

**MISSION TO PAKISTAN AND AFGHANISTAN**

**PROJECT ASSISTANCE COMPLETION  
REPORT**

**Transformation and Integration of Provincial  
Agricultural Network (TIPAN)  
(391-0488)**



*Submitted by Agriculture and Rural Development Division  
October 1994*

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## LIST OF ACRONYMS

A&E	Architectural and Engineering
ACE	Agricultural Commodities and Equipment Program
AU	Agricultural University
BOSTID	Board of Science and Technology for International Development
CIMMYT	International Wheat and Maize Improvement Center, Mexico
FAR	Fixed Amount Reimbursement
FSR	Farming System Research
FTE	Full-Time Equivalents
GOP	Government of Pakistan
ICARDA	International Center for Agriculture Research in Dry Areas, Syria
LRC	Learning Resource Center
NWFP	Northwest Frontier Province
P&D	Planning and Development
PACD	Project Assistance Completion Date
PARC	Pakistan Agricultural Research Council
PC-1	A GOP planning document that sets forth funding for development projects
PIM	Pakistan Institute of Management
Rs.	Pakistani monetary unit (U.S. \$1.00 = Rs.30.50 in 1994)
SIU	Souther Illinois University at Carbondale
SOM	Skidmore Owing and Merrill (U.S. A&E firm)
TA	Technical Assistance
TIPAN	Transformation and Integration of Provincial Network Project
UIUC	University of Illinois at Urbana-Champaign
USAID	United States Agency for International Development
USDA	U.S. Department of Agriculture

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## PROJECT ASSISTANCE COMPLETION REPORT

### TRANSFORMATION AND INTEGRATION OF PROVINCIAL AGRICULTURAL NETWORK (TIPAN)

OCTOBER 1994

#### I. BASIC PROJECT DATA

Project Title and No.	Transformation and Integration of Provincial Agricultural Network (TIPAN), 391-0488
Date of Authorization	August 22, 1984
Date of Original Agreement	August 30, 1984
Original PACD	September 30, 1990
Revised PACD	August 29, 1994
Amount Authorized	\$55,500,000
Amount Obligated	\$55,500,000
Amount Deobligated	\$ 1,100,000
Obligation (as of 9/30/94)	\$54,400,000
Amount Expended (as of 9/30/94)	\$53,483,015
Grantee's Representative	Mr. Saeedullah Shah, Director (P&D) University Grants Commission Islamabad
Implementing Agencies	- University Grants Commission, Islamabad - NWFP Agricultural University, Peshawar
Contractors	- University of Illinois in Collaboration with the Southern Illinois University (Tech. Assistance) - ENCORP International (Construction) - Skidmore Owing and Merrill (A&E)
USAID Project Officer	Abdul Qayyum Khan

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## II. PROJECT GOAL AND PURPOSE

### A. Goal

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

### B. Purpose

The purpose of the project was 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.

## III. BACKGROUND

Agriculture was one of the major sectors that USAID/Pakistan had, in the context of the 1982-87 economic assistance package, targeted for priority assistance. The agriculture sector had many institutions, but very few strong institutions. This was certainly true of Pakistan's institutes of higher learning. The country was faced with the need to allocate scarce resources to a plethora of universities, whose graduates were inappropriately trained and whose faculties were insufficiently funded to undertake productive activities in research and development.

The NWFP was selected for intensive assistance for several reasons. Along with Balochistan, the NWFP was receiving relatively less government resources than the provinces of Punjab and Sindh, which enjoy advantages of nature and infrastructure that make them more productive and easier to develop. The NWFP was facing the problem of feeding a growing population, with the added pressure caused by the presence of over two million Afghan refugees. The NWFP had the unique potential to grow a wide variety of horticultural crops, due to its diverse agro-climatic zones, its fertile soils and controlled water supply. The creation of NWFP Agricultural University ("AU" or the "University") as an autonomous university in 1981 provided an institutional focus for project activities in a less developed province, which was not available in Balochistan. The Government of NWFP recognized the need for a reform of the technology transfer system, requested USAID assistance, and made the organizational and policy changes required for developing an effective, integrated program for research, education and outreach in NWFP.

Under the Title XII collaborative assistance mode, USAID asked the University of Illinois at Urbana-Champaign (UIUC) in collaboration with Southern Illinois University at Carbondale

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(SIU) to design and implement a comprehensive institutional development project to integrate agricultural research in the province with agricultural education at the University level. The objective of the project was to raise the productivity, economic well-being, health and general welfare of the agricultural sector by improving the quality of education and research programs and strengthening the linkages with agricultural extension through a problem-solving, farmer oriented research and outreach program at the University.

The project was named the Transformation and Integration of Provincial Agricultural Network (TIPAN) Project and was authorized in August 1984 as the first part of a three-phase project. The initial authorization was \$35.5 million, which was followed with a second authorization in 1989 to augment the 10-year project by an additional \$20 million, bringing the total authorization to \$55.5 million. An additional amount of \$3.2 million was provided to the TIPAN Project through the Agricultural Commodities and Equipment (ACE) Project (391-0468) for procurement of agricultural commodities and equipment in the initial period of implementation of the TIPAN Project. The Government of Pakistan (GOP) contribution was \$25 million, which included local currency contribution as reflected in Annual Development Plan plus in-kind contributions by both the Provincial and the Federal Government.

#### **IV. PROJECT COMPONENTS**

The TIPAN Project had two major components. Construction of physical infrastructure and institution building. These are briefly described below:

##### **A. Construction**

The primary objective of this component was to construct buildings considered essential to the expanded functions of the University, to serve increased student enrollment, and to establish a recognizable campus core and entrance point. The construction of expanded physical facilities was funded jointly by USAID and the GOP. USAID financed the construction of thirteen major academic buildings and eleven small farm center buildings and related infrastructure covering 387,383 square feet (sq. ft.) area. The GOP financed the construction of 39 faculty houses and a female hostel covering 117,569 sq. ft. area. The USAID-funded portion was constructed by a U.S. firm, ENCORP International, under a USAID direct contract, while the construction of GOP-funded portion was completed by a local construction firm, MARKS International. Skidmore Owings and Merrill (SOM) was the A&E firm that designed the Master Plan and supervised both the USAID and the GOP-funded construction, under a USAID direct contract.

##### **B. Institution Building**

The institution building aspect of the project was composed of six institutional components: teaching, research, outreach, administration and governance, integrated programs, and

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linkages. The successful completion of these components would have accomplished the goal of developing a University that is dynamic, outward-looking and future-oriented. The University of Illinois, in collaboration with Southern Illinois University, implemented the institution building component of the project, which involved technical assistance, training and commodities. These elements are briefly discussed below:

### **1. Teaching Program:**

This element of the project was designed to assist the NWFP Agricultural University in improving the quality of education offered at the University level. The changes that were needed for improvement in the teaching-learning process included:

- revised admission policy to expand the sources of entering freshmen;
- encouragement of women's enrollment;
- complete revision of existing curricula and addition of new core courses aimed at strengthening mathematics, science and English;
- introduction of new teaching methods;
- establishment of a new system of student evaluation through conversion from an external examination to an internal examination system and a grade point average; and
- placement office and other student services.

The revised teaching program was to prepare the students to fill job opportunities in both private and public sector entities working in the agricultural development sector of the Province.

### **2. The Research Program:**

This element of the project was designed to assist the Government of the NWFP to merge the crop and livestock research system with the NWFP Agricultural University and to establish a new coordinated research program which would have a problem-solving, multi-disciplinary orientation suitable for the complex farming systems that characterize the North-West Frontier Province.

### **3. The Outreach Program:**

This was a new concept for the Province and the nation. This component was to establish an Outreach Directorate that was to have close and effective operational

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linkages between the University's merged research system and the NWFP's agricultural extension operations. Through application of this concept the University was to acquire the capability to supply technology packages for major crops and animal husbandry to extension workers. The capability of the Outreach Directorate was to be strengthened by establishing two support centers including the Continuing Education Center and the Learning Resource Center (LRC). The Continuing Education Center was to provide facilities for short courses, seminars and workshops. The Learning Resource Center was to include: (1) the University Library equipped with the latest books, journals, periodicals and modern facilities and data base information system; and (2) the Communication Services Unit, which was to produce mass media programs and audio-visual instructional aids. Both the Continuing Education Center and the Learning Resource Center were to support the combined activities of teaching, research and outreach.

#### **4. The Integrated Programs- Staff Development:**

Under this component, the NWFP Agricultural University was to build effective programs within the faculty groups and research stations integrating the disciplines of teaching, research and outreach. The amount of time each person was to spend in each of the three programs-- teaching, research and outreach-- was to be established by job description.

#### **5. Administration and Governance:**

Under this component, the Agricultural University was expected to develop and implement a new administrative and governance structure to support and implement the new role and orientation of the University. To perform the new role and mission of the University, the University was thus expected to establish a committee, with representation from both professionals - faculty and research staff - as well as students.

#### **6. Linkages:**

The University was to establish firm linkages with other Universities within and outside of Pakistan, and with national and international agricultural research organizations. These linkages were to be fostered through joint research projects, presentation of papers at conferences, seminars, visits and other communications.

### **V. INPUTS**

The TIPAN Project was authorized on August 22, 1984 involving planned obligations of \$35.5 million in grant funds over a period of six years. The project was amended on September 14, 1989 increasing the authorized obligation to \$55.5 million in grant funding and life of project

of ten years. The total obligation during the LOP was \$55.5 million. However, an amount of \$1.1 million was deobligated immediately after the completion of the project on August 29, 1994. Therefore, the obligated amount as of 9/30/94 (as shown below) is \$54.4 million. The TIPAN Project received farm machinery, instruction materials, computers and laboratory equipment worth \$3.2 million from the Agricultural Commodities and Equipment (ACE) Program (391-0468). Host country contributions during the LOP amounted to approximately Rs. 750 million in cash and in kind. A summary of USAID's expenditures over the LOP is set forth in the following table:

- **TIPAN Project:**

Line Item	Obligation (as of 9/30/94)	Expenditures (as of 9/30/94)
Technical Assistance	12,095,825	12,050,949
Training	11,040,000	10,982,076
Commodities	3,181,380	3,157,536
A&E Services	6,605,780	6,477,495
Construction	20,000,001	19,429,343
Other Costs	1,221,445	1,130,046
Evaluation	255,569	255,569
<b>TOTAL:</b>	<b>54,400,000</b>	<b>53,483,014</b>

- **ACE Project (391-0468):**

Farm machinery, instruction materials,  
computers and laboratory equipment \$3,200,000

Details of TIPAN Project inputs by each line item are given below.

**A. Technical Assistance:**

Long and short-term technical assistance needs were identified by USAID and the University of Illinois at Urbana Champaign and Southern Illinois University at Carbondale in close collaboration with the faculty and research staff of the merged AU system. Sixteen long-term advisors provided 465 person-months of technical assistance. The long-term technical assistance was programmed in two broad areas:

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- policy and program development and management to effect the structural changes and expanded program thrust of the project, including linkage development to provincial and central government organizations; and
  - technical and management assistance in particularly weak areas.

Fifty-two short-term technical and fifteen administrative personnel provided 112 months of short-term technical assistance. This technical assistance was programmed to:

- support program development in specific disciplines; and
- guide the in-country thesis research of participants.

Fifteen administrative visits were programmed to:

- review and evaluate the project;
- support morale of the field Technical Assistance Team; and
- strengthen linkages between the consortium of the UIUC, SIU, the NWFP Agricultural University and USAID.

### **Consulting Firms:**

Local and international consulting firms were also utilized to provide technical assistance in the following areas:

- Pakistan Institute of Management (PIM) provided management training to 30 top-level administrators, department heads, deans and station directors of the Agricultural University and its merged system.
- Lahore University of Management Sciences was engaged by USAID to develop a business plan for the Agricultural University to strategically market its services and facilities to ensure its sustainability.
- Peat Marwick prepared an accounting manual and computerized the financial management system for the AU and its merged system.

### **B. Training:**

Human resources development is one of the key inputs for any institutional development program. In order to meet the challenges of the new mission of the Agriculture University and its merged system, a professional development plan was prepared for updating the

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technical skills, leadership qualities and attitudinal orientation of the faculty and research staff. At the end of the project, 130 participants have returned to Pakistan with Ph.D or Masters degrees. Of these, 65 participants were from the campus and 65 participants were from the research stations. Twelve participants came back without completing their studies because of health or family problems. Twenty participants conducted their thesis research in Pakistan.

Seventy-three participants received short-term training. Short-term training was tailor made to the needs of the Agricultural University and its merged system which involved technical, administrative and observational content. In addition, invitational travel was arranged for University administrators and Provincial Government policy-makers whose understanding and support were critical to the success of the TIPAN Project.

All long and short-term training was administered by the UIUC under its direct contract with USAID. Approximately \$11.0 million was spent under the Training element of the TIPAN project.

#### **C. Commodities:**

To meet the challenges of the expanded mission of the AU, human resource development efforts were strengthened through the supply of equipment, materials and supplies. Commodities and equipment totalling \$3.2 million were procured for the University and its research system under the TIPAN Project. Another \$3.2 million was procured under the Agricultural Commodities and Equipment (ACE) Program. Project vehicles, furniture and household equipment were procured directly by USAID, while agricultural machinery, computers, photocopiers, laboratory and office equipment, journals, text-books and audio-visual equipment were procured under the UIUC contract.

#### **D. A&E Services:**

In order to accomplish the multiple goals of the University and accommodate its planned development and growth, a U.S. Architectural and Engineering firm, Skidmore, Owings and Merrill (SOM) was contracted by USAID to design a plan for a Master Campus. SOM, in consultation with the UIUC design team, prepared a comprehensive Campus Master Plan for physical facilities that incorporates the philosophical aspirations of the academic, research and outreach objectives. This plan, which included both new physical facilities and renovation and retention of existing structures, not only catered to the need for additional space, but also located and organized the facilities in such a manner so as to ensure their most effective and efficient use.

After completion of the Master Plan, SOM prepared bid documents, as well as drawings and specifications for selection of construction contractors. SOM was responsible for the overall design and supervision of all construction work carried out by both USAID and GOP-funded

construction contractors. The total contract cost of the SOM contract was \$7.76 million (as of September 30, 1994).

**E. Construction:**

The construction of expanded physical facilities was funded by USAID and GOP. Under an USAID-direct contract, the U.S. firm ENCORP AMCA International constructed thirteen major academic buildings and eleven small farm center buildings and related infrastructure covering 387,383 sq.ft. area. The total cost of the work through 9/30/94 was \$17.6 million. (ENCORP's contract was split in dollars and rupees.) The expenditure figure is expected to change as a result of resolution of the many claims submitted by the construction contractor to USAID.

Under a GOP-funded contract, a Pakistani firm, MARKS International, constructed 39 faculty houses and a female hostel covering 117,569 sq.ft. area at a cost of Rs. 75 million. For both of these contracts, a U.S. A&E, SOM, performed the construction supervision.

In addition, USAID funded the construction of a Maintenance and Operation Building, a tubewell, water lift station, laying of telephone cables and gas pipeline, installation of audio-visual equipment and other related infrastructure. These activities were carried out by the University's Directorate of Works under Fixed Amount Reimbursement (FAR) arrangements. The total cost of these activities was approximately \$0.875 million.

**F. Other Costs:**

During the first phase of the project (1984-1989), USAID financed a part of the increase in operating costs to quickly expand the number of students and to switch over to the semester system. This general across-the-board support was phased out by June 30, 1989. After July 1, 1989, USAID support was targeted toward accelerating specific activities such as training of farmers and extension workers, financing of problem-solving peer reviewed research projects, preparation of textbooks written by Pakistani authors, installation of gas and power lines; invitational travels for University's administrators and federal and provincial government policy makers and other related activities. These activities were implemented through Project Implementation Letters. Total disbursements made under the "Other Costs" line item were \$1.13 million. This figure also includes some construction costs under the FAR arrangements, discussed under Construction, as well as expenses of observational tours of University staff and seminars and conferences.

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## **VI. PROJECT ACCOMPLISHMENTS**

### **A. Teaching Program:**

#### **1. Conditions at the outset:**

The problems existing in the teaching program at the NWFP Agricultural University at the time the project was launched were as follows:

- poorly balanced curricula in terms of agricultural science base and applied orientation;
- outdated teaching/learning environment and procedures;
- no differentiation of courses for different career paths;
- over-dependence on the lecture method;
- inadequate library and textbook resources;
- dependence on external examination system -- no incentives for students to study on continuous basis;
- no procedure for faculty member to judge whether student is learning what is intended; and
- little or no use of audio-visual teaching and demonstration aids.

#### **2. Accomplishments in the Teaching Program:**

Since the inception of the TIPAN Project, tremendous progress has been made in the improvement of quality of education being offered at the University. This has been accomplished through:

- improvements in the teaching program;
- establishment of Directorate of Teaching;
- reformation of admission policy;
- conversion from external examination to two term internal evaluation system;
- faculty development;

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- establishment of Learning Resource Center;
  - integrating teaching, research and outreach; and
  - evaluation of teaching performance.

The teaching program has been restructured and revamped through introduction of many interventions in the outdated teaching system. The Directorate of Teaching has been established to assume the role of making long-range structural and organizational changes needed to accomplish the new mission of the University. The admissions policy was reformed to broaden the base of new entrants by reserving seats for various ethnic, geographic and social groups for admission and encouraging the enrollment of female students. The old external examination system was converted into a two-term system with an internal examination and a grade point average system.

The curriculum at the University was modernized and updated, and continues to be revised, in light of the design team's recommendation that courses be offered to strengthen the mathematics, science and english capability of students entering with different backgrounds. For example, students with a pre-engineering background were required to take biology and pre-medical students were required to take mathematics. All the courses recommended by the design team have been introduced. Many new courses have been added and some were dropped. Courses in entrepreneurship were offered to increase the skills of fledgling entrepreneurs. New text-books were added to the library. In order to make new curriculum relevant to the development needs of Pakistan, five text-books were written by Pakistani authors under the TIPAN Project. The new curriculum is parallel to international standards. After the return of faculty staff who have completed long-term degree training in the U.S., the process of curriculum revision has been institutionalized and is continuous.

A Learning Resource Center (LRC), including a modern library, computer center and communication services unit, was established and housed in the newly constructed buildings. New books and scientific journals were added to the library and additional databases were expanded through CD-ROM. Computer centers are being used by the students for their academic exercises and thesis research. Through the Communication Service Unit, a number of teaching aids, such as overhead projectors, slide projectors, film projectors, TV and VCRs were made available to the faculty for teaching purposes. In addition, in order to improve the English language capabilities of the students and teachers, two listening stations were placed in the library. These were equipped with tapes and reading materials. The facilities provided by the LRC have improved the teaching/learning process and made it more interesting.

In order to improve the abilities of the faculty and research staff, long and short-term training programs were successfully implemented. One hundred and thirty faculty and research staff received degree training. Of these, 65 participants were from the campus and

65 from the research stations. Seventy-three participants received short-term training in specific programs and disciplines. In addition, various seminars, meetings and individual conferences were held to improve the teaching capabilities of the faculty.

Another aspect of the project design was an internship program which was designed to insure that all graduates have marketable skills and practical experience gained through summer internships that would be valuable to potential employers in the public and private sectors. The internship program was started in the early years and was discontinued due to budgetary constraints. The students were very enthusiastic about the internship program.

Integrating agricultural education with research added a problem-oriented dimension to the learning process. Students are now conducting their thesis research at the research stations on problems identified through teaching-research feedback.

As part of student services, a Placement and Human Resource Development office was set up headed by a Professor from the Agricultural Economics Department. The office is actively engaged in developing contacts with agriculture-related public and private sector employers. This office, through the Institute of Development Studies, conducted a survey of private agriculture related industries in 1989 and identified over 80 agriculture-related industries in the province as potential employers.

Another accomplishment, which was mainly due to the bold efforts of the previous Vice Chancellor, was to control cheating during exams. Cheating is a common academic disease in many Pakistani academic institutions. To restore the creditability of the academic performance of the students, cheating during exams has now been completely eliminated.

The introduction of the above-mentioned key interventions completely changed the outdated teaching-learning system into a modern system that assures quality education which reflects the substantial progress toward the accomplishment of the purpose of the TIPAN project which has been made in the teaching area.

### 3. Constraints:

#### Lack of Accountability:

There are four Agricultural Universities in Pakistan-- Faisalabad, Tandojam, Peshawar and Rawalpindi (Barani Agriculture University funded by the Punjab Government). The agricultural graduates of all the four Agricultural Universities compete for a common pool of federal jobs. Since grades form the main criteria for determining the merit, each of the four Agricultural Universities endeavors to inflate the grades of its students to put them at a comparative advantage. This attitude on the part of the Universities affects the credibility of the quality of education throughout Pakistan. If the NWFP Agricultural University is to establish its reputation for quality graduates, it will have to strictly enforce academic

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accountability so that it becomes known that quality is the hallmark of the University's graduates.

**B. Research Program:**

**1. Conditions at the outset:**

- research at the campus focused on the M.Sc. student theses only; it was not directly oriented toward solving priority problems.
- provincial agricultural crops research was conducted by M.Sc and B.Sc agricultural graduates staffed by the Department of Agriculture. No technological breakthroughs or development of new technologies were generated;
- livestock research at the Veterinary Research Institute was limited to nutrition and feeding, management and breeding of local breeds and cross-breeds with Friesian cattle, and evaluation of forages. Jaba Research Station, which has now been merged with the AU, was primarily a production unit for sheep breeding stock.

The agricultural crops and livestock research was very low quality and limited in scope and content, and thus no technological breakthrough could be made. The reasons for low quality and limited research were:

- inadequate trained manpower for high quality research;
- insufficient field and laboratory equipment;
- lack of a library equipped with the latest scientific journals and lack of access to the databases of international research centers and organizations;
- lack of operating funds.

**2. Accomplishments in the research program:**

**a. Merger of the Agricultural Research with the University:**

Under the TIPAN concept, the agricultural research system of the NWFP was to be merged with the NWFP Agricultural University in Peshawar. The merger was to include the Directorate of Agricultural Research (crops) and the Livestock Production Units (Animal Production Division of the Veterinary Research Institute and the Livestock Experiment Station, Jaba) of the Provincial Agriculture Department. Under the merger:

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- the provincial research systems revenue and Annual Development Program budgets were to be transferred to the University;
  - all of the professional and support staff of the provincial research systems were to be transferred to the University; and
  - all physical facilities under the control or use of the provincial research system were to be transferred to the University.

Although the research budget, physical facilities and research staff have been transferred to the University, an amendment to the merger act, lobbied for by research staff, kept the research staff under the control of the provincial civil service. This amendment created a dual system of governance, i.e. the research staff was to be governed by provincial civil service rules and the university staff was to be governed by the university rules. This incomplete merger has affected the University's control over the research system. However, in spite of this, the first three Vice Chancellors strongly and successfully resisted interference from the Provincial Agriculture Department in matters relating to transfers of research staff. The fourth Vice Chancellor, who took over in April 1993, completely yields to the pressure of the Provincial Agriculture Department so that now transfers of research staff are being made by the Provincial Agriculture Department.

The research staff's grievances toward the merger were two-fold -- personal and institutional. From a personal standpoint, they were concerned that their personal grades were lower than the grades of the faculty members. They were also concerned that their chances for future promotion were minimal. The institutional problem was that the research staff was not involved in the design of the TIPAN Project. Similarly, research staff were not consulted in preparing the plan for construction of physical facilities, as a result of which all infrastructure was built on the campus and none at the research centers. In training and commodities, however both the research station and campus have benefitted equally.

The merger of the provincial research system with the University was to improve the quality of research for the benefit of the rural poor. The concept of the merger of research and education has proven successful in increasing agricultural productivity in India, Africa, and Latin American countries. In this connection, please see the paper entitled "Building Universities for Development: the TIPAN Experience" written by Dr. Abdul Qayyum Khan, Project Officer, TIPAN Project appended as Attachment-I to this report.

Convinced of the benefits of merging research and education at the University level, a local Pakistani firm, Asianics Agro-Dev International (Pvt) Ltd., was hired under the TIPAN Project to develop a Unified Personnel System that would lead to the complete merger of the research staff with the University. Asianics developed such a system and it was recommended that it be implemented, however, the Provincial Agriculture Department

resisted the move as the Agriculture Department was allegedly planning to de-merge the research system from the University after termination of the TIPAN Project.

In the face of the above-mentioned problems, the TIPAN Project strengthened the research system to the maximum extent possible through human resource development, provision of modern equipment, and planning and peer review of the research projects to improve the quality and relevance of the product. Consequently, the nature, quality and relevance of research product have begun to improve.

**b. Quality of research:**

Before the TIPAN Project started, the research activity at AU was limited to helping students conduct thesis research. Researchers at the research stations were engaged in conducting trials of rabi (winter) crops and kharif (summer) crops, the majority of which involved varietal and fertilizer trials. These experiments determined only what happened to yield with no idea of why. Most of the research involved only a single factor of production and interaction among different factors of production was not considered. Research reports mainly involved compilation and presentation of data rather than analysis and synthesis of the research results.

In order to overcome these shortcomings, the process of research planning was started. All research projects were peer-reviewed and the reporting of the research projects subjected to technical analysis. The outcome was: generation of new scientific knowledge (new and improved varieties and new cultural practices); technical recommendations for the farming community; conducting joint (collaborative) research projects by research and campus staff; initiation of a multi-disciplinary approach for identification of research geared toward solving farmers' problems; integration of student theses into research programs and publication of findings in journals; presentation of research results at international conferences; and generation of new projects which received external fundings such as PARC, the Pakistan Science Foundation, and the BOSTID programs. As a result of these changes, the quality of research has improved considerably over a period of ten years.

**c. Problem-solving (or relevance of) research:**

Problem-solving research involves a multi-disciplinary approach. A Master Research Plan was prepared by the faculty and research staff of the Agricultural University and its merged research system. Future research will be based on this Master Research Plan, which reflects the research needs of the Province. A multi-disciplinary approach was initiated in the Mansehra area where farmers used to cut their green wheat for fodder. The multi-disciplinary team included representatives of the teaching and research staff of the University, extension department, and numerous input-supplying agencies. The team tried oats as a substitute for the wheat crop and found that oat produce three times as much fodder as wheat. This research identified the problem of the client and then planned

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research to provide solution to that problem. A similar type of approach is being used to assess the effectiveness and profitability of specific herbicides, found by Tarnab scientists, in controlling wild oats, a serious weed in wheat. These initiatives are small and need to be expanded in order to accomplish the goal of the project of farmer-oriented, problem-solving research.

Long and short-term training, modern laboratory and office equipment, in-country research methodology, along with planning and management training, improved both the research process and the end product. If the government's financial and administrative support is enhanced and continued, the existing research talent pool will be able to effectively plan research and provide solutions to the problems faced by farmers in Pakistan.

**d. Constraints:**

The incomplete merger of the research staff with the University has affected the speed of progress in accomplishing the project goal of improving the quality of research and education offered at the University level. In order for the University to be a dynamic force in the rural development of the NWFP, it is inevitable that the merger be completed without any further delay to capitalize on the huge investment already made under the TIPAN Project.

**C. Outreach Program:**

**1. Conditions at the outset:**

The UIUC design team recommended the merger of the Provincial Agricultural Research System with the University without integrating the agriculture extension department with the University. The design team was of the view that working relationships with the provincial agricultural extension department would be established and strengthened as the outreach capabilities of the University were developed, people were trained, and the Learning Resource Center, the Continuing Education Center and other facilities became operational. Under the merged system the purpose of the outreach program was to forge strong operational linkages with the NWFP Agricultural Extension Department and other agriculture-related public and private organizations.

**2. Accomplishments in the Outreach Program:**

The outreach program was a new concept for NWFP and Pakistan. Under the TIPAN concept, an Outreach Directorate was established and staffed with a Director, three Regional Outreach Directors, an Information Officer, an Audio Visual Specialist and Assistant Audio-Visual Specialist and a total of 18 full-time support staff. The development of the outreach program was very slow for a variety of reasons, including:

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- incomplete merger;
  - delays in construction of physical facilities;
  - less than required outreach staff;
  - lack of commitment to the outreach concept by the University administrators and provincial leaders; and
  - lack of operational funds.

In spite of these difficulties, the mission of the outreach program of the University -- taking the University to the people -- is gradually being recognized and appreciated by the faculty and research staff of the University as well as provincial leaders.

The Outreach Directorate is comprised of three units: (1) Outreach; (2) Continuing Education Center; and (3) Communications Services Center. The Outreach Directorate was established and developed as a new program of the University during the period 1985 through 1989. During this period, numerous workshops and training activities were held by the Division of Continuing Education. These training activities included: training of groups of farmers in support of seed multiplication; travelling seminar for farmers; a Farming System Research (FSR) workshop; workshops for extension administrators and subject matter specialists; animal husbandry training; grain storage management training; the Fruit and Vegetable Development Board's field assistant training program; beekeeping workshop; photography workshops; and the role of women in FSR workshops. The outreach program was further strengthened in the later years. During 1992-93, faculty and research staff participated in twenty field days that were attended by over 3000 NWFP farmers.

The Director of Continuing Education was appointed in December, 1991. In spite of the fact that building facilities were not available for the Continuing Education Center, this Center organized 34 short courses during 1992-93. Over 800 people were enrolled in the training programs that were conducted by 80 different faculty and research staff. The participants in the short courses included agricultural extension staff, researchers, Agriculture University faculty and Afghan Agriculturalists. The last Continuing Education Specialist of the University of Illinois Technical Assistance Team was confident about the sustainability of the Continuing Education Center of the University.

A Communications Service Center was established which has been provided with the modern equipment necessary to support the services of the University to the people of NWFP.

### **3. Constraints:**

The design team's decision in 1984 to exclude the Provincial Agricultural Extension Department from the merger with the AU turned out to be an obstacle to the transformation and integration of the provincial agricultural network. An important component of an

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integrated research and education system that would take the University to the people was missing. Agricultural extension leaders felt deprived of TIPAN Project benefits and thus labelled the University's outreach program as a duplication of their extension activities. This view was also maintained by the Provincial Agriculture Department. Fortunately, overseas short term training for senior extension leaders in 1993 proved to be very helpful in strengthening the University and its merged research system's linkages with the provincial agricultural extension service. However, in order for the University to reach the people, the provincial agricultural extension department will have to be brought under the umbrella of the University and its merged research system.

#### **D. Integrated Programs:**

##### **1. Conditions at the outset:**

The Project Paper Amendment called for the initiation and implementation of integrated programs within faculty groups and field stations involving the multiple disciplines of teaching, research and outreach. In order for the University to carry out this newly integrated function, it had to allocate its manpower resources judiciously to these functions on the basis of Full-Time Equivalents (FTE). Therefore, each faculty and research member was supposed to have split assignments dividing his/her time among these areas.

##### **2. Accomplishments in integrated programs:**

The faculty and research staff did not understand the concept of split assignments and considered it an extra workload. The Technical Assistance Team held many meetings with the faculty, research staff and administration to discuss the merits of split-assignments, forward planning and timely faculty/researcher achievement evaluation and reporting. Most of the faculty and researchers had concerns about the nature and responsibilities related to outreach activities. The previous Vice Chancellor, Mr. Abdur Rahman Khan was very clear about the concept of split-assignments and its advantages and had issued an administrative order dated January 4, 1993 to all Deans, Directors and Department Chairs to nominate staff to undertake split-assignments in teaching, research and outreach programs of the University. As a result of this directive a list of staff with split-assignments was developed. In spite of these efforts, very few faculty members assumed split-assignments. The concept of split-assignments needs to be institutionalized. Certainly, this requires strong leadership at the University which is dedicated and equipped with the administrative capability to bring about change.

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**E. Administration and Governance:****1. Conditions at the outset:**

The upgraded and expanded role of the University required a modified organizational structure. The proposed changes had to reflect the multi-functional development thrust of the University. It was planned that each of the three functions of the University: teaching, research and outreach, were to be headed by a Director. To accomplish this new orientation, a system of governance had to be established involving professional and student representation in a committee structure representing critical areas of development of the University.

**2. Accomplishments in administration and governance:**

The teaching, research and outreach functions of the University have been institutionalized by appointment of a Director in each of these three areas. A committee system is partially in place. Many of the administrative reforms expected to take place in the University system to meet the challenges of its new mission and expanded roles were not accomplished. These include: a unified personnel system; promotion on the basis of performance and merit rather than seniority; decentralization of administration (power, authority and responsibility); transportation policy; and long-range planning for sustainability.

**F. Establishment of Linkages:**

Under the TIPAN Project, the NWFP Agricultural University was required to establish firm linkages with other universities within and outside Pakistan, international agricultural research centers and other research organizations through interaction, joint research projects, presentation of papers at conferences, seminars, visits and other communications.

The NWFP Agricultural University has established firm working relationships with the Pakistan Agricultural Research Council (PARC) and the National Agricultural Research Center (NARC) through research projects, joint meetings and seminars. Linkages with Faisalabad and Tandojam, Gomal and Barani Agricultural Universities have been strengthened through the development of text-books programs under the TIPAN Project, the presentation of seminars, and the representation of faculty and researchers on students thesis examination panels. Linkages with international research centers and organizations like USDA, ICARDA, CIMMYT, and IRRI have been established through training programs. Similarly linkages with universities in the U.S. have been established through long and short-term training.

Linkages with those organizations which provided authority and resources to the TIPAN Project have been very weak in the past. These linkages are very important for

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sustainability of the TIPAN concept. In the last year of the implementation of the TIPAN Project, the University made efforts to strengthen its working relationships with the Provincial Agriculture Department at the provincial level and with the University Grants Commission, Ministry of Education, Ministry of Finance and Ministry of Food and Agriculture at the federal level.

## **VII. LESSONS LEARNED:**

The Transformation and Integration of Provincial Agricultural Network (TIPAN) Project was a very comprehensive and complex project involving many aspects of agricultural development in NWFP. During the course of implementation of the project from August 1984 through August 1994, the following significant lessons learned have emerged which may help those who are called upon to be involved in the development of such type of projects in future:

### **A. The University should have an integrated agricultural education, research and extension program.**

The design team of the University of Illinois had recommended that the Provincial Agricultural Research System be merged with the NWFP Agricultural University. This merger was essential for the University to have a base for generation of scientific knowledge. In order for the University to take this scientific knowledge to the farmers, the design team had recommended the establishment of an outreach directorate at the University charged with the task of delivery of scientific knowledge to the extension service for onward dissemination to the farming community. Thus, the Outreach Directorate was supposed to build a bridge between the university and its merged research system and the provincial agriculture department. This bridge was to be built through training of agricultural extension staff for dissemination of technical knowledge to the farming community. In this respect, the University and the Provincial Agriculture Department signed a Memorandum of Understanding regarding their cooperation. Unfortunately, the Provincial Agriculture Department felt that University's outreach program was a duplication of the extension department's activities. The Technical Assistance Team did not make a concerted effort to convince the agricultural extension department that the University's outreach activities were not duplicative of the agricultural extension activities. In the later part of the implementation of the TIPAN Project, five extension leaders, including the head of the extension service, were sent to the U.S. to attend a short course on "Agricultural Technology: Farm Research to Extension to Farmers". This training was very instrumental in convincing the extension leaders of the benefits of the outreach program and will likely have a positive effect on cooperation between the extension service and the University in the future.

**B. The construction of the AU campus could have been done more economically by local contractors, and should have been carried out in multiple phases rather than as a single large project.**

The contract for construction of all of the improvements to be made on the AU campus, covering more than 380,000 sq.ft, was awarded to a single U.S. construction contractor. The construction work, which was started in January, 1989, was estimated to take three years, but, due to repeated delays, actually took five years to complete. The delay in completion of construction of buildings adversely affected the University's development program. The Learning Resource Center and the Continuing Education Center could not function due to lack of space. Similarly, the faculty that returned after completion of their Ph.D and Masters degrees in U.S. were hampered in their functioning because of inadequate facilities. Had the work been undertaken in phases, the University could have taken beneficial occupancy of the facilities as they were completed, and would have gained years of use of some of the buildings.

In addition, the extremely high cost of the expatriate technical assistance personnel of the construction contractor and the A/E firm (also a U.S. company ), combined with the late completion of the work and the numerous claims which were submitted by the construction contractor, calls into serious question whether off-shore firms are needed to furnish the type of services contracted for under TIPAN, especially where, as in Pakistan, there are local firms that have the kind of technical expertise required. The capabilities of local construction firms were demonstrated when the responsibility for construction of the Maintenance and Operation Building, which was supposed to be constructed by the main construction contractor under the TIPAN Project, was shifted to the University's Directorate of Works for construction. The Directorate hired a local contractor to perform the work, and the entire Maintenance and Operation Building was constructed in only eleven months and two days, well ahead of the twelve months estimated for completion.

**C. Building a sustainable institution in a developing country on the pattern of U.S. Land Grant System takes time.**

Many U.S. universities have formed partnerships with universities of underdeveloped countries to establish agricultural universities along the pattern of U.S. Land Grant institutions. This experience has shown that it takes fifteen to twenty years to develop a sustainable institution that will have impact on the economic life of the rural poor. In the case of the AU, the early termination of technical assistance (after ten years) before the objectives of the TIPAN Project were fully achieved may jeopardize the huge investment already made.

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### **VIII. SUSTAINABILITY:**

The sustainability of the TIPAN Project needs to be looked at from the standpoint of both budget support and institutional development. Although the federal government has provided the funds promised in the federal Annual Development Programme, these federal resources are inadequate to meet the need of the University's new mission and expanded programmes in teaching, research and outreach. The budget is inadequate to pay the salaries of the University staff. On the other hand, the provincial government has provided adequate funds for the University's research system. The shortfall in the federal budget from a programmatic point of view has had a negative impact on completion of the merger of the research system with the University. However, at the termination of the TIPAN Project, the NWFP Provincial Government has promised to pick up the cost of the outreach program as well as the maintenance and operation costs of the physical facilities, a move which should promote the sustainability of the programs initiated under the project. The federal funding is expected to be maintained at the current level with possible increase of 5% per annum. In addition, the University's Sustainability Group and Continuing Education Centers are actively involved in marketing the University to generate additional resources. The University is also working to establish a Foundation or Endowment to solicit donations and contributions to the cause of education and research and service to the farming community.

As far as institutional sustainability is concerned, the merged University system has been under pressure from those detractors who wanted to undo the merger. However, the situation has changed in the last three to four months in favor of the institution. The provincial government has agreed to continue the development of the University's merged system for another two years until it is institutionalized.