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# **FINAL REPORT**

**CONTRACT NO. 391-0481-00-C-5021-00**

**APRIL 24, 1985 THROUGH SEPTEMBER 30, 1994**

**SUBMITTED BY:**

**WINROCK INTERNATIONAL INSTITUTE FOR AGRICULTURAL DEVELOPMENT  
ROUTE 3, PETIT JEAN MOUNTAIN, MORRILTON, ARKANSAS 72110, U.S.A.**

**SEPTEMBER 30, 1994**

**USAID - GOVERNMENT OF PAKISTAN**  
**FORESTRY PLANNING AND DEVELOPMENT PROJECT**  
**CONTRACT NO. 391-0481-00-C-5021-00**  
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## PROJECT CONTRACT FACE SHEET

Project Title : Forestry Planning and Development Project  
Project Number : 391-0481-00-C-5021-00  
Obligation Amount : \$7,872,321  
Contract Completion Date : September 30, 1994  
Contractor : Winrock International  
USAID Project Officer : Khawaja Hameedullah

## LIST OF ACRONYMS

CCD	:	Contract Completion Date
COP	:	Chief of Party
FD	:	Forest Department
FP&DP	:	Forestry Planning and Development Project
GOPI	:	Government of Pakistan
IGF	:	Inspector General of Forests
NGO	:	Non-governmental Organization
O/IGF	:	Office of the Inspector General of Forests
PACD	:	Project Assistance Completion Date
PFI	:	Pakistan Forest Institute
PP	:	Project Paper
SAU	:	State Agricultural University
TAT	:	Technical Assistance Team
USAID	:	United States Agency for International Development

## EXECUTIVE SUMMARY

The Pakistan Forestry Planning and Development Project has been in operation for 11 years. The initial project goals were to enhance Pakistan's scarce energy supplies and to expand Pakistan's extremely limited forest resource base. These goals were later modified to put more emphasis on farm forestry to increase overall wood supplies and to develop markets for locally produced wood. Primary project purpose was to strengthen the capacity of institutions in both the private and public sector to provide programs which would increase production and incomes from the production of fuelwood and timber. The secondary purpose was demonstrating the feasibility of producing tree crops on privately-owned land.

Operations were focused on developing a participatory farm forestry approach which also included irrigated farmlands. Objectives were to (a) improve the productivity of farm-forestry systems through the field program which emphasized joint participation by farmers, foresters and industrialists, (b) establish training programs in farm forestry and wood utilization, (c) implement research needed to improve farm forestry systems, (d) support social forestry and environmentally-oriented NGOs through a series of grants and (d) develop policies and plans to increase the contribution of forests resources to national economic development.

These objectives were generally achieved. This was done by (a) establishing extension and communication linkages between the project and farmers as well as wood-using groups, (b) using demonstration and motivational techniques to get farmers involved in raising nurseries and planting trees on their lands, (c) providing fellowships for training, (d) identifying marketing strategies to promote ties between wood producers and wood users, and (e) administering the NGO small grant program.

The project has (a) supported establishment of over 5,000 private farmer nurseries, (b) produced over 150 million seedlings from these nurseries, (c) trained over 20,000 farmers, forest officers and industrial wood users in nursery and plantation management and in marketing principles, (d) produced and used 100 multiple language technical training packages to help transfer technology to forestry extension workers and farmers, (e) conducted 50 studies on topics covering tree-crop interface, tree management and economic feasibility of tree farming, (f) provided grants to 70 NGOs involved in farm forestry and environmental aspects of natural resource use, (g) helped establish marketing channels for wood raw material to industries throughout Pakistan, (h) helped involve about 150,000 farmers as tree producers with about 130 million additional trees planted, and (i) helped afforestation on 5,000 acres in Sindh.

Lessons learned were categorized as (a) use and misuse of targets in the forestry sector, (b) need for more emphasis on informal training, (c) need to consider markets and marketing early in project implementation, (d) the importance of industrial clients, (e) approaches to obtaining policy and institutional changes in the forestry sector, (f) optimal means to use short-term technical assistance, (g) the need for technical training for NGOs, (h) initial setting of project activities, (i) the use of NGOs as a means to strengthen industrial linkages, and (j) the ability of the project to achieve success despite lack of supporting research.

## I. PROJECT DESCRIPTION

### A. Project Background

The Forestry Planning and Development Project (FP&DP) was authorized by the USAID Administrator on August 11, 1984. The original Project Assistance Completion Date (PACD) was September 30, 1991. A revised Project Paper (PP) was produced in June 1989 and a revised PC-1 was then prepared. The PACD was subsequently extended to August 27, 1993 and was again extended to September 30, 1994 for the Technical Assistance Contract component. This report covers activities of the Technical Assistance Team (TAT) over the period April 1985 through September, 1994. Emphasis, however, is on activities, accomplishments, and opportunities during the second phase of the project which covered the period June, 1989 to September, 1994. Lessons learned cover the entire project period. Project goals and purposes are set out below while implementation targets and expected outcomes are in section I.C.

### B. Project Goals and Purposes

The original PP (July 1983) set as the primary goal to help Pakistan increase indigenous energy supplies and achieve energy self-sufficiency. The secondary goal was to improve Pakistan's limited forest base. The primary purpose was to strengthen the capability of federal, provincial and local institutions to design, implement and evaluate policies and programs for increasing the production of fuelwood and timber in Pakistan. The secondary purpose of the project was to demonstrate the economic, technical and social feasibility of producing tree crops on privately owned farm and range lands. These goals and purposes were to be achieved by strengthening the capability of the Government of Pakistan to (1) collect data, conduct systematic analyses and develop integrated federal and provincial plans for the cost-effective development of forest resources on the public and private lands of the country; (2) design, assess, justify, and evaluate specific forest development projects that meet the needs of the population, (3) develop and conduct a program of research leading to the design of improved farm forestry management systems that produce fuelwood and timber while enhancing agricultural productivity; (4) establish and conduct an educational program to train professionals in the techniques of farm forestry; (5) establish units within the Provincial Forest Departments to conduct farm forestry assistance programs; and (6) institute an operational program to demonstrate the social, economic and technical viability of farm and energy forestry systems. The project was to consist of three closely-related components: (i) institutional and manpower development, (ii) farm and energy forestry research, and (iii) farm and energy forestry field operational activities. Each of these components has purposes attached to them.

In 1989, a mid-term adjustment of project activities was required. Inputs to this process were provided by a project audit, a mid-term evaluation, the findings of the design team and lessons learned during the first four years of project implementation. As a result of this, five major constraints were identified:

1. Limited Focus on Non-irrigated (i.e. Barani) Areas

Considerable opportunity for development of Farm and Energy Forestry exists in irrigated areas, where field evidence suggests that farmer's motivation for adoption of tree-crop technology is already high. Limitation of demonstration and outreach activities to Barani areas constitutes a significant opportunity foregone.

2. Inadequate Physical Infrastructure for Research

The activities of the Farm Energy Forestry Research component are designed to improve the scientific basis for farm and energy forestry activities and increase researchers' knowledge of the social, economic and technical aspects of on-farm tree crop management. Provincial research facilities are inadequate for conducting the area specific, problem oriented research essential to generating and testing appropriate technology for integrating multi-purpose tree crops with farm crops.

Distances in Pakistan are great. It can take many hours, sometimes days, to reach remote research areas normally selected for farm forestry research. Suitable sub-stations for research must be provided in each province if research is to take place in the areas and under the conditions found on cooperating farmer's lands. Another benefit of these additional research facilities will be research into identifying and protecting biological diversity in Pakistan. While this research will not be directly funded through the project, the availability of facilities in these remote areas will allow access for researchers.

3. Lack of Training Facilities at Federal and Provincial Levels

A major element of the project purpose is to strengthen the GOP's capability to identify, implement and evaluate alternative forest development programs and policies, through a variety of in-country and overseas training programs. Considerable in-country training is programmed in the provinces but there are no facilities that can be dedicated to this training. Each province, except Baluchistan, has a small forest ranger training school but these are utilized throughout the year in normal training. The project therefore will upgrade Provincial training schools so that training can be provided to groups of 20 to 40 students at a time. In some cases only expansion of existing facilities is envisioned, but where no facility exists, a small center will be established.

These centers will consist of simple classrooms and dormitories, located at the research stations discussed in (2) above.

Women's participation in training activities is inhibited in part by a lack of suitable facilities. For example, at the Pakistan Forestry Institute (PFI), there are no housing, study rooms, or restrooms provided for women. If professional women foresters are to be trained under the project, physical facilities must be modified. During the Amendment period, the project will also actively promote women's participation in field activities.

#### 4. Conservation/Environmental Concerns

Improving general public awareness of broad environmental concerns and the social benefits associated with various conservation measures can complement the project's outreach activities. Indigenous NGOs and PVOs, with appropriate support, could be the best conduit for publicising natural resource issues. The project will help with funding for technical assistance and operations through sub-grants administered by a US-registered NGO/PVOs. Indigenous NGO/PVO will use the money to increase their technical capacity and to pay for activities like improving wildlife habitats or conducting public awareness programs through mass media and schools.

#### 5. Effectiveness of Technical Assistance (TA)

Levels and performance of the TA team were major concerns of both the GOP and USAID. It was decided to reduce the number of long-term expatriate consultants, but to ensure continued high quality support by using short-term consultants that have long-term commitments to the project, but do not reside in Pakistan, for various technical inputs. Repeated visits by short-term experts will increase efficiency by reducing the time required for familiarization of the country and ensuring continuity of inputs.

Changes in the revised project (1989-1994) were to (a) put more emphasis on commercial species such as poplar and eucalyptus that had commercial markets as Phase I indicated even smallholders viewed tree farming as a potentially important source of cash income, (b) more emphasis on irrigated areas relative to Barani areas as farmers in irrigated areas also saw tree farming as a good source of cash income, (c) a consequent shift towards NWFP and Punjab, (d) a shift towards development of private sector, market oriented plantation operations, (e) much more emphasis on wood users groups and marketing agents including training for users, where appropriate, and (f) a shift in research away from PARC and towards forestry institutions. Importantly, the revised PP also recommended adding an NGO grant component to the project.

The revised Project Paper of June 1989 added several new activities and rescheduled some delayed activities. New activities which had a direct impact on TAT activities included:

(a) Operational Program Sub-grants to NGOs and PVOs:

Grants will be given to Pakistani NGOs and PVOs to undertake many different environmental and conservation management projects on forest and wild lands.

(b) Managerial and Infrastructure Support to the O/IGF:

Training, commodities, and other assistance will continue to be provided to the Office of the Inspector General of Forests for developing policy, procedures, and operational guidelines. New activities will include the establishment of a cell to monitor the forest product sector's activities, both public and private, so that a data base of information about economic and marketing conditions can be developed.

(c) Expansion of Farm and Energy Forestry Demonstration Activities to the Irrigated Areas of Punjab and Sind Provinces.

### C. Scope of Work for the Technical Assistance Contract

The overall objective of the contract is to provide technical assistance and training through long- and short-term consultants, fellowships and study tours, and home office backstopping, to assist the GOP in strengthening the capabilities of its forestry institutions to (1) develop integrated plans to increase the contribution of existing and potential forest resources to Pakistan's overall energy supplies and economic development; (2) design, implement, and evaluate effective forest development projects; (3) develop, manage, and execute a program of research to identify improved farm forestry systems on private farm lands that produce fuelwood, fodder, and timber while enhancing agricultural productivity; (4) establish and execute a training program for professionals, technicians, and farmers in farm forestry techniques; (5) establish and execute a program of outreach/extension to give on-going assistance to tree farmers in farm forestry techniques and (6) establish and implement a field operational program to demonstrate on farmers' land the overall viability of farm and energy forestry systems.

The Contractor shall assist the GOP with institution building, support for infrastructure development, delivery of training, establishment of local training capacity, research program development, and operational field design, testing, and demonstration of appropriate farm forestry methods. The Project Paper will be the principal guide for project implementation.

The Contractor shall assist the Office of the Inspector General of Forests (O/IGF), the Provincial Forest Departments, the Pakistan Forest Institute (PFI), and related institutions to implement all aspects of the Forestry Planning and Development Project. Specific areas and activities in which the Contractor shall be required to assist these institutions include, but are not limited to:

1. Planning, Policy, Program and Budget

a. the introduction and initial execution of a systematic forest planning process using economic, financial, socio-logical, technical, and related analytical techniques to identify and establish priorities for development opportunities in the forest and farm forestry sectors at the community, provincial and federal levels;

b. the analysis of alternative afforestation and fuelwood development policies including a comparison of the direct and indirect returns to investments in forestry on government versus private lands, the division of federal and provincial responsibilities for forestry and fuelwood development, the role of fuelwood as an energy resource, and the role of farm forestry in enhancing the productivity of agricultural land;

c. needs for preparation, analysis, and justification of federal and provincial budgets in support of private sector wood production and use, fuelwood production, afforestation, and farm forestry;

d. the analysis of individual afforestation, farm forestry, and fuelwood development projects to determine their technical, economic and development impact on natural resources management in Pakistan;

e. the introduction and initial operation of computers and other analytical techniques in the O/IGF for data processing and analysis of the forestry sector, public and private, to determine the economic importance of forestry in the national product and to develop a database to amass statistics of the sector for use by the O/IGF and others;

f. the design and implementation of short-term overseas training opportunities in support of items a. through e. above;

g. the identification of long-term and short-term overseas training opportunities in support of items a. through f. above and the identification and screening of individuals who will participate in the training activities identified, and

h. the coordination of farm and energy forestry activities conducted in the forestry sector with related policies and programs in the energy and agricultural sectors.

## 2. Farm and Energy Forestry Research

a. assists the PFI, Provincial Forest Departments and State Agricultural Universities (SAUs) with the development and initial implementation of a research program in support of farm and energy forestry activities to examine:

i. the design and yields of farm forestry systems with respect to both tree crops and conventional agricultural crops;

ii. the economics of alternative farm forestry systems;

iii. the sociological and cultural factors that affect the design and management of farm forestry outreach programs and local acceptance of the outreach program products;

iv. ecological analysis to facilitate farm forestry prescriptions to be made by field foresters;

v. species trials and provenance testing for farm and energy forestry applications;

vi. hydrological analyses in support of both farm and energy plantation forestry; and

vii. the interactions of tree crops with other crops on irrigated agricultural lands in Punjab and Sind Provinces.

b. the identification of long-term and short-term overseas training opportunities to prepare Pakistani professionals to effectively plan and implement the research activities described above.

c. the facilitation of GOP participation in and coordination with related internationally sponsored forestry research projects and programs.

## 3. Farm Forestry Field Operations

a. assists the Provincial Forest Departments in the establishment of effective organizations and supporting infrastructure to encourage and assist farmers in adopting on-farm tree crop management activities;

b. assists in utilizing the recommendations of baseline sociological and anthropological assessments that identified:

i. characteristics of local motivators who will be selected and hired by the appropriate local or Provincial Forest Departments as project assistants to encourage farmers to adopt and participate in on-farm tree crop management;

ii. effective organizational and participatory strategies for involving farmers in the detailed design and oversight of local and regional farm forestry programs; and

iii. a small number of representative villages to be periodically monitored and evaluated to determine the effectiveness of project activities over the life of the project.

c. the preparation of materials and programs in multiple media to promote farmer awareness of on-farm tree crop management opportunities and educate them regarding appropriate application of these opportunities;

d. assists in the improvement of private sector nurseries to supply seedlings for the project's operational farm and energy forestry activities;

e. assists in the establishment and management of farm forestry outreach programs at the district, tehsil (group of villages) and village level;

f. assists in monitoring and evaluation of activities described in items a. through e. above;

g. assists the PFI with the establishment of B.Sc. and M.Sc. curricula to prepare junior professional to manage farm and energy forestry programs;

h. assists the O/IGF with the design and implementation of in-country seminars to prepare senior Pakistani professionals to design, coordinate, and manage farm and energy forestry outreach programs;

i. assists the Provincial Forest Departments with the design and initial implementation of a series of on-farm forestry demonstrations using techniques and technology proven successful in other similar conditions and of training outreach forester and farmers in these techniques and,

j. assist the provincial Forest Departments with the preparation of a silvicultural plan for the irrigated forest plantations in Sind and Punjab, and the improvement and expansion of the irrigated forest plantations in Sindh.

#### 4. General

a. the identification and direct procurement of selected smaller items of equipment and materials in support of items a. through j. of paragraph 3. above, and identification of other equipment and commodity needs for separate procurement through the USAID commodity office or directly by the GOP;

b. participation as resource personnel in periodic and special project evaluations;

c. conduct an annual survey of training completed during each calendar year to include in-country and out of country training. Submit a report to the GOP and USAID with observations and suggestions, if any; and,

d. keep AID informed of the progress of the project and of activities of the technical assistance team through periodic reports as set forth in the contract.

Long-term and short-term consultant positions created during phase II of the project, and categories of short-term consultancy services to be provided are set out in Annex I.

#### **D. Expected Outputs and Impacts**

Expected project outputs listed in the original 1983 PP were:

1. the strengthening of a federal forest policy and planning team with professional staff responsible for integrating farm and energy forestry activities into federal policies, plans and budgetary allocations;

2. the establishment of provincial forestry planning teams with skills necessary for provincial program planning/evaluation;

3. the strengthening of Federal and Provincial Forest Department infrastructures as required to implement tree crop management programs on privately-owned farm and range lands;

4. the demonstration of tree crop management opportunities on approximately 24,000 acres of privately-owned farm and range lands leading directly to the production of approximately 50 million cubic feet of fuelwood and 2.5 million cubic feet of timber;

5. the improved management of about 2,400 acres of existing forest plantations in Sindh and the development of about 400 additional acres of forest plantations leading to the production of approximately 2 million cubic feet of fuelwood and 1 million cubic feet of timber;

6. approximately 427 forestry and related professionals trained and functioning effectively as decision-makers, farm and energy forestry managers, researchers, and analysts with responsibility for farm and energy forestry policies and programs;

7. approximately 20,000 farm families trained in on-farm tree crop management techniques;

8. the development of comprehensive federal and provincial farm and energy forestry development plans; and,

9. the development and initial implementation of a comprehensive farm and energy forestry education and research program.

The projected numbers of participating farmers over an 8 years period was 18,240 and the estimated acreage to be planted was 24,483. During the period August 1983-May 1989, it was estimated that 5 million trees were planted on 8,300 acres of farmland.

Based upon the revised PP, the original project objectives and goals were modified to reflect changes in project orientation and staffing. The revised PP listed 13 specific expected project outputs:

1. The strengthening of a federal forest policy and planning team with professional staff responsible for integrating farm and energy forestry activities, private forest product sector needs, and other non-traditional forestry activities into federal policies, plans, and budgetary allocations. This will include the ability to collect and analyze data about the forestry sector.

2. The establishment of provincial forestry planning teams with skills necessary for provincial program planning and evaluation.

3. The strengthening of Federal and Provincial Forest Department infrastructures as required to implement tree crop management and outreach programs to owners of private farms and range lands.

4. The demonstration of tree crop management on approximately 70,000 acres of privately-owned farm and range lands leading directly to the production of approximately 126 million cubic feet of fuelwood, 9.2 million cubic feet of timber, and \$5.5 million worth of minor forest products including fodder, thorn fencing material, and mine pit props.

5. The improved management of about 5,000 acres of irrigated forest plantations on government lands in Sindh Province.

6. The training of 568 forestry and related professionals to improve their skills in decision-making, to develop farm and energy outreach training specialists, researchers, economics and marketing analysts, and to train planners for developing strategies to implement national policies on forestry and natural resource management.

7. The training of approximately 60,000 farmers and their families in on-farm tree crop management.

8. The development of federal and provincial forest management plans (with emphasis on farm and energy forestry) in cooperation with the UNDP and ADB.

9. The expansion of the research program supporting farm forestry including cooperative agroforestry research with agriculture research workers.

10. The improvement in operations of the Tarbella Watershed Project and reforestation of approximately 5,000 additional acres.

11. Assistance to Pakistani NGOs and PVOs social forestry and in the natural resource management and conservation area through a grants program. Approximately 10-20 such grants of between \$5,000 and \$50,000 will be given.

12. Improvement of provincial research stations and training centers. Four training centers and four research stations will be improved, one in each province.

13. The role of women in forestry will be enhanced by the construction of a women's hostel at PFI and funding the main building for renovation to include women's studies and wash rooms. Additional WID activities will be developed and coordinated with the Mission WID officer.

Detailed quantified outputs are given in the log frame of the revised PP and are repeated in Annex Tables 1-9. These were used by the project as indicators in their quarterly reports.

## II. PROJECT PERFORMANCE

### A. Achievements

#### 1. Goal Level Indicators

The primary achievements of the TAT are listed in Appendices A-H. Cumulative Life of Project summaries are provided in the Quarterly Progress Reports which are on file in USAID, Winrock headquarters and O/IGF. The achievements of goals summarized in the PP logframe as well as some related measures are set out in Annex Tables 1-6 for the project as a whole as well as for different components. Table 7 presents the goal level indicators for the NGO component added in Phase II. The original PP goal was 10-20 grants, the actual number of grants made (Table 7) was 71 for a total obligation of \$543,000 out of the target amount of \$492,587.

Table 1-6 indicate that most major goals were met or exceeded. The areas where goals were not met were those that (a) received much less emphasis in Phase II, (b) were perceived by farmers to be of marginal benefit (soil conservation) and (c) those areas under direct government implementation (Sindh irrigated plantation rehabilitation and construction). Progress between provinces and federal level was more variable, as would be expected. Travel to project areas in Baluchistan and Sindh was restricted during much of the time which limited project assistance in areas found critical to project success. Table 7 indicates that the NGO grant program was extremely successful and was a timely, well designed project add-on. More progress would have been possible if the long delay between PP approval and signing of the grant agreement was not encountered.

#### 2. Purpose Level Indicators

Tables 8 and 9 summarize the purpose level indicators as developed by the Winrock team, USAID and O/IGF. The narrative which follows is based on the 12 purpose level indicators listed in Table 8.

#### Indicator No. 1: Adoption by Seedling Producers

Over a period of time the tree nursery farmers have developed good nursery management skills producing nursery stock even better than the forest departments. A large number are now so well trained that they could continue the operation without further help by the foresters. Annual nursery production under the project has now leveled off and tends to be constrained by GOP budget allocations and staffing levels. As farm forestry awareness has expanded within villages, the demand for specific tree seedlings continues to increase. Given the increasing sale of wood fiber and wood products from farm woodlots, it is expected that this demand for seedlings

will continue and possibly increase. Increased seedling production is most likely only if Forest Departments introduce a system of tree nursery privatization, purchasing the seedlings from private tree nurseries rather than growing the same on state land. However Forest Departments will have to continue supply of good quality germplasm from established sources.

#### Indicator No. 2: Adoption by Farmers

Farmers have been planting trees on their farms and marginal land in various patterns, viz. single trees scattered in the field, trees in a compact block, in conjunction with agricultural crops and as linear plantations single or multiple around field borders or along water courses. The later two patterns have been emphasized, as the country did not want to reduce its already meager cropping area. Also it was considered necessary to enable the farmer to raise annual crops till he got some returns from a long-term farm crop like trees. The increase in planted area with diversified species shows that economic returns are promising.

In the initial stages of the project, with emphasis on barani (rainfed) conditions, *Eucalyptus camaldulensis* was the main species raised and planted by the farmers. But as the project expanded and irrigated areas too were included, fast growing multi-purpose trees such as poplars and willows were also introduced. Realizing the potential demand by the sporting goods industry and the ease with which these cuttings of species can be grown, these species were readily adopted by the tree farmers and planted on a large scale. Establishment of a few clonal banks of good performing clones helped distribution of good quality stock.

Exceptionally heavy rains and unprecedented high temperatures have brought misery and hardship to the people in general. The farming community after losing successive agricultural crops due to crop disasters caused by these factors have started planting more and more trees as these withstood the vagaries of nature much better.

#### Indicator No. 3: Organizational Strength Index

The involvement of wood using industry in the earlier phase of the project was rather low. The wood producer - wood user national workshops and tree farmers conventions brought this omission to a sharp focus resulting in increased interest and direct dialogue for sale and purchase of wood. A number of industries started trial runs with Eucalyptus wood as raw material for chipboard manufacture. Sale of Eucalyptus wood to this particular industry started in 1993. Manufacture of furniture and even boat construction got underway. Installation of a mill to prepare pulp and paper from Eucalyptus wood was initiated. These developments are a very healthy indicator of a growing relationship much to the satisfac-

tion of both the parties. Sustainability is being addressed through improved project management and by developing market linkages between private farm forestry wood producers and private industrial wood users. Important accomplishments include:

- Used U.S. short-term technical assistance to conduct marketing and management workshops to strengthen the linkage between industrial users and farm producers.
- Wood Producers - Wood Users seminar was held on 19th September, 1994 at Lahore. Seminar helped in strengthening linkage between the farmers, industrialists and foresters.

#### Indicator No. 4: Critical Events in Development of Institutional Capacity

There has been a sustained effort on the part of GOP to revise and implement policies to improve the forest cover in Pakistan through a sustained tree planting program. The office of the IGF played a highly effective role in formulating the National Conservation Strategy for Pakistan. The completion of a comprehensive Master Plan on Forestry Sector and initiation of the Master Plan through program implementation followed. Sindh Forestry Development Project was launched with the help of the ADB to promote social forestry and has made significant strides. An Aide Memoire prepared by the World Bank to assist government of the Punjab in social forestry, irrigated forestry, range management, etc. is being studied by the state government. If put into operation, it would go a long way to help forests and forestry in the Punjab. Annex table 9 also provides some indicators of changes in institutional capacity which have been observed during the project period.

#### Indicator No. 5: Organizational Strength Index

These indices (Annex table 9) reflect the Forest Department's ability to institutionally undertake training, research and outreach programs in farm forestry. Recruitment and retention of committed, qualified staff continues to be a major factor restricting the development and effectiveness of these institutions. Strategic planning capability is gradually improving, but effective interaction and implementation of programs in collaboration with agricultural institutions continues to be minimal. These deficiencies are related to the staff retention issue. Until the management staff is retained in farm forestry positions for an extended period of time so they can gain experience and maturity in the farm forestry arena, it is unlikely that these indicators will improve significantly.

#### Indicator No. 6: Effectiveness of Tree Crop Management

Initially project emphasis was almost exclusively on meeting reforestation targets with little emphasis placed on the transfer

of technology related to the management of perennial tree crops. This indicator shows a gradual acceptance of the broader outreach mandate by the forest departments. As industries increase their use of farm grown wood, forest departments are increasing their emphasis on management and marketing activities. Continued acceptance of this mandate is essential if the farmers are to be assisted effectively in management and marketing of forest products from their woodlots.

#### Indicator No. 7: GOP Commitment to Farm Forestry

Social forestry as a component of forest department's activities has existed for more than a decade. This indicator shows that social forestry's importance in overall department activities is increasing. This change has been largely due to increases in the development budget. The slowest advance is in staffing where infrastructure is less developed and status and perks are perceived to be lower. Recent budgetary reductions have not appeared to affect social forestry's position in an adverse manner. Social forestry initiatives in the Punjab and Sindh provinces that were implemented during PFY 91/92 have recently increased this indicator.

#### Indicator No. 8: Research to Support Farm Forestry

There is an increasing interest in the development and adoption of forest technologies for use in farm forestry. The present level of annually initiated research projects reflects workload saturation on the part of existing scientists and an increasing rigor in the identification, review and approval of research. Some earlier projects have been completed and a series of new projects were initiated. The Pakistan Forest Institute (PFI) has begun to undertake farmer and forest officer field days to transfer technologies to these groups. However, client research needs are yet to be effectively incorporated into the research planning process. Until this is achieved significant change is not expected. It is time that all tree crop interface and other related research is written up in comprehensive, non-technical language and findings passed to the end users, i.e. forest departments, tree farmers and industries.

#### Indicator No. 9: Women in Development Programs

There is an increasing need for women professional foresters to serve as extension foresters and to participate in the design and planning of social forestry activities. In their absence, it is extremely difficult for the forest departments to reach and strengthen activities focused at women's groups. Significant progress may have been achieved in March 1992 when PFI hired a women instructor in its Forest Education Division. This, coupled with a concerted effort by PFI to increase enrollment of women, would continue to provide a pool of trained women professionals

available for recruitment by the departments and NGOs. However, it is uncertain whether or not women will continue to be recruited as students at PFI after the project terminates. The effect of having a women extension forester on the project during the period 1990-1992 can be seen in the increased participation of women in farm forestry activities.

The Project has been directly involving women in forest department activities as professional forest officers. Important accomplishments include:

- Twenty nine women students received B.Sc. and M.Sc. Forestry degree training from the Pakistan Forest Institute (PFI).
- Five women with professional degrees in forestry have been employed by Non-government Organizations covering rural development programs which include a forestry component. Public sector is expected to absorb some while donors and NGOs are likely to pick up others. Employment has been provided to a woman graduate at PFI.
- A "Second National Seminar on Women in Forestry" was held at the Pakistan Forest Institute, Peshawar on March 28-31, 1994. Emphasis focussed on the employment of women in government and non-government positions. Recommendation have been sent to MINFA. Provincial Governments are informed to pick up women, initially for extension and research activities.

#### Indicator No. 10: Training

The limited pool of degree training candidates coupled with the nominees problems clearing TOFEL and GRE examinations has limited the number of overseas degree training participants that have been and are being trained under this project. Increased assistance during PFY 90/91 helped nominees meet pre-training criteria and resulted in the placement of 14 participants into degree programs during 1992-93. To date, no participant has returned without a degree and those who have returned have been assigned to activities that directly benefit the project. One individual has been granted a Ph.D degree under this program. Short-term participant training is being effectively used to increase the managerial and social science skills of farm forestry officers. Emphasis continues to be placed on in-country training of forest officers, forest technicians and farmers. Initially this training was focused at tree planting skills. Current and future emphasis is shifting to skills required to manage and market tree crops. Since the latter is technical rather than motivational, workshops are restricted in size and the total number of individuals trained is less.

Other activities include:

- Adopted a revised curricula for Forester and Forest Guard technician training, complemented by 17 chapters covering the whole curricula have been written up. By the middle of September, 500 copies of each of the 17 chapters would be ready for distribution. Training materials emphasize nursery production, woodlot management and farm products marketing topics required of farm forestry extension staff.
- Prepared 70 posters, as a training and teaching aid, depicting different forestry operations and distributed to principals of forestry schools, some NGOs and extension staff of the forest departments.

In-country field days, seminars and workshops were used to strengthen technical and managerial skills of forest department officers, technicians and farmers. Important accomplishments include:

- Organized and held two 2-day workshops, one for 50 forest officers and one for 400 farmers and wood-using industrialists, on management and marketing of wood products raised under agroforestry systems.
- Organized and conducted half-day workshops for 2585 farmers involved in tree planting activities in Punjab and Balochistan.
- Organized and conducted one-day workshops for 46 farmers involved in managing farm nurseries in Balochistan.
- Organized and conducted one-day workshop for 5 farmers involved in land development activities in Balochistan over an area of 20 acres.
- Organized and conducted one-day workshops for 20 farmers involved in land development activities in the Punjab over an area of 100 acres.
- Organized five four-day workshops for training of trainers at PFRI, Faisalabad. One trainers at the level of forest rangers were trained over a period of two months. Training course included nursery and field plantation management marketing. Special emphasis was placed on extension methods for which services of specialists were hired from the Agricultural University, Faisalabad.

#### Indicator No. 11: Status of Construction Activities

Initially, identification of building sites and construction modalities delayed this activity. However, all 41 social forestry

office facilities financed by USAID have now been completed. Significant delays in the GOP financed construction of residences for social forestry staff exist, but 27 of the 90 proposed residences have been completed. The completion of the men's hostel at PFI has allowed the institute to expand its short-term training programs. The completed women's hostel should significantly encourage the continued training of women at PFI. Construction of Sindh social forestry offices, and teaching and research facilities at the provincial technical schools and research stations are nearing completion where 80% of the work has been finished. (This activity is not under the TAT scope of work.)

#### Indicator No. 12: Status of NGO Grant Activities

During the 4th quarter of PFY 91/92, an NGO Grant Unit was established to award grants to environmental, industrial and village-level NGOs to strengthen their programs in conservation and forestry activities. To date, 71 grants have been awarded to increase public awareness of farm forestry, to support conservation of unique ecosystems, to strengthen wood user-producer linkages, and to train individuals in farm forestry production technologies. A training program was planned which has been executed during April-June 1994 for the NGOs. Training by NGO cell is provided to NGO environmental groups, farmers and women. Assistance was also provided to Balochistan Rural Support Program in the formulation of Social Forestry Master Plan and its implementation. The formal involvement of NGOs into Project activities has been established through a grants program. Important accomplishments include:

- Completed 66 grants totalling \$461,476 which strengthened NGO programs in conservation and forestry activities.
- Ongoing 5 grants totalling \$31,111 which were terminated or canceled before the project was completed.
- With the financial assistance of Winrock International/USAID an "NGO's Convention" was held at Lahore from 17-18 September, 1994 by "Save Environment and Trees (SET)" - an NGO based in Islamabad.

#### Contract and Grant Budget Status

Finally, recent project budget summaries are given in Annex Table 10 for the contract and Annex Table 11 for the NGO grant component. These figures are approximate as final financial statements won't be complete until late in 1994. They are good approximations, however.

## B. Challenges, Constraints and Problems Encountered

Many of the problems encountered arose from the project design process which reflected the traditional approach to government-led forestry development efforts. Targets were based on traditional forestry concepts of number of tree and acres planted, number of nursery farmers, seedlings produced, etc. Yet the key indicators of success proved to be number of meetings held, contact hours of farmer training, number of radio program, repeat clients, number and type of extension publications, etc. These were the key elements in motivating farmers which only then led to trees being planted, nurseries established, etc. Traditional ("formal") training was emphasized rather than farmer training in the informal, on-farm context. Industry as a major project client was generally overlooked and it was assumed industry would provide whatever markets were necessary. No thought was given to provision of training and technical assistance for the industrial sector to assist in developing demand for farm forestry products and in developing marketing and pricing mechanisms. The TAT budget did not identify a line item of extension/outreach. This failed to recognize the major importance of extension efforts with both farmers and industry clients. The project focused on planting but failed to recognize that fast growing tree species would need a lot of effort (training, extension) on the management of growing trees and the subsequent harvest/ marketing/ utilization stage. The project design assumed that social scientists would play a lead role in designing tree production, marketing and utilization while the real need was for forestry extension in all the above areas by technically qualified foresters.

The formal structures designed to provide local motivation were general ineffective. Village motivators and advisory committees failed to take off for various reasons and motivation came primarily from demonstration effects provided by local successful producers. The key counterparts from O/IGF faced constant problems in funding for travel which limited ability of these staff to accompany TAT members. It took 7 years before the issued was resolved and project funds could be used for such travel. Forest department staffing needed to fully support project efforts was uneven and uncertain.

With the project in place, it was possible to maintain communication and linkages between forest departments and clients, including farmers, wood product users and women. As the project phases out, an institutional structure is not in place to maintain government-client interaction, including the need for farmers to bring pressure on the government to effect needed policy changes to encourage private sector tree farmers and development of local markets for farm produced trees. We had hoped that an NGO started with project backing, the Pakistan Tree Farm Society, could potentially fill that role but it does not appear that this will be the case. Thought needs to be given to this need. The "advisory"

committees at federal, provincial and district level currently serve as government-sponsored coordinating units but, with the improved government policies, could gradually become representative groups working on broad agendas to promote the types of activities found essential under this project.

### III. LEARNING FROM THE EXPERIENCE

#### A. Reflecting on the Experience

This project, as is the case of most planned activities which set in place rapid changes, was able to identify key areas leading to success. Rapid changes, however, allowed us to identify new problem areas and issues that arose because of these events.

The project was basically an institutional development effort complicated by the need to work with institutional development at the federal, provincial and district levels with the GOP as well as the need to work with private sector institutions and directly with large numbers of individual farmers.

The Forestry Planning and Development Project achieved success because it was gradually able to change the Forest Department's orientation towards a non-traditional clientele: private tree farmers and industrial wood users. It is an axiom that an institution's clientele must be effectively included in any activity that effects changes in an institutions mandate. Building up this clientele base helped get the process of a reorientation of institutional focus and institutional change started. This process still has a long way to go, however. Induced changes in an institutions focus and way of doing business must then be translated into changes in staffing, operating procedures and use of facilities. An expanded development agenda and clientele base must be translated into expanded human and financial resources to do the job.

After demonstrating success on a limited scale, we then need to ask how the program could be expanded and replicated given the limited public sector resources available to support this work and also taking into account that institutional change has not kept pace with the new tree growing paradigm that is emerging in Pakistan. The obvious solution is to provide more services through groups rather than through individual farmers. These would include farmers groups, farmer organizations, NGOs and wood users groups or associations. To accomplish this would require a project with unusual flexibility and a long time-frame and with a mandate to work with a variety of institutions, some not yet even conceptualized, and with a variety of funding mechanisms. Activities that are committed to village organizations can also require tremendous input of human and financial resources as the Malakand Social Forestry Project indicates. Therefore, a follow-on activity should focus specifically on farmer groups voluntarily organized to establish nurseries, and grow and market trees. Organizational work should be left up to specialized NGOs that have sufficient experience in this area.

Next, the linkages between tree users, tree producers and market mechanisms must be constantly kept in mind when expansion of private tree farming is contemplated. The extension approach of information, motivation, teaching and inducing change is relevant to these areas but the existing formal public support structures are only just beginning to work out the modalities of providing extension services to a very limited range of activities required by tree producers. The project, because of its flexibility and funding, could tackle all three areas simultaneously but when the project closes, weaknesses will develop in the tree user and marketing areas. Again, sustainability calls for a mix of organizations to interface and link all these components and to provide the optimal mix of services to each group.

## **B. Actions Needed to Enhance Sustainability**

1. Privatization of forestry as an economic activity has been successfully started and the government's role should be one of supporting the private sector through provision of appropriate policies and infrastructure support such as information, assistance with marketing and communications and providing an enabling legal environment.

2. The working linkages developed through the project between farmers, industries and foresters have been shown to be very useful but are not yet self-sustaining in either an organizational or financial sense. Professional organizations and industry associations are not yet well enough established to guarantee such linkages will be sustained. It was thought that the Pakistan Tree Farm Society may be able to fulfill that role. Unfortunately, this now appears unlikely. A neutral NGO serving as an apex council on social forestry/ farm forestry, with a solid funding base, may be needed to keep this crucial component going.

3. Subsidies are an issue which must be dealt with to ensure sustainability. Private nurseries represent a sustainable and efficient input service and the sale of subsidized seedlings in direct competition with these nurserymen should be discouraged. This is a complicated issue because of current forest department staffing, limited resources of many farmers to purchase seeds, etc.

4. The key element for successful farm forestry, as is the case for crop production, is the assured supply of quality planting material. Sustainability of farm forestry will require that private nurseries can remain profitable, market oriented and can maintain access to good genetic material. A number of issues related to government policies, control and subsidies all revolve around the private nursery question. They are related to Forest Department control through the issuance of private farm forestry nursery contracts, and influences the willingness of private farmers to sell seedlings on the open market, the availability of seedlings on the open market, the kinds of seedling produced and the long-term

viability of private farm nurseries. The red tape needed for a farmer to get free seedlings or to harvest trees from his own land continues to be a major issue and reflects historical patterns of control rather than the realities of a private, market oriented farm forestry sector. The growing private farmer tree farming community will, hopefully, bring pressure on the government to enact the necessary changes needed to promote private sector planting and harvesting.

### C. Lessons Learned

The end-of-tour reports prepared by Charles Hatch, Gary Naughton, George Blake and the advisors associated with the Phase I Technical Assistance Team reviewed numerous issues that can be cast into a "lessons learned" format for the Project. The lessons learned which follow are drawn from all of those reports. They are stated in the context of farm forestry project design considerations.

Use of Targets - In forestry bureaucracies of Asia, project targets specify the direction of the program. If targets are trees planted, extension personnel undertake activities which are needed to plant trees. That translates narrowly into nursery and tree planting activities. Time spent by an extension forester helping a farmer manage a tree crop that was planted in an earlier period, is not planting new trees so time is not targeted for this activity. It is important that farm forestry projects be designed to manage as well as plant tree crops. In successful projects, the time which extension foresters will need to spend providing farmers with technical information that is needed to grow trees, will exceed the time they spend motivating farmers to plant trees. Successful tree farmers plant trees. So projects should be designed to not only address project needs at time of start up (activities associated with the planting of trees), but also needs which may occur if the project is successfully implemented (activities associated with the management of tree crops).

Informal Training - Training is generally couched in the formal context of structured workshop, seminar and course work programs. In farm forestry programs, activities associated with conducting farmer training in the informal, on-farm context as used in extension and outreach programs must be legitimized. The Forestry Planning and Development Project spent thousands of person-hours conducting structured workshops, seminars and conferences, yet the informal farmer training was its most successful extension activity. The project was, on occasion, criticized because it didn't emphasize "traditional" training programs of several days duration for farmers. If farmer training is a major project objective, training programs and formats must lend themselves to the clients schedule. Otherwise, farmers who attend multiple-day,

highly structured training will tend to come from the population of farmers who are absentee landowners, relatively resource rich, and more formally educated.

Markets - In farm forestry programs, from the start, forest industry needs to be considered a project client. Too often emphasis is placed solely on farmers (wood producers), and wood users (industries) are ignored; yet the key to institutionalizing private forestry is in strengthening the industrial based wood demand and market infrastructure. Although motivation results in trees being planted, markets sustain farm forestry activities and tree planting over the longer term. The understanding and reporting of market linkages is an essential component of a farm forestry extension program.

Importance of Industrial Clients - Wood user-wood producer linkages potentially provide nearly an unlimited number of opportunities to sustain farm forestry programs. Activities which should be considered, while designing farm forestry programs that could help forest industries strengthen their ability to affect linkages, include:

- access to credit for forestry activities and for renovation of manufacturing facilities;
- more extensive research to support industrial forestry needs; and
- formation of a federation of industrial commodity associations at the national level (similar to the National Forest Council of the U.S.) for the purpose of promoting private forestry. Such a federation could give high level recognition to the private forestry sector as a national leader in self-help programs, and provide a long-lasting institutional framework for the sponsorship of tree-farming.

Affecting Change in Forest Policies - The USAID Project Paper envisioned that the project, through the Office of the Inspector General of Forests, would be proactive in formulating and directing a farm forestry policy agenda for Pakistan. This direction was commonly interpreted to imply that a revised forest policy for Pakistan would be formulated, and legislation would then revise existing laws so new administrative regulations could be issued. The policy has been revised, but laws have not yet been passed to affect its implementation. Because no new laws have been passed, many individuals have questioned whether or not Pakistan's forest policy changed as a result of the project. The formal enactment of laws change stated policy. However, the Office of the Inspector General of Forests, through the Forestry Planning and Development Project, proactively affected Pakistan's farm

forestry policy agenda through the institutionalization of farm forestry programs within provincial forest departments. Throughout all provinces, farm forestry activities now are being formally incorporated into forest department program objectives, establishment appropriations, and permanent staffing structures. Participatory forestry methods are standard practice within farm forestry programs, and farmer-wood industry linkages are viewed as critical farm forestry components. This is a significant forest policy change that evolved from a programmatic activity. During project design, actions needed to institutionalize a project's activities should be consciously planned with the intent to affect policy. Sustainability, generally, is better served through institutionalization than it is through forced action.

Use of Short-Term Expatriate Technical Assistance - Short-term expatriate technical assistance is frequently used to undertake specialized studies and to train individuals and trainers. An equally important use, however, is to help long-term technical assistance team members better understand complex technical issues, and present them to both host government and donor personnel. In the absence of this use, numerous opportunities to implement project activities in more creative manners are lost.

Role of Long-Term Expatriate Technical Assistance - Because of the punitive nature of bureaucracies, host government officials generally act conservatively with respect to project implementation decisions. Long-term expatriate advisors provide them a more risk-free environment by being there to take responsibility for activities which go astray. Thus, the range of implementation alternatives that are considered is greater, and bolder decisions tend to be made.

Reimbursing Costs - When projects enter new areas, institutional restructuring is often required and this translates into project staffing problems. If funding support for the project were based on the number of staffed positions it might encourage more rapid staffing of new projects. Therefore, project support funds should be provided on the basis of the number of positions that are staffed, and not on the basis of project activities to be performed.

Construction of Facilities - For projects that enter new areas, infrastructure can play an important role in the assignment and retention of staff. In this context, the construction of residences are as important as offices. They should be built as a package to ensure that a functional complex is established.

Technical Training for NGOs - Although rural development NGOs can be and are motivated to tackle natural resource/ conservation

issues in their rural development programs, if they are new to a technical area their technical capacity in the new field may be overlooked because of their past rural development successes. Technical training is an absolutely essential component if the NGOs successes are to be continued in their expanded area of interest.

Initial Siting of Project Activities - Frequently forestry projects are designed to assist individuals who reside in the most poorly developed regions of a country. Commonly, these regions lack infrastructure and are, largely, in remote locations. Siting initial farm forestry project activities exclusively in remote sites, which are distant from markets, makes them difficult to use as training sites and as focal points during visits to the project by senior officers and foreign guests. It also delays the ability of the project to demonstrate early market impacts. Initial siting of project activities should consider both short- and long-term project needs and provide for both.

Use of NGOs to Strengthen Industrial Linkages - Natural resource NGO programs often exclude private sector linkages by concentrating on rural development activities which increase the availability of resources at the household level. Strengthening markets by collaborating with wood industries and industrial associations could provide complementary opportunities for farm households. Activities which should be considered, while designing NGO programs that could help forest industries strengthen their ability to affect farm-industry linkages, include:

- help associations focus on farm production opportunities to address their raw material supply problems;
- facilitate meetings between industrial associations, or individual companies, and tree farmers to explain the industry's raw material needs and quality constraints, and to improve industrial understanding of the farmers's production constraints; and
- be an operational mechanism for industrial associations and/or individual companies to support tree farming by providing nursery stock to farmers, by cooperating with the social forestry staff, by financing farmer recognition programs, and by offering technical forestry extension services through the employment of field foresters.

Need for Research - The project was highly successful despite having a research component which provided essentially no inputs into overall project operation. The End of Tour Report by the Education/ Training and Research Advisor stated that not a single research project had prepared a final research publication and been successfully concluded. This leaves several questions unanswered. Were the knowledge requirements such that quality research was not really needed and project objectives could be met using existing knowledge of forestry production in Pakistan? Were the wrong types of research projects chosen? Are the day-to-day duties of Forest Research Officers such that they have no interest or incentives to conduct and conclude quality research? Is the level of training such that quality research programs cannot readily be put in place? At what stage in forestry development will this demonstrated lack of research capacity become a serious constraint? All these issues need discussion and further analysis before large amounts of resources are committed to additional forestry research in Pakistan.

## APPENDIX A

### TECHNICAL ASSISTANCE TEAM AND NGO GRANT UNIT MEMBERS

#### Technical Assistance Team

##### Advisors

C. Buford Brisco	Chief of Party	5/05/85-11/04/86
H. Eugene Ostmark	Chief of Party	1/19/87- 1/11/89
Charles R. Hatch	Chief of Party	6/19/89- 7/31/94
Dean Current	Extension Advisor	10/07/85-12/16/86
Gary G. Naughton	Field Demonstration For.	7/10/89-5/31/93
Kenneth McNabb	Research Advisor	6/09/85-10/04/88
William J. Hart	Training Advisor	9/29/85- 9/20/88
George M. Blake	Training & Research Adv.	9/04/89- 8/31/92
Michael R. Dove	Anthropologist	12/04/85- 6/18/89
Mahmood Iqbal Sheikh	For Mgmt Specialist	2/25/90- 9/30/94
Tahir Wadood Malik	Training & Comm Coord	11/19/89- 9/30/94

##### Technical Staff

Jamil A. Qureshi	Social Scientist	3/01/86-11/30/88
Mamoona Muhammed Wali	Extension Forester	11/18/90- 5/03/92
Nighat Mansoor	Extension Forester	11/18/90- 7/16/91
Gohar Rehman	Data Base Cell Off	8/18/91- 4/29/93
Ayaz Mehmood	Data Base Cell Off	8/18/91- 5/15/92
Ghulam Q. Shah	Data Base Cell Off	6/15/92-12/17/92
Raja M. Omer	Data Base Cell Off	11/15/92- 9/30/94
Shauket Ali Khan	Data Base Cell Off	12/18/92- 4/29/93

##### Field Assistants

Riaz Ahmad	Social Sci. Enumerator	7/03/86- 4/30/87
Nazeer Marwat	Social Sci. Enumerator	7/20/86- 4/30/87
Shamsul Qamar	Social Sci. Enumerator	7/20/86- 4/30/87
Nisar Ahmad	Social Sci. Enumerator	7/27/86- 4/30/87
Nadeem Shahzad	Social Sci. Enumerator	8/03/86- 5/27/87
Sarfraz Ahmad	Social Sci. Enumerator	8/03/86- 5/27/87
Zafar Masood	Social Sci. Enumerator	8/19/86- 5/09/87
Gul M. Umrani	Social Sci. Enumerator	8/19/86- 5/09/87
Abul Hassan	Social Sci. Enumerator	1/07/87- 4/30/87
Nisar Ahmad	Social Sci. Enumerator	7/01/87- 8/15/88
Shamsul Qamar	Social Sci. Enumerator	8/01/87-11/30/88
Gul M. Umrani	Social Sci. Enumerator	8/01/87-11/30/88
Sarfraz Ahmad	Social Sci. Enumerator	9/01/88-11/30/88
Sarfraz Ahmad	Social Sci. Enumerator	2/05/89- 7/03/89

Office Staff

Imtiaz A. Sheikh	Admin Officer	5/27/85- 4/09/92
Obaid-ur-Rehman	Accountant	4/12/92- 9/30/94
John W. Sandho	Secretary-Peshawar	12/01/85- 9/30/88
Khalid Naseer	Secretary	8/05/85- 6/30/91
M. Munir Malik	Secretary	3/29/87- 9/30/94
M. Aqeel Abbasi	Secretary	4/15/90- 9/30/94
Haroon Abassi	Secretary	8/01/91-12/30/91
Farman Ullah	Secretary	1/13/92- 2/18/92
M. Afzal Khan	Secretary	5/03/92- 5/05/94
Muhammad Din	Secretary	5/24/94- 9/30/94
Fahim A. Khan	Chauffeur-Peshawar	11/19/85- 7/13/88
Mohammad Parvez	Chauffeur	6/02/85- 9/30/94
Jamil Ahmad	Chauffeur	1/12/86- 1/31/87
M. Ibarat	Chauffeur	2/01/87-10/21/89
Nazar Shabarti	Chauffeur	10/22/89- 9/30/94
Munir Ahmed	Chauffeur	5/08/88- 9/30/94
Feroze Masih	Janitor	5/27/85- 9/30/94
Masood Alam	Maintenance Engineer	5/27/85- 9/30/94
Muhammad Alam	Gardner	5/27/85- 9/30/94

NGO Grant Unit

Management

Ahmed S. Bokhari	Grant Unit Mgr	6/22/92-9/30/94
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Technical Staff

Qasim M. Ahmed	M&E Officer	11/15/92-9/30/94
Farhat Naseer	M&E Officer	12/15/92-9/30/94

Office Staff

Obaid-ur-Rehman	Accountant	10/01/94-9/30/94
Haroon Abassi	Secretary	7/15/92-9/30/94
Ch. Rashid Ahmed	Chauffeur	3/01/93-9/30/94
	Chauffeur	10/01/94-9/30/94
Irfan Masih	Janitor	9/08/92-9/30/94

APPENDIX B

PARTICIPANTS FUNDED FOR DEGREE STUDIES

Completed

M.Sc. Degree

ANSARI, M. Alam	Sindh	Mgmt & Planning	08/27/86	05/22/88
RAFIQ, Mohammad	NWFP	Mgmt & Planning	08/25/86	06/30/88
KHAN, Safdar Ali	PFI	Forestry Outreach	01/19/87	04/30/89
KHAN, Mohammad	PFI	Silviculture	08/26/87	08/31/89
KHAN, Malik M.	Punj	Mgmt & Planning	01/13/88	01/12/90
SUBHAN, Fazali	PFI	Mgmt & Planning	01/13/88	05/31/90
JAMIL, Abdul	NWFP	Budget/Res Mgmt	01/11/89	01/31/91
ALI, Shaukat	NWFP	Forestry Outreach	01/02/89	03/31/91
KEERIO, Ghulam R.	Sindh	Forest Mgmt	08/27/89	08/26/91
LEKHRAJ, Kella	Sindh	Forestry Outreach	09/18/89	09/30/91
VIRK, Amjad T.	Baloch	Wildlife	09/20/89	12/19/91
IQBAL, Mohammad	NA	Silviculture	09/01/88	12/23/92
FAROOQ, Muhammad	Punj	Social Forestry	01/07/91	01/06/93
MOHAMMAD, Taj	Baloch	Economics	05/28/91	08/15/93
AHMAD, Manzoor	Baloch	Forest Mgmt	08/22/91	08/21/93
CHIMA, Amjad M.	Punj	Forestry Extn	09/09/91	09/08/93
MEHMOOD, Tariq	Punj	Forest Econ	01/14/92	09/17/93
AWAN, Shahid R.	Punj	Forestry Extn	01/21/92	09/17/93
VISTRO, Najmuddin	Sindh	Econ Farm For	01/14/92	09/17/93
LAEEQ, M. Tahir	PFI	Silviculture	08/28/91	09/30/93
KHAN, Mohammad S.	NWFP	Research	09/22/91	10/31/93
SULEMAN, Kanwar M.	PFI	Pulp & Paper	01/10/92	12/31/93

Ph.D Degree Coursework

VIRK, Amjad T.	Baloch	Wildlife	12/20/91	05/31/93
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Ph.D Degree

KEERIO, Ghulam R.	Sindh	Agroforestry	05/30/93	12/22/93
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In-Training

Ph.D Degree

EJAZ, Babar	Punj	Mgmt & Planning	01/23/90	07/22/93
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M.Sc. Degree

KHAN, Gul M.	NWFP	Res Economics	08/16/92	08/15/94
MOHAMMAD, Syed G.	Baloch	Silviculture	08/16/92	08/15/94
BAKSH, Ilahi M.	PFI	Silviculture	08/24/92	08/01/94
HUSSAIN, Zameer	Punj	Silviculture	08/27/92	08/26/94

APPENDIX C

PARTICIPANTS FUNDED FOR OVERSEAS SHORT-TERM TRAINING

Special Short-term Courses

BHATTI, Sanaulah	Punj	Proj	Eval-UC	09/24/86	12/09/86
KHARAL, A.R.	Sindh	Proj	Eval-UC	09/24/86	12/09/86
KUNAIN, S. M.	NWFP	Proj	Eval-UC	09/24/86	12/09/86
REHMAN, Shah	Baloch	Proj	Eval-UC	09/24/86	12/09/86
SHAMIM, Mian M.	Punj	Proj	Eval-UC	09/24/86	12/09/86
SURAHIO, Ibrahim	Sindh	Proj	Eval-UC	09/24/86	12/09/86
ABRO, Ali Asghar	Sinch	Proj	Eval-UI	05/22/89	06/30/89
AHMAD, Mian M.	Punj	Proj	Eval-UI	05/22/89	06/30/89
AHSAN, Javed A.	Punj	Proj	Eval-UI	05/22/89	06/30/89
ARSHAD, Abdul R.	NWFP	Proj	Eval-UI	05/22/89	06/30/89
ASHFAQUE, Raja M.	PFI	Proj	Eval-UI	05/22/89	06/30/89
HAYAT, Mohammad	NWFP	Proj	Eval-UI	05/22/89	06/30/89
INSHA ULLAH, M.	Punj	Proj	Eval-UI	05/22/89	06/30/89
KAZI, Ashfaq	Sindh	Proj	Eval-UI	05/22/89	06/30/89
KHALIQ, Ch. Abdul	Fed	Proj	Eval-UI	05/22/89	06/30/89
KHAN, Mohammad I.	NWFP	Proj	Eval-UI	05/22/89	06/30/89
KHAN, Mumtaz	NWFP	Proj	Eval-UI	05/22/89	06/30/89
KHARAL, A.R.	Sindh	Proj	Eval-UI	05/22/89	06/30/89
MEMON, M. Yousaf	Sindh	Proj	Eval-UI	05/22/89	06/30/89
MEMON, Shamsul H.	Sindh	Proj	Eval-UI	05/22/89	06/30/89
QAYUM, Abdul	NWFP	Proj	Eval-UI	05/22/89	06/30/89
RAFIQ, Muhammad	Baloch	Proj	Eval-UI	05/22/89	06/30/89
SHAH, Bashir H	Fed	Proj	Eval-UI	05/22/89	06/30/89
SHAH, Mubarik H.	NWFP	Proj	Eval-UI	05/22/89	06/30/89

Workshops/Short Courses

CHAUDHRY, S. Ali	Punj	OICD-Res	Mgmt	07/28/86	09/05/86
KHAN, Mirza Hakim	PFI	OICD-Res	Mgmt	07/28/86	09/05/86
REHMAN, Shams-ur	PFI	NCSU-Forestry		10/12/86	10/22/86
CHEEMA, M. Afzal	FPI	OICD-LU	Plan	06/15/87	07/24/87
BALOCH, M. Anwar	Sindh	OICD-Wtr	Mgmt	06/15/87	08/07/87
SHAH, Ehtesham H.	Sindh	OICD-Wtr	Mgmt	06/15/87	08/07/87
RANDHAWA, Rashid	Punj	OICD-Arid	For	07/20/87	08/14/87
REHMAN, Shams-ur	PFI	OICD-Arid	For	07/20/87	08/14/87
SALEEM, Mohammad	Punj	OICD-Arid	For	07/20/87	08/14/87
KHAN, Akhlaq Ahmed	Punj	OICD-Proj	Mgmt	09/21/87	10/30/87
SHEIKH, Ghulam M.	Sindh	UW-Forestry		02/29/88	03/30/88

AHMED, Rana Rafiq	Fed	OICD-Gen Mgmt	05/30/88	07/01/88
AZIZ, Nasrullah K.	Fed	OICD-Agric Dev	06/06/88	07/15/88
CHIMA, Amjad M.	Punj	OICD-Agri Res	05/30/88	07/15/88
SHAH, Qasim Ali	PFI	OICD-Micro Comp	06/27/88	08/05/88
ZAFARULLAH, M.	Punj	OICD-Res Mgmt	06/06/88	08/12/88
BANGASH, Amanullah	NWFP	OICD-Proj Mgmt	07/18/88	08/26/88
MEMON, Abdul Aziz	Sindh	OICD-Proj Mgmt	07/18/88	08/26/88
SIDDIQUI, Khalid	PFI	OICD-Proj Mgmt	07/18/88	08/26/88
AHMED, Tanver	PFI	OICD-Mgmt/Plan	07/18/88	08/26/88
RANA, M. Ataullah	Punj	OICD-Proj Mgmt	08/08/88	09/16/88
WANI, Bashir Ahmed	Fed	OICD-LU Plan	06/12/89	07/21/89
AHMAD, Manzoor	Baloch	OICD-Ran Mgmt	06/05/89	08/04/89
ALAM, Mian Maqsood	Punj	OICD-Ran Mgmt	06/05/89	08/04/89
BAZAI, Akhtar M.	Baloch	OICD-Ran Mgmt	06/05/89	08/04/89
ABDUL, Ali	Baloch	OICD-Arid For	07/17/89	08/11/89
AHMAD, Rana Rafiq	Fed	OICD-Arid For	07/17/89	08/11/89
AZIZ, Nasrullah K.	Fed	OICD-Arid For	07/17/89	08/11/89
AMIN, Mohammad	Punj	OICD-Trn Trn	08/07/89	09/15/89
BHATTI, Abdul H.	Sindh	OICD-Trn Trn	08/07/89	09/15/89
SULEHRIA, M. S.	Punj	OICD-Trn Trn	08/07/89	09/15/89
REHMAN, Wali-Ur	PFI	Pest Control	06/19/90	07/13/90
AHMAD, Ghiasuddin	Baloch	OICD-Proj Impl	07/16/90	08/24/90
RANDHAWA, Rashid	Punj	OICD-Proj Impl	07/16/90	08/24/90
MALIK, Nazir Ahmad	Punj	OICD-Trn Trn	08/06/90	09/14/90
MUHAMMAD, Ali	Punj	OICD-AF Extn	08/13/90	09/15/90
RAZA, Ali	Fed	OICD-AF Extn	08/13/90	09/15/90
WANI, Bashir Ahmed	Fed	OICD-AF Extn	08/13/90	09/15/90
AHMED, Imtiaz	Fed	OICD-Agr Stat	09/10/90	10/19/90
CHEEMA, M. Afzal	PFI	OICD-Agr Stat	09/10/90	10/19/90
BHUTTO, M. Ramzan	Sindh	OICD-Ag Extn	08/27/90	10/26/90
RAJPAR, Anwar Ali	Sindh	OICD-Ag Extn	08/27/90	10/26/90
SOOMRO, Abdul M.	Sindh	OICD-Ag Extn	08/27/90	10/26/90
AHMAD, Rana Rafiq	Fed	OICD-Intg Dev	09/17/90	10/26/90
CHAUDHRY, M. Afzal	Punj	OICD-Intg Dev	09/17/90	10/26/90

KHAN, Shah Wazir	NWFP	OICD-Intg Dev	09/17/90	10/26/90
REHMAN, Shams-ur	PFI	OICD-Intg Dev	09/17/90	10/26/90
ASHRAFF, Qazi M.	NWFP	OICD-AF Extn	05/13/91	06/14/91
HAQ, Noor ul	NWFP	OICD-AF Extn	05/13/91	06/14/91
KHAN, Hafeezullah	Punj	OICD-AF Extn	05/13/91	06/14/91
MALIK, Mohammad N.	Punj	OICD-AF Extn	05/13/91	06/14/91
KUNAIN, S. M.	NWFP	OICD-Mgmt Skill	05/27/91	06/28/91
RANA, Mohammad M.	NWFP	OICD-Mgmt Skill	05/27/91	06/28/91
AYAZ, Mohammad	PFI	OICD-LU Plan	06/24/91	08/02/91
MUHAMMAD, M. W.	WI	OICD-LU Plan	06/24/91	08/02/91
HABIBULLAH	Baloch	OICD-Arid For	07/15/91	08/09/91
KHAN, Akhtar Saeed	Punj	OICD-Agro Ext	05/11/92	06/12/92
KHAN, F. Ur Rehman	NWFP	OICD-LU Plan	06/08/92	07/17/92
MARJAN, Ghazi	NWFP	OICD-LU Plan	06/08/92	07/17/92
AHMED, Aftab	Punj	OICD-LU Plan	06/08/92	07/17/92
ALI, Qazi Abdul	Baloch	OICD-FSRE	07/06/92	08/07/92
KHAN, Anwar Ahmed	PFI	OICD-FSRE	07/06/92	08/07/92
WANI, Bashir Ahmed	Fed	OICD-Ag Extn	06/22/92	08/14/92
AHMED, Imtiaz	Fed	OICD-Micro Comp	07/06/92	08/14/92
KHAN, Raja A.	Punj	MSU-Seed Tech	06/17/92	08/31/92
KHAN, Mohammad	PFI	MSU-Seed Tech	06/17/92	08/31/92
SULEHRIA, M. S.	Punj	OICD-Adv Trn Trn	09/21/92	10/16/92
SWATI, M. Iqbal	NWFP	UW/USFS-For Mgmt	08/31/92	10/24/92
KHAN, Yar Mohammad	NWFP	USDA GS-Proj Mgmt	03/01/93	04/02/93
SIRHINDI, B.	Sindh	OICD-Proj Mgmt	05/31/93	07/09/93
AHMAD, Rana Rafiq	Fed	UT-Sus Nat Res	06/27/93	07/23/93
KHAN, Ali Akbar	NWFP	UT-Sus Nat Res	06/27/93	07/23/93
NAZIR, Ch. Tariq	Fed	UT-Sus Nat Res	06/27/93	07/23/93
SHEIKH, Ghulam M.	Sindh	UT-Sus Nat Res	06/27/93	07/23/93
BALOCH, Abdul R.	Baloch	OICD-Res Mgmt	06/21/93	07/30/93
MEMON, Shamsul H.	Sindh	OICD-Sus Devel	06/28/93	08/06/93
ABBASI, Raja M. Z.	Punj	OICD-Ag Extn	06/21/93	08/12/93
SAMIULLAH	NWFP	OICD-Ag Extn	06/21/93	08/12/93

IQBAL, Zafar	Punj	OICD-FSRE	07/06/93	08/06/93
KHAN, Inam Ullah	Baloch	OICD-FSRE	07/06/93	08/06/93
SHAH, S. Ijaz H.	Fed	OICD-Agr Stat	09/07/93	10/15/93

#### Study Tours

ASHRAF, Ch. M.	Punj	US Forestry	06/15/86	07/02/86
JAN, Abeerullah	NWFP	US Forestry	06/15/86	07/02/86
QAZI, I.A.	Fed	US Forestry	06/15/86	07/02/86
RAFIQ, Mohammad	Baloch	US Forestry	06/15/86	07/02/86
KHAN, A.R.	NWFP	UM-For Mgmt	09/30/86	10/24/86
ABBAS, Sardar G.*	Punj	Thai, Phil, Nep	06/28/87	07/19/87
AHSANULLAH*	NWFP	Thai, Phil, Nep	06/28/87	07/19/87
HUSSAIN, Ajmal*	Punj	Thai, Phil, Nep	06/28/87	07/19/87
JAMALI, Ali H.*	Baloch	Thai, Phil, Nep	06/28/87	07/19/87
KHEL, S. M.*	NWFP	Thai, Phil, Nep	06/28/87	07/19/87
LALEKA, M. A. Ali*	Punj	Thai, Phil, Nep	06/28/87	07/19/87
AHMED, Lal Fazal	Sindh	Thai, Phil, Nep	06/28/87	07/19/87
ASHRAF, Qazi M.	NWFP	Thai, Phil, Nep	06/28/87	07/19/87
HABIBULLAH	Baloch	Thai, Phil, Nep	06/28/87	07/19/87
MASRUR, Anwar	Punj	Thai, Phil, Nep	06/28/87	07/19/87
SHAH, Abdul S. H.	Fed	Thai, Phil, Nep	06/28/87	07/19/87

NOTE: \* - Farmers

KHAN, G.-ur-Rehman	NWFP	UM-For Mgmt	10/02/87	10/28/87
KHANZADA, S.K.	Punj	UM-For Mgmt	10/02/87	10/28/87
RAFIQ, Mohammad	Baloch	UM-For Mgmt	10/02/87	10/28/87
AHMAD, Ashiq	PFI	Thai/Malay/Ken	10/08/88	11/04/88
CHAUDHRY, M. Afzal	Punj	Thai/Malay/Ken	10/08/88	11/04/88
HAQ, Afzal	Sindh	Thai/Malay/Ken	10/08/88	11/04/88
HUSSAIN, Raja W.	PFI	Thai/Malay/Ken	10/08/88	11/04/88
KHAN, Saliheen	PFI	Thai/Malay/Ken	10/08/88	11/04/88
REHMAN, Maqbool-ur	NWFP	Thai/Malay/Ken	10/08/88	11/04/88
REHMAN, Shams-ur	PFI	Thai/Malay/Ken	10/08/88	11/04/88
SHAH, A. Sattar H.	Fed	Thai/Malay/Ken	10/08/88	11/04/88
HUSSAIN, Raja W.	PFI	UM-For Mgmt	09/17/89	10/11/89
NAEEM, Taj M.	Baloch	UM-For Mgmt	09/17/89	10/11/89
AHMAD, Farid Uddin	Punj	Miss St For Tour	09/25/90	10/02/90
QAZI, I.A.	PP	UM-For Mgmt	09/13/92	10/06/92
JAH, Asif	PFI	UM-For Mgmt	09/13/92	10/06/92

### Special Conferences

RAZA UL HAQ, Haji	PFI	World For Congr	09/07/86	09/21/86
JAN, Abeerullah	Fed	IUFRO Congr	08/04/90	08/17/90
KHAN, Yar Muhammad	NWFP	World For Congr	09/15/91	10/03/91
MASRUR, Anwar	Punj	World For Congr	09/15/91	10/03/91
SIDDIQUI, K. M.	PFI	World For Congr	09/15/91	10/03/91
SIDDIQUI, K. M.	PFI	Int'l Poplar Comm	09/22/92	10/03/92
JAVID, Zahid	Punj	Int'l Poplar Comm	09/22/92	10/03/92
WANI, Bashir Ahmed	Fed	F/FRED Mkt Sem	12/05/93	12/10/93
AZIZ, Nasrullah K.	Fed	F/FRED Mkt Sem	12/05/93	12/10/93

## APPENDIX D

## FORESTRY PLANNING AND DEVELOPMENT PROJECT CONSULTANTS

Consultant	Activity	Period	Person- Months
1985			
None			
1986			
James S. Bethel	Curriculum Specialist	1/29/86- 4/30/86	3.5
E. Lee Medema	Curriculum Specialist	1/29/86- 4/30/86	3.5
Glenn Peterson	Irrigation Specialist	2/28/86- 5/15/86	4.4
George Belt	Curriculum Specialist	3/01/86- 4/26/86	2.1
Peter Felker	Prosopis Specialist	9/18/86-10/09/86	0.9
Carlos Garces	Irrigation Specialist	10/12/86-10/19/86	0.4
1987			
Nancy L. Ruther	U. Conn. Wksp. Trainer	6/19/87- 6/28/87	0.5
Gerard Schreuder	Forest Mgmt Specialist	8/01/87-12/31/87	2.1
Douglas Maguire	Growth & Yield Spec.	9/22/87-11/08/87	2.1
David C. Pearson	Computer Specialist	10/11/87-12/31/87	2.7
1988			
David C. Pearson	Computer Specialist	1/01/88- 2/15/88	1.5
Gerald Schreuder	Forest Mgmt Specialist	1/01/88- 2/29/88	1.7
A. Colin McClung	Report Prep. Spec.	2/13/88- 3/05/88	0.8
Charles R. Hatch	Report Prep. Spec.	2/13/88- 3/05/88	0.7
W.S. Null	Evaluation Specialist	3/09/88- 4/19/88	1.4
Gerald Schreuder	Forest Mgmt Specialist	3/11/88- 3/27/88	0.7
John Gordon	Project Design Spec	4/22/88- 5/10/88	0.8
Jo Ellen Force	Project Design Spec	4/23/88- 5/10/88	0.8
Ms. Roen Repp	Computer Training	7/20/88- 7/21/88	0.1
1989			
Charles Hatch	Management Specialist	2/28/89- 3/30/89	1.2
Gary Naughton	Extension Specialist	3/18/89- 4/16/89	1.1
Peter Felker	Prosopis Specialist	3/25/89- 4/02/89	0.1
Ms. Kay Huth	Editor	4/27/89- 5/11/89	0.2
Jeff Campbell	Tour Leader	11/03/89-11-30/89	0.2
Sarah T. Warren	WID Specialist	12/09/89-12/15/89	0.2
1990			
George E. Slagle	Tractor Specialist	1/18/90- 3/05/90	1.8
Lester A. DeCoster	Tree Farm Specialist	4/27/90- 5/19/90	0.7
Gerald G. Wire	Pulp & Paper Spec	5/08/90- 8/21/90	3.5
Wendell P. Clark	Marketing Specialist	5/09/90- 6/08/90	0.6
Charles W. McKetta	Forest Economist	5/10/90- 8/23/90	1.5
William Beaufait	Research Mgmt Spec	5/14/90- 6/05/90	0.9
T.A. Ansari	Wood Study Consultant	7/01/90- 8/31/90	2.0
G.M. Khattak	Wood Study Consultant	7/01/90- 8/31/90	1.0

Iqbal Sial	Wood Study Consultant	7/01/90- 8/31/90	1.0
Nat. Mgmt. Consult	Wood Study Consultant	7/01/90- 8/31/90	2.0
PFI	Wood Study Consultant	7/01/90- 8/31/90	2.0
Envoforestry	Wood Study Consultant	7/01/90- 9/30/90	3.0
MSJ Res Inst	Wood Study Consultant	7/01/90-10/31/90	4.0
TurPak Int'l	Wood Study Consultant	7/01/90-10/31/90	4.0
Kenneth McNabb	Research Management	8/28/90- 8/30/90	0.1
Wendell P. Clark	Marketing Specialist	11/01/90-12/22/90	1.7
Joe Zimmer	Comm. Wksp. Prep.	11/05/90-12/18/90	0.6
Melvin Clausen	Comm. Wksp. Prep.	11/21/90-12/05/90	0.1
Nico Marcar(SC)	Soils/Water Log. Wksp.	11/25/90-12/11/90	0.8
1991			
Gerald G. Wire	Pulp & Paper Spec	1/02/91- 5/29/91	1.3
Joe Zimmer	Communications Wksp.	5/01/91- 6/12/91	1.7
Melvin Clausen	Communications Wksp.	5/01/91- 6/12/91	1.6
Doug Richards(SC)	Regeneration Spec.	6/25/91- 7/15/91	0.8
Jo Ellen Force	Land Use Plan. Wksp.	10/04/91-11/26/91	1.1
Debbie Forester	Land Use Plan. Wksp.	10/04/91-11/26/91	1.2
Jack Vozzo(SC)	Seed Tech. Wksp.	10/14/91-11/08/91	0.8
Frank Bonner(SC)	Seed Tech. Wksp.	10/14/91-11/05/91	0.6
Larry Davis	Harvest Sched. Wksp.	11/16/91-12/18/91	1.0
1992			
Mark Behan	Ecology Instructor	1/21/92-11/09/92	6.5
Jack Vozzo (SC)	Intl. Seed Conf.	2/02/92- 2/23/92	1.0
Bill Gladstone	Tree Imp. Plan.	2/23/92- 5/20/92	0.3
Sam Land (SC)	Tree Imp. Plan.	2/24/92- 4/30/92	0.6
Charlie Long	Urban Forestry Train.	5/27/92- 6/24/92	1.2
Houchang Khatamian	Urban Forestry Train.	5/27/92- 6/24/92	1.2
Hans Zuuring	Res. Methods Instructor	5/27/92- 8/13/92	2.7
Gary Archer	GIS Specilist	6/01/92-10/31/92	0.8
Jack Vozzo (SC)	Nat. Seed Conf.	11/06/92-11/27/92	0.8
Charles McKetta	Economics Instructor	11/12/92-12/11/92	1.2
Bill Elam (SC)	Nat. Seed Conf.	11/13/92-11/27/92	0.6
1993			
Burton Swain (SC)	Veneer Slicing Spec.	1/07/93- 2/03/93	1.1
Don Grebner	Project Evaluation	5/26/93- 7/13/93	1.7
Gary G. Naughton	Field Extension Spec	10/01/93-11/15/93	2.0
1994			
Paula Spaine	WID Conf. Speaker	3/24/94- 4/05/94	0.6
Gary G. Naughton	Log Grading Specialist	3/25/94- 4/30/94	1.2
Yet to be ID	GIS Training	8/ /94- 8/ /94	0.4
John De Boer	Close-out Specialist	90/3/94- 9/30/94	0.9

## APPENDIX E

### CONSULTANT REPORTS PREPARED BY THE PROJECT

- The Economics of Farm and Energy Forestry in Pakistan by Henry Kernan, 1983, Prepared for USAID, 29 p.
- Training Needs for Farm Forestry in Pakistan by Christopher Gibbs, 1983, Prepared for USAID, 98 p.
- Forest Plantation Irrigation and Riverine Forests by Paul H. Kirshen, 1983, Prepared for USAID, 45 p.
- A Recommended M.Sc. Forestry Curriculum - Farm and Energy Forestry by James S. Bethel, George Felt and Lee Medema, 1986, 152 p.
- Irrigation and Land-leveling in the Penah Forest of Sind by Glenn Peterson, 1986, 105 p.
- Midterm Evaluation by T.M. Catterson, Hameed Ahmad, K.J. Byrnes and J. Hoffman, 1987, Prepared by Associates in Rural Development, Inc. for USAID, 73 p.
- Phase II Technical Feasibility Report by George H. Belt, 1987, Prepared by Ronco Consulting Corporation for USAID.
- Extension of the Forestry Planning and Development Project - Ministries Support and Research/Training Facilities Needs by George Belt, Gerald Schreuder and A.S. Bokhari, 1987, Prepared by Ronco Consulting Corp. for USAID, 45 p.
- Extension of the Forestry Planning and Development Project - Integrated Forestry/Watershed Demonstration by Gerald Schreuder and A.S. Bokhari, 1987, Prepared by Ronco Consulting Corp. for USAID, 32 p.
- Extension of the Forestry Planning and Development Project - Social Feasibility Issues by Carol Carpenter and Riffat Sardar, 1987, Prepared by Ronco Consulting Corp. for USAID, 54 p.
- IPS International Training Trip Report by Nancy L. Ruther, 1987, Prepared by University of Connecticut, 7 p.
- Recommendations for Development of Prosopis in Pakistan including a supplement on Prosopis Weed Control, Influence on Grass Species Composition, Pod Feeding Values and Taxonomy in Pakistan by Peter Felker, 1987 (supplement 1989), 19 p. plus 17 p. supplement.
- Computer Installation and Training Consultancy by David C. Pearson, 1988, 2 p.

- HYMNS - Hury Yield Model and Economic Synthesis by Douglas A. Maguire, Gerald F. Schreuder, David G. Briggs and Mustafa Shaikh, 1988, 45 p.
- Pakistan Tree Seed Center by Franklin T. Bonner, 1988, Prepared by USDA Forest Service and F/FRED for USAID, 18 p. plus appendices.
- Guidelines for Report Preparation by A. Colin McClung and Charles R. Hatch, 1988, 50 p.
- Evaluation of Project Field Operations by W.S. Null, 1988, 44 p.
- Phase II Technical Assistance Re-Design and Suggested Contract Amendment by David Daugherty, John Gordon and Jo Ellen Force, 1988, 76 p.
- Formulation of a Scope of Work for a Consultancy to Develop a Women's Strategy for the Forestry Planning and Development Project by Sarah T. Warren, 1989, 6 p.
- Tractor Operation and Training by George E. Slagle, 1990, 4 p.
- Communicating to Yield Multiple Benefits to Pakistanis by Lester A. DeCoster, 1990, 8 p.
- Forestry Research, Education and Training by William R. Beaufait, 1990, 8 p.
- A Study of Tree Farm Wood Utilization for Wood Pulp Production in Pakistan by Gerald G. Wire, 1990, 28 p. plus exhibits and appendices.
- Agroforestry Investment Analysis in Pakistan: The Private Farm Tree Planting Decision by Charles W. McKetta, 1990, 39 p.
- Marketing Farm Produced Timber in Pakistan by Wendell P. Clark, 1990, 99 p. plus appendices.
- Consumption of Wood in the Chipboard/Particle Board and Hardboard Industries of Pakistan by National Management Consultants, 1990, 39 p. plus annexures.
- A Survey of the Pulp and Paper Industry in Pakistan by T. A. Ansari, 1990, 73 p. plus annexures.
- Wood Consumption in the Flue-Cured Virginia Tobacco Industry in Pakistan by G.M. Khattak and Mohammad Iqbal, 1990, 43 p. plus appendices.
- Wood Consumption Survey of the Railway Industry in Pakistan by Envoforestry (Pvt) Limited, 1990, 41 p. plus annexures.

- Wood Use in the Match Industry of Pakistan by K.M. Siddiqui and Saliheen Khan, 1991, 21 p. plus appendices.
- Wood Use in the Plywood Industry of Pakistan by K.M. Siddiqui and Saliheen Khan, 1991, 27 p. plus appendices.
- Wood Use in the Mining Industry of Pakistan by Turpkak International (Pvt) Limited, 1991, 68 p.
- A Study of Wood Yards in Pakistan by Turpkak International (Pvt) Limited, 1991, 49 p.
- Wood Use in the Brick Kiln Industry of Pakistan by Turpkak International (Pvt) Limited, 1991, 50 p.
- A Survey of the Sawmilling/Crate/Box Making Industry in Pakistan by MSJ Research Institute, 1991, 54 p. plus annexures.
- A Survey of the Furniture Industry in Pakistan by MSJ Research Institute, 1991, 56 p. plus annexures.
- A Survey of the Truck & Bus Body, Tractor Trolley and Boat Building Industry in Pakistan by MSJ Research Institute, 1991, 59 p. plus annexures.
- A Wood Use Overview of the Sawmilling/Crate/Box Making; Truck & Bus Body, Tractor Trolley and Boat Building; and Furniture Industries of Pakistan by MSJ Research Institute, 1991, 17 p.
- Wood Use in the Sports Equipment Industry by Envoforestry (Pvt) Limited, 1991, 35 p. plus annexures.
- Training Report for the Workshop on Management of Trees on Saline, Sodic and Waterlogged Soils by Nico Marcar, 1991, 4 p. plus appendices.
- Pulp & Paper Making from Tree Farm Grown Eucalyptus camaldulensis at Adamjee Paper & Board Mills Ltd., Nowshera, Pakistan by Gerald G. Wire, 1991, 28 p. plus appendices.
- Training Report for the Workshops on Interpersonal and Communication Skills in Natural Resources by M.J. Zimmer and M.D. Clausen, 1991, Prepared by Zimmer & Associates, 11 p. plus appendices.
- A Plan of Work for Technical Training in Tree Improvement Tree Seed Technology and Nursery Technology by Douglas P. Richards, 1991, 25 p. plus appendices.
- Midterm Evaluation by M. Stevens, P. Hammett, D. Minnick, B. Mitchie and K.G. Yasin, 1991, Prepared by Tropical Research & Development, Inc. for USAID, 172 p.

- Training Report for the Workshop on Forest Seed Technology by Frank Bonner and John A. Vozzo, 1991, 10 p. plus appendices.
- Training Report for the Workshop on Land Use Planning Methodologies in Social Forestry by Jo Ellen Force and Deborah Forester, 1991, 9 p. plus appendices.
- Training Report for the Workshop on Advanced Quantitative Forest Management by Lawrence S. Davis, 1992, 11 p.
- Enhancing the Potential of Pakistan Forest Tree Seeds by J.A. Vozzo, 1992, 7 p. plus appendices.
- Remarks for a National Plan of Action on Tree Improvement as part of a Pakistan National Tree Seed Technology and Improvement Conference by S.B. Land, Jr and W.T. Gladstone, 1992, 22 p.
- Arborist Training and Urban Environmental Management by Charles E. Long and Houchang Khatamian, 1992, 11 p.
- Training Report for Instruction and Workshops on Research Methods by Hans Zuuring, 1992, 12 p.
- Recommendations on Geographic Information System Facilities for the Pakistan Forest Institute, Peshawar, Pakistan by G.R. Archer, 1992, 15 p.
- Report on Forest Ecology Teaching Consultancy by Mark Behan, 1992, 16 p.
- National Workshop on Seed Technology by William Elam and J.A. Vozzo, 1992, 5 p. plus appendices.
- Report on Forest Economics and Management Teaching Consultancy by Charles W. McKetta, 1992, 6 p.
- NGO Management by Richard Bottger, 1993, 10 p.
- Veneer Slicing Consultancy by B.F. (Ted) Swain, 1993, Prepared by International Executive Service Corps, 2 p.
- Review of Forestry Planning and Development Project by Donald L. Grebner, 1993, 27 p. plus appendices.
- Farmer-Market Linkages for Forest Products by Gary G. Naughton, 1993, 21 p.
- Forest Extension/Outreach with Emphasis on Log Grading Rules by Gary G. Naughton, 1994, 12 p. plus appendices.

## APPENDIX F

### WOOD USE STUDIES UNDERTAKEN BY THE PROJECT

- A Study of Tree Farm Wood Utilization for Wood Pulp Production in Pakistan. 1990. Consultant Report by Gerald G. Wire.
- Marketing Farm Produced Timber in Pakistan. 1990. Consultant Report by Wendell P. Clark.
- The Wood Shortage in Pakistan: Hypothetical Contradictions. 1990. Analytical Study by Charles W. McKetta.
- Consumption of Wood in the Chipboard/Particle Board and Hardboard Industries of Pakistan. 1990. Consultant Report by National Management Consultants.
- A Survey of the Pulp and Paper Industry in Pakistan. 1990. Consultant Report by T. A. Ansari.
- Wood Consumption in the Flue-Cured Virginia Tobacco Industry in Pakistan. 1990. Consultant Report by G.M. Khattak and Mohammad Iqbal.
- Wood Consumption Survey of the Railway Industry in Pakistan. 1990. Consultant Report by Envoforestry (Pvt) Limited.
- Wood Use in the Match Industry of Pakistan. 1991. Consultant Report by K.M. Siddiqui and Saliheen Khan.
- Wood Use in the Plywood Industry of Pakistan. 1991. Consultant Report by K.M. Siddiqui and Saliheen Khan.
- Wood Use in the Mining Industry of Pakistan. 1991. Consultant Report by Turkpak International (Pvt) Limited.
- A Study of Wood Yards in Pakistan. 1991. Consultant Report by Turkpak International (Pvt) Limited.
- Wood Use in the Brick Kiln Industry of Pakistan. 1991. Consultant Report by Turkpak International (Pvt) Limited.
- A Survey of the Sawmilling/Crate/Box Making Industry in Pakistan. 1991. Consultant Report by MSJ Research Institute.
- A Survey of the Furniture Industry in Pakistan. 1991. Consultant Report by MSJ Research Institute.
- A Survey of the Truck & Bus Body, Tractor Trolley and Boat Building Industry in Pakistan. 1991. Consultant Report by MSJ Research Institute.

A Wood Use Overview of the Sawmilling/Crate/Box Making; Truck & Bus Body, Tractor Trolley and Boat Building; and Furniture Industries of Pakistan. 1991. Consultant Report by MSJ Research Institute.

Wood Use in the Sports Equipment Industry. 1991. Consultant Report by Envoforestry (Pvt) Limited.

Pulp & Paper Making from Tree Farm Grown Eucalyptus camaldulensis at Adamjee Paper & Board Mills Ltd., Nowshera, Pakistan. 1991. Consultant Report by Gerald G. Wire.

Veneer Slicing Consultancy. 1993. Consultant Report by B.F. (Ted) Swain.

Forest Extension/Outreach with Emphasis on Log Grading Rules. 1994. Consultant Report by Gary G. Naughton.

## APPENDIX G

### TRAINING MATERIALS PREPARED BY THE PROJECT

#### Books

- Jan, A.U. 1993. Review and Analysis of Forest Policies of Pakistan (English). Pictorial Printers, Islamabad, 146 p.
- Jan, A.U. 1993. Fundamentals of Photointerpretation and Photogrammetry (English). Pictorial Printers, Islamabad, 103 p.
- Sheikh, M.I. 1993. Trees of Pakistan (English). Pictorial Printers, Islamabad, 142 p.
- Jan, A.U. 1993. Forest Policy Administration and Management in Pakistan (English). Pictorial Printers, Islamabad, 193 p.

#### Technical Notes

- No. 1. Marketing Farm Forestry Products (English/Urdu). 1990. R. Zarif & G.G. Naughton.
- No. 2. Farm Windbreaks (English/Urdu). 1990. G.G. Naughton.
- No. 3. Tree Planting (English/Urdu). 1990. M.I. Sheikh.
- No. 4. Some Fodder Trees of Pakistan (English). 1991. M.I. Sheikh.
- No. 5. Raising of Nurseries (English/Urdu). 1991. M.I. Sheikh.
- No. 6. Seed Collection (English/Urdu). 1991. M.I. Sheikh.
- No. 7. Thinning Block Plantations (English/Urdu). 1991. G.G. Naughton & C.R. Hatch.
- No. 8. Measuring Farm Grown Trees (English/Urdu). 1992. G.G. Naughton & C.R. Hatch.
- No. 9. Air Seasoning (English/Urdu). 1992. G.G. Naughton.
- No. 10. Tree Planting and Extension (English/Urdu). 1992. M.I. Sheikh.
- No. 11. Suitable Tree Species for Different Agro-Ecological Regions and Civil Divisions of Pakistan (English). 1992. M.I. Sheikh.

- No. 12. Economic Opportunities from Tree Farming (English). 1993. N.A. Malik & G.G. Naughton.
- No. 13. Insects and Diseases of Poplars (English). 1993. M.I. Chaudhry, A. Chaudhry & M.I. Sheikh.
- No. 14. Hardwood Veneer Log Grading [Interim Guidelines] (English). 1994. G.G. Naughton & A. Jah.

#### Tree Farmers Guides

- No. 1. Marketing Farm Grown Timber (English/Urdu). 1991. G.G. Naughton.
- No. 2. Pruning Timber Trees (English/Urdu). 1992. G.G. Naughton.
- No. 3. Managing Coppice Sprouts (English/Urdu). 1992. G.G. Naughton.
- No. 4. Farm Trees - Chinaberry (English/Urdu). 1992. G.G. Naughton.
- No. 5. Farm Trees - Ber (English/Urdu). 1992. G.G. Naughton.
- No. 6. Nursery Seedlings - Grading, Root Pruning and Hardening Off (English/Urdu). 1993. M.I. Sheikh.
- No. 7. Estimating Weight of Standing Eucalyptus Trees (English/Urdu). 1993. G.G. Naughton.
- No. 8. Instructions for Raising a Poplar Nursery (English/Urdu). 1993. M.I. Sheikh.
- No. 9. Farm Trees - Neem (English/Urdu). 1993. M.I. Sheikh.
- No. 10. Farm Trees - Black Locust (English/Urdu). 1993. F. Naseer.
- No. 11. Farm Trees - Asmani (English/Urdu). 1993. F. Naseer.
- No. 12. Farm Trees - Eucalyptus (English/Urdu). 1993. M.I. Sheikh.
- No. 13. Farm Trees - Sissoo (English/Urdu). 1993. M.I. Sheikh.
- No. 14. Steps in the Planting of Poplar (Urdu). 1993. M.I. Sheikh.
- No. 15. Farm Trees - Kikar (English/Urdu). 1994. M.I. Sheikh.
- No. 16. Farm Trees - Bans (English/Urdu). 1994. R.M. Omer.

- No. 17. Poplar Log Grades (English/Urdu). 1994. G.G. Naughton & A. Jah.
- No. 18. Mulberry Log Grades (English/Urdu). 1994. G.G. Naughton & A. Jah.
- No. 19. Shisham Veneer Log Grades (English/Urdu). 1994. G.G. Naughton & A. Jah.
- No. 20. Semal Log Grades (English/Urdu). 1994. G.G. Naughton & A. Jah.
- No. 21. Farm Tree - Simal (English). 1994. R.M. Omer.

#### Foresters Field Guides

- No. 1. Suitable Poplar Clones for Different Ecological Zones in Pakistan (English/Urdu). 1993. M.I. Sheikh.
- No. 2. Species Recommended for Different Edaphic & Climatic Sites and Method of Planting (English/Urdu). 1993. M.I. Sheikh.
- No. 3. Establishing Seed Production Areas (English/Urdu). 1993. M.I. Sheikh.
- No. 4. Expected Returns from Farm Grown Trees (English/Urdu). 1993. M.I. Sheikh & C.R. Hatch.

#### Other Training Materials

##### Project Manuals

- No. 1. The Use of Computer Spreadsheets for Compiling Monthly & Quarterly Reports on Physical Achievements & Financial Expenditures (English). 1989. N.K. Aziz & M.R. Dove.
- No. 2. Field Guide for Farm Forestry (English). 1989. N.K. Aziz & M.R. Dove.

##### Lecture Notes

- Forest Sociology for M.Sc. Students (English). 1989. M.I.A. Niazi.
- Research Methods Notes (English). 1992. H. Zuuring.
- MYSTAT Workshop Notes (English). 1992. H. Zuuring.
- Lessons in Soil-Plant Water Relationships (English). 1992. M. Behan.

- Forest Ecology (English). 1992. M. Behan.
- Forest Valuation Theories and Applications (English). 1992. C.W. McKetta.
- Forest Economics and Forest Management (English). 1992. C.W. McKetta.
- Forest Guard and Forester Lecture Notes (Urdu). 1994. 16 chapters produced by Habitat Integrated - Pakistan.
- Forester and Forest Guard Visual Training Aids (Urdu). 1994. 70 flip charts produced by Habitat Integrated - Pakistan.

### Training Manuals

- Beginner's Guide to Computer & Disk Operating System (English). 1990. M.Q.A. Shah.
- Introduction to Computers (English). 1990. T.W. Malik.
- Manual for Planting of Poplars (English/Urdu). 1990. M.I. Sheikh.
- Containerized Nurseries - A Field Manual for the Assistance of Nursery Farmers (Urdu). 1990. Compiled by T.W. Malik.
- Use of Video as a Training Aid (English). 1990. G.G. Naughton & T.W. Malik.
- A Guide to Tree Planting on Saline, Sodic and Waterlogged Soils (English). 1991. N.E. Marcar & D. Crawford.
- Interpersonal and Communication Skills for Professionals in Natural Resources (English). 1991. M.J. Zimmer & M.D. Clausen.
- Facilitator Training (English). 1991. M.J. Zimmer & M.D. Clausen.
- Workshop Manual for Tree Seed Technology Training Course (English). 1991. F.T. Bonner, J.A. Vozzo, W.W. Elam & S.B. Land, Jr.
- Workshop Manual for Land Use Planning Methodologies in Social Forestry (English). 1991. J.E. Force & D. Forester.
- Planning an International Symposium in Pakistan (English). 1992. J.A. Vozzo.
- Planning a Pakistan National Tree Seed Symposium (English). 1992. J.A. Vozzo.

Designing a Particleboard Panel of Desired Parameters  
(English). 1992. S.M. Yasin & T.A. Qureshi

Improving the Quality of Wood Produced from Eucalyptus Trees  
(English). 1992. S.M. Yasin & S.M. Raza.

Woody Plant Seed Manual [Pakistan] (English). 1992. M. Khan &  
R.A. Khan.

Planting Technique (English/Urdu). 1993. A.U. Jan & M.I.  
Sheikh.

Farmers and Tree Planting (Urdu). 1993. M.I. Sheikh.

Eucalyptus Nursery and Planting Guide (Urdu). 1993. M.I.  
Sheikh.

Common Terms and Definitions Used in Watershed Management  
(English). 1994. B.A. Wani.

Predicting the Suitability of a Wood Species of Known Density  
for Producing Desired Density Particleboard (English).  
1994. S.Mohammad Yasin

#### Training Videos

Kissan Nursery Operations (English & Urdu). 1990. 8 minutes.

Tree Planting (English & Urdu). 1990. 10 minutes.

## APPENDIX H

### PUBLICATIONS, PAPERS AND REPORTS PREPARED BY THE PROJECT

#### Published Articles

- Prospects for Farm Forestry in Pakistan Part-I: Village Level determinants. 1988. M.R. Dove. Pakistan Journal of Forestry 38(1):15-23.
- Prospects for Farm Forestry in Pakistan Part-II: Household-Level determinants. 1988. M.R. Dove. Pakistan Journal of Forestry 38(3):125-132.
- Prospects for Farm Forestry on Rainfed Versus Irrigated Farms in Pakistan. 1989. M.R. Dove. Pakistan Journal of Forestry 39(1):3-10.
- Green Sands. 1990. M.I. Sheikh. NCS Bulletin 2(2):12-14.
- The Wood Shortage in Pakistan: Hypothetical contradictions. 1990. C.W. McKetta. Pakistan Journal of Forestry 40(4):266-273.
- Anthropology Development Vs. Development Anthropology: Mediating the forester-farmer relationship in Pakistan. 1991. M.R. Dove. Practicing Anthropology 13(2):21-25.
- TREES: Breaking the poverty cycle in Pakistan. 1991. G.G. Naughton. SEEDS, May 1991, p. 2.
- Pakistan Emphasizes Afforestation Work. 1991. S. Rashid Ali. World Wood 32(6):11-12.
- The Development Counterpart as Development Subject: An Illustration from Pakistan's Forestry Sector. 1992. M.R. Dove. Culture and Agriculture Bulletin, No. 44:13-16.
- Foresters' Beliefs about Farmers: a Priority for Social Science Research in Social Forestry. 1992. M.R. Dove. Agroforestry Systems 17(1):13-41.
- Farmer Behavior and Forester Belief: Unraveling the Misconceptions. 1992. M.R. Dove. Farm Forestry News 5(4):1, 3-4.
- Estimation of Crown Biomass Production of Populus nigra Italica Muench in Pakistan. 1992. M. Iqbal, J.A. Moore and C.R. Hatch. Pakistan Journal of Forestry 42(3):118-129.

- Private farm nurseries in Punjab and NWFP. 1992. R.M. Omer, S.A. Khan and C.R. Hatch. Pakistan Journal of Forestry 42(4):180-190.
- Foresters' Perspectives on Social Scientists. 1993. G.G. Naughton and B.A. Wani. Farm Forestry News 6(1):2.
- Pakistan - New Directions for Foresters and Farmers. 1993. B.A. Wani and T.W. Malik. Wood Energy News 8(1):11-13.
- NGOs and Forestry. 1993. T.W. Malik. Forest Extension Network Newsletter, Jungle 1(2).
- How Marketing Can Help. 1993. T.W. Malik. Forest Extension Network Newsletter, Jungle 1(2).
- Extending Research Results - How? 1993. M.I. Sheikh. FORSPA Occasional Paper 15, 17 p.
- Farm Forestry in Pakistan: An Evaluation of A.I.D. Assistance. 1993. Center for Development Information and Evaluation. A.I.D. Evaluation Highlights No. 21, 8 p.
- Farm forestry comes of age - the emerging trend in Asia. 1994. R. Van Den Beldt, C. Hatch, C. Sastry, J. Raintree, S. Ghosh, N.C. Saxena and D. Garrity. Farm Forestry News 6(2):1, 4-7.
- Attock: The tree planters' district. 1994. B.A. Wani. Farm Forestry News 6(2):10-11.

#### Books

- Sociology of Natural Resources in Pakistan and Adjoining Countries. 1992. M.R. Dove and C. Carpenter (Editors). Vanguard Books Pvt Ltd, Lahore, Pakistan, 458 p.

#### Proceedings

- International Seminar on Pakistan Forest Policy. 1989. 106 p.
- Wood Producers-Users Seminar. 1990. 117 p.
- National Workshop on Tree Seed Technology. 1993. 97 p.
- Forestry Extension in Pakistan. 1993. 157 p.
- 2nd National Workshop on Women in Forestry in Pakistan. 1994. 116 p.

## Social Science Reports

- Household-Level Factors Affecting Interest in Planting Trees and operating Nurseries: The Punjab. 1987. M.R. Dove. Report No. 1, 14 p.
- Household-Level Factors Affecting Interest in Planting Trees and operating Nurseries: The Punjab. Village and District Data. 1987. M.R. Dove and J. Qureshi. Report No. 1A, 72 p.
- Household-Level Factors Affecting Interest in Planting Trees and operating Nurseries: The NWFP. 1987. M.R. Dove. Report No. 2, 15 p.
- Household-Level Factors Affecting Interest in Planting Trees and operating Nurseries: The NWFP. Village and District Data. 1987. M.R. Dove and J. Qureshi. Report No. 2A, 33 p.
- Household-Level Factors Affecting Interest in Planting Trees and operating Nurseries: Baluchistan. 1987. M.R. Dove. Report No. 3, 12 p.
- Household-Level Factors Affecting Interest in Planting Trees and operating Nurseries: Baluchistan. Village Data. 1987. M.R. Dove and J. Qureshi. Report No. 3A, 13 p.
- Village-Level Factors Affecting Interest in Farm Forestry: Punjab, NWFP, Baluchistan. 1987. M.R. Dove. Report No. 4, 12 p.
- Prospects for Farm Forestry on Rainfed Versus Irrigated Farms: Punjab NWFP, Baluchistan. 1987. M.R. Dove. Report No. 5, 10 p.
- Prospects for Wood-Dung Fuel Replacement Through Farm Forestry Development: The Punjab, NWFP, Baluchistan. 1987. M.R. Dove. Report No. 6, 11 p.
- Farmer Preferences for the Timing of Tree-Planting: The Punjab, NWFP, Baluchistan. 1988. M.R. Dove, N.K. Aziz and J.A. Qureshi. Report No. 7, 13 p.
- The Fuelwood Supply and Demand in Rural Households: The Punjab, NWFP, Baluchistan. 1988. M.R. Dove, N.K. Aziz and J.A. Qureshi. Report No. 8, 18 p.
- The Timber Supply & Demand in Rural Households: The Punjab, NWFP, Baluchistan. 1989. N.K. Aziz, M.R. Dove and Z.I. Marwat. Report No. 9, 16 p.
- Receptivity to Farm Forestry Outreach: The Punjab, NWFP, Baluchistan. 1989. J.A. Qureshi. Report No. 10, 10 p.

### Research Reports

The Timing of Forestry Operations in the Pakistan Barani Based on Long Term Climatic Averages. 1988. S. Ahmad and K. McNabb. Research Report No. 1, 26 p.

The Effects of Three Different Sized Polythene tubes on Eucalyptus camaldulensis Seedling Development. 1991. M.I. Sheikh, M. Mustafa and C.R. Hatch. Research Report No. 2, 4 p.

Cross-Arms of Eucalyptus and Poplar Woods. 1992. Siraj-ud-Din. Research Report No. 3, 5 p.

Assessment of poplar Clones in the Forestry Planning and Development Project Kissan Nurseries. 1993. M.I. Sheikh. Research Report No. 4, 5 p.

A Study of Farm Nurseries in Punjab and NWFP. 1993. R.M. Omer, S.A. Khan and C.R. Hatch. Research Report No. 5, 27 p.

### Extension Publications

Pests of Farm Forest Trees (Urdu). 1989. M.I. Choudhry (Ed.). Pakistan Forest Institute, 22 p.

Eucalyptus (Urdu). 1990. J.A. Khan. Pakistan Forest Institute, 7 p.

Eucalyptus for Planting. 1990. M. Ayaz. Pakistan Forest Institute, 6 p.

### Newsletters

Computer Alert

Farm Forestry Newsletter

Wood News

### Periodic Management Reports

Annual Work Plans

Quarter Project Reports

Trip Reports

Training Reports

Annual Survey of Training Reports

### Formal Reports

- A Comprehensive Plan for the Research Component of the Forestry Planning and Development Project. 1988. K. McNabb. 60 p.
- The Rules and Procedures for the Executive Research Review Committee. 1988. K. McNabb. 30 p.
- A Training Plan for Forestry Planning and Development. 1988. W.J. Hart. 32 p.
- Outreach Plan for Social Forestry Programs. 1990. A. Jan and G.G. Naughton. 34 p.
- Forestry Statistics of Pakistan. 1992. Pakistan Forest Institute. 17 p.
- Financial Analysis of Different Tree Crops in Pakistan. 1993. K.M. Siddiqui. 87 p.
- Farmer Nurseries - An Evaluation of Punjab and NWFP Kissan Nurseries. 1993. R.M. Omer and S.A. Khan. 29 p.
- Review of the Forestry Planning & Development Project. 1994. D.L. Grebner and C.R. Hatch. 32 p. plus appendices.

### Papers

- Base-line study of farm forestry in Pakistan: Methods, results, and implications. 1987. M.R. Dove.
- Deforestation and afforestation in Pakistan: The dialectics of socio-ecological change. 1987. M.R. Dove.
- Human ecological determinants of interest in farm forestry in Pakistan. 1987. M.R. Dove.
- Socio-economic research on farm forestry in Pakistan. 1988. J.A. Qureshi.
- The "humor" of shade: Hummoral conceptions of tree shade among Pakistani farmers. 1988. M.R. Dove.
- The social background of farm forestry in Pakistan. 1988. A.U. Jan.
- Farmer interest in multipurpose tree species in Pakistan. 1989. M.R. Dove.
- Rural fuel supplies, urban-rural interdependence and coal briquette development. 1989. M.R. Dove.

- A review of past forestry policy in Pakistan. 1989. A.U. Jan, I.A. Qazi, N.K. Aziz, B.A. Wani and M.R. Dove.
- Social forestry in Pakistan: a review. 1989. A.U. Jan.
- The Wood Shortage in Pakistan: Hypothetical Contradictions. 1990. C.W. McKetta.
- Status of Wild Medicinal Plants in Pakistan and the Need for Incorporation in Agroforestry System. 1991. M.I. Sheikh.
- Land Degradation in Pakistan. 1991. M.I. Sheikh.
- WID Activities in the Forestry Planning and Development Project. 1991. M.W. Muhammad.
- A Compendium of Papers by Pakistani Scientists on Tree Production from Saline, Sodic & Waterlogged Soils. 1991. Compiled by George M. Blake.
- Country Report on Pakistan. 1991. R. Ahmad and A.H. Qaisar.
- WID Activities in the Forestry Planning and Development Project. 1991. N.M. Chughtai.
- Review and Analysis of Forest Policies of Pakistan. 1991. A.U. Jan.
- Forest Policy Administration and Management in Pakistan. 1991. A.U. Jan.
- Country Status Report on Local Organizations in Community Forestry Extension in Pakistan. 1991. B.A. Wani and R.M. Randhawa.
- Country Status Report on Regional Wood Energy Development Programme in Asia. 1991. R. Ahmad.
- Desertification and Appropriate Technologies in the Management of Arid Lands. 1992. M.I. Sheikh.
- A Position Paper on a National Tree Improvement Program for Pakistan. 1992. G.M. Blake.
- Windbreaks and Agroforestry in Pakistan. 1992. M.I. Sheikh.
- Country Status Report on Agro-Forestry Systems Research & Development. 1992. R. Ahmad.
- Private Sector Strategy - Forestry Planning and Development Project (Phase II). 1993. G.G. Naughton.

Pakistan Tree Farm Society. 1993. T.W. Malik.

Proposed Strategy for Support of NGO Activities Associated with the Forestry Planning and Development Project. 1993. G.G. Naughton.

Extending Technologies for Upland and Saline Sites - How? 1993. M.I. Sheikh.

Role of Farm Forestry in Supplying Wood Needs of Pakistan. 1993. R.M. Randhawa.

Impact of Forest Resources and Forest Policies on Agricultural Productivity and Environmental Quality. 1994. W.R. Bentley, C.R. Hatch and J.C. Gordon.

Using Industrial Wood Markets to Sustain Farm Forestry: the Pakistan Experience. 1994. C.R. Hatch and G.G. Naughton.

Country Status Report - Pakistan: Agroforestry Research, Development and Education. 1994. R. Ahmad.

## APPENDIX I

### ADVISORY SERVICES PROVIDED UNDER PHASE II OF THE TECHNICAL ASSISTANCE CONTRACT

#### Long-term Advisors

##### 1. Senior Policy and Management Advisor and Chief of Party

Develop a strong working relationship with the Inspector General of Forests (IGF) to advise on innovative methods of modernizing the forest department so that it will be better able to establish priorities in allocation of resources, training efforts, and personnel. A major aspect of this will be assistance in the planning, organization, and development of Natural Resource Planning institutions. The consultant will utilize the GOP National Agricultural Commission Report and USAID policy statements regarding development of the public and private sector and management of natural resources for this activity.

##### 2. Field Demonstration/Outreach Forester

This position will be responsible for introducing the concept of outreach/extension services and assisting in developing them as an integral part of the work of the forest departments and the foresters. In addition, a high priority will be given to establishing within the forest departments a series of farm forestry demonstrations on farmers' lands. The consultant will be responsible to develop in-country training to support these activities.

##### 3. Education/Training/Research Advisor

The project will emphasize in-country training for improving the ability of the forest department to institutionalize farm forestry and outreach activities. Consequently, a majority of this person's time will be concentrated in developing a program of in-country training. In addition, the individual should be able to assist the GOP with developing policy and a plan for research in Pakistan.

##### 4. Host Country Policy and Management Specialist

This person will support the Senior Policy and Management Advisor and the GOP in facilitating, coordinating, and advising as directed to carry out the implementation of the project.

##### 5. Host Country Training Logistics Coordinator

This individual will support the GOP and the Technical Assistance Team with training logistics for in-country training, workshops, and seminars.

In addition, a number of areas requiring short-term consultant inputs were identified. To assure continuity and to derive maximum benefits from short-term consultant services, experts are provided under two distinct categories. One group will consist of continuing consultants who will visit periodically throughout the life of the project to give on-going assistance in certain critical program areas. They will be supplemented by single assignment short-term consultants recruited to address specific but limited requirements.

#### Short-term Consultants

##### 6. Forest Policy, Planning and Management

Consultants will provide continuing assistance to the O/IGF and other GOP Natural Resource Management agencies in bringing specific advice and policy analyses and current forest policy initiatives to Pakistan forestry, drawing upon their background and timely interactions with other policy experts worldwide. They will bring to Pakistan's natural resource management effective skills for managing group process, decision analysis, and quantitative planning and control techniques. They will assist in guidelines and will provide intellectual support and professional liaison in the United States and in Pakistan. Inputs to analyze the projected impact of increased supply on marketing of forest products will require studies of the existing markets and wood products industry in Pakistan. Continuing review and economic analysis will be essential for developing appropriate forest marketing policies and programs. Working closely with the IGF and COP, the forest marketing/economics consultants will be an important component of policy development.

##### 7. Forest Education, Training and Research

Consultants will provide continuing guidance on the integration of academic instruction and the coordination of research, but most particularly continuing training and education for Pakistan's forest managers and scientists. The nature of the consultants services will enable a continuing dialogue and improved interaction over the life of the project in increasing the capacity of PFI and other components of the educational system to teach and conduct advanced research in farm forestry including continuing assistance on specific research projects.

##### 8. Field Demonstration and Outreach

Consultants will assist the GOP in developing extension/outreach capacity to support demonstration activities. The social science studies confirm a high farmer interest in tree planting and tree crops. Specific information is needed on alternatives and a broadening of visions about the role trees can play in farming systems. The continuing consultants should bring expertise in extension/outreach, communications, farm forestry, and farming

systems. Consultants will provide a continuing analysis of the role of women in farm forestry in Pakistan. They will help identify and enhance the role of women in the farm forestry project.

#### 9. Tree Propagation and Nursery Technologies

The continuing consultants selected for tree propagation and nursery technologies will provide technical expertise and assistance to field foresters, operational nurseries, and researchers in Pakistan through the project. The propagation of trees in the operational component of the project will require a significant input of expertise.

#### 10. Social Science Information for Policy, Management and Outreach

Sociocultural information, economic and financial analysis, as well as marketing information needs to be integrated into policy, management, and outreach programs. The capacity to generate this information needs to be institutionalized. Teaching the tools to analyze this information should become part of the training, both formal and continuing, of forest officers and others. Consultants will assist the forest departments/training institutes in this area.

#### 11. Short-Term Host Country (Local) Consultants

Short-term local Pakistan advisor services shall include sociocultural analysis services and the assistance of graduate students who will be used to gather social survey information at the local village level as needed in support of on-going studies or new studies focused on women in farm forestry.

Annex Table 1. Life of Project Targets and Accomplishments by Fiscal Year

Name of Activity	LOP PC-1								LOP 1985-94		% of LOP PC-1 Target
	Target 1985-94	1985/88 Achieved	1988/89 Achieved	1989/90 Achieved	1990/91 Achieved	1991/92 Achieved	1992/93 Achieved	1993/94 Achieved	Achieved To Date		
1. PLANTING											
No. Farms	105,500	10,423	7,913	21,020	48,665	24,689	18,043	16,055	146,808	139	
No. Plants	133,725,000	5,727,791	7,658,221	12,962,302	24,991,741	28,465,304	24,951,837	24,632,996	129,390,192	97	
2. NURSERY											
No Units	1,783	252	299	789	1,377	1,126	948	528	5,319	298	
No Plants	133,725,000	16,615,437	10,039,210	22,181,830	30,920,600	35,474,660	24,843,600	16,577,000	156,652,337	117	
3. LAND DEVELOPMENT											
No. Acres	99,284	3,804	813	2,715	5,538	1,170	2,153	810	17,003	17	
4. SOIL CONSERVATION											
No Acres	7,600	85	35	405	2,035	310	293	50	3,213	42	
5. SINDH IRRIG. PLANT.											
Miles Canal Const	2			1	1				2	100	
Acres Afforested	5,400				337	1,220	2,429	668	4,654	86	
Acres Rehabilitated	1,818			152	217	64		0	433	24	
6. RESEARCH											
No. New Projects	50	17	13	1	7	6	5	0	49	98	
7. TRAINING											
A. No. of Staff											
Overseas											
Short Term	117	18	28	10	23	7	14	14	114	97	
Long Term	43	2	1	3	2	3	3	10	24	56	
Tours	50	12	8	2	1		2	0	25	50	
Local											
M.Sc	52			3	19	1	20	24	67	129	
B.Sc.	76			8	20	1	19	36	84	111	
Other	280	147	63	65	204	164	207	129	979	350	
Tours	170	1	8	54	65	63	23	0	214	126	
B. No. of Farmers											
Tree Planting	23,000	5,906	5,978	9,676	36,806	26,835	17,314	8,401	110,916	482	
Nursery Techniques	1,780			289	215	598	962	842	2,906	163	
Land Development	990			25	55	99	414	12	605	61	
Soil Conservation	760			92	11	4	43	0	150	20	
Mgmt/Mkt	2,500				629	589	156	535	1,909	76	
Motivators	600	11	231	23	35	63	25	36	424	71	
Tours	570	27	158	294	223	313	123	0	1,138	200	
8. BUILDINGS **											
No. Offices	41 (27)			2	17	3	2	0	24	89	
No. Nursery Hut	34 (20)			3	9	3	2	0	17	85	
No. Res/Train Labs	4 (1)	NA	NA	NA	NA	NA	NA	0	0	0	
No. Hostels	3 (4)				1		1	0	2	50	
No. Residences	90 (0)		1	5	5	12	4	0	27	30	

LOP=Life of Project

\*\* PC-1 Targets (USAID Commitment)

Table 2. Punjab Life of Project Accomplishments by Fiscal Year

Name of Activity	1985/86 Achieved	1986/87 Achieved	1987/88 Achieved	1988/89 Achieved	1989/90 Achieved	1990/91 Achieved	1991/92 Achieved	1992/93 Achieved	1993/94 Achieved	1985-94 Achieved
<b>1. PLANTING</b>										
No Farms	112	761	2,952	4,320	6,874	27,704	11,836	9,418	6,279	70,356
No. Plants	54,554	755,327	1,790,773	3,974,403	6,476,904	14,850,127	15,300,207	15,447,037	12,206,307	70,855,639
<b>2. NURSERY</b>										
No. Units	8	49	100	209	566	992	566	299	212	3,001
No. Plants	886,500	2,122,500	4,074,624	5,500,580	16,759,830	17,328,900	13,023,560	8,923,600	7,253,000	75,873,094
<b>3. LAND DEVELOPMENT</b>										
No Acres		2	2,952		2,067	3,458	627	1,768	200	11,074
<b>4. SOIL CONSERVATION</b>										
No. Acres		50			399	1,491	310	62	50	2,362
<b>5. SINDH IRRIG PLANTATION</b>										
Miles Canal Const	NA									
Acres Afforested	NA									
Acres Rehabil	NA									
<b>6. RESEARCH</b>										
On-Going Research/Demon.										0
No. Completed					1	2	1			4
<b>7. TRAINING</b>										
<b>A. No. of Staff Overseas</b>										
Short-Term		3	3	6	3	6	2	4	3	30
Long-Term					1			1	4	6
Tours		1	2	1		1		1	0	6
<b>Local</b>										
M.Sc.						9		13	12	34
B.Sc.						10		11	24	45
Other	18	21	20	25	32	79	37	39	61	332
Tours				4	20	22	8	19	0	73
<b>B. No. of Farmers</b>										
Tree Planting	112	802	3,048	4,529	7,689	28,696	20,176	15,019	6,456	86,527
Nursery Techniques						239	69	57	413	1,036
Land Development							7	321	1	329
Soil Conservation					85		4	31	0	120
Mgmt/Marketing						609	496	120	380	1,605
Motivators				195					0	195
Tours				68		54	78		0	200
<b>8. BUILDINGS</b>										
No. Offices					1	12	1	2	NA	16
No. Nursery Huts					3	6		2	NA	11
No. Residences				1	3	2	8	1	NA	15
No. Hostels	NA	0	0							
No. Research/Training Labs	NA									

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Table 3 Sindh Life of Project Accomplishments by Fiscal Year

Name of Activity	1985/86 Achieved	1986/87 Achieved	1987/88 Achieved	1988/89 Achieved	1989/90 Achieved	1990/91 Achieved	1991/92 Achieved	1992/93 Achieved	1993/94 Achieved	1985-94 Achieved
<b>1. PLANTING</b>										
No. Farms	NA	NA	NA	NA	NA	NA		48	404	452
No Plants	NA	NA	NA	NA	NA	NA		1,103,800	1,900,534	3,004,334
<b>2 NURSERY</b>										
No Units	NA	NA	NA	NA	NA	NA	70	55	47	172
No Plants	NA	NA	NA	NA	NA	NA	2,960,000	1,600,000	960,000	5,520,000
<b>3 LAND DEVELOPMENT</b>										
No Acres	NA	NA	NA	NA	NA	NA			0	0
<b>4 SOIL CONSERVATION</b>										
No Acres	NA	NA	NA	NA	NA	NA			0	0
<b>5 SINDH IRRIGATED PLANT</b>										
Miles Canal Constructed					1	1	NA	NA	NA	2
Acres Afforested						337	1,220	2,429	668	4,654
Acres Rehabilitated					152	217	64		0	433
<b>6. RESEARCH</b>										
On-Gong Research/Demon	NA									
No. Completed	NA									
<b>7. TRAINING</b>										
<b>A. No. of Staff</b>										
Overseas										
Short-Term		2	3	6	1	3			3	18
Long-Term			1				2		2	5
Tours				1					0	1
Local										
M.Sc					1	3		3	5	12
B.Sc.					2	3		2	1	8
Other			2	1	2	22	15	9	0	51
Tours					5	3	13		0	21
<b>B. No. of Farmers</b>										
Tree Planting	NA	NA	NA	NA	NA	NA	2,737	300	145	3,182
Nursery Technology	NA	NA	NA	NA	NA	NA		132	45	177
Land Development	NA	NA	NA	NA	NA	NA			0	0
Soil Conservation	NA	NA	NA	NA	NA	NA			0	0
Mgmt/Mkt	NA	NA	NA	NA	NA	NA	79	25	0	104
Motivators	NA	NA	NA	NA	NA	NA			0	0
Tours	NA	NA	NA	NA	NA	NA	79		0	79
<b>8. BUILDINGS</b>										
No. Offices	NA	NA	NA	NA	NA	NA			0	0
No. Nursery Hut	NA	NA	NA	NA	NA	NA			0	0
No. Residences	NA	NA	NA	NA	NA	NA	4		0	4
No. Hostels	NA									
No. Research/Training Labs	NA	NA	NA	NA	NA	NA			0	0

Table 4. NWFP Life of Project Accomplishments by Fiscal Year

Name of Activity	1985/86 Achieved	1986/87 Achieved	1987/88 Achieved	1988/89 Achieved	1989/90 Achieved	1990/91 Achieved	1991/92 Achieved	1992/93 Achieved	1993/94 Achieved	1985-94 Achieved
<b>1. PLANTING</b>										
No. Farms		1,400	4,625	2,878	13,030	20,307	10,673	6,827	8,848	68,588
No. Plants		670,892	1,834,565	3,226,000	4,492,000	8,001,800	6,917,100	4,556,000	5,226,000	34,924,357
<b>2. NURSERY</b>										
No. Units	10	16	46	81	148	171	192	155	132	951
No. Plants	400,000	2,061,468	5,375,345	4,144,000	3,297,000	10,409,700	10,111,900	4,912,000	5,564,000	46,275,413
<b>3. LAND DEVELOPMENT</b>										
No. Acres			850	813	175	1,680		96	60	3,674
<b>4. SOIL CONSERVATION</b>										
No. Acres			35	35	6	544		66	0	686
<b>5. SINDH IRRIGATED PLANT.</b>										
Miles Canal Constructed	NA									
Acres Afforested	NA									
Acres Rehabilitated	NA									
<b>6. RESEARCH</b>										
On-Going Research/Demon.	NA									
No. Completed	NA									
<b>7. TRAINING</b>										
<b>A. No. of Staff</b>										
<b>Oversas</b>										
Short-Term		1		7		5	1	4	2	20
Long-Term			1			2			0	3
Tours		2	2	1					0	5
<b>Local</b>										
M.Sc					1	4	1	3	5	14
B.Sc.					4	5		5	10	24
Other	15	14	11	16	14	31	15	26	13	155
Tours					15		12		0	27
<b>B. No. of Farmers</b>										
Tree Planting		200	1,220	791	1,987	7,843	1,251	122	450	13,864
Nursery Technology					18	146	67	22	81	334
Land Development					25	55		2	1	83
Soil Conservation					7	11		2	0	20
Mgmt/Mkt						20	6	10	105	141
Motivators			11	36	23	24	18	6	7	125
Tours			27	80	47	162	122	13	0	451
<b>8. BUILDINGS</b>										
No. Offices					1	3			NA	4
No. Nursery Hut						2	1		NA	3
No. Residences					1	2		3	0	6
No. Hostels									0	0
No. Research/Training Labs	NA									

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Table 5 Balochistan Life of Project Accomplishments by Fiscal Year

Name of Activity	1985/86 Achieved	1986/87 Achieved	1987/88 Achieved	1988/89 Achieved	1989/90 Achieved	1990/91 Achieved	1991/92 Achieved	1992/93 Achieved	1993/94 Achieved	1985-94 Achieved
1. PLANTING										
No. Farms			573	715	1,016	654	2,180	1,750	524	7,412
No. Plants			621,680	457,818	1,993,398	2,139,814	6,247,997	3,845,000	5,300,155	20,605,862
2. NURSERY										
No. Units		14	6	8	74	213	295	435	136	1,181
No. Plants		1,000,000	394,000	300,000	1,940,000	3,000,000	9,284,000	8,700,000	2,720,000	27,338,000
3. LAND DEVELOPMENT										
No. Acres					473	400	543	289	550	2,255
4. SOIL CONSERVATION										
No. Acres								165	0	165
5. SINDH IRRIG PLANTATION										
Miles Canal Constructed	NA									
Acres Afforested	NA									
Acres Rehabilitated	NA									
6. RESEARCH										
On-Going Research/Demon.	NA									
No. Completed	NA									
7. TRAINING										
A. No. of Staff										
Overseas										
Short-Term		1		1	3	1	1	1	2	10
Long-Term							1	1	2	4
Tours		1	2		1				0	4
Local										
M.Sc.					1	3		1	2	7
B.Sc.					2	2	1	1	0	6
Other		4	7	8	2	10	18	2	1	52
Tours				1	5	2	8		0	16
B. No. of Farmers										
Tree Planting			524	658		267	2,671	1,873	1,350	7,343
Nursery Technology					32		474	550	303	1,359
Land Development							92	91	10	193
Soil Conservation								10	0	10
Mgmt/Mkt									0	0
Motivators						11	45	19	29	104
Tours					18	7	6	110	0	141
8. BUILDINGS										
No. Offices						2	2		NA	4
No. Nursery Hut						1	2		NA	3
No. Residences					1	1			0	2
No. Hostels	NA									
No. Research/Training Labs	NA									

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Table 7. Number of NGO Grants by Status, Type and Province through September 30, 1994

COMPLETED GRANTS	TYPE OF GRANT											
	Seedling Production		Environmental Awareness		Biodiversity		Institutional Capacity		Training		Total	
	No.	US \$	No.	US \$	No.	US \$	No.	US \$	No.	US \$	No.	US \$
Punjab	21	125,000	2	5,402	0	0	3	12,600	1	2,049	27	145,051
Sindh	9	37,035	1	3,448	0	0	1	13,257	2	4,350	13	58,090
Balochistan	1	7,208	0	0	2	36,992	0	0	0	0	3	44,200
NWFP	4	48,258	1	14,190	0	0	0	0	1	1,982	6	64,430
AJ&K	1	6,839	1	2,561	0	0	0	0	0	0	2	9,400
Islamabad	4	29,080	5	58,741	0	0	2	21,175	0	0	11	108,996
Federal	0	0	1	8,188	2	17,827	1	5,294	0	0	4	31,309
Subtotal	40	253,420	11	92,530	4	54,819	7	52,326	4	8,381	66	461,476
EXPENDITURES UNDER TERMINATED/CANCELLED GRANTS												
Punjab	1	7,992	0	0	0	0	0	0	0	0	1	7,992
Sindh	1	977	0	0	0	0	0	0	0	0	1	977
Balochistan	0	0	0	0	0	0	0	0	0	0	0	0
NWFP	0	0	0	0	0	0	0	0	0	0	0	0
AJ&K	0	0	0	0	0	0	0	0	0	0	0	0
Islamabad	0	0	2	22,142	0	0	1	0	0	0	3	22,142
Federal	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	2	8,969	2	22,142	0	0	1	0	0	0	5	31,111
TOTAL GRANTS												
Punjab	22	132,992	2	5,402	0	0	3	12,600	1	2,049	28	153,043
Sindh	10	38,012	1	3,448	0	0	1	13,257	2	4,350	14	59,067
Balochistan	1	7,208	0	0	2	36,992	0	0	0	0	3	44,200
NWFP	4	48,258	1	14,190	0	0	0	0	1	1,982	6	64,430
AJ&K	1	6,839	1	2,561	0	0	0	0	0	0	2	9,400
Islamabad	4	29,080	7	80,883	0	0	3	21,175	0	0	14	131,138
Federal	0	0	1	8,188	2	17,827	1	5,294	0	0	4	31,309
Total	42	262,389	13	114,672	4	54,819	8	52,326	4	8,381	71	492,587

Table 8. Summary of Purpose-level Indicators

PURPOSE LEVEL INDICATORS	PFY										CUMUL. TO DATE
	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	
<b>ADOPTION OF FARM FORESTRY</b>											
<b>1. Adoption by Producers (Seedling Production)</b>											
a) # private nurseries in operation	19	80	153	299	789	1,377	1,126	948	528		
b) Value of seedlings produced (Rs million)	1.39	5.25	9.98	10.04	22.18	30.92	35.47	24.84	16.58		156.65
<b>2. Adoption by Farmers</b>											
<b>a) Activities directly supported by project</b>											
1) Annual # of farmers planting seedlings	112	2,161	8,150	7,913	21,020	48,665	24,689	18,043	16,055		146,808
2) Future value of trees planted (Rs million)	2.3	61.0	184.5	327.6	554.5	1,069.1	1,413.6	1,067.4	1,053.8		5,734
3) Tree cultivation on private lands											
- # of new acres	26	642	1,833	3,255	5,185	10,711	15,421	10,812	10,674		58,559
- # of new miles (linear plantings)	1	65	295	524	1,182	2,849	4,520	3,982	3,931		17,351
b) # seedlings sold directly to farmers ('000)	0	0	0	75	150	300	500	1,200	700		2,925
<b>3. Adoption by Industry</b>											
<b>a) # private wood-using industries/associations funding farm forestry activities</b>											
	2	2	2	2	4	5	6	7	7	7	
b) Value of above involvement ('000 Rs)	180	180	180	240	420	830	500	1,400	700	700	4,630
<b>INSTITUTIONAL CAPACITY</b>											
4. Critical Events Agenda	0	0	0	1	3	2	1	2	0	0	9
<b>5. Organizational Strength Index</b>											
a) O/IGF	n.a.	n.a.	13	13	14	14	14	14	14	14	
b) Punjab forestry office	n.a.	n.a.	11	13	13	13	12	12	12	12	
c) Sindh forestry office	n.a.	n.a.	9	9	10	12	11	12	12	12	
d) NWFP forestry office	n.a.	n.a.	9	10	10	12	11	12	12	12	
e) Balochistan forestry office	n.a.	n.a.	8	11	11	12	10	10	11	11	
f) Pakistan Forest Institute	n.a.	n.a.	8	8	10	12	13	13	13	13	
g) Punjab Forestry Research Institute	n.a.	n.a.	9	10	11	11	11	11	11	11	
6. Effectiveness of Tree Crop Management	n.a.	n.a.	5	5	6	9	9	9	11	11	
<b>7. GOP Commitment to Farm Forestry (FF)</b>											
a) % FF budget / total forestry budget	2.3%	2.1%	7.1%	9.0%	19.6%	19.8%	19.8%	20.6%	20.6%	20.6%	
b) % FF staff / total forestry staff	2.9%	2.9%	3.3%	3.7%	3.9%	6.5%	7.6%	7.6%	7.6%	7.6%	
<b>8. Research</b>											
a) # farm forestry projects initiated	1	2	14	13	1	7	6	5	0	0	49
b) PFI ability to adapt research results	1	1	1	2	2	2	2	2	2	2	
<b>9. WID</b>											
<b>a) # women foresters trained at PFI</b>											
1) # Started / # Completed	0/0	0/0	0/0	4/4	1/1	0/0	14/13	13/-	0/0	0/11	32/29
2) # Employed	-	-	1	3	2	-	2	-	-	-	8
b) # women owning nurseries/plantations	n.a.	n.a.	101	104	109	125	200	225	225	225	
<b>10. Training</b>											
<b>a) Long-term participant training</b>											
1) # started / # completed	0/0	3/3	3/3	3/3	4/3	2/2	9/8	5/1	0/0	0/4	29/27
2) % utilizing training	-	100	100	100	100	100	100	100	100	100	
<b>b) Short-term Training (# of person months)</b>											
1) Participants training	0	27	22	51	15	30	7	22	17	3	194
2) In-country training	10	50	118	170	307	1,106	725	512	184	80	3262
<b>11. % Construction Activities Completed</b>											
12. NGO Grants											
a) # NGO grants awarded / # Completed	-	-	-	-	-	-	-	33/13	30/21	7/32	70/61
b) Amount awarded (\$ 000)	-	-	-	-	-	-	-	320	182	34	536

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Annex Table 9. Organizational Strength Index

INSTITUTION/YEAR	STAFFING		EQUIPMENT/ INFORMATION FACILITIES		PLANNING CAPABILITY		INSTITUTIONAL LINKAGES		TOTAL					
	93	94	93	94	93	94	93	94	93	94	95			
O/IGF	3	3	3	3	2	2	2	2	3	3	3	14	14	14
FORESTRY OFFICES														
- Punjab	2	2	3	3	2	2	2	2	3	3	2	2	2	12
- Sindh	2	2	3	3	2	2	2	2	2	2	2	3	3	11
- NWFP	2	2	3	3	2	2	2	2	2	3	2	2	2	11
- Balochistan	1	1	3	3	2	2	2	2	2	2	2	2	2	10
PAKISTAN														
FOREST INSTITUTE	2	2	4	4	3	3	3	2	2	2	2	2	2	13
PUNJAB FORESTRY RESEARCH INSTITUTE	2	2	3	3	2	2	2	2	2	2	2	2	2	11

- 1 = fair performance
- 2 = satisfactory performance
- 3 = good performance
- 4 = excellent performance

Annex Table 10. Estimated Technical Assistance Financial Summary for Phase II

Line Item	Five year Budget Total	Estimated Cumulative Expenditure	Percent Expended
1. Salaries and Wages	\$1,248,070	\$1,180,650	94.60%
2. Fringe Benefits	\$296,926	\$287,560	96.85%
3. Overhead	\$723,687	\$684,182	94.54%
4. Travel, Transport and Per Diem	\$645,487	\$540,000	83.66%
5. Allowances	\$327,378	\$311,000	95.00%
6. Other Direct Costs	\$744,826	\$748,000	100.43%
7. Local training	\$244,850	\$236,000	96.39%
8. Commodities	\$418,475	\$413,022	98.70%
9. Subcontracts	\$78,271	\$78,271	100.00%
Total Expended	\$4,727,970	\$4,478,685	94.73%

Annex Table 11. Estimated NGO Grant Financial Summary

Line Item	Budget Total	Estimated Cumulative Expenditure	Percent Expended
1. Salaries and Wages	\$43,771	\$40,606	92.77%
2. Fringe Benefits	\$15,342	\$13,800	89.95%
3. Other Direct Costs (field operations)	-	\$76,000	
4. Other Direct Costs (headquarters)	-	\$2,200	
Total, 3&4	\$99,074	\$78,200	78.93%
5. Indirect Costs	\$62,353	\$57,000	91.42%
6. NGO Grants	\$570,000	\$492,587	86.42%
7. Travel and per diem	\$7,460	\$4,000	53.62%
Total Expenses	\$798,000	\$686,193	85.99%