

6 Human Resource Development

Professional forestry education is imparted at the Pakistan Forest Institute, Peshawar. The Directorate of Forestry Education and Training is supported by its own faculty members and senior research scientists at PFI. Occasionally field officers also deliver lectures. Excellent teaching facilities are available which include a laboratory and hostels for men and women. In addition to degree courses, in-service specialised courses are also organized at the institute.

6.1 Forestry Education and Training

In Pakistan, the purpose of forest education is to provide a steady flow of trained manpower to the Forest Departments, other government organizations (including NGOs), and wood-based industries. Forestry education can be acquired only in specialised institutions. Apart from classroom teaching, forestry education involves practical field training, which includes extensive tours of forests in different ecological zones and study of various wood-based industries. Thus forestry education is comparatively expensive. A limited number of students are enrolled in these institutions and their training expenses, including tuition fees and allowances, are borne by the sponsoring agencies.

6.1.1 The Pakistan Forest Institute, Peshawar

The Pakistan Forest Institute (PFI), Peshawar is a national institute attached to the Federal Ministry of Environment, Local Government,

and Rural Development. It was established in 1947 and since then has fulfilled the forestry training and research needs of the Provincial Governments and other organizations. The institute has five divisions including the Forest Education Division. The other divisions are mainly engaged in forestry research, but provide valuable support to the Forest Education Division.

The PFI offers two courses of two years duration, the BSc. Forestry and the MSc. Forestry. The faculty of education at PFI (Forest College) is affiliated to the University of Peshawar for conducting examinations and awarding degrees. Subject to fulfilling the prescribed qualifications, admission in the courses is granted without gender bias. Generally, the following are admitted to receive professional forestry education at the PFI, Peshawar:

- those already in government forest service;
- probationers nominated by the government and private agencies;
- persons selected through competitive examinations by the Pakistan Forest Institute for its requirements;
- nominees of foreign governments and international organizations; and
- a limited number of self-financed individuals fulfilling the requirements for government nominees.

Following successful completion of the two-year course, BSc. (Forestry) and MSc. (Forestry) graduates are usually employed by their

sponsoring organizations. Over the years, the education faculty of the PFI has gradually expanded. In order to meet the emerging challenges, especially in participatory forestry, it will have to train professional foresters for their role outside their departments. For this purpose, specialised courses are also offered to develop a broader, more socially-oriented outlook and expertise in forestry professionals.

6.1.2 The University of Agriculture, Faisalabad (UAF)

The University of Agriculture, Faisalabad, established its Department of Forestry, Range Management and Wildlife in 1977, offering a degree with a major in forestry. At present, it offers a four-year course leading to MSc. (Hons') Agriculture (with a BSc. (Hons) agriculture after two years) with a major in forestry. The forestry curricula are well integrated with agriculture. However, the classroom facilities are rudimentary, the teaching faculty is incomplete, and the department has only a small library of about 400 books. The forestry content has been increased, but its depth and breadth needs considerable improvement. As a result of stiff competition from the PFI, few students enroll each year. Provincial Forest Departments are not happy to recruit the graduates from Faisalabad University as a result of the apparent weaknesses in certain disciplines.

6.1.3 The Punjab Forest Research Institute (PFRI), Gatwala

The Punjab Forest Research Institute located near Faisalabad provides in-service training for forestry technicians and professionals in agroforestry as well as performing research.

6.1.4 The Punjab Wildlife Research Institute, Gatwala

The Punjab Wildlife Research Institute located near Faisalabad provides in-service training for forestry and wildlife technicians and wildlife professionals as well as performing research.

6.1.5 Provincial Forestry Schools

The education and training of Foresters and Forest Guards is conducted by the Provincial Forest Departments in their forestry schools. The training duration for foresters is one year and for Forest Guards six months. Certificates are awarded to the nominees of the departments and organizations on successful completion of training. The list of forestry schools is provided in Table 10.

Balochistan and the Northern Areas do not have forest schools and their nominees receive training at the forest schools of other provinces.

6.1.6 Forestry Training

The courses leading to BSc. Forestry and MSc. Forestry have a large number of applied science and forestry subjects. Although most of the subjects are the same, they are taught in greater depth at MSc. Forestry level. Forestry education and training programmes are designed to produce professionals and technicians. There are four levels of training which correspond to the entry-level needs of forest departments and other organizations. The levels are shown in Table 11.

The subjects are taught to MSc. Forestry and BSc Forestry students at the PFI, Peshawar, are shown in Table 12.

Table 10: List of Forestry Schools in Pakistan

Name of School	Location	Province
Punjab Forest School	Ghoragali (Murree Hills)	Punjab
Punjab Forest School	Bahawalpur	Punjab
Sarhad Forest School	Thai (Abbottabad)	NWFP
Miani Forest School	Hyderabad	Sindh
Azad Kashmir Forest School.	Muzaffarabad	AJK

Table 11: Levels of Entry for Forestry Training Programmes

Training Programme	Pre-requisites	Training Period	Employment Level	Responsibility
<u>Professional</u> MSc. Forestry	BSc./BSc. Forestry	Two years	Sub-Divisional/ Divisional Forest Officer	Protection and management of Forest Division (BPS-17) comprising 4-6 Forest Ranges and supervision of Range Forest Officers
BSc. Forestry	FSc.	Two years	Range Forest Officer	Protection & management of forests in a Forest (BPS-16) Range, comprising 4-6 Forest Blocks and direct supervision of Foresters and Forest Guards
<u>Technician</u> Certificate (Forester)	Matriculation	One Year	Forester	Protection of Forest Blocks (BPS-5), comprising 4-6 Forest Beats, and supervision of Forest Guards and labour
Certificate	Matriculation	Six Months	Forest Guard	Protection and direct supervision of Forest Beats (smallest administration units) (BPS-2)

6.1.7 Participatory Forestry Education

In the past, estate management and law enforcement were the only concerns of forest departments. Therefore, forestry education dealt with forest protection in detail, and included basic silviculture and elementary forest management. In the policy statements of 1955, 1962, and 1980, the emphasis on technical forestry grew steadily and new disciplines were gradually added to forestry education as well as to the responsibilities of forest departments. These included watershed management, range management, logging and engineering, social forestry, and a small course on wildlife, fisheries, countryside recreation, sociology, and public administration. With the shift from traditional protection forestry to participatory forestry during 1985-95, forest education at the PFI, Peshawar, and forestry schools has undergone considerable changes. The present syllabi of the BSc. Forestry and MSc. Forestry courses taught at PFI, Peshawar, reflect this (Table 12).

6.1.8 Specialisation in Forestry Education

The following specialisations in forestry education have been introduced at the level of MSc. Forestry at the PFI, Peshawar.

- Logging Engineering
- Watershed Management
- Social Forestry
- Range Management

Specialisation in the subjects listed above requires replacement of related subjects in the MSc. Forestry programme. The subjects to be substituted in the MSc. programme are listed in Table 13.

While specialising, the students are required to conduct a research study and write a short thesis in the field of their specialisation, as well as to prepare a management plan for a forest with emphasis on logging and forest road construction.

Table 12: Curricula for Forestry Degrees	
MSc.(Forestry)	BSc. (Forestry)
Forestry Subjects	
<ul style="list-style-type: none"> • General Silviculture • Species' Silviculture & Silviculture Systems • Forest Management & Forest Working Plans • Forest Mensuration • Forest Economics and Valuation • Forest Protection • Forest Statistics & Research Methods • Forest Utilisation 	<ol style="list-style-type: none"> 1. General Silviculture 2. Species' Silviculture & Silviculture Systems 3. Forest Management & Forest Working Scheme. 4. Forest Mensuration 5. Forest Economics 6. Forest Protection 7. Forest Statistics 8. Forest Utilisation
Participatory Subjects	
<ul style="list-style-type: none"> • Watershed Management • Range Management • Farm Forestry 	
Subsidiary Subjects	
<ul style="list-style-type: none"> • Forest Botany including Pathology • Forest Zoology & Entomology • Recreation & Park Management • Forest Engineering • Survey and Drawing, • Soil Science • Soil Conservation & Land Management • Forest Law & Policy • Forest Mathematics 	<ol style="list-style-type: none"> 9. Forest Botany including Pathology 10. Forest Zoology and Entomology 11. Recreation & Park Management 12. Forest Engineering 13. Survey and Drawing 14. Soil Conservation 15. Forest Law & Policy 16. Forest Mathematics
Accessory Subjects	
<ul style="list-style-type: none"> • Fish and Wildlife • Geology • Photogrammetry & Photo Interpretation. • First Aid, Public Health & Hygiene • Sociology & Public Administration 	<ol style="list-style-type: none"> 17. Fish and Wildlife 18. Geology 19. Photogrammetry 20. First Aid, Public Health & Hygiene 21. Forest Accounts & Procedure 22. Islamic Studies 23. Pakistan Studies 24. Sociology & Public Administration
Sources: PFI, Peshawar, and Forestry Sector Master Plan	

6.1.9 Public Awareness for Participatory Forestry

Public awareness about forest conservation and development is limited, but this is changing rapidly. The IUCN, WWF-Pakistan, Margalla Save the Hill Society, Pakistan Tobacco Company, and various NGOs have generated considerable interest in the conservation of existing forests and the need to undertake tree planting. Tree planting campaigns are organized

twice a year during the spring and monsoon seasons throughout the country. Messages from the President and the Prime Minister of Pakistan are telecast to motivate the public, and especially farming and student communities, for their wholehearted participation in the nation-wide tree planting programme. The Provincial Forest Departments make special arrangements to distribute planting stock at subsidised rates as well as providing advisory services. On average, 240 million saplings are planted every year.

Table 13: Specialised Subjects in Forestry Courses	
Subjects included in the Specialisation Course	Subjects omitted in lieu of Specialisation Courses
A. Forest Products and Engineering (since 1981)	
1. Wood working & saw milling	1. Mycology and Forest Pathology
2. Applied Mechanics	2. Forest Zoology & Entomology
3. Work Study & Labour Science	3. Plant Taxonomy
4. Machinery in Forestry	4. Fish and Wildlife Management
5. Special Considerations in Road Design & Construction	5. Range Management
6. Tree Harvesting & Transportation	6. Watershed Management
7. Wood Structure & Identification	7. Forest Genetics
8. Composite Wood Products & Adhesives	8. Recreation & Park Management
9. Wood Testing & Processing	9. Soil-Plant-Water Relationships
B. Watershed Management (since 1985)	
10. Forest Meteorology	10. Forest Genetics
11. Forest & Range Hydrology	11. Forest Protection
12. Design of Soil Conservation Works	12. Forest Protection
13. Watershed Planning & Analysis	13. Soil-Plant-Water Relationship
C. Farm and Energy Forestry (since 1987)	
14. Energy as a Forest Product	14. Forest Recreation & Park Management
15. Agro-forestry Systems.	15. Fish & Wildlife Management
16. Farm & Energy Forestry Management	16. Photogrammetry & Photo-interpretation
Source: PFI, Peshawar	

Apart from Provincial Forest Departments, there are a few government agencies and private organizations that are also concerned with forestry education and training in their spheres of operation and influence. These include the following.

- Aga Khan Rural Support Programme (AKRSP)
- NWFP Forest Development Corporation (FDC)
- Azad Kashmir Logging and Sawmilling Corporation (AKLASC)
- Mangala and Tarbela Watershed Wing of WAPDA (Water and Power Development Authority)
- Social Forestry Projects for production of fuelwood and small timber
- Pakistan Agricultural Research Council (PARC)
- Sindh Arid Zone Development Authority (SAZDA)
- Arid Zone Research Institute, Quetta (Balochistan)
- Paper and Pulp Industry

- Sports Goods Industry of Pakistan

There are a number of participatory forestry projects sponsored by various international agencies. The important components of these projects include setting up of Village Organizations and Women's Organizations, and farmers' training. The existing training facilities in the Pakistan Forest Institute, Forestry Schools, and Provincial Forest Departments have been strengthened and expanded through these projects. Some of the most important projects are as follow.

- Tarbela Watershed Management Project, sponsored by the World Food Programme and KFW (Kreditanstalt Für Wiederaufbau, Germany)
- Kalam Integrated Development Project, sponsored by the Swiss Government
- Siran Valley Integrated Watershed Management Project, sponsored by the German Government
- Malakand Social Forestry Project, assisted by the Dutch Government

- Forestry Sector Development Project, Punjab, sponsored by the World Bank
- Forestry Sector Development Project, NWFP, sponsored by the Asian Development Bank, ICIMOD, IUCN, ILO, and WFP

6.2 Trends in Human Resource Development

Professional forestry education and training are influenced by:

- traditional general education in the country; and
- the quantitative and qualitative demand of the forestry sector.

The importance of a sector can be assessed on the basis of its economic role, or its social contribution to human subsistence and welfare, or both. The higher the importance of a sector, the greater the requirements for trained manpower. This is equally so for forestry. Currently, forestry is a low priority sector in Pakistan, but its importance is likely to increase as a result of increased recognition of the role in economic and ecological terms. The Provincial Forest Departments recognise the future dependence on farmers growing trees on their lands. The department's aim to develop the strategies and talent needed to motivate and assist the farming community, to establish linkages between growers and wood-based industries, and to improve the market-oriented forestry environment.

6.2.1 Review of Curricula

Curricula are placing increasing emphasis on agroforestry and commercial forestry, with

importance given to the management of rangeland, watersheds, and wildlife. Forestry students are closely integrated with those of agriculture, rural sociology, economics, marketing, and related subjects. This qualifies them to become social foresters and extension workers and able to reach farmers and entrepreneurs effectively. The curricula for professional education at the PFI, Peshawar, are reviewed periodically and taken up with the Syndicate of Studies at the University of Peshawar. At present, the curricula are under review.

At the annual review of forestry research and education at PFI, the Chief Conservators of Forests of the Provincial Forest Departments discuss in detail the performance of the forestry graduates in the field. The faculty is apprised of any need to improve the contents of the curricula to train professionals. The forestry researchers at PFI and other research organizations and universities, who are also engaged in teaching students, are aware of and have access to the latest knowledge in the fields of their specialisation. In addition, the forestry researchers are involved in collaborative research with various national and international organizations. They are enabled to attend international seminars, workshops, and meetings to update their knowledge and share their experience with other scientists.

The curricula for forestry schools is reviewed and revised by the Provincial Forest Departments according to the manpower needs. Since the forestry schools are not affiliated with the Secondary Boards of Education, it takes considerable time to review the curricula. Revised curricula were adopted for these schools in 1994.