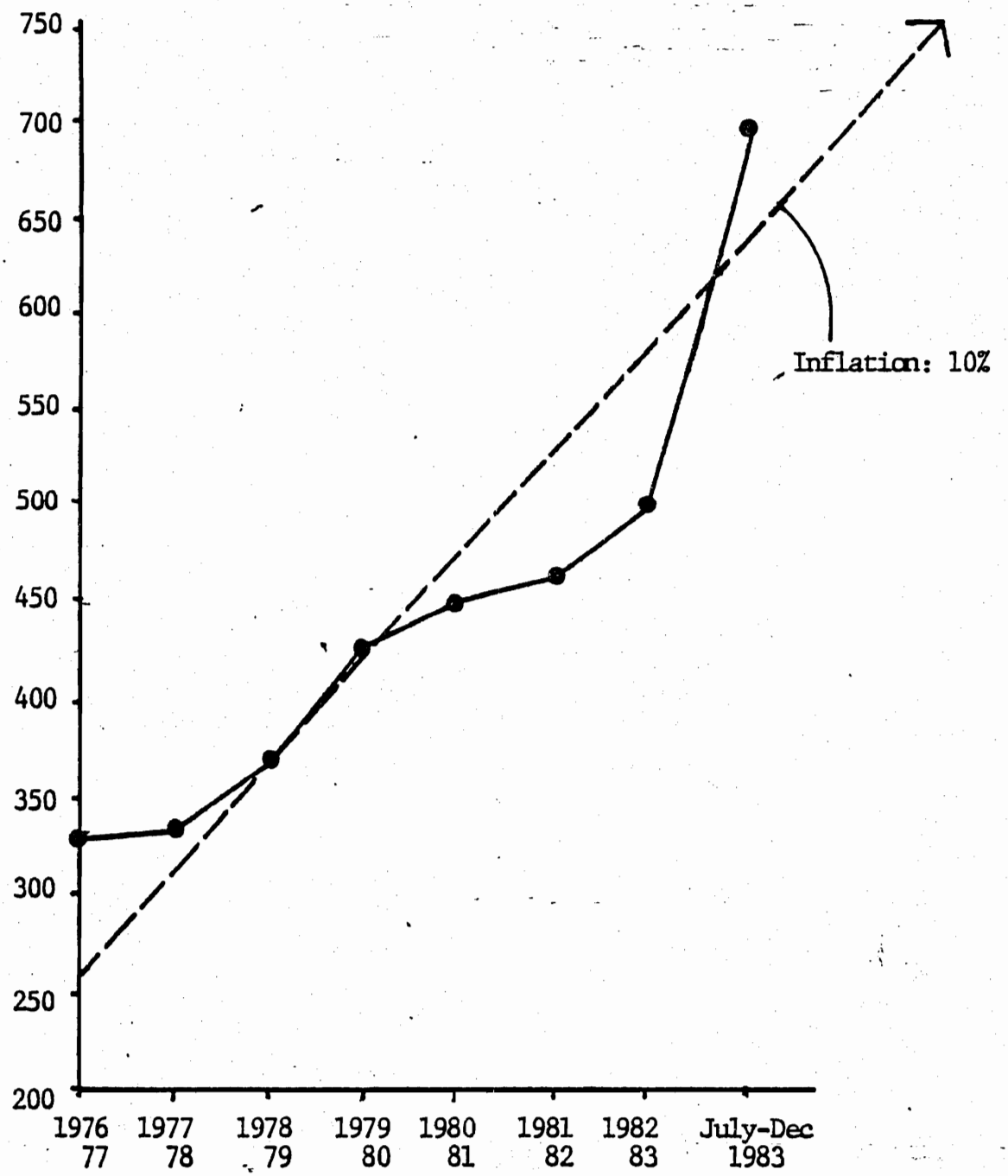
RISE IN PRICE OF CEMENT IN PESHAWAR (NESPAK)



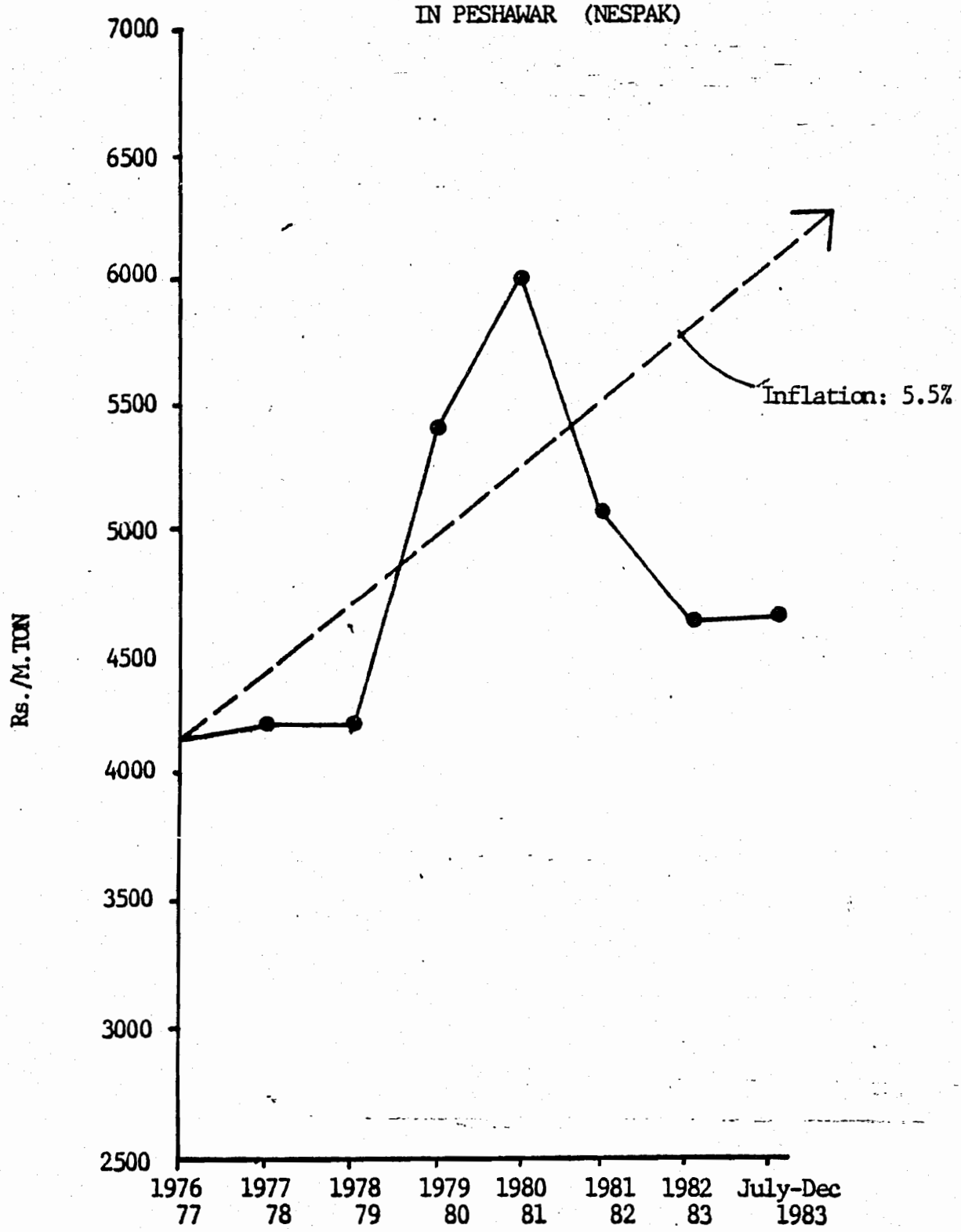
RISE IN PRICE OF TIMBER LOGS
IN PESHAWAR (NESPAK)



RISE IN PRICE OF BRICKS IN PESHAWAR (NESPAK)



RISE IN PRICE OF MILD STEEL BARS
IN PESHAWAR (NESPAK)



INFLATION FACTOR CALCULATED FROM PRICE DATA OBTAINED FROM 3 PROJECTS IN PESHAWAR (PERIOD COVERED 1979-83)

CONSTRUCTION INPUT	UNIT	% OF TOTAL CONSTRUCTION	COST IN 1979 (RS)	COST IN 1983 (RS)	ANNUAL INFLATION FACTOR
Carpenter	Rs./Day	5	45	80	15.4%
Mason	Rs./Day	10	40	70	15%
Unskilled labor	Rs./Day	10	15	25	13.6%
Bricks	Rs./1000	15	450	700	11.6%
Cement (Portland Grey)	Rs./Bag	30	50	65	10.6%
Mild Steel Iron Bars (1.27 CM dia)	Rs./M.Ton	10	4800	5000	1%
Timber prices (Log Shisham)	Rs./Cu. Metre	5	1800	2800	11.6%
Miscellaneous	-	15	-	-	15%
Construction Index	Index 1979 = 100	100	100	111	11.6%

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REVISED CONSTRUCTION PLAN

PROPOSED PHASE - I

A.I.D. funded:

Program Element	Gross Area in square meters.	Cost in 1983$	%Total Program
A. Academic Space.			
• Classrooms & Offices	2530	$ 762,000	40%
• Research & Teaching Labs	3000	$1,046,000	40%
• Farm Center	2700	$ 540,000	50%
B. Academic Support			
• Learning Resources Center	7525	$2,355,000	100%
• Computer Center	425	$ 148,750	100%
• Outreach Center	1500	$ 450,000	100%
• Auditorium Renovation	675	$ 236,250	100%
• Central Administration	1525	$ 457,500	100%
C. Other Support			
• Student Faculty Center	1925	$ 577,500	100%
• Dispensary	325	$ 81,250	100%
D. Housing.			
• Student Housing (Men) (i.e. 6 residential buildings housing 330 students	6550	$1,312,900	36%
• Student Dining	850	$ 250,000	67%
• Visiting Scientist's Housing	1675	$ 335,000	100%
• Outreach Housing	2025	$ 405,000	100%
E. Housing Support			
F. Infrastructure & Site Work			
• 60% of Sanitary Sewage System of Farm and Campus Area.		$ 141,000	60%
• 60% Water Distribution of Farm and Campus Area		$ 276,000	60%
• 60% Power substations & Dist. of Farm and Campus Area		$ 906,000	60%
• 60% Telephone Distribution of Farm and Campus Area.		$ 186,000	60%
Subtotal		$10,466,150	
10% Contingency		$ 1,046,615	
TOTAL		$ 11,512,765	

G.O.P. funded:

Program Element	Gross Area in square meters	Cost in 1983 $	%Total Program.
A,B,C Housing	8275	$1,655,000	20%
• Student Housing (Women) for housing 60 women students	1200	$ 238,000	100%
INFRASTRUCTURE:-			
• Roads & Lighting of Campus & Housing		$681,000	60%
• Vehicular ford		$ 90,000	100%
• Pedestrian Bridge		$ 205,000	100%
• Sanitary Sewage System Housing Area		$105,000	60%
• Water Distribution System of Housing Area		$180,000	60%
• Power substations, dist of Housing Area		$492,000	60%
• Telephones dist. of Housing Area		$ 84,000	60%
• Landscaping/Paving/Grading of Campus & Housing		$618,000	60%
Subtotal		$4,348,000	
Contingency 10%		$ 434,800	
TOTAL		$4,782,800	

proposed phase-II

GOP funded:

Program Element	Gross Square Meters	Construction Cost ($1983)	%Total Program
A. Academic Space			
• Classrooms & Offices	2,530	$ 599,250	40%
• Research & Teaching Labs	3,000	823,000	40%
• Farm Center	2,700	540,000	50%
B. Academic Support (None in Phase II)	-	-	-
C. Other Support			
• Athletic/Recreation	625	190,000	33%
• Physical Plant	825	165,000	50%
• Covered Parking	1,050	105,000	100%
D. Housing			
• Student Housing	3,975	917,300	46%
• Student Dining	400	125,000	33%
• A, B, C Housing	8,275	1,655,000	20%
• D, E, F Housing	7,875	1,220,625	100%
E. Housing Support			
• Commercial Center	625	125,000	100%
• Mosque	525	131,250	100%
• Elementary School	1,050	262,500	100%
F. Infrastructure & Site Work			
• 30% of Total Program	-	1,806,429	30%
		8,665,354	
	Contingency 10% ---	866,535	
		9,531,889	

NOTE
Cost of Academic space in this Phase includes cost of renovating 5150 gross square meters of existing academic space about $ 772,700.

NOTE
Construction cost of Housing in this Phase includes cost of renovation of two existing Hostel building, each of 3820 gross square meters area (Total area of both hostels 7640 gsm, cost of renovation $ 878,600)

proposed phase - III

GOP funded:

Program Element	Gross Square Feet	Gross Square Meters	Construction Cost ($1983)	%Total Program
A. Academic Space				
• Classrooms & Offices	13,665	1,290	$ 218,250	20%
• Research & Teaching Labs	16,075	1,475	299,750	20%
B. Academic Support				
(None in Phase III)	-	-	-	-
C. Other Support				
• Athletic/Recreation	13,675	1,275	380,000	67%
• Physical Plant	9,000	825	165,000	50%
D. Housing				
• Student Housing	79,150	3,555	701,700	18%
• A, B, C Housing	267,000	24,825	4,965,000	60%
E. Housing Support				
(None in Phase III)	-	-	-	-
F. Infrastructure & Site Work				
• 10% of Total Program	-	-	641,000	10%
Sub-total	398,625	37,065	$7,370,700	
Contingency @ 10%			737,070	
Total			$8,107,770	

DRAFT CONGRESSIONAL NOTIFICATION

SUBJECT: TRANSFORMATION AND INTEGRATION OF THE PROVINCIAL AGRICULTURAL NETWORK (TIPAN) PROJECT (391-0488) - DRAFT CONGRESSIONAL NOTIFICATION (CN)

1. THIS CABLE TRANSMITS DRAFT LANGUAGE FOR THE CONGRESSIONAL NOTIFICATION FOR THE SUBJECT PROJECT. OURS PLANS RE SUBMITTING THE PP TO AID/W WILL BE SUBJECT OF SEPTEL.

2. ACTIVITY DATA SHEET:

PROGRAM: PAKISTAN

TITLE: TRANSFORMATION AND INTEGRATION OF THE PROVINCIAL AGRICULTURAL NETWORK

NUMBER: 391-0488 - NEW GRANT

FUNDING: ECONOMIC SUPPORT FUND

PRIOR REFERENCE: NONE

PROPOSED OBLIGATION (IN DOLS 000):
- FY 1984 EQUALS 5,000
- LOP EQUALS 35,500,000 (PHASE I ONLY)

INITIAL OBLIGATION : FY 1984

ESTIMATED FINAL OBLIGATION: FY 1987

ESTIMATED PROJECT COMPLETION DATE: FY 1990(PHASE I)

3. PURPOSE: TO INTEGRATE AGRICULTURAL RESEARCH IN THE NWFP WITH AGRICULTURAL EDUCATION AT THE UNIVERSITY LEVEL, IMPROVE THE QUALITY OF EDUCATION OFFERED AND RESEARCH UNDERTAKEN BY THE UNIVERSITY, AND STRENGTHEN THE LINKAGES WITH AGRICULTURAL EXTENSION THROUGH A PROBLEM-SOLVING, FARMER-ORIENTED OUTREACH PROGRAM AT THE UNIVERSITY.

4. BACKGROUND: THE NWFP ECONOMY IS DOMINATED BY AGRICULTURE, WHICH ACCOUNTS FOR APPROXIMATELY 50 PERCENT OF THE NWFP'S GROSS PROVINCIAL PRODUCT. THREE-FOURTHS OF THE LARGE SCALE (20 PLUS EMPLOYEES) MANUFACTURING ESTABLISHMENTS IN THE PROVINCE ARE BASED ON AGRICULTURAL AND FORESTRY RAW MATERIALS. APPROXIMATELY 55 PERCENT OF THE PROVINCE'S LABOR

FORCE IS INVOLVED IN AGRICULTURE. HOWEVER, AGRICULTURAL YIELDS FOR MANY CROPS IN THE NWFP RANK BELOW THE NATIONAL AVERAGE, AND YIELDS IN PAKISTAN AS A WHOLE ARE AMONG THE LOWEST IN THE DEVELOPING WORLD. THE POTENTIAL EXISTS IN THE NWFP TO SUBSTANTIALLY INCREASE AGRICULTURAL YIELDS AND PRODUCTION THROUGH THE GENERATION, DISSEMINATION AND APPLICATION OF RELEVANT AND IMPROVED TECHNOLOGIES. THE DEVELOPMENT AND INTRODUCTION OF IMPROVED TECHNOLOGIES ARE CONSTRAINED BY A POORLY EQUIPPED AND FRAGMENTED AGRICULTURAL TECHNOLOGY TRANSFER SYSTEM, WHICH IS CHARACTERIZED BY AN INADEQUATE SUPPLY OF WELL-TRAINED AGRICULTURALISTS AND THE LACK OF A FARMER-ORIENTED, PROBLEM-SOLVING FOCUS.

5. PROJECT DESCRIPTION: THE PROJECT DESIGN CALLS FOR THE NWFP'S VARIOUS RESEARCH OPERATIONS AND THE NWFP AGRICULTURAL UNIVERSITY AT PESHAWAR TO BE MERGED INTO A MODERN, INTEGRATED SYSTEM ORIENTED TOWARD SOLVING PROBLEMS RELEVANT TO THE AGRICULTURE SECTOR IN THE NWFP. UNDER THE PROJECT, THE UNIVERSITY'S FACULTY WILL BE PROVIDED ADVANCED TRAINING IN THEIR FIELDS OF SPECIALIZATION AS WELL AS IN NEW TEACHING TECHNIQUES; THE UNIVERSITY'S CURRICULUM WILL BE COMPLETELY REVISED AND MODERNIZED; AND, THE UNIVERSITY'S PHYSICAL PLANT WILL BE UPGRADED AND EXPANDED. RESEARCH STAFF WILL BE TRAINED, A NEW SYSTEM OF PLANNING AND IMPLEMENTING RESEARCH INTRODUCED, AND FARM AND LABORATORY IMPROVEMENTS CARRIED OUT. IN ADDITION, AN OUTREACH CAPABILITY WILL BE DEVELOPED WITHIN THE MERGED SYSTEM AND A CLOSE WORKING RELATIONSHIP ESTABLISHED WITH THE PROVINCIAL AGRICULTURAL EXTENSION DEPARTMENT TO BETTER SERVE THE PROVINCE'S FARMERS. FINALLY, A CAPACITY TO PROVIDE IN-SERVICE TRAINING TO EXTENSION WORKERS AND TO PRODUCE AND DISSEMINATE TECHNOLOGICAL PACKAGES TO FARMERS AND OTHER CLIENT GROUPS WILL BE DEVELOPED WITHIN THE UNIVERSITY. THE OBJECTIVE IS TO CREATE, AT THE NWFP AGRICULTURAL UNIVERSITY, A DYNAMIC, OUTWARD-LOOKING, PROBLEM-SOLVING, FARMER-ORIENTED CENTER OF TEACHING, RESEARCH, AND OUTREACH LINKED TOGETHER TO INCREASE AGRICULTURAL YIELDS, AGRICULTURAL PRODUCTION, FARM INCOME, AND RURAL EMPLOYMENT IN THE NWFP. THIS ELEVEN-YEAR PROJECT WILL BE IMPLEMENTED IN 3 CONSECUTIVE BUT OVERLAPPING PHASES. THE IMPLEMENTATION OF SUCCESSIVE PHASES WILL BE PRECEDED BY COMPREHENSIVE EVALUATIONS OF ACTIVITIES UNDER THE PREVIOUS PHASES. DEPENDING ON THE RESULTS OF THE EVALUATION OF PHASE I, WHICH IS SCHEDULED FOR THE SPRING OF 1988, AID WILL MAKE ITS DECISION REGARDING ADDITIONAL FUNDING FOR PHASE II.

UNDER PHASE I, THE INSTITUTION BUILDING COMPONENT WILL BE IMPLEMENTED IN 4 YEARS AND THE CONSTRUCTION PROGRAM IN 6 YEARS. AT THE END OF PHASE I, ALL ORGANIZATIONAL LINKAGES WILL HAVE BEEN ESTABLISHED, THE REVISED UNDERGRADUATE CURRICULUM AND MODERN TEACHING METHODS WILL HAVE BEEN INTRODUCED, AND THE MOST CRITICAL PHYSICAL PLANT FACILITIES CONSTRUCTED. THE A.I.D. CONTRIBUTION IN PHASE I IS DOLS 38.5 MILLION, CONSISTING OF DOLS 35.5 MILLION UNDER THIS PROJECT AND DOLS 3.0 MILLION IN COMMODITIES UNDER THE AGRICULTURAL COMMODITIES AND EQUIPMENT PROGRAM (341-0468).

6. RELATIONSHIP OF PROJECT TO A.I.D. COUNTRY STRATEGY: THE OVERALL A.I.D. STRATEGY IN PAKISTAN RELIES ON A BLEND OF RESOURCES TO REACTIVATE A LONG-TERM RELATIONSHIP IN DEVELOPMENT COOPERATION. PROJECTS ARE INTENDED TO MEET BASIC HUMAN NEEDS, CONTRIBUTE TO LONG-TERM DEVELOPMENT, BUILD A FOUNDATION FOR MORE RAPID ECONOMIC GROWTH, AND RELIEVE BALANCE OF PAYMENTS DIFFICULTIES. THERE IS A MAJOR FOCUS ON BUILDING INSTITUTIONAL CAPACITY IN BOTH THE PUBLIC AND PRIVATE SECTORS TO ENABLE PAKISTAN TO BETTER PLAN, MANAGE, IMPLEMENT AND BEAR THE RECURRING COSTS OF DEVELOPMENT ACTIVITIES. THE OVERALL GOAL OF ACTIVITIES IN THE AGRICULTURE SECTOR IS TO INCREASE PRODUCTIVITY AND FARMER INCOME. OVER THE COMING YEARS, A.I.D. WILL BE SUPPORTING THE GOP IN SEVERAL PROGRAMS TO ACHIEVE THIS GOAL. IT WILL BE MET THROUGH THIS PROJECT BY: PRODUCING HIGH QUALITY GRADUATES TO STAFF PUBLIC AND PRIVATE INSTITUTIONS IN THE AGRICULTURAL SECTOR; IMPROVING THE QUALITY AND RELEVANCE OF RESEARCH CONDUCTED IN THE NWFP; AND, STRENGTHENING THE SYSTEM FOR GENERATING AND DISSEMINATING IMPROVED TECHNOLOGIES TO FARMERS.

7. HOST COUNTRY AND OTHER DONORS: THE GOP IS EXPECTED TO PROVIDE THE EQUIVALENT OF U.S. DOLS 29,000,000 IN PHASE I TO FINANCE CONSTRUCTION, OPERATION AND MAINTENANCE COSTS, STAFF SALARIES, COMMODITIES AND IN-COUNTRY TRAINING. SPECIFIC PROJECTS FINANCED BY OTHER DONORS THAT TIPAN WILL COMPLEMENT INCLUDE: THE BARANI (RAINFED) AGRICULTURAL RESEARCH AND DEVELOPMENT PROJECT FINANCED BY THE CANADIAN INTERNATIONAL DEVELOPMENT AGENCY (CIDA) AND THE WORLD BANK'S AGRICULTURAL RESEARCH, ON-FARM WATER MANAGEMENT AND SALINITY CONTROL AND RECLAMATION PROJECTS. ALL OF THESE PROJECTS INCLUDE EXTENSIVE RESEARCH AND/OR EXTENSION

COMPONENTS WHICH TIPAN WILL BUILD ON. OTHER DONORS, MOST NOTABLY, THE JAPANESE ARE CURRENTLY NEGOTIATING WITH THE GOP AND ARE LIKELY TO CONTRIBUTE FINANCIAL RESOURCES TO THE TIPAN PROJECT.

8. BENEFICIARIES: DIRECT BENEFICIARIES INCLUDE THE UNIVERSITY STAFF AND FACULTY, RESEARCH SCIENTISTS AND EXTENSION AGENTS WHO WILL BENEFIT FROM TRAINING OPPORTUNITIES AND IMPROVED FACILITIES AS WELL AS THE UNIVERSITY STUDENTS WHO WILL RECEIVE A BETTER EDUCATION AND ENHANCED EMPLOYMENT OPPORTUNITIES. THE ULTIMATE BENEFICIARIES ARE THE NWFP FARMERS WHOSE INCOME SHOULD RISE AS A RESULT OF INCREASED AGRICULTURAL PRODUCTION AND THE CONSUMERS WHO WILL BENEFIT FROM MORE PLENTIFUL AND AVAILABLE AGRICULTURAL PRODUCTS. SINCE IT IS THE AGRICULTURAL SECTOR IN PAKISTAN WHICH FUELS THE COUNTRY'S ECONOMIC GROWTH, THIS PROJECT SHOULD MAKE A SIGNIFICANT CONTRIBUTION TO THE ECONOMIC DEVELOPMENT AND QUALITY OF LIFE OF THE COUNTRY IN GENERAL AND THE NWFP IN PARTICULAR.

9. MAJOR OUTPUTS:		PHASE I ONLY:
-UNDERGRADUATE CURRICULUM REVISED AND IMPLEMENTED	-	X
-NEW TEACHING-LEARNING PROCESS INTRODUCED	-	X
-NEW M.SC. PROGRAM PLANNED	-	X
-PROVINCIAL RESEARCH ACTIVITIES MERGED WITH THE UNIVERSITY (PERSONNEL, BUDGET, FACILITIES)	-	X
-FARM AND LABORATORY IMPROVEMENTS CARRIED OUT	-	X
-FORMAL OPERATING AGREEMENT ADOPTED AND IMPLEMENTED BY UNIVERSITY AND PROVINCIAL EXTENSION SERVICE	-	X
-UNIVERSITY STUDENT BODY INCREASED	-	FROM 683 TO 915
-EXTENSION AGENTS TRAINED	-	300-400 ANNUALLY

-UNIVERSITY FACULTY AND RESEARCH SCIENTISTS TRAINED OVERSEAS	-	95 (DEGREE) 47 (NON-DEGREE)
-FACULTY INCREASED AT THE UNIVERSITY	-	FROM 110 TO 170
-LEARNING RESOURCES CENTER, CONTINUING EDUCATION CENTER, AND DEPARTMENT OF EXTENSION, EDUCATION AND COMMUNICATIONS ESTABLISHED AT THE UNIVERSITY	-	3

10. AID FINANCED INPUTS: - PHASE I ONLY (IN DOLS THOUSAND)

- TECHNICAL ASSISTANCE	-	7,422
- TRAINING	-	5,349
- COMMODITIES	-	1,000
- A&E SERVICES	-	3,976
- CONSTRUCTION	-	14,133
- OPERATING COSTS	-	1,764
- EVALUATION	-	90
- CONTINGENCY	-	1,766
- - TOTAL:		35,500

(PLUS DOLS 3 MILLION UNDER ACE (391-0468)

11. PRINCIPAL CONTRACTOR OR AGENCIES: UNIVERSITY OF ILLINOIS WILL BE THE PRINCIPAL CONTRACTOR UNDER THE COLLABORATIVE ASSISTANCE MODE. U.S. AND PAKISTANI PRIVATE A&E AND CONSTRUCTION CONTRACTORS WILL BE SELECTED COMPETITIVELY.