

## Trends in forest ownership, forest resources tenure and institutional arrangements

Case study from Pakistan

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## Summary

With less than 2.5 percent of its total land area under natural and planted forests, Pakistan is a forest-deficit country, and the gap between supply and demand for forest goods and services is increasing with the rising population. At present, the population is 150 million people, but this is projected to increase to 210 million by 2025. Forestry receives less importance in national priorities, so many issues that need the attention of decision-makers at the highest level remain unresolved. The issue of land tenure arrangements and ownership rights has not been addressed in any of the policy statements or reform processes of the past 20 years. The basis of all rights to forest resources remains the settlement reports prepared by the United Kingdom colonial government in the last quarter of the nineteenth century. All forest management plans are based on these.

The land reforms that Pakistan has witnessed over the past 50 years have been limited to agricultural lands and lands termed waste and grazing land; forest land has not been subject to land reform. Title to forest land is determined by land revenue records and the records of provincial forest departments. Historically, forest land was available for everybody to use, and the available records show that tenure arrangements were made in terms of access to grazing, tillage and water. The Mughal kings maintained some areas as royal hunting grounds, but the first attempts at forest conservation, settlement of rights and demarcation were made by the colonial rulers between the mid-nineteenth and mid-twentieth centuries.

The large area covered by this case study made it impossible to categorize tenure arrangements, because of the great diversity in tenure systems, customary and formal laws and administrative arrangements among Pakistan's provinces. The relationships between customary law and formal law also vary from province to province. According to the Federal Constitution, forestry is a provincial subject.

Analysis of the present complex tenure system is difficult owing to a lack of reliable data on forest resources, and scant data on laws and customs further complicate an understanding of the complexities involved. However, there appears to be a pattern in the evolution of forestry legislation and management, from simple unowned land to tribal ownership, leading on to State intervention as the need for conservation started to be felt. State institutions kept local people's needs in mind, by leaving large chunks of land as either common grazing ground, or *Guzara* forests in the provinces of Punjab and North West Frontier Province (NWFP). Reserve forests with limited rights were meant for conservation and were exclusively State lands, while protected forests on State or private land aimed to restrict specific activities, for which permission had to be obtained. Protection measures included declaring certain trees royal or banning the harvest of certain herbs; activities that were not banned could be carried out unhindered in protected forests.

Other lands transferred to the forest departments were termed unclassified forests, and were protected by the departments without any legal support from forest laws. In the Northern Areas, there were two systems that determined local people's access rights to forests: the tribal ownership system, which was governed by customary laws; and the *fief* system of rulers, called *Mirs*. With the accession of the Northern Areas to Pakistan, both of these traditional systems broke down and were replaced by a far more complex system, which is barely understood by those it is supposed to serve. In the meantime, the apparently never-ending acrimony over forest protection in State-owned forest between forest departments and local communities continues. In privately owned forests, there is an increasing trend of deforestation, despite the stringent rules and regulations.

Forest working plans and land settlement reports form the basis of all management in both natural and planted forests, and the rights admitted in forest land settlements are reflected in the land revenue records (locally called *shart Wajib ul- Arz*). Hilly forests had been subject to management since the late nineteenth century; shelterbelts and selection systems were adopted with the objective of producing sustainable yields of commercial wood. Such systems were interrupted in 1985 with the imposition of a ban on the harvesting of green trees in the Punjab, which was extended to the whole country after the devastating flood in 1992.

Many forest management interventions have been made, such as the establishment of forest cooperative societies and the Forest Development Corporation for better management and the sharing of benefits with communities, but most have failed. Provincial and federal governments, donors and non-governmental organizations (NGOs) have taken a keen interest in NWFP over the last 20 years. NWFP has taken a lead by revising the 1927 Forest Act that *inter alia* provides legal coverage to joint forest management (JFM). If successful, this experience could be emulated in other provinces.

Recognizing the links between poverty reduction and forests as envisioned in the Millennium Development Goals (MDGs), the Government of Pakistan increased the development budget for afforestation for the years 2005 and 2006.

With more awareness of forest-related traditional knowledge, access and benefit sharing, and local/indigenous communities' rights and obligations, there is hope that legislation will be made to adapt to Pakistan's obligations under the Convention on Biological Diversity. There is a trend for more and more NGOs to become involved in forest policy issues and reporting on deforestation. Many medium-sized and small projects have been initiated – most with donor assistance – for forestry-related issues, but few projects deal directly with forest land tenure. Moreover no comprehensive study of forest land tenure and trends in forest ownership has been conducted. This case study is the first attempt in this direction and should pave the way for further studies.

Prior to any effective reform of forest land tenure, a thorough analysis of the complex existing systems is needed. The following needs for the future have been identified: forest land tenure reform; adaptation of policies and legislation and of planning and monitoring systems; identification of land tenure's role in farm forestry; and recognition of customary laws, traditional knowledge and the rights and obligations of local/indigenous communities.

Adapting provincial forest policies to fulfil national and international obligations for forest conservation, sustainable use and equitable benefit sharing would be a major leap towards sustainability. This could be achieved by establishing regular fora for policy analysis at the highest level. Although land reforms have been made in Pakistan – with varying degrees of socio-political impact – there has never been an attempt to address forest land tenure reform, and such an effort would be a step in the right direction. One of the main reasons for the failure of interventions in the forestry sector at the community level is the lack of cooperation from local communities, most of which are against the State functionaries of forest departments. This conflict is the result of forest departments' lack of sensitivity to the customary laws that communities have been practising and perfecting over generations of living with nature. Recognition of customary law, traditional knowledge and the vital role of indigenous communities could help forest dwelling and forest-dependent communities to develop a sense of ownership in and around the forest. Although farm forestry interventions have met with success in Pakistan, the massive potential of farm forestry has not been fully harnessed; a critical analysis of agricultural land tenure as it affects farm forestry needs to be made because most farmland is cultivated by tenants who do not favour tree planting. Tenants with tenure of only two or three years prefer not to sacrifice today's yield for the future.

Owing to non-existent or weak monitoring systems there is a shortage of reliable data on forest areas, tenure arrangements and trends of deforestation in Pakistan. A regular unbiased monitoring system would be of major assistance in improving forest cover, providing livelihoods to communities and equitably sharing the benefits from forestry resources.

## Introduction

It is widely recognized that the forestry sector carries many hopes and promises for achieving the Millennium Development Goals (MDGs) for poverty reduction in the twenty-first century. Linking forest management with poverty reduction is one of the major challenges faced by the forestry sector in developing countries in general, and Pakistan in particular. Forests have the potential to reduce poverty not only for forest dwelling communities, but also for other low-income rural and urban communities. Pakistan is committed to achieving MDG 7 by increasing the forest cover on State-owned and private forest and farmland from the 1992 level of 4.8 percent to 6 percent by 2015. Reliable data for planning are essential to achieving this target, but reliable data on forest area, boundaries and land tenure are scarce.

Pakistan takes up the challenge of reducing poverty through the forestry sector with much previous experience in afforestation projects, management planning and farm forestry over recent decades. Community participation in forest resource management has been widely recognized in forest policy statements and in the Forestry Sector Master Plan (FSMP) of 1992. Over the past 20 years, the concept of community participation in natural resource management has been practised and tested through various projects and institutional arrangements of both the government and non-governmental organizations (NGOs) at different levels and in all provinces of Pakistan. However, these interventions do not appear to have achieved all of their desired results. Available

studies show an overall trend of decreasing forest cover in Pakistan, despite heavy investments in projects. Detailed surveys and assessments of forest resources were conducted in 2003/2004 by the Pakistan Forest Institute Peshawar. The total area under forest cover reduced from 3.59 million to 3.32 million ha between 1992 and 2001 – an average rate of 27 000 ha per annum. In the post-FSMP period, forest areas in Punjab and Azad Jammu and Kashmir (AJK) have increased, whereas in Sindh and Balochistan they have decreased. In North West Frontier Province (NWFP) there was no change. The highest rate of deforestation was in Northern Areas, where forest cover declined by more than half in ten years.

Literature studies and experiences from other countries show that a major shortcoming of past interventions was their lack of sensitivity to issues related to forest land tenure. Understanding the impact of tenure is essential to the formulation of effective policies and the promotion of forest management. With the recent trends of privatization, devolution of powers to the district level and community involvement in forest management, the issues related to forest land tenure are becoming increasingly complex as more and more stakeholders are involved. Forest land tenure is a broad concept that includes ownership, tenancy and other arrangements for the use of forests; for the purposes of this case study, forest land tenure is a combination of legal and customary ownership and other rights, arrangements and conditions for forest management and usage.

The limited availability of reliable data on forest resources is a major issue that affects the planning of appropriate actions to achieve these targets. After 1947, the government took over large chunks of land, and uncultivable land was transferred to the provincial forest departments through the Federal Land Commission. These transfers of land are reversible because no tenure arrangements are defined, and their main purpose appears to be safeguarding the land from encroachment. Policies regarding tenure arrangements for forests could help achieve the MDGs, but this issue has attracted little attention so far. There is a lot of literature on land tenure for agricultural lands, but little on tenure in forest areas.

In response to growing concern about the depletion of forest resources, some steps were taken in the late nineteenth century to conserve, demarcate and settle forests. During these settlements, large chunks of land were left to satisfy the needs of local populations, while others were declared State forests for conservation and scientific management for sustained timber yields. This system worked well for almost a century, but in the absence of management and inputs the communal forests have deteriorated drastically. The condition of State forests is much better, because of the forest departments' protection, restocking and scientific management efforts. Forest departments do not prepare scientific management plans for the regeneration of communal forests, except for regulating the harvesting of timber; in their records, the departments refer to community rights as a "burden" on forest.

This study analyses forest ownership, rights and institutional arrangements in order to assist planners in achieving the MDGs by linking the implications of forest resource ownership and management to poverty alleviation. The main problem encountered was the lack of reliable data, especially on forest ownership and tenure.

For example, the Forest Department in Abbotabad Circle, NWFP does not keep ownership records for communal (or *Guzara*, as it is known locally) and private forests as these can be sold, so their ownership keeps changing. The ownership of communal forests is recorded in the revenue record maintained by the Revenue Department, and can be collective or joint. When a parcel of forest is sold, the permission of all the owners is necessary, as it is when a single owner wants to sell his/her individual rights in a joint-ownership parcel. Sales can be either with or without rights in the forests, and individuals with rights in communal forest can sell those rights to other individuals. Private forest owners can sell the ownership of forest land with or without rights to grazing, the proceeds of commercial harvesting, wood collection, etc.

In the hill district of Rawalpindi in Punjab province, on the other hand, *Guzara* forest rights cannot be sold because the Forest Act of 1927 provides that rights can be transferred only through inheritance. An owner of a *Guzara* forest can therefore sell his/her share of ownership (with the consent of other co-owners), but not the associated rights. Therefore, the sale and purchase of *Guzara* is rare. The Revenue Department in this region keep records of ownership and right holdings while the forest department issues wood cutting permits to right holders and transit permits for the movement of wood that has been legally extracted from private or communal forests.



It is difficult to gather information in the Northern Areas because of poor access and the extent of privately owned forest, over which the State has no control other than through banning the movement of timber to markets in the settled areas of other provinces. However, in the presence of such complex tenure arrangements, the ownership of forest can hardly be termed as private. Forest owners often do not participate in the preparation of the management plans that determine the extent of forest to be harvested. They cannot auction their forest, decide who to contract to carry out the harvest, or penalize forest offenders because all of these decisions are made by the forest department. Owners are involved only in determining usages such as grazing, and even then it is the forest department that decides the extent to which these can be carried out. The *de jure* owners of forest therefore become passive spectators to the decisions made by the forest department.

Forestry does not appear on the concurrent or residual list of subjects in the Constitution of Pakistan, making it a provincial subject for which each province makes its own laws. These laws are a legacy of the first forest legislation made in the late nineteenth century. The overall objectives of forestry laws are conserving forest and fulfilling the needs of local communities. Management of private or communal lands in NWFP is carried out through agreement on the sharing of sale proceeds. There have been many experiments in NWFP for better forest governance and reducing the role of the forest department to a minimum through devolution. The latest of these was an experiment with forest cooperative societies in the early 1980s, but this failed and led to further deforestation, forcing the government to reverse the policy. The NWFP Forest Ordinance of 2002 was drafted after years of consultations and reflects many hopes for the improvement of forests, especially jointly managed forests.

There is no single compendium of laws regarding forest landownership rights and tenure arrangements in Pakistan; existing laws on this subject are diverse and complex. Figures on the extent of each category of forest are not reliable, and data collection efforts tend to lead to the creation of new data. The data collected under the 1992 FSMP are the most reliable so far, but they contain very little on forest ownership and tenure. Some of the data in this case study have not been published before, especially those regarding the rights of communities in reserve forests in Punjab and the complex forest management scenario in privately owned forests for the Northern Areas.

Forest settlements form the basis of all rights in forest areas; for areas where no settlement has been made customary law prevails, as is the case for the rights of communities and individuals in the Northern Areas. The Settlement of Jhelum Forest Division was one of the first settlements made in the province of Punjab, and the original settlement report reflects the importance that the colonial government of the time assigned to this task (see Annex 2). The rights admitted in this settlement form the basis of all the rights still exercised.<sup>42</sup>

During analysis of forest ownership patterns and communal rights for this case study, it was felt that some hitherto neglected areas, such as revival of the seigniorage fee, need careful study and discursive analysis, as they may have the potential to create a system for forest resource ownership in forest dwelling communities. Society needs to know about the steps taken by the Government of NWFP to control the sale and purchase of rights in forests by making right holders aware of what they are selling so that their poverty is not exploited by rights purchasers.

## PAKISTAN COUNTRY PROFILE

Pakistan occupies more than 880 000 km<sup>2</sup> in the South Asian subcontinent. It is bordered by India on the east, China on the northeast and the Islamic Republic of Iran and Afghanistan on the west. It is characterized by significant variations in altitude and topography across its territory. According to the Koppen Geiger classification of climatic zones, which defines zones on the basis of monthly temperature and precipitation data, there are 11 distinct but overlapping climatic zones in Pakistan. Pakistan's diversity also extends to its socio-economic and environmental characteristics, which differ significantly from region to region. Pakistan's Arabian Sea coastline stretches for more than 990 km and consists of two distinct units in terms of physiographic outline and geological characteristics.

<sup>42</sup> This study had no access to the settlement reports of other provinces/areas.

The country has four provinces – Punjab, NWFP, Sind and Balochistan – and two federally administered territories: the Federally Administered Tribal Areas and the Northern Areas. In addition, the territory of AJK is under the administration of the Government of Pakistan. Each province or territory is divided into administrative districts.

Pakistan has a population of 150 million, which is expected to rise to 210 million by 2025, and is the eighth most populous country in the world. Agriculture contributes about 24 percent of gross domestic product (GDP) and provides employment to 48.4 percent of the workforce (Economic Advisory Wing data for 2003). Forestry provides about 0.8 percent of this. The Pakistan Agriculture Research Council has divided the country into ten agro-ecological zones based on physiographic characters. Almost a third of the country is classified as rangeland, which supports two-thirds of the total sheep and goat population and more than half of its cattle. Millions of herders and pastoralists depend on rangelands for their livelihoods.

## The tenure system, facts and figures

For a better understanding of the origins of land tenure arrangements it is important to have an overview of the historical perspective, because most of the present system is a continuation of the past system, whose history stretches back for more than a century. Annex 1 provides such an overview. The provisions of the Forest Act of 1927 (including the recent NWFP Act 2002) and the Land Revenue Act of 1867 (amended as the Provincial Land Tenure Act of 1967) remain the main legal instruments that determine the legal aspects of landownership, including of forest land. The following are the main legal categories of forests based on ownership and rights.

### *State-owned forests:*

- reserve forests with limited community rights;
- reserve forests with no community rights, including the demarcated forests of AJK.

### *Protected forests :*

- private or community forests with restrictions on usage and harvesting limits imposed by the forest departments in hilly areas of Punjab, NWFP and AJK;
- State lands declared as protected, with access and usage rights for communities (except for banned activities);
- Guzara or community-owned forest managed by forest departments;
- private forest with exclusive ownership – managed and harvested by forest departments in hilly areas, and fully managed by owners in the plains;
- forest plantations, including roadside and canal sides, owned and managed by the government;
- privately owned forest plantations, including farm forests, shelter belts and blocks, managed and harvested by owners; movements of harvested timber regulated by the forest department in some areas.

An overview of the evolution of forest ownership patterns in Pakistan shows that the pattern followed was similar to that of other systems in which feudalism persisted. Although the local feudal chiefs were replaced by the United Kingdom colonizers in the eighteenth and nineteenth centuries and by the creation of Pakistan in 1947, it appears that many issues still need to be resolved. Pakistan has a long way to go in adapting its forest land tenure systems and ownership patterns, with the involvement of local communities, forest owners and other beneficiaries at all levels. There have been land reforms for agricultural land, but not for forests.

## **TENURE SYSTEMS**

The land tenure systems prevalent in public, communal and private forests vary somewhat from province to province and across administrative units. The forest settlement reports are the basic documents that determine the extent of ownership and rights to forests in the provinces; an example is given in Annex 2. No forest settlements have been drawn up for Balochistan or the Northern Areas, so neither boundaries nor ownership are clear. In the past, forest settlements sought to balance the needs of local populations with forest conservation. This balance was achieved by setting aside large chunks of forests for the use of communities, especially those adjacent to reserve forests. However, while the State forests were scientifically managed, the communal forests were under increasing pressure from human usage as the population grew. During the course of this study, it was revealed that the revenue record for Ziarat district in Balochistan provides local communities

with the right to clear juniper forest for agricultural purposes. As a result, hardly any cultivable land still has forest cover, and juniper has survived only on poor-quality soils.

Reserve forests leave the local population with no or very few rights, which are limited to satisfying the needs of residents in the settlements/villages surrounded by reserve forests. Such rights include grazing of domestic cattle, collection of fuelwood from fallen trees or brushwood, and rights of water and way. In protected forests, whether State-, community- or privately owned, all activities are allowed except those that are specifically prohibited by special orders. Privately owned forests, especially natural forests in the hills, are subject to a complex ownership and usufruct rights system. *De jure*, private forest is the property of its owner, who can sell and buy forest land with or without rights. However, only the forest department has the right to harvest trees, and the owner is not allowed to cut a single tree for his/her domestic use without the department's permission. There are certain rights to use trees for house construction, or on the death of a family member in Guzara and protected forests in hilly districts of Punjab and NWFP.

There is a general sense that the stakeholders and users of resources are seldom involved in public and communal forests and rangelands. The existing legislation, however, includes many legal provisions that cater to the needs of local communities in the chapters on village forests in the Act of 1927. During the initial settlements in the early 1900s, elaborate procedures were followed to admit rights prior to declaring a forest a reserve and to ensure the impartiality of forest settlements by balancing the opposing views of conservators and forest settlement officers.

The management and protection of forests was handed over to provincial forest departments with the aim of protecting the rapidly depleting forest cover and wildlife habitat while providing sustainable yields of timber and fuelwood for the State and the economy. Large chunks of dry lands were handed over to the forest departments for management as grazing land or as a result of land reforms/settlements. Under the Forest Act of 1927, all forest and range areas were classified as reserved, protected or unclassed on the basis of the rights of communities. Some rights were purchased, bartered or otherwise settled at the time of forest settlement when the reserve and protected forests were declared. Unclassed forests were notified under the act pending their final settlement as reserve or protected forest; the act is not applicable to unclassed forests, so provisions in the Land Revenue Act of 1967 and the Provincial Laws Act provide legal instruments for forest protection and the prosecution of forest offences on such lands. Forest laws and regulations notified by the provincial governments under the act of 1927 include provisions for the regulation and protection of communal and private/Guzara forests.

The following sections provide more detailed descriptions and discussions of tenure arrangements in each province.

## PUNJAB

Forests and rangelands in the Punjab that are in the public sector are managed under the Forest Act of 1927. The rights and concessions in reserve forests that were admitted for the local population at the time of settlement are rights of way and water, collection of fuelwood for domestic use, and grazing rights, which are granted free or on payment of half or full grazing fees. These rights are non-transferable and cannot be sold; the only method of transferring rights is through inheritance. Rights in reserved forests are rare in high hill forests, but frequent in scrub forests. Grazing is further regulated by grazing control forms in the working plans for Rawalpindi, Jhelum, Chakwal, Attock, Pail and Sodhi ranges within Jauharabad Forest Division. All newly afforested areas are closed for ten years, and in some forests grazing is closed for three months to allow the trees to rest during the growing period. Some scrub forest areas within reserve forests are managed purely as rangelands by a separate Range Management Circle. The grazing fees charged by the Punjab Forest Department (PFD) are fixed by the government. Protected forests, including blocks of natural and artificial plantations and roadside and canal side plantations, allow rights and concessions for timber, grazing, grass cutting, lopping and the collection of dry fuelwood. Unclassed forests are areas that have been transferred to PFD pending final legal classification. Resumed lands have been given to PFD as a result of land reforms or evacuee property and have not yet been classified.

Section 38 forests are privately owned lands that have been voluntarily and temporarily put under the control of PFD for the conservation and preservation of soil and vegetation. These are notified under section 38 of the 1927 Forest Act on the written request of the individual owner or of a two-thirds majority of the owners in cases of joint property, for periods of 25 or 30 years.

Owing to the peculiar nature of Guzara forests and the rangelands of Cholistan, the dynamics of their stakeholders and legal positions are discussed in more detail in the following sections.

### Guzara forests in Punjab

Guzara means subsistence, and Malkiat means privately owned. Guzara forests are located in Tehsils Murree, Kotli Satian and Kahuta in Rawalpindi district and are managed by a divisional forest officer (DFO) based in Rawalpindi. Forests on communal land that has not been divided and is meant for collective use to satisfy the requirements of all the village community are known as Guzara forests. Forests on communal land that has been taken over by its owner(s) for personal use are known as Malkiat forests. Table 1 provides the areas of land under Guzara and Malkiat forest and Table 2 the numbers of villages with Guzara forest. The area of a Guzara forest in each village varies from 4 to 5 609 acres (1.6 to 2 271.6 ha).

TABLE 1  
Areas of Guzara and Malkiat forest

Range	Guzara forest	Malkiat forest	Total
Kahuta	27 529 acres	29 090 acres	56 619 acres
Murree	20 502 acres	13 836 acres	34 338 acres
Karor	20 544 acres	10 794 acres	31 388 acres
Lehtrar	31 834 acres	14 488 acres	46 322 acres
<b>Total</b>	<b>100 409 acres</b>	<b>68 208 acres</b>	<b>168 617 acres</b>

1 acre = 0.405 ha.

TABLE 2  
Numbers of villages with Guzara forest

Tehsil	No. of villages
Kahuta	79
Murree	72
Kotli Sattian	45
<b>Total</b>	<b>196</b>

The Guzara Forest Division is self-financed, and the records show no government investment in forestry operations since its creation. Timber from dead, dry, windfall and uprooted trees in Guzara forests is put to public auction, and the revenue generated is divided, with 70 percent going to the village Guzara fund, 25 percent to the central Guzara fund, and 5 percent to the staff welfare fund.

Dead, dry and windfall timber from Malkiat forests is sold at the request of its owner, who must obtain approval from the Guzara Forest Chairperson. The revenue is then divided, with 70 percent to the landowner, 12.5 percent to the village Guzara fund, 12.5 percent to the central Guzara fund, and 5 percent to the staff welfare fund.

### The right of Haqdari

The inhabitants of Murree, Kahuta and Kotli Satian are entitled to three chir pine trees from Guzara/Malkiat forests for house construction every three years. Owing to a ban on green felling, permission to cut only dry fallen pine trees is granted by the Guzara Forest Division, after verifying the claimant's rights with the revenue staff.

For the last 20 years, efforts have been made to prepare a working plan for Guzara forests but owing to unclear boundaries and the local communities' fear of uncovering encroachments, no demarcation can be carried out, so no working plan can be prepared.



## NWFP

All previous forest enactments, especially the Forest Act of 1927, have been consolidated under the NWFP Forest Ordinance of 2002, which provides for the management of reserve, protected, Guzara and all types of private forest in the province. The NWFP Management of Protected Forests Rules of 1975 regulate the rights of communities in protected forests by providing free grants of trees in all the districts except for Swat and Kalam. The rates charged for trees in these districts are given in Table 3.

TABLE 3  
Rates for trees in Swat and Kalam

Area	Rate per tree (Rupees)			
	Deodar	Kail	Fir/spruce	Chir
Madyan, Behrain, Fatehpur and Matta Tehsils	700	500	400	-
Khabbal, Babuzai and Charbagh	600	400	300	-
Alpuri, Kanam Lilowni Puran and Chakesar Tahsisi	600	400	300	
Buner Sub-Division	600	400	350	

A system of quotas for right holders is maintained in the revenue records, and the law provides for grants of trees to local people, subject to the verification and recommendation of the tribal communal system. Commercial sales are allowed subject to approved working plans and payment of 15 percent of sale proceeds to the local right holders through the appropriate district officer revenue. The schedule of tree quotas for the domestic needs of local people in Swat district is given in Annex 3.

Ownership and tenure are generally well defined in NWFP, except for in Federally Administered Tribal Areas. Reserve forests owned by government and managed by NWFP Forest Department are situated in Hazara (Haripur), Galliat (Abbotabad), Kaghan, Siran and Agor Tanawal (Manshera district). All of these forests were demarcated and set aside under permanent land settlements in 1872 and 1905, and their total area is 100 000 ha. Under the NWFP Forest Ordinance of 2002, rights of pasturage or to forest produce can be admitted by the Forest Settlement Board, but no right can be acquired over reserve forests except by succession, and no right can be alienated by mortgage, grant, lease, sale or otherwise without the sanction of the government. In practice, however, studies indicate that the sale and purchase of rights has been one of the major causes of deforestation in NWFP (Javed and Fawad, 1998)

The following are prohibited in reserve forests: all acts of encroachment, trespassing, grazing and browsing except where rights are admitted; cutting of trees; and quarrying of stones, etc. Violations are punishable with imprisonment for up to two years, fines of up to 50 000 rupees (Rs), or both. If the offender is a woman, the magistrate, for reasons to be recorded in writing, may permit an agent to appear on her behalf. If a child under 16 years of age is in charge of cattle that trespass into the reserved forest, the owner of the cattle is deemed the offender. The provincial government has the power to declare a forest no longer reserved, but has exercised this power rarely.

### Village forest

A unique feature of the NWFP Forest Ordinance of 2002 is the power of the government to assign any reserve forest to any community as village forest; such assignments are reversible. The government may make rules to regulate the management of village forests, prescribe conditions for the provision of timber and other forest products to the village community, and prescribe joint responsibility and liability for the contravention of provisions of the rules. So far, no rules for village forests have been notified by the Government of NWFP, nor have there been any requests for reserved forests to be declared village forest.

Protected forests in NWFP were inherited from the princely states of Chitral, Dir and Swat at the time of accession to the Government of Pakistan in 1969. Protected forests are State property, and right holders are subject to the payment of 60 to 80 percent royalties on timber sales. Originally the royalty was 15 percent. These forests are situated in the districts of Chitral, Dir, Swat and Kohistan to the right of the River Indus. The total area of protected forests recorded by NWFP Forest

Department is 590 000 ha. The NWFP Forest Ordinance of 2002 gives the government powers to declare as protected forest any forest that has not been declared reserve forest, as long as the rights of communities are settled. When emerging conservation issues warrant the immediate closure of a forest, the government may declare that forest protected without abridging or affecting any of the existing rights of individuals or communities. The government may also reserve certain trees or close forests for periods of up to 30 years, but the law provides that when a portion of forest is closed, the remainder of the forest left open must be sufficiently large and accessible for communities and individuals to exercise any rights suspended in the closed portion. The activities prohibited in protected forests are similar to those prohibited in reserve forests, as are the penalties for violations.

Local communities' rights to shares from the sale proceeds of timber harvesting have been a subject of intensive study. Studies indicate that there is a group of timber traders, often referred as the "timber mafia", who purchase the rights of poor communities many years before working plans for timber harvesting are prepared (Khan *et al.*, 2001). Under public pressure against the selling and purchasing of rights, the NWFP government passed legislation in 2001 that makes the presence of the original right holder necessary when royalties are distributed. This new initiative has not been tested, however, as no commercial harvesting has been carried out since imposition of the national ban in 1992.

### **Guzara forest**

According to the NWFP Forest Ordinance of 2002, Guzara is the protected village wasteland that was set aside at the time of settlement to meet the needs of landowners and right holders in areas comprising the districts of Haripur, Abbotabad, Mansehra, Kohistan and Batagram. Tenure arrangements for Guzara forests in NWFP are somewhat different from those in the Punjab. The main differences are that there is no owners' representative body equivalent to the Punjab Guzara Advisory Committee and that all deodar (*Cedrus deodara*) growing in Guzara in the Kaghan area, whether on government or private land, is declared government property. For deodar trees on private land, the landowner is paid half the price of any timber sold, after deduction of NWFP Forest Department's costs for extraction, taxes and management.

A Guzara may be individually owned (Malkiat) or jointly owned by families and communities (Shamilat). According to one survey (Rafique, 1990), 81 percent of Guzara is owned by 12.3 percent of the households in the area, with each household owing an average of 196 acres (80 ha). Guzara may be bought and sold, but the sale of community Guzara is not common. The legal definition of Guzara implies that the trees growing or grown on it are subject to government control and regulation, regardless of who owns them. The complex pattern of Guzara ownership, rights and control has several management and policy implications for any programme seeking to improve forest management and poverty alleviation. The following is a brief outline of the issues involved in Guzara ownership (see also Annex 4).

#### ***Usufruct rights in Guzara***

Guzara lands are shared commonly or divided as forest and/or pasturelands and owned and utilized by the village landowners. They are not open to all villagers for fuelwood and fodder collection; even the grazing of animals is restricted in some villages. Tree felling for timber in Guzara forests is controlled by NWFP Forest Department. Owners can cut from one to three trees after obtaining a formal permit from the DFO, but tenants and the landless do not have any right to cut timber.

#### ***Guzara forest management by NWFP Forest Department***

Until the ban on commercial harvesting of 1992 stopped all exploitation, Guzara forests were directly managed by the forest department through working plans. These contain a wealth of information on social and biophysical aspects and the history of past management.

#### ***Rights in Guzara forests***

Until the first regular land settlement of 1872, there was no record of rights to Guzara forests. The settlement recognized that arable lands in the possession of the people were their property, but treated forest land differently. Portions of forest in villages were set aside as Guzara for meeting the needs of local people, while the remainder was constituted into State-owned reserved forests. During the course of settlement, the people's customary uses of forest were ascertained from the village elders, recorded in the village record of rights and admitted as rights to the forests. These rights survived the two subsequent land settlements of 1904 and 1946.

Rights in a Guzara forests are inherited, along with property in the village concerned. The descendents of the people who were admitted as landowners in the first land settlement enjoy the full rights that go with the property, including rights to the Guzara forests. Anybody acquiring property in the village by means other than succession may or may not be entitled to exercise rights to the Guzara forest, depending on whether the property was acquired with or without such rights.

People acquiring only land or only Guzara rights in a village may be entitled to exercise only some of the rights to the Guzara forest. For example, a person who purchases rights in village Guzara (without landholding) is not entitled to free grants of trees, while certain privileges such as the utilization of dry and fallen wood may be available even to non-right holders. Among the most important rights to Guzara forests are seigniorage fees, timber for domestic use, royalties from sale proceeds, collection of dry, brush and green wood, use of wood for charcoal and kilns, lopping of trees for fuelwood and fodder, and grazing of animals. Exercise of these rights is governed by the Hazara Forest Act of 1936, the Guzara Forest Rules of 1950 and village records of rights.

*Seigniorage fee:* This is a reciprocal right enjoyed by the people for State-owned reserve forests and by the government for privately owned Guzara forests. The fee is payable on the revenue earned from the sale of harvested trees; the rates to be paid are fixed by the government. Table 4 gives the most recent rates.

TABLE 4  
Schedule of seigniorage fees (2002)

	Product	Botanical name	Fee per green tree (Rs)		
			At least 24 inches diameter at breast height	16–23 inches diameter at breast height	Per dry tree
1	Deodar	<i>Cedrus deodara</i>	50.00	25.00	One-quarter of the rates for green trees
2	Blue pine (Biar)	<i>Pinus wallichiana</i>	40.00	20.00	
3	Silver fir (Paludar)	<i>Abies pindrow</i>	30.00	15.00	
4	Chir	<i>Pinus roxburghii</i>	30.00	15.00	
5	Walnut (Akhrot)	<i>Juglans regia</i>	6.00	3.00	
6	Ash (Sum)	<i>Fraxinus floribunda</i>	10.00	5.00	
7	Spruce	<i>Picea smithiana</i>	30.00	15.00	

1 inch = 25.4 mm.

The fee was first enforced in 1873, long before enactment of the Hazara Forest Act of 1936, and has since been applicable at uniform rates everywhere. The law requires the rates to be revised every ten years, but the rates fixed in 1912 were not revised until the NWFP Forest Ordinance of 2002. During key informant interviews for this case study, some NWFP forest officers expressed the opinion that reviving the seigniorage fee would not contribute to poverty alleviation because it is reciprocal, i.e., NWFP Forest Department charges fees on private sales while paying fees on sales from State forests. In recent years, the payment of seigniorage fees to Guzara owners has not been regular owing to oversight and the owners' lack of interest. Some of the fees that should be paid to the people from the sale proceeds of reserved forests have ended up in the public exchequer, and even when NWFP Forest Department sends the fees to be paid to the people to the Deputy Commissioner, they often remain undisbursed.

*Trees for domestic use:* The right to free grants of trees is available to people who acquired their rights in the Guzara forest through succession, and – in some cases – to those who purchased their Guzara rights along with a landholding in the village. The number of trees granted is determined by the village record of rights. Resident right holders have first priority, but each family can receive only one grant every three years. Non-resident right holders are allowed a grant once every ten years, but only if there are excess trees after residents have received their grants. Gifts of trees are allowed only to charitable institutions and for community purposes, and can only be made with the agreement of right holders and owners when there are excess trees after right holders have received their grants.

*Royalties from commercial harvesting in Guzara forests:* The Guzara Forest Rules of 1950 obligate NWFP Forest Department to manage Guzara forests with the same technical considerations as for reserve forests, including preparing working plans. Such plans assess the anticipated needs of right holders and prescribe the volume of timber available for commercial harvesting each year. Revenues from Guzara forests are shared between the people, who receive 80 percent, and NWFP Forest Department, which receives 20 percent as Guzara management charges. On receipt of the sale proceeds of wood, the forest department deducts its 20 percent share and sends the remainder to the Executive District Officer Revenue for distribution among the owners according to the shares determined in the revenue records. The volumes removed from different landowners and the corresponding revenues collected are indicated by the DFO, who records the landholding numbers of every tree marked for harvesting through the village revenue official.

All the right holders in a Guzara are entitled to free and unrestricted use of dry wood, whether it is standing, fallen or brush. Non-right holders may also use dry wood free as long as the right holders and NWFP Forest Department do not object. Resident right holders and non-right holders specifically authorized by NWFP Forest Department may collect dry wood for sale, but non-right holders need to obtain a licence for this, on payment of a fee. The sale of dry wood by right holders is permitted in head loads within or outside the village, provided that the majority of right holders do not object. Collection of any dry or green wood from a forest that is being harvested is prohibited. Right holders, and non-right holders if the former do not object, may use – free and without restriction – the bark of felled or fallen trees and green wood to make agricultural implements and for burial purposes. Collection of medicinal herbs from Guzara forests, except with the permission of NWFP Forest Department, is prohibited. Revenues from the collection of medicinal herbs are shared between the Guzara owners and the forest department at a ratio of 80:20. Rights to Guzara forests do not clearly include the rights to lop trees for fuelwood and fodder, to cut grass, or to graze cattle. The extent to which non-owners may exercise these rights is determined during land settlement, and recorded in the village record of rights. Forest working plans for the area suggest that people have full rights for animal grazing and grass cutting.

### **Joint forest management**

NWFP is Pakistan's leading province for joint forest management (JFM) in terms of both joint forest management committees (JFMCs) placed and legislation. The Forest Ordinance of 2002 gives the DFO revocable powers to designate any reserve forest, protected forest or Guzara to a JFMC, whose functions are to protect, harvest and manage the forest. Under amendments made in 2001 to the Hazara Management of Wastelands Rules of 1950, a Guzara JFMC can be registered on the request of more than 50 percent of the Guzara owners, as long as their total holdings account for more than two-thirds of the Guzara area. JFMCs have 15 elected members: seven from among the owners; three from among the non-owner beneficiaries; one from a local NGO; and two as elected councillors. The DFO also nominates two NWFP Forest Department staff members to the JFMC.

Each JFMC approves its own bylaws, carries out timber harvesting under written agreement from the forest department, sells the timber and distributes the net income to the owners. JFMCs also reforest and plant on farmland, at the request of owners. The JFMC collects departmental charges at prescribed rates from the auction of timber and deposits these in the Guzara forest development fund for afforestation and reforestation activities.

Annex 5 lists the substantial number of JFMCs in Hazara Forest Circle; these will become active when the 1992 ban on commercial harvesting of forests is lifted. An experiment with JFMCs has been initiated in two villages in Hazara Forest Circle: Methal, in Panjul Reserve Forest, Siran forest division; and Fateh Bandi, in Doga Protected Forest, Agror Tanawal forest division. Villagers are already cooperating with the JFMCs, but the litmus test of the system will be when the JFMCs can take up commercial harvesting. There is concern that a lack of capital for harvesting will force the JFMCs to rely on the old harvesting contractors.

### **SINDH**

According to the latest data on landownership in Sindh, there are 1.1 million private farms covering 5.67 million ha of a total area of 14.01 million ha. Only 2 percent of these farms have holdings of 20 ha or more, 22 percent are from 5 to 20 ha, and 42 percent are less than 5 ha (Government of Sindh, 2000). Regarding tenure systems, the land of 62 percent of owners, accounting for 50 percent of the

total area, is cultivated by tenants, 8 percent is cultivated by tenants and owners jointly, and 30 percent by the owners themselves. The usual tenancy arrangements involve the equal sharing of inputs and outputs.

The forests of Sindh were scientifically managed during the colonial era for the production of considerable quantities of wood for the Indus steam flotilla. In 1843, game reserves became the nucleus of forest management activities, resulting in well-defined and demarcated forest areas. In 1871, the first conservator of forests initiated scientific management on 2 500 km<sup>2</sup> of forest; plans drawn up in 1877/1878 had the main objective of providing wood for railway fuel and sleepers. During the same period, 24 529 ha of riverine forests were very well maintained.

In April 1936, Sindh was declared an independent province, separate from the Bombay Presidency. The completion of the Lloyd canal system in 1930 had made sufficient water available for the establishment of irrigated plantations. In 1947, Sindh Forest Department was managing 269 511 ha of reserve and 24 369 ha of protected (mainly riverine) forests under the Forest Act of 1927. In 1954, the vast mangrove forests at the mouth of the river Indus were recognized as a vital and unique ecosystem, and this 364 000 ha area was declared protected forest in 1958, as was 457 000 ha of rangeland in Registan and Kohistan. Mangrove forests provide an excellent breeding ground for fish and prawn, which are important high-earning export items.

In the private sector, plantations of *Acacia nilotica* are a useful source of pit props and fuelwood. They have the additional benefits of reclaiming saline soils and providing additional income to farmers.

## BALUCHISTAN

The forests and rangelands of Baluchistan in the public sector are generally managed as State forests under the Pakistani Baluchistan Forest Regulation of 1890. This was amended by the Baluchistan Forest Regulation Act of 1974, which bans the cutting, removal and sale of juniper wood, and the felling, girdling, lopping, burning and bark stripping of juniper trees for timber or fuelwood. Such offences are punishable by up to a year in prison, a fine of up to RS500, or both. Public forests and rangelands are administered and protected as State forests under section 3-10 of this regulation. The following are features of the 1890 regulation and other legal instruments that affect land tenure arrangements:

- *State forests:* Under section 3, any woodland, permanent grazing ground or other land that is government property may be declared by notification in the Official Gazette to be State forest. No rights of any description adverse to the government can be acquired in or over State forests by lapse of time or otherwise than under grant or contract in writing made by or on behalf of government. Acts such as setting fires, felling, girdling, tapping, quarrying or clearing for cultivation or other purposes are prohibited, except with permission of the government or a forest officer authorized by the government. Offences are punishable with fines.
- *Reserved trees:* The government may declare any trees or any specified class of trees standing on any land at the disposal of the government to be reserved trees from a date to be fixed by notification. The government may vary or cancel any such notification. Felling, girdling, marking, lopping or injuring such trees by fire or otherwise are prohibited and punishable with fines.
- *Forest produce in transit:* Under sections 13, 14 and 15 to 17 of the 1890 regulation, the government may establish a forest station within or outside any State forest for the examination of timber and other forest produce and for the collection of dues payable in respect of the same. Offences are punishable with up to six months in prison, fines of up to RS500, or both.

Data on tenure arrangements for forests and rangelands in Baluchistan are scarce.

## AZAD JAMMU AND KASHMIR

In AJK, the forests and rangelands in the public sector are managed by AJK Forest Department, under the legislative provision of the Jammu and Kashmir Forest Regulation 2 of 1930, as



demarcated forests and undemarcated forests. Demarcated forests are forest and wastelands whose boundaries have already been demarcated by means of stone or masonry pillars or other conspicuous marking, or that have been declared demarcated under section 3 of the 1930 Regulation. There are two main differences between demarcated forests and reserve forest under the Forest Act of 1927: demarcated forests can be put under the control and management of any department or local authority and not just the forest department; and, in demarcated forests, all rights, concessions and activities can be exercised or carried out with the written permission of the forest officer. In cases of the wilful or negligent causing of fire or the felling/killing of trees, the Chief Conservator of Forests (CCF) is empowered to suspend rights, concessions or privileges in pastures or forest produce for periods of up to two years.

Undemarcated forests include all forest and wastelands (other than demarcated forests and wastelands or forest under the management and control of the revenue department) that are the property of the government and are not appropriated for any specific purpose. In undemarcated forests, the Government of AJK is vested with powers to declare any class of tree reserved and to prohibit any activities. Infringements are punishable with up to three months in prison, fines of up to RS300, or both. According to the latest reports on forest land tenure, nearly all undemarcated forests have been converted to demarcated forests, and there are practically no undemarcated forests at present.

### **Rights and concessions in forests**

In all State forests, usufruct rights include the obligation to extinguish fires in or near forest and to prevent other forest offences. Failure to do so is punishable as for the offences themselves. Concessions in demarcated forest are granted for domestic and agricultural uses to landowners and tenant farmers living within 3 miles (4.8 km) of the forest boundary. Such concessions cannot be sold or bartered and are made only if the forest is silviculturally capable of meeting the demands. Concessions granted include grazing, grass cutting and timber collection – excluding Deodar wood – for house repairs. Revenue and settlement departments can demarcate forests on any land that is not used for cultivation.

#### ***Village forests***

The government may assign any Khalsa (crown) lands to any village community as village forest, and may make rules governing community members' use of forests, including their duties to protect and improve them.

#### ***Buffer zones***

When undemarcated forests are demarcated, the Forest Law Manual provides for a buffer zone of 15 to 25 Karam (25 to 42 m) between the forest and cultivated farmland. A buffer zone of 25 m must also be established around royal trees. Buffer zones are meant to protect forests from encroachment, but cases of mismanagement have been reported. A buffer zone can be declared demarcated forest to all intents and purposes if it contains at least 20 trees per hectare. Buffer zones that are required for community use can be notified as village forests or Guzara and brought under some kind of management system. Buffer zones used to be under the control of the Land Revenue Department, but are now under AJK Forest Department. According to the Ministry of Environment (2005), the Revenue Department is still allotting buffer zones to private owners, without documenting them properly.

#### ***Closure of forests***

Rules allow the CCF to close 25 percent of the area of a range as long as right and concession holders have access to water and passage. Such closures must be notified two months in advance.

#### ***Royal reserved trees***

The AJK Land Revenue Amendment Act of 1955 declared all trees of deodar (*Cedrus deodara*), chir pine (*Pinus roxburghii*), blue pine (*Pinus wallichiana*/*Pinus excelsa*), chilghoza pine (*Pinus geradiana*), Himalayan spruce (*Picea morinda*), cypress (*Cupressus torulesa*), pencil cedar (*Juniperus excelsa/macropoda*), chenar (*Platanus orientalis*) and mulberry (*Morus* spp.) State reserved/royal trees. Such trees on any public or private land cannot be harvested without the explicit sanction of the AJK Forest Department.

*Private forests*

A unique legislative provision in AJK are the rules for private forest under section 2 of the Azad Kashmir Land Revenue Act of 1955. The 1984 Azad Kashmir Rules for Sale and Development of Private Forests define private forests as areas bearing trees that are assessed for land revenue and over which the owner has undisputed right of ownership. According to the rules, the CCF is authorized to sanction the sale of trees on written application from the owner after joint demarcation by high-ranking officers from the revenue and forest departments. Sales are sanctioned only if 50 trees of 24 inches (0.6 m) diameter at breast height are available for selection–improvement, or if 400 trees of smaller diameter are available for thinning–improvement; the owner must undertake in writing to abide by the operations prescribed by AJK Forest Department for the protection and development of private forest. The private forest of owners who infringe these rules is brought under AJK Forest Department management for a period that is fixed by the CCF. The DFO marks trees for felling, and the CCF arranges the extraction and sale. The total sales from private forests cannot exceed 200 000 cubic feet (566 m<sup>3</sup>) of conifers and 20 000 cubic feet (57 m<sup>3</sup>) of broad-leaved trees throughout the whole state. In exceptional cases, the CCF may allow owners to carry out the felling themselves, provided they have adequate finances and capability.

The government charges 25 percent of the gross sale proceeds as supervision and development charges, and the balance is paid to the owner. These royalty rates are fixed by the CCF. According to the Ministry of Environment (2005), only 223 ha have been registered as private forests, but this is not reflected in the official forestry statistics of AJK Forest Department. This discrepancy implies that owners do not register their land areas under trees as private forest unless they want to cut the trees. Consequently, data on private forests are not reliable. The rules need to be more participatory, and owners should be given adequate time to register their private forests with AJK Forest Department after verification by the Revenue Department. Owners' working of private forests was suspended in 1978 on the recommendations of a Commission of Enquiry seeking to prevent such malpractices as smuggling and theft. The AJK Sale and Development of Private Forest Rules were revised in 1984 to remove the grey areas. According to these rules, 70 percent of the sale proceeds are paid to the owner, 18 percent are earmarked for forest development, 10 percent go to the AJK government consolidated fund, and 2 percent are AJK Forest Department supervision charges. Any amount saved from the regeneration or reforestation of forest land is paid to the owner.

*Distribution of timber to concessionaries*

Under the AJK Interim Constitution Act of 1974, the President of AJK promulgated the AJK Protection of Forests and Distribution of Timber Ordinance of 1980 under which a forest committee was constituted for each Union Council. Each forest committee comprises a chairperson, three elected members from the Union Council and one coopted official from AJK Forest Department. The committees are responsible for dealing with all forest offences up to a value of RS100, with powers to direct offenders to pay compensation and damages as laid down in the Forest Regulation of 1930. When the culprit is not traceable, the forest committee may impose collective compensation to be paid by the local community. In cases of forest encroachment, the forest committee ejects encroachers with the help of local revenue, forest and police authorities. Compensation and costs are recovered as arrears of land revenue. The chairperson of the forest committee has the power of a magistrate to summon, issue warrants of arrest to the accused, call witnesses and try cases. The forest committee makes allocations of up to two trees for repair or construction of concession holders' houses. The DFO can sanction allocations of up to two trees free of cost for the reconstruction of houses destroyed in natural disasters or the construction of village mosques, when recommended by the Union Council chairperson. The village Union Council is responsible for providing all possible assistance in tracing forest offenders, effecting closures, impounding cattle, etc.

**NORTHERN AREAS**

Area statistics, geographical distribution and rights in the forests of the Northern Areas are given in Annex 6. The Northern Areas land tenure system is clear; at the Northern Areas' accession to Pakistan in 1952, the Government of Pakistan admitted all private forest ownership rights in an agreement with the tribes. According to this agreement, the government respects the propriety rights of the tribes and manages private forests in the best interest of their owners and with their consent. From 1953 to 1967, the tribes were free to sell their forest products to contractors, but the sales agreements had to be attested by the assistant political agent. The attested deeds were then passed to

the DFO for tree marking. Harvesting was regulated through written contracts that gave Northern Areas Forest Department power to control violations. In 1957, the forest department received RS12 per log as royalty, increasing this to RS 25 per log in 1958, irrespective of species and size.

The Gilgit Private Forests Regulation was enforced in the 1970s, with royalties fixed on the basis of species and volume. Three working schemes and a working plan for the scientific management of forests have since been prepared. However, Northern Areas Forest Department lacks trained staff and technical expertise, so the reliability of the data on which the plans are based is questionable, especially when the area concerned has not been settled and the boundaries have not been demarcated. In addition, rights have not been specified in government records. The Northern Areas Forest Department has prepared maps on the basis of information provided by local tribes and through consultations. The shortage of expertise at Northern Areas Forest Department has led to many civil suits arising from the sale of forest produce, which are still pending in the law courts.

### **Ownership rights to forests**

The forests in Diamir district are unsettled, and ownership has not been properly defined in the official records. In such situations, customary law is applied and all claims of ownership are settled by Northern Areas Forest Department in consultation with the tribes. The Government of Pakistan has accepted the private ownership of forests that extend in total for 30 percent of the Northern Areas' overall area (219 802 ha). The Accession Deed of 1952 lays down that the government should spend 30 percent of the income from forest sales on developing the area, and that the protection and scientific management of forests is the responsibility of the government in consultation with owners. The deed provides for the imposition of restrictions on free grazing in regeneration areas. The Gilgit Private Forests Regulation of 1970 was enacted for the protection and scientific management of forests, and provides for forest conservation under rules framed in 1975. The penalties for forest offences stipulated in the Forest Act of 1927 have also been adopted in the Northern Areas.

Rules under the Gilgit Private Forest Regulation of 1970 provide access to forest resources for communities residing in the vicinity of the forest; these rights include the free grant of trees, grazing and the collection of dead/dry trees. Grazing is allowed only in those areas that are not closed for regeneration.

Some tribes, including the Soniwals, Doods, Kamins, Gujars and Syeds, settled in certain areas do not enjoy ownership rights in forests under customary law and are not entitled to the 50 percent share of royalties from forest lessees, nor to any royalties from the direct sale of trees by owners. The dynamics of Northern Area tribes' acquisition of rights and migration has been a subject of special interest to anthropologists, and many studies have been produced by local and international researchers. In Diamir, Chilas, Darel and Tangir, private or clan owners have 100 percent ownership of prime forests, but are not consulted during the preparation of working plans or the sale of trees (Bilal, Haq and Moore, 2003).

## Features of forest management

### FARM FORESTRY

In Pakistan, the importance of farm forestry and its roles in providing wood for markets and in poverty alleviation were recognized in the 1970s. Several provinces implemented farm forestry projects with a good degree of success, but the major impetus to farm forestry came with the United States Agency for International Development (USAID) Forestry Planning and Development Project of 1985 to 1994. This project's concept of farmers' nurseries was widely accepted as the model for subsequent projects. As a result of successful farm forestry interventions, farm-grown wood provides 80 percent of the total fuelwood used in Pakistan. The provinces of Punjab and NWFP have established regular forest circles to deal with forestry extension and farm forestry. Trees outside forests are grown on privately owned land and sometimes on communal land.

Ownership rights to trees on private land are well defined; the owner of the land owns the trees. Many private landowners lease their agricultural land to tenants, with well-defined terms and conditions, but the ownership of trees remains with the landowner in all cases. The result is that tenants do not favour growing trees as boundaries and shelterbelts, because they see the trees as competing for water and sunlight with their own agricultural crops. Further studies are needed to identify the role of land tenure arrangements in farm forestry and to devise policies that would promote farm forestry.

### FOREST AREA TYPE AND CONDITION

Forests in Pakistan cover 4 224 000 ha, or 4.8 percent of the country's total surveyed area of 87.98 million ha. The percentage coverage of forests varies considerably across provinces and territories. The forest area of AJK accounts for 20.7 percent of the total land area, followed by NWFP, with 16.6 percent forest cover, the Northern Areas, with 9.5 percent, Punjab and Sindh, both with about 2.8 percent, and Balochistan, with 0.7 percent.

Forest vegetation in Pakistan is diverse in structure and composition, owing to variations in climatic and ecological conditions. Latitude ranges from 24 to 37 °N, and altitude from zero, or sea level, in the south to more than 8 000 m in the north. These changes also account for a progressive decrease in mean annual temperatures and an increase in rainfall from the south to the north. Forest areas, vegetation and conditions are given in Annex 7.

### STAKEHOLDERS

The main focus of forestry activities in Pakistan are government forests, and forest departments are answerable for all forest issues owing to the immense powers they hold. Provincial forest departments deal with all issues, including afforestation, deforestation, sustainable forest management (SFM), trade in forest products, and regulation of commercial forest harvesting. Although large areas are classified as communal or private forest, there is no forum where forest owners/traders and forest-dependent communities can voice their concerns. The federal government has established the Federal Forestry Board, which is chaired by the federal Minister of the Environment and meets at least twice a year to discuss forestry issues at the policy level. The nomination of non-governmental members to the board is still under discussion.

Civil society has made efforts to influence the forest policy design and implementation process, with some success; civil society organizations were fully consulted during framing of the latest forest policy in 2002 (in its draft stages). Civil society is also adequately represented on the National Steering Committee of the FAO National Forestry Programme (NFP).

Civil society has developed its own programmes, mainly on advocacy, and holds consultative workshops and other activities, most of which are donor-driven and -funded. At present, major NGOs, such as the World Conservation Union (IUCN), the World Wide Fund for Nature (WWF)

and Leadership for the Environment and Development (LEAD), are not implementing any major forestry programmes. One of the activities approved under FAO's NFP is the development of fora for forest policy analysis (at a cost of US\$35 000). It is hoped that communities will be fully involved in consultations and that their concerns will be duly reflected in the final output of this activity.

In NWFP, JFMCs are expected to support the forest department in protecting forests and safeguarding the interests of local communities. However, during a seminar organized by LEAD Pakistan in December 2003 (LEAD Pakistan, 2003), it was found that many office bearers in the JFMCs are related to timber contractors and forest officers, and that JFMC operational activities, such as timber harvesting, are hampered by a lack of capital.

In Pakistan, strong farmers' organizations regularly influence policy in the agriculture sector; it is time that such bodies are established for the forestry sector.

## **OWNERSHIP FIGURES, RIGHTS AND RESPONSIBILITIES**

Figures on forest ownership are not readily available, especially for the Northern Areas and Balochistan where the demarcation of forest boundaries is not clear. In addition, the accuracy of the available figures is not reliable. In NWFP, data on owners of Guzara forest are not available, mainly because ownership of private and Guzara forests keeps changing as these forests are saleable and transferable. Land revenue records of ownership are kept by the District Revenue Officer under the Land Revenue Act of 1967. All the applications for felling or wood removal from private forests that the forest department receives are referred to the revenue authorities for verification of the land title (Conservator of Forests Abbotabad, personal communication). According to forest authorities, it is practically impossible to keep records of private/communal forest landownership. In the hilly districts of Rawalpindi, Attock, Jhelum, Chakwal and Khushab in Punjab, the movement of all wood and wood products is regulated through the issuance of transit permits by the DFO; here too, authentication by the revenue authorities is a prerequisite to the issuance of permits.

Private and communal forest ownership is shared with forest departments through complex legal arrangements that confer joint responsibility for protection; owners can use forest resources for their daily subsistence uses only, while management, harvesting and sales are carried out by the forest departments. The shares of sale proceeds are disbursed by the departments according to ratios fixed for each area through agreements between the government and the owners. New forest arrangements in NWFP include the establishment of a Directorate of Community Development at the Forest Management Centre at Peshawar.

There is consensus that the existing arrangements of ownership rights and responsibilities are not serving the objectives of SFM and are leading to deforestation. Many projects implemented in the past 20 years had a strong community participation component, but the desired results do not appear to have been achieved. Although institutional and legal arrangements have been made in NWFP through projects supported by the German Agency for Technical Cooperation (GTZ) and aimed at promoting community participation in forest management, protection and harvesting, the results of these cannot be assessed until the ban on commercial harvesting has been lifted. In all other provinces, arrangements for forest ownership, rights and responsibilities have remained unchanged for the last 50 years.

The non-availability of data, and gaps on ownership and tenure arrangements appear to be a major obstacle for appropriate SFM planning in Pakistan. At present, people have no access to data and information on the activities undertaken by forest departments on the behalf of communities.

## **MANAGEMENT AGREEMENTS: FIGURES, RIGHTS AND RESPONSIBILITIES**

Public sector forest and range resources are managed by the provincial forest departments. All legal categories of forests and rangelands are affected by the rights and concessions of local communities for grazing, grass cutting, and rights of way and water. In addition, forests are under pressure from human and livestock populations that are pushing them beyond their productive capacity. Forest resources are managed, protected and conserved through a regulatory and punitive legislative framework that does not include community consultations and participation. This lack of ownership and participation creates multiple protection and management problems, and sustainable development is almost impossible in most cases.



Reserved forests are mostly free from local community rights and are protected, but are conserved through a punitive enforcement system, resulting in illicit and unsustainable removals. In spite of the ban on green felling, forests and rangelands continue to degrade rapidly. Nomadic and local grazers and other forest users are exhausting meagre resources, even in valuable watersheds and fragile mountain ecosystems.

Protected forests are often affected by rights, which have been admitted since the time of permanent land settlement. These include grazing, grass cutting, lopping for fuelwood and – above all – the cutting of three mature trees every five years for the repair of houses and of one tree at the demise of a family member for burial purposes. The increase in numbers of families has increased the number of right holders beyond the productive potential of protected forests. Forest departments perceive communities as not caring about sustainability, in spite of having ownership rights and shares in forests and rangelands. However, except for the removal of trees, communities have no tenure or sense of ownership of forest resources. Many forests do not have any mature trees left, having allowed right holders to fell them all. The plight of unclassed forests and rangelands is even worse.

### **Communal forests and rangelands**

There are different types of communal forest and rangeland, including village common lands and grazing lands under Board of Revenue control, and *Guzara* (subsistence) forests under the control of provincial forests departments with various levels of community participation. There is no clear management system for village common and grazing lands. *Guzara* forests and rangelands, which were initially meant for the subsistence of local pastoral and rural communities, have tended to fall into the clutches of influential and political people, and all management options appear to have failed to protect and conserve them. Common ownership and tenure seem to result in nobody assuming responsibility. The management history of *Guzara* forests in NWFP and Punjab shows that resources continue to degrade.

The NWFP government introduced a system of forest cooperative societies on an experimental basis in 1981 to develop confidence among the owners of *Guzara* forests. Initially, 18 cooperative societies were registered in a pilot project, and ten of these had been made functional by 1983. Of these, two were subsequently liquidated owing to serious irregularities and another two were suspended. Between 1986 and 1988, five new societies were registered, eight others were organized and two of the suspended societies were reinstated, raising the total to 21. The major drawback in this arrangement was that large landowners benefited from subletting the sale of standing trees to contractors who were in league with them. Smaller owners lost out to large owners, who deprived them of the benefits they derived from cooperatives for paltry sums of money. The influence of large owners and rich people led to overexploitation and mismanagement of felling, and the experiment with cooperative societies led to large-scale deforestation. Large-scale corruption led the federal government to ban all cooperative societies in 1993.

Private forests in AJK are exploited and reforested under the Sale and Development Rules of 1984. Owners who want to exploit the trees on their land have to apply for permits and are barred from selling and/or transporting timber to the lucrative markets in other provinces. The AJK government has the legal provisions to formalize private forests either by land-use classification or by setting a deadline for owners to register their forests. To this end, incentives are offered and owners can only exploit their registered forests on the basis of management plans for felling and regeneration.

Private forests and rangelands in the Northern Areas are managed by the forest department as protected forests under the Forest Act of 1927. The owners of these forests in the Northern Areas are not yet ready to take over their responsible management. There is a great risk of forest destruction, which would worsen the already harsh living conditions of people in the valleys of the Northern Areas, the economy of downstream communities and the country as a whole.

Private forests in the hilly areas of Punjab are managed under similar arrangements in which owners have to seek forest department approval for the harvesting and marketing of timber and fuelwood, even for domestic use. The forest department has enormous powers to check all forest produce, whether stored or in transit.

### **Forests, rangelands and wilderness areas in Cholistan**

Cholistan covers 2.59 million ha in the three southern districts of Punjab, and is the site of local communities' traditional grazing grounds. This area was managed by the former rulers of Bahawalpur State and later transferred to the Punjab Forest Department on accession to Pakistan in 1952. The rulers of Bahawalpur collected small grazing fees and shares from the auction of Khar (*Haloxylon recurvum*), a raw material for the soda ash industry; the forest department has continued with this practice. Grazers are willing to pay the fees because the payment record is the only proof that they are residents on the land. The other important right of the local community involves employment in Khar collection. Khar collectors are entitled to half of the Khar they collect, but as there is no local market, they are forced to sell it to the one purchaser that buys all the Khar in the area.

### **PLANNING AND MONITORING IN DIFFERENT FOREST TENURE TYPES**

The tenure systems adopted a century ago continue unchanged, in spite of some professionals' belief that they need change at the macro level. Such change would require political will, and many of the civil society organizations that would like to see change are faced with inadequate data and knowledge on the complexities of forest landownership and tenure arrangements. The first systematic study of forest land tenure arrangements was conducted by the Inspector General Forests (IGF) under an Asian Development Bank (ADB) loan project, Strengthening of the Office of the IGF (1997 to 2005). The only reliable monitoring is that of forest cover under the FSMP project of 1992, but forest ownership and forest land tenure arrangements were not in the mandate for this, so no such data are provided in the final report. Forest working plans for ten to 20 years prescribe forest management, including harvesting, revenue sharing, rights and responsibilities; excerpts of some working plans are given in Annex 8.

## Changes and trends

The basis of most land tenure in Pakistan is feudalistic; territories that are now included in the country have been subject to many invasions, the United Kingdom being the last foreign invader. Each invasion caused significant changes in land tenure, the winner generally taking over the property of the losers, who either migrated to less hospitable tracts or, as happened to the Kohistanis when the Yusufzais invaded Swat, were forced to accept the role of tenants. The United Kingdom did not take over agricultural lands, but redistributed them among loyal tribes. The same happened to forest settlements; settlement officers were more liberal in acceding the rights claimed by loyalists. However, the best forests were declared United Kingdom crown property, although limited rights were admitted. Since then, land tenure has principally been shaped by history, which has not been the same in all provinces. As a result, the current tenure in forest and grazing lands is a mosaic of ownerships and rights varying from place to place.

The common denominator is that landowners residing near forests have rights to timber and to shares in the income accruing from the sale of trees. Tenants can graze livestock and collect fuelwood for domestic use, but at the will of the landowners, who can stop them. Exceptions to this general rule are in Hazara and Swat, where each male member of a family is an entity on his own and has equal shares in all the benefits from forests, including timber and the income from sales. All over Pakistan, such arrangements are for men only, and it is rare for women to inherit rights.

Changes in land tenure have been gradual responses to the changing political and social structure. The ways in which ownership rights are apportioned between the State and the landowners, and the essential subsistence needs of the landless are accommodated, have been determined by local customs and traditions, laws and rules and the manipulations of local elite groups. Land tenure change has not kept pace with the rapid increases in population and the incidence of poverty and landlessness. Control of deforestation is a daunting challenge in an era of declining natural resources, increasing demand, deteriorating governance and eroding social controls, and a common complaint of natural resource managers is that landless communities with or without rights in forests do not cooperate with forest departments in this task. A first step in addressing these complex problems would be to study the existing land tenure systems to find ways of reforming them so that they can help to curb deforestation and alleviate poverty. Forest tenure reforms have attracted very little attention from the government and civil society, as witnessed by the fact that the seigniorage fee established in 1904 was not revised until 2002.

The forestry sector is changing as a result of the forestry reform process that is driven mainly by donors and NGOs; government agencies are slow but they are interacting with civil society and working towards change. The shifts in focus to farm forestry in the Punjab and to JFM in NWFP may lead to change if followed up properly. IGF's recent involvement in the Convention on Biological Diversity, as the convention's focal point for Pakistan since 2004, may help to draw more public attention to the issues of traditional forest-related knowledge, customary law, indigenous communities and their rights, and the access and benefit sharing international regime. This would be a big step forward for forest land tenure arrangements.

### PROCESS AND DRIVING FORCES

The initial legislation and policies discussed in the previous chapters were direct responses to the growing concern about dwindling forest resources during the later part of the nineteenth and the early twentieth centuries. As a result of these measures, adequate forest and grazing lands were left to meet the needs of local populations, while other areas were declared reserve forests to meet the needs of conservation and sustained yield management. Later, continuing concerns about dwindling forest resources and the additional pressures that were being put on forests led the State to promote farm forestry on a large scale. Farm forestry has been a success in Pakistan, and farm-grown wood now accounts for a major proportion of the wood sold in the market.

Donor-driven projects in NWFP have played a major role in forestry reforms, forestry roundtables and the drafting of the NWFP Forest Ordinance of 2002. This ordinance enhances the

powers of forest officers, but gives the communities a share in decision-making for the joint management of forests. A large number of JFMCs are in place. The NWFP government came up with new directions for safeguarding community rights in its Reforming the NWFP Forest Management document of 2001. FAO's NFP is expected to create much enhanced public and civil society awareness of forestry issues.

## **FOREST MANAGEMENT**

The forest management systems developed during the United Kingdom colonial era were adopted for all types of forests in Pakistan; the driving objective was sustained yields of timber and fuelwood. No management systems were devised for communal/Guzara and private forests, except for in NWFP, where working plans for Guzara forests were more concerned with felling series than with the protective role of forests. In general, management systems paid very little attention to the potential for alleviating poverty through fair and equitable distribution of the benefits from forests. Elaborate working plan procedures were devised in the first half of the twentieth century, which the provinces adapted and improved after the creation of Pakistan in 1947. Shelterbelt, selection and group selection silvicultural and management systems were used in Pakistan until a complete ban on green felling in natural forests was imposed in 1992. (The Government of Punjab had imposed a ban on harvesting from natural forests in 1985.) Current rules, regulations and procedures are a legacy of the colonial systems, which were based mainly on distrust among stakeholders, i.e., owners, shareholders, forest officers and contractors/purchasers.

## **ORGANIZATIONAL SET-UP**

Each provincial forest department is headed by an administrative secretary who may be an administrative services officer or forester. The technical head of the department is the CCF. CCFs, conservators, DFOs, sub-divisional forest officers/range forest officers, foresters/block officers and forest guards form the hierarchy of the forest department, and are responsible for forest management at the provincial, circle, district/division, range/tehsil, block and beat levels, respectively. The duties, responsibilities and jurisdiction of each rank as defined in colonial times are still in force, with some amendments. There is no institutional set-up for community forestry, indigenous communities, traditional knowledge, customary laws and/or communal rights, apart from NWFP's recently established Directorate of Community Development and Punjab's Extension Forest Circle based in Lahore. Civil society recognizes the need to encourage the forest departments to address communal issues.

## **LIVELIHOODS**

In addition to timber and fuelwood, forests also provide livelihoods to local communities, directly, indirectly and potentially. Direct incomes can be derived from grazing and browsing pasture, non-timber forest products (NTFPs), traditional medicines and food. Indirect contributions to income include fresh air, water and soil, and potential sources of income include ecotourism, forest-related traditional knowledge, and access and benefit sharing regimes. Most of the income derived from these sources is not accounted in national GDP calculations. Women are the main collectors of small fuelwood and sometimes also graze ruminants in forest areas. Specialized nomadic and transhumant tribes are fully dependent on natural forests for their livelihoods, and the lack of policy to safeguard the livelihoods of nomadic tribes that have to cope with closures for new plantation and regeneration areas is making it difficult for them to follow their traditional migration routes.

The fate of the traditional grazer tribes in the deserts of Cholistan is even worse, especially during drought, when they are compelled to live as lower-status groups with the landowners in irrigated areas. Punjab Forest Department (PFD) has stopped releasing annual grazing programmes, which were a requirement of the old working plans, so grazers are left at the mercy of local forest staff. PFD's policies and programmes for safeguarding trees from the effects of nomads are forcing mobile indigenous people to adopt a settled life style. Following PFD's ban on grazing, some mobile people purchased small pieces of land from the holders of grazing rights, only to find that the right of grazing is non-transferable, even when the land has been purchased. There is a need to sensitize decision-makers to the necessity of fulfilling the livelihood needs of forest-dependent people, so that Pakistan's poverty alleviation commitments can be met.

## **CAPACITIES**

The NFP concept note clearly identified the need to enhance the capacities of government forest staff and civil society organizations so as to create an aware society. Communities also need capacity building, because at present their knowledge depends on what they have been told by knowledgeable people, and their main concerns are meeting their immediate food and fuelwood requirements.

## **POLICY AND LEGISLATION**

In Pakistan, the federal government's role in forestry, through IGF, is limited to coordination, research and training. Except for a federal act declaring the Margala hills as a national park, there is no federal legislation on forestry. The provinces of NWFP and Punjab have framed their own provincial forest policies, which generally meet the needs for SFM but do little to safeguard tenure rights in communal and private forest or to improve communal forests and the rights of local populations. All policy documents acknowledging the role of farm forestry and community participation invariably call for the promotion of community and farm forestry. The importance of trees outside forests is recognized in the Forest Act of 1927; under Section 38 private owners can hand their lands over to the forest department for tree plantation and protection, for fixed periods of 25 to 30 years at mutually agreed terms and conditions. However, this section of the law appears to favour the rich who use the policing role of the forest departments to restrict the access of local populations to their private forest lands. The NWFP Forest Ordinance of 2000 provides a legal and institutional mechanism for involving communities, and this is a major development in the area of community participation in forest management.

## **WHICH TENURE SYSTEM CONTRIBUTES BEST TO SFM AND POVERTY ALLEVIATION?**

It is difficult to analyse the comparative effectiveness of the different forest tenure systems in Pakistan, and more studies of specific sites and locations are required. The NWFP Forest Ordinance of 2002 seems to offer the greatest potential by providing adequate provisions to safeguard the rights of local communities while conserving forestry resources. The final test for this law, however, will be when the ban on commercial harvesting is lifted and the JFMCs are operational. Although provincial forest departments and forest owners are vociferous in their demands for lifting of the ban, the political will to do so still seems to be lacking.



## Proposals for the way forward

An improved forest management system that alleviates poverty, supports livelihoods, provides employment in a multiplier effect, and conserves the environment and ecosystems is an idealists' dream that can come true only when the political will exists; it was the political will of the Indian government that brought forestry on to the concurrent list of the Indian Constitution, for example. It is hoped that continuous efforts and awareness raising will create a critical mass that pushes for a better future for forestry in Pakistan. It is also hoped that forest land tenure and ownership will attract attention for further studies. In the meantime, the following are proposals for now or the very near future.

### **Adapting policies and legislation**

There is a need to adapt provincial forest policies to fulfil national and international obligations for forest conservation, sustainable use and equitable benefit sharing. Analysing the existing legislation and devising dynamic procedures for adapting and responding to changes is a massive task. At present, there is no regular system for policy analysis and revision and no mechanism for monitoring implementation. The best option in the present scenario is to invest in education for foresters, civil society groups and communities. The involvement of legislators will be a major breakthrough in this process.

### **Forest land tenure reforms**

The need for forest land tenure reforms has not been recognized in Pakistan. There is much talk of giving communities a role in forest management, and various models of participatory forestry have been tried through projects. There is also some continuation of the reform process after the completion of these projects, as in NWFP's creation of the Directorate of Research and Community Development, but in most cases there is no such continuity. The government has been sensitive and responsive in making land reforms for agricultural landholdings and granting ownership rights to the landless, but forest tenure reforms have been anecdotal and lacking in vision. Forest land tenure and ownership reforms are needed because the common perception is that the State is the best manager of forests.

### **Revitalizing the seignorage fee**

The seignorage fee is a reciprocal amount exchanged between forest owners and the Forest Department in NWFP at the time of forest harvesting. The rate of seignorage fee is so low that forest owners do not collect their shares, which lie undisbursed in the State treasury. Rationalizing the seignorage fee so that forest owners/right holders feel that it carries adequate monetary benefits would probably enhance a sense of ownership and encourage communities to protect forests for their own interest.

### **Adapting planning and monitoring systems**

The only monitoring of forest cover and extent since the 1992 FSMP study that covers the entire country was the ADB-funded study conducted in 2004/2005, which was restricted to monitoring the forest cover and extent of change since 1992. This study was supposed to cover the socio-economic impacts of forest change, but it produced little that could assist decision-makers in adapting policies and legislation for the reform of forest land tenure arrangements.

### **Identifying the role of land tenure in farm forestry**

The importance of farm forestry in meeting the timber demands of the country is widely recognized, and many projects have successfully promoted the concept at the farm level. However, more analytical studies are needed to find the linkages between farm forestry and land tenure, because it appears that there is divergence of opinions between landowners and tenants regarding the planting of trees alongside agricultural crops.

**Recognition of customary law, traditional knowledge and the role of indigenous communities**

Indigenous communities hold forest-related traditional knowledge that they have been putting into practice for thousands of years in their struggle for survival in close proximity to nature. With increased population and urbanization there are fears that this knowledge may be lost. Forest dwelling communities have also developed and adapted systems for resource management, but the imposition of formal forest laws is threatening these age-old traditions with extinction (Cholistan DFO, 1994). Forest dwelling/-dependent communities all over the country practise customary law, which often conflicts with the formal laws followed by forest departments (an overview of NWFP customary law is given in Annex 4). There are no moves to recognize indigenous communities and their traditional knowledge; attention must be paid to these issues so that Pakistan can comply with its international obligations under Articles 8 (j), 10 (c) and 15 of the Convention on Biological Diversity, to which it is a party. Traditional knowledge has become a particular focus of attention following fears of biopiracy and the trend for patenting such knowledge at the global level.

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## ANNEX I: THE HISTORICAL PERSPECTIVE

“Ownership of all land vests with God” has been the subject of much analysis in Pakistan (Punjab Land Administration Manual). As a Covenant State, land revenue has been collected by the State since the Mughal period (seventeenth century AD), throughout United Kingdom colonial rule and up to the present. Without entering into debates about the justification or otherwise of this, for this study the main point is that ownership and tenure arrangements for all lands, except those declared forest lands or transferred to the forest department, are regulated by the Land Revenue Act of 1967. Land revenue is not collected from private forest owners or communal forests, but the State charges royalties and taxes from owners and right holders on the income generated from the sale of trees. Tenure in non-forest lands follows the landowner, the peasant and the Riyatwari systems (FAO, 1974). In the landowner system, individuals own large estates, most of which were granted by the State for political reasons or for services to the government; land revenue is not usually levied on these estates. In the peasant system, land is owned and cultivated by individual families. In the Riyatwari system, land is acquired on a tenancy basis directly from the State. There used to be another system – Jagridari landownership – which was similar to the feudal holdings of Europe. In this system, the king granted large areas to influential lords, who were given governance autonomy in exchange for the payment of a fixed annual amount to the king’s exchequer. Cases of default in payments were dealt with by armed invasion, but defaults were made only when the Delhi throne was weak.

Another forest tenure system, called Wesh, was unique to Swat and Dir Kohistan and had been practised by the rulers of Swat since the occupation by Yusufzai Pathans in the seventeenth century (Sultani-I-Rome, 2005). Under this system there were no permanent ownership or tenure rights to land; cultivable land was allotted to the local Pakhtuns for periods of eight to ten years, on a rotation basis; similar rules affected forest lands. Non-Pakhtun tribes had rights to graze and collect fuelwood, but the felling of trees was permitted only to Pakhtun leaseholders.

In Pakistan, there was no commercial exploitation of natural forests in the hilly areas of NWFP until the first quarter of the twentieth century, when the United Kingdom political agent intervened to curb deforestation. Landowners still collect traditional Qalang fees for land usages such as grazing in forested areas and rangelands. In the Punjab a similar fee – tirni, which is also for grazing land usage – was introduced by the Nawabs of Bahawalpur State and later adopted by the Punjab Forest Department in the early 1950s.

The United Kingdom colonial rulers recognized the need for forest conservation in the later part of the nineteenth century, when they took steps to enact forest laws, demarcate forest lands and make forest settlements. The first attempt at forest administration in India was made in 1806 in connection with the supply of timber for the navy. The Forest Act of 1870 and the Forest Policy of 1894 were the first steps to regulate forests.

The Forest Conservancy Rules were replaced by the Forest Regulations of 1872, followed by the Hazara Forest Regulation of 1873. These regulation were enacted during the course of the first regular land settlement in 1872/1873, which classified forests into government-owned reserve forests and privately owned wastelands (Guzara forests). Management of reserve forests was entrusted to the forest department, and the administration of Guzaras stayed with the deputy commissioner. Subsequent regulations of 1874, 1879, 1893 and 1911 modified the original regulations.

The colonial government renewed its commitment to forest conservancy when it enacted a comprehensive law, the Hazara Forest Act of 1936, repealing the last forest regulation of 1911. In 1950, the Guzara Forest Rules were framed under this act, most of the provisions of which have been adopted in the NWFP Forest Ordinance of 2002. Under these rules, the management of Guzara forests was transferred from the deputy commissioner to the forest department. Guzara forests were to be managed according to technical considerations, following the same pattern as State-owned reserve forests.

Under the control of the deputy commissioner, from 1873 to 1950, Guzara forests were protected by people employed by their owners and paid in cash or kind at the time of harvest. Each household was entitled to cut up to four trees per year for domestic use. Owners could cut trees at their own discretion after notifying the village revenue official or representative. The trees for sale were marked by a non-forester revenue officer.

At the time of independence (1947), Pakistan inherited a land tenure system that was essentially feudalistic: there were no limits on landholdings; and 53 percent of the land was owned by 7 percent of the population under the Jagridari system.

**ANNEX 2: EXCERPTS FROM A DETAILED REPORT ON JHELUM RAKHS**

“In several cases it has been found that rights of way and access to water require recognition. The opinion of the Deputy Commissioner and Settlement Officer may be accepted at to the necessity or otherwise in each case. Mr Clarke has passed orders, which he hopes that the Punjab Government will endorse. In several cases he was obliged to disagree with the Conservator, who seemed to him to take too departmental a view of the requirements of the people in this respect. Many of the recommendations refer to the future management of the forests. In some cases, Mr Clarke has expressed an opinion, but as a rule, he thought these might be left to be decided by the Deputy Commissioner in approving of the yearly plans of operation.

In this further note the Settlement Officer proposed: (1) the abandonment of some rakhs; (2) the transfer of others from the Forest Department to the Deputy Commissioner; and (3) from the Deputy Commissioner to the Forest Department. The officiating Financial Commissioner has recorded his views, in each case accepting (1) and (2). As regards (3), the Settlement Officer gives good reasons against the transfer and the mere fact that the transfer would round off the District Forest Officer’s charge is not, Mr Clarke thinks, sufficient under the circumstances (see paragraph 4 of Government letter No. 287-F., dated 21st June 1881). These rakhs are not, I am to say, capable of afforestation.

As regards fees for dry wood, Mr Clarke considers that it is only necessary to abolish the distinction between large and small wood in the case of head loads, and charge in anna for both; the other rates remaining as before. In being an accepted principle that the rakhs are to be managed for the benefit of the people, and not with a view to making a profit, it follows, I think, that the rates to be charged should be made only so high as to prevent the risk of the rakhs being exploited by speculators – a risk that, at any rate in the case of rakhs near the railway, is not entirely imaginary. We must of course in all cases provide that the wood is to be used for private purposes, and is not to be sold; but rates that would leave a very large margin of profit must also be avoided.

This risk of a traffic in wood is one reason for making no change in the rates for camel, bullock and donkey loads: another reason is that by lowering the head load rate alone we sufficiently provide for the poor man, who is the person chiefly to be considered. As one maund is a moderate estimate of the average weight of a head load, the present rates seem at first sight moderate enough, but the zamindar has to pay for his fuel in labour as well as in cash, and if the value of the former be added, it may be estimated that his fuel at present rates costs him from 2 to 8 annas per maund, which is not in the circumstances very low. It should also be remembered that throughout the Shahpur Salt Range, free collection of fuel is allowed, though this is a consideration affecting the adjoining parts of the Jhelum bills rather than the district as a whole. On these grounds I am of the opinion that the rate for head loads, should be reduced to 6 pies, and I would abolish the distinction between large wood and brushwood, which it must be almost impossible to give effect to in practice, while its necessity in the case of head loads is not clear, when no such distinction is made in the case of bullock loads, etc. If doubts are entertained as to the result of fixing a rate so low as that proposed, it might be sanctioned subject to reconsideration after five years.”

Forest Department May, 1902, Abstract of Proposals

### ANNEX 3: ANNUAL QUOTAS OF TREES FOR THE DOMESTIC NEEDS OF THE POPULATION IN SWAT DISTRICT

Sr. No.	Area	Central quota	Local quota
1	Babuzai-Manglawar	50	150
2	Babuzai-Jambil	50	150
3	Charbagh Masurizai	20	180
4	Azai Khel	30	270
5	Janki khel	20	180
6	Madyan	30	270
7	Behrain	40	360
8	Shamzai (Bar Swat)	40	360
9	Si-Boojnai	40	360
10	Kabal	40	370
11	Barikot	30	270
12	Badezal (Buner)	40	360
13	Salarzi (Buner)	40	360
14	Daggar (Buner)	60	540
15	Gaggara (Buner)	60	540
16	Chamla (Buner)	50	450
17	Chagbarzai (Buner)	60	540
18	Amazai (Buner)	40	360
19	Khudu khel Tatalai	60	540
20	Alpuri	40	360
21	Kana (Shahpur )	40	360
22	Lilowani	20	180
23	Chakesar	40	360
24	Puran	40	360
25	Martung	30	270
26	Bisbain	20	180
27	Seo	20	180
28	Pattan	30	270
29	Dobar	20	180
30	Ranolia	20	180
31	Karang	10	90
32	Jajshuai	10	90
33	Kalam	50	100
34	Ushu	30	70
35	Uttor	30	70
<b>Total</b>		<b>1 250</b>	<b>9 900</b>

## ANNEX 4: TENURE SYSTEM FOR AGRICULTURAL LANDS, INCLUDING FOREST LANDS, IN NWFP

### Sharecropping

There are two main sharecropping systems: in one the tenant gets a share of 20 to 25 percent, and in the other a share of 50 percent:

- *20 to 25 percent share:* A tenant, permanent or temporary, who provides only labour in operating the lands gets 20 to 25 percent of the grains of each crop worked on. A 25 percent share is more common, but in Oghi, Shergarh area, which was part of the former Amb State, 20 percent shares are paid to tenants.
- *50 percent share:* A tenant who provides all inputs (seed, manure and bullocks, ploughing and labour) receives a 50 percent share of grains. Generally, items that do not involve major cash expenditure, i.e., seed, manure, bullocks for ploughing and labour, are provided by the tenant, while the owner provides or shares the cost of items that need cash, i.e., fertilizer, tractors, etc., depending on the mutual agreement and socio-economic conditions of the two. Some villages (e.g., Ismail Bandi) operate systems in which tenants provide only work with their own pairs of bullocks, and receive 50 percent of the grains and some straw/stalks for fodder.

### Land rent (Qalang)

The tenants manage the land fairly independently and give 25 percent of the produce (or its value) to the owner. This system is common in villages owned by large landowners with several permanent tenant families mostly in small hamlets up in the mountains. The collection of this 25 percent share as land rent depends on the degree of control a landowner can exercise over the tenants. Some tenants delay (or at times avoid) the payment of Qalang to the owners, but strong landowners can collect their 25 percent shares of grain and some straw/stalks for fodder. In a few areas (e.g., Panjool), land is also leased at a fixed rent for short periods (one crop season or one year). This is locally termed Bauli Tawan.

*Farm trees and grasses:* Farm trees are the exclusive property of the landowner, who does not allow tenants to fell them. However, landowners may allow tenants to prune trees for fodder and/or fuelwood.

Similarly, grasses on field bunds are often utilized by the owners, who may sometimes let tenants cut some. Crop weeds are not so strictly controlled. Tenants and even non-tenants may be allowed to collect grasses and other weeds from crops. Weeding is considered beneficial for the crop, provided it is carried out carefully so that the crop is not damaged. In late winter (January to February), most villagers face fodder shortages and prune green wheat tops for mixing with hay fodder. After the crop harvest, grazing is usually allowed for the livestock of tenants and others.

### Free labour (begar)

Tenants, especially permanent ones, are expected to provide labour to landowners. The frequency of this free labour varies from village to village, depending on the degree of control that the landowner exercises over the tenants. Such labour is usually for crop and hay harvesting, fuelwood, hay and fodder carrying, house building, and weddings or funeral feast arrangements. Strictly speaking it is not absolutely free labour: the landowner provides food for the day and may let tenants take fodder, hay, stalks, fuelwood, etc., either immediately or when they need it. This again depends on how generous the landowner is.

### Exchange labour (ashar)

Most small landowners and tenants exchange labour among themselves. This labour exchange is fairly flexible; a villager who receives help with hay harvesting does not necessarily have to return help with the same activity, but is expected to help with any socio-economic activity as required, and not to refuse when help is needed. There is a lifelong mutual help system in the villages, but in some areas this system is slowly vanishing and being replaced by daily wage labour.



**Artisan fee (saep)**

Village artisans, such as blacksmiths, carpenters and barbers, receive a bundle or two of harvested crops and 5 to 10 kg of grain for each cropping season from all of the farmers (both owners and tenants) they serve. The water carrier (who works mostly for the mosque) and the Iman (if landless) also receive quantities of harvested crops and threshed grains. The donkey rider who carries grain and straw from the farms to the houses receives 10 to 15 kg of each grain crop plus straw/stalks, depending on the quantity of the produce carried.

**Fuelwood collection in Guzara forest**

Owners and forest departments usually allow tenants to collect dry wood from the Guzara forest for household fuel consumption.

**Guzara pasture**

In Guzara lands where there are few or no trees and grass grows well, some villages leave portions of their Guzara land treeless for use as pasture. Many of these Guzara pastures are open for animal grazing to the whole village, although most are closed in the rainy season to protect grass growth for cutting in September/October for haymaking for the winter season. Grass in areas that are protected during the rainy season is cut by permanent tenants, and 25 percent of the hay or its value is given or paid to the owners as annual land rent. Patches of standing grass can be purchased. Village wastelands, on the other hand, are seldom closed from grazing; animal grazing is usually open all year round. A few large-scale landowners control their Guzara lands very strictly and do not let villagers graze animals or cut grass, even after the hay has been harvested. This is particularly common where there are young tree plantations.

**Private forests, pasture and wastelands**

Most private forests and pasturelands are in Oghi-Shergarh (former Amb State) area, where they are owned and managed by large-scale landowners as individual private patches of land. Tenants are allowed very limited use of these resources, except for grazing animals for eight to nine months a year. Small quantities of hay and field grasses are also allowed to the tenants. The owners protect almost all of their grass in the rainy season, selling it only to whoever needs and can pay for it. Tenants are allowed very little fuelwood, because the owners consume it themselves.

# ANNEX 5: JFMCs IN NWFP

Division	JFMC/Guzara	Composition						Representatives of forest department	Local councillors	Total
		Owners	Non-owners/ beneficiaries	NGOs						
Kaghan	Bahoonja	7	3	1	2	2	2	15		
	Chushad	7	3	1	2	2	2	15		
	Bagir	7	3	1	2	2	2	15		
	Batsangra	7	3	1	2	2	2	15		
	Kaushian	7	3	1	2	2	2	15		
	Suan	7	3	1	2	2	2	15		
	Jagir	8	3	1	2	2	2	16		
	Satbani	7	3	1	2	2	2	15		
	Bhangian	7	3	1	2	2	2	15		
Hazara Tribal	Keola C – 5	7	3	1	2	2	2	13		
	Keola C 1 and 2 Mankai 3 and 7	9	5	2	2	2	1	19		
	Batila C 7 and 8	8	2	1	2	2	2	15		
	Rimadar C 4	8	2	1	2	2	2	15		
	Barray Akorrian	6	3	1	2	2	-	12		
	Kana – Gangwal	7	2	1	2	2	1	13		
	Ganja Gangwal	8	2	1	2	2	2	15		
	Jhakh – Gangwal	8	2	1	2	2	1	14		
	Jabhour – 6	3	2	1	2	2	1	9		
	Rimdara C – 5	8	2	1	2	2	-	13		
	Mankai Guzara C – 1 and 2	10	2	1	2	2	1	16		
	Jabar Guzara C – 16	8	2	1	2	2	1	14		
	Mankai Guzara C – 8	6	2	1	2	2	1	12		
	Reindara Guzara C – 3 and Jabar C – 5	11	2	1	1	2	2	17		
	Gantar Guzara C 2, 3 and 4	8	2	1	2	2	1	14		
	Rashang Guzara C – 13	6	2	1	2	2	2	13		
	Gantar Guzara C 12 and 13	10	2	1	2	2	2	17		

	Reindara Guzara C – 7	6	2	1	2	1	12
	Roonga C – 5	5	2	2	2	1	12
	Devli Guzara C 1, 4, 7, 10, 28, 29, 38, 41, 43, 45 and 49	7	3	.	2	2	14
	Devli Guzara C – 19, 24 and 25	10	1	.	2	2	15
	Ghori Pair C – 1 and Laam C-1	7	2	1	2	2	18
	Kala Dob C – 2	6	3	1	2	2	14
	Panjool Guzara C 20 and 21	7	3	-	2	2	14
	Devli Guzara C – 10	7	3	-	2	2	14
	Mandagocha C – 16	11	2	-	2	2	17
	Mandagocha C – 1, 2, 3, 5, 8, 10, 25, 26, 27 and 28	11	3	1	2	2	15
	Mankay Guzara C – 5	7	2	1	2	1	13
	Darrah Pashto C – 2	9	2	2	2	2	17
	Roonga Karr Baik C – 1	8	2	1	2	1	14
	Rashang C – 9	10	2	1	2	1	16
	Koela C 3, 4 and Gantar C – 22 (ii)	6	2	1	2	1	12
	Dheri Guzar C – 17 and Rashang Guzara C – 16	7	3	1	2	2	15
	Rashang C – 2, 3	9	3	1	1	1	15
	Rashang C – 5, 6	8	2	1	2	1	14
	Rashang C – 11, 12	8	3	1	2	1	15
	Keri Guzara C 3, 4	7	2	1	2	2	14
	Jachha Guzara C – 11	9	2	-	2	2	15
	Jachha Guzara C 12	7	2	-	2	2	15
	Devli Guzara C 8, 9	9	2	-	2	1	14
	Hillan Guzara C 15 to 19	7	3	1	2	2	15
	Jachha Guzara C 3	12	2	-	2	2	18
	Rashang Guzara C 7, 8	10	2	1	2	1	16
	Jabar C – 13	7	3	1	2	2	15
	Hillan Guzara C – 22, 23, 25 to 27	7	4	1	2	2	16
	Hillan Guzara C – 21, 24, 28, 29	7	3	1	2	2	15
	Gaggar Guzara C 1, 2, 3	8	2	1	2	2	15
	Jachha Guzara C – 2	13	2	-	2	2	19

	Jachha Guzara C – 6	16	2	-	2	2	22
Siral	Battal	7	3	1	2	2	15
	Keri	7	3	-	2	2	14
	Mandagocha	8	2	-	2	2	14
	Hilkot	7	3	1	2	2	15
Alpuri	Chakisar C – 8	7	3	1	2	2	15
	Chakisar C – 7	7	3	1	2	2	15
	Kana East C 13	18	-	-	-	-	18
	Kana East C 5	13	-	-	-	-	13
	Kana East C 9, 11 and 12	15	-	-	-	-	15
	Lilwanai C – 8, 9, 10, 11, 26 to 31, 33, 39, 40 and 41	20	--	-	-	-	20
	Kana West C 11 to 16 and Kana West C 14 and 15	10	-	-	2	-	12
Upper Dir	Jarjori C – 66, 67, 68	8	2	-	2	-	12
	Gorkohi Forests C 46	9	2	1	2	-	14
	Gorkohi C 47	7	-	4	2	2	15
Dir Kohistan Sheringal	Biar Forest (Village)	8	-	2	2	3	15
	Kalkot Forests (Village)	13	2	3	4	2	26
Swat	Bar Lalko C 17 to 31, 39 & 40	8	3	-	2	2	15
	Gujarao Kalay Mian Adam C 16 to 19	7	4	-	2	2	15
Chitral	Berir Valley Forests	15	5	1	2	2	20
	Kana West C 11 to 16 and Kana West C 14 and 15	10	-	-	2	-	12

### Abstract

S. No.	Division	No. of JFMCs
1	Kaghan Forest Division	9
2	Hazara Tribal Forest Division	49
3	Siran Forest Division	4
4	Upper Dir	3
5	Alpuri	9
6	Dir Kohistan Sheringal	2
7	Chitral	1
	Total	77

## ANNEX 6: AREA STATISTICS AND GEOGRAPHICAL DISTRIBUTION IN THE NORTHERN AREAS

The area under protected forests – conifers – in the Northern Areas is 64 512 ha. Total forests are 381 200 ha, and further classification into private or protected forests is not reported. The district distribution of protected forests in the Northern Areas is given in the table on the next page.

The protected forests in various locations of districts are listed below:

- *Diamir district (only in Astore sub-division)*: Bunji, Rama, Bulan, Gurikote, Tarshing, Parshing, Bulushber, Rattu, Mir malik, Rehmanpur, Buluchi, Qamari, Ooian, Harcho, Mushkin-Dashkin-Turbiling, Faqir, Kot, Gudai Valley, Kala Pani, Gurais in Minimurg Tehsil.
- *Baltistan district*: Sadpara, Thorsay Bilamik, Munthokal Gasing, Torgan Memosh, Hargosil, Bilarimo, Basho, Gangi, Talu, Harpo, Mendi, (Hingo), SKB, Kachura, Kharmang.
- *Gilgit district*: Minower, Sakwar, Jutial, Barmus, Nowpura, Healter, Juglote, Rehmainabad, Sharote shikiote, Danyour nullah, Bar valley, Skindarabad, Jafarabad, Minpin, Thoal/Nilt, Haramosh, Sai Nallah, Bagrot, Kargah Nallah, Naltar and Chalt-Chaprote.
- *Ghizar district (Punial)*: Assumber, Pakora, Thandar Mathandar, Sherqillah Nallah, Ghulapur, Singul Nallah, Gich Nallah, Isi Nallah and Bargal Nallah, Birga.
- *Ghizar district (Yasin)*: natural forests of poplar and willow in Darkot.
- *Ghanche district*: natural scrub forest of willow and sea-buckthorn in almost all nullahs and riverbeds; juniper forest in Thala, Kharfuk, Khaplu nullah and Hushe valley.

### Ownership rights and tenure in other areas of the Northern Areas

A review of the evolution of ownership rights and tenure arrangements in the forest lands of the Northern Areas is very interesting in the context of this study: forest management in areas formerly owned and managed by the Mirs is different from the management and control followed under the tribal system, locally called shinaki. Until the principalities were abolished, there were two categories of forests in the Northern Areas:

- tribal forests in Chilas, Darel, Tangir and Diamir districts;
- feudal forests owned by the ruling princes.

Although customary rules still operate, it is statutory law that primarily governs the use of forest resources in Northern Areas today. Under customary law, tribal institutions regulated the usage of forests, permitting access to wood and grazing to fulfil local needs but not for commercial purposes. In the customary law prevalent today, the tribal communities decide how to use forests with a 60 percent majority vote; the forest department imposes a 50 percent royalty on trees sold by the communities to contractors. The State now owns forests that formerly belonged to the feudal rulers, and traditional right holders are allowed to continue using them, but with some variations. Before the abolition of the Rajgiri system, rights holders had to apply to the Raja for permission to take felled timber; since 1972, they apply to the forest department. An IUCN study in 2003 found that the local communities do not have a sense of ownership or rights in these forests, and deterioration continues.

**Protected forest in the Northern Areas**

District	Area		Forest type	Significance	Rights	Remarks
	Mile <sup>2</sup>	km <sup>2</sup>				
Gilgit (Gilgit and Nagar)	66	169	17 028	Subsistence timber, fuelwood, grazing and other NTFPs; biodiversity, watershed, ecotourism, and logging for civil works	In Nagar, free grant of timber and fuelwood to local right holders, as per notification of 1974  In Gilgit, timber at concessional rates to locals; free fuelwood from dead and dying trees	No forest in Hunza
Ghizar (Punial)	30	77	7 740	Subsistence timber, fuelwood, grazing and other NTFPs; biodiversity, watershed, ecotourism, and logging for civil works	Free grants of timber and fuelwood to local right holders, as per notification of 1974	Scarce forest resources in Ghizar; no forest in Punial and Gupis
Diamir (Astore)	120	307	30 960	Subsistence timber, fuelwood, grazing and other NTFPs; biodiversity, watershed, ecotourism, and logging for civil works	Free grant of timber and fuelwood to local right holders, as per Alian No. 40 of 1940	All forests in Chilas, Darel and Tangir are private forests
Skardu	36	92	9 288	Subsistence timber, fuelwood, grazing and other NTFPs; biodiversity, watershed, ecotourism, and logging for civil works	Timber at concessional rates to locals; free fuelwood from dead and dying trees	Limited forest resources in Skardu district. No forest in Ghanche district.
Total	252	645	65 016			

Source: Northern Areas Forest Department.

## ANNEX 7: FOREST TYPES AND CONDITION

Forest ecosystems in Pakistan are classified primarily on the basis of Seth's 1935 descriptive classification of Indian forest types. Although there are other classifications in use, the descriptive classification summarized in the following sections is valid and serves all practical purposes. This classification is based on climatic and others factors and amply reflects the diversity of forest types in Pakistan. A major portion of the total area is under natural coniferous and broad-leaved forests. About 5 percent of forests are entirely the results of planting. The range of forests starts with alpine scrub in the north Himalayas and finishes with mangrove forests in the Indus deltaic swamps along the Arabian Sea.

The following table gives the distribution of forest area according to forest type.

**Forest areas, by category of forest (ha)**

		Production	Protection	Total	(%)
1	Coniferous forests	867 000	1 092 000	1 959 000	42.75%
2	Scrub forests	158 000	1 568 000	1 726 000	37.65%
3	Riverine forests	158 000	138 000	296 000	6.50%
4	Mangrove forests	.	347 000	347 000	7.60%
5	Irrigated plantations	83 000	151 000	234 000	5.10%
6	Linear plantations	.	17 000	17 000	0.40%
	<b>Total</b>	<b>1 266 000</b>	<b>3 313 000</b>	<b>4 579 000</b>	<b>100%</b>
	<b>Area (%)</b>	<b>27.6%</b>	<b>72.4%</b>		

### Coniferous forests

#### *Sub-alpine forests*

This is the most common tree formation in the Himalaya and other mountain ranges between 3 350 and 3 800 m elevation, occurring in AJK, Northern Areas and Malakand and Hazara civil divisions of NWFP. Tree vegetation such as Himalayan silver fir (*Abies pindrow*) and blue pine (*Pinus wallichiana*) are the important conifers, which occur mostly in pure form with a lower storey of broad-leaved trees, among which *Betula utilis* is typically prominent. Other associates, such as *Prunus* and *Salix* spp. and viburnum bushes, complete the cover. The trees in this zone are comparatively short in height. There is a spring flush of herbaceous flora, among which are primula and ranunculaceous. Ferns are also in abundance. *Aconitum heterophyllum*, *A. chasmanthum*, *A. leave* and *Saussurea lappa* plants are important medicinally and are intensively exploited.

#### *Dry temperate forests*

These are distributed throughout the dry inner mountain ranges, beyond the reach of the monsoon, in the Northern Areas, AJK (Neelum valley), NWFP (Chitral and Kaghan valley) and Balochistan (Takht-i-Suleman, Shinghar and Ziarat), at 1 525 to 3 350 m or higher. Natural vegetation is mostly conifers. The main species are *Cedrus deodara*, *Pinus gerardiana*, *Juniperus excelsa*, *Pinus wallichiana* and *Picea smithiana*. *Quercus ilex* predominates as a pure crop on lower elevations. The commonly found associates are *Fraxinus* and *Acer* spp. The scrub vegetation includes xeromorphic species of *Daphne*, *Lonicera*, *Prunus*, *Artemisia*, *Astragalus* and *Ephedra*. Medicinal plants such as *Ephedra nebrodensis*, *Artemisia maritima*, *Carum bulbocastanum*, *Thymus* sp. and *Ferula* sp. are exploited commercially. Dried fruits of walnut (*Juglans regia*), chilghoza (*Pinus gerardiana*) and unab (*Zizyphus vulgare*) are collected in sizeable quantities to increase household income.

#### *Juniper forests*

There are few pure stands of juniper species in the world, and the juniper forests of Balochistan are believed to be the most extensive of these. Many of the juniper trees (*Juniperus excelsa*) are known to be at least 2 500 years old. The forests lie at between 2 000 and 3 000 m altitude in an area of

montane steppe, and are composed of scattered trees with no closed canopy. They contain unique flora and fauna, with Sino-Himalayan, Central Asian, Iranian and Turkish affinities.

There is no commercial exploitation, but cutting of the trees for fuelwood has depleted the forest, and regeneration is hampered by unrestricted livestock grazing. Junipers are particularly susceptible to the effects of overexploitation and prolonged drought, and have an extremely slow rate of regeneration. About 37 247 ha of juniper forest is now included in the Ziarat Juniper Wildlife Sanctuary, but there is no management plan for this.

#### **Moist temperate forests**

The main character of this forest type is the extensive growth of conifers. This formation extends along the whole length of the outer ranges of the Himalaya, between subtropical pine and sub-alpine forests at 1 375 to 3 050 m altitude, varying markedly in aspect and configuration in the Murree hills, Galies, Kaghan, Dir, Swat and AJK, with annual rainfall of 630 to 1 500 mm and average annual temperature of 12.2 °C. Most of this precipitation derives from the southeastern monsoon from July to September, but an appreciable part is brought by the westerly disturbance during the winter and spring months. This largely falls as snow, and is an important factor in determining the type of forest formation.

The main coniferous species are *Pinus wallichiana*, *Cedrus deodara*, *Picea smithiana* and *Abies pindrow*, attaining heights of 24 to 36 m and diameters of up to 1.5 m. *Taxus* sp. also occurs locally in the lower canopy. Among the broad-leaved trees, *Quercus incana*, *Q. dilatata* and *Q. semicarpifolia* are prominent, with *Rhododendron arboreum* as their most common associate.

#### **Subtropical pine forests**

Chir (*Pinus roxburghii*) forests are nearly at their western limit in Pakistan at altitudes of between 925 and 1 675 m, ascending sometimes to 2 150 m on ridges with southern exposure. They commonly occur in Hazara, the Murree hills and AJK. Chir forms practically all of the top canopy, which may grow to up to 37.5 m high with 0.8 m diameter. Broad-leaved species include *Quercus incana* with occasional *Lyonia ovalifolia*, *Rhododendron arboreum*, *Pistacia integerrima*, *Sisymbrium cumini*, *Mallotus philippinesis*, *Xylosma longifolium*, *Quercus glauca*, *Ficus* spp. and others.

### **Scrub forests**

#### **Dry subtropical broad-leaved forests**

This area is badly eroded and deep ravines have been formed. Torrents form shallow drainage lines that criss-cross the undulating and broken country. Rocks and boulders are common features. Weathering of sandstone produces some insoluble matter, which forms small units of infertile soil that support only very poor vegetation. There are extensive areas of sheet rock and limestone from which surface soil has entirely disappeared. The climate of this tract is extreme in nature: winters are cold and summers very hot. Winds blow all through the summer. The rains come in July and August and in January and February, but are erratic, often falling in a few heavy storms with long intervals of aridity. These forests grow in the foothills and lower slopes of the Himalayas, the Salt range, Kala-Chitta and the Suleman range, and may occur throughout the country at suitable elevations, merging downwards with tropical thorn forests and upwards with subtropical pine and temperate forests. These are forests of low branchy trees, varying in density from complete closure under the most favourable conditions to scattered single trees or groups on dry sites. The type has a fair amount of shrub growth, but this too varies in density. The tree species are mostly thorny, often with small evergreen leaves. Diameters of reasonable size can be seen in those valleys where deep soil and enough moisture are available. The main species are *Olea fernlginea*, *Acacia modesta*, *Pistacia integerrima*, *Dodonea viscosa*, *Reptonia buxifolia*, *Capparis decidua*, *Tecoma undulata*, *Gymnosporia royleana* and *Zizyphus nummularia*.

#### **Dry tropical thorn forests**

This is the natural vegetation over all of the Indus plain, and is known as Rakh forest in the upper part and desert forest in the lower part of the country. These species have the capacity to survive and grow in an area where temperatures often reach 45 °C and rainfall ranges from 75 to 140 mm. There are an average of only 16 rainy days a year. Vegetation consists of trees that are usually thorny and stunted, dominated by *Acacia* spp. Common species are *Acacia modesta*, *A. nilotica*, *A. senegal*, *A. jacquemontii*, *Salvadora oleoides*, *Prosopis cineraria*, *Tanwrix aphylla*, *Zizyphus mauritiana*, *Z.*



*nummularia*, *Capparis decidua*, *Tecoma undulata*, *Calotropis procera*, *Commiphora mukul* and *Euphorbia caudicifolia*. Of these, *A. senegal*, *A. jacquemontii*, *C. mukul* and *Euphorbia* occur in the subtropical semi-arid maritime region. While sand dune tracts are overgrown by species of *Calligonum*, saline parts are occupied by species of *Sueda*, *Salsola*, *Haloxylon* and *Salvadora persica*, and areas that are periodically inundated by water have *Tamarix dioica*. Among the grasses, species of *Aristida*, *Eleusine*, *Panicum*, *Cenchrus* and *Lasiurus* are prevalent on appropriate habitats.

### Riverine forests

These forests, commonly known as Bela forests in Punjab and riverine forests in Sindh, occur on the floodplains and banks of the major rivers that form the Indus basin. Flooding for about six weeks appears to be necessary for their good growth. Erosion and deposition in succession is a constant feature of these areas. The main species include *Acacia nilotica*, *Tamarix aphylla*, *Tamarix dioica*, *Prosopis cineraria*, *Dalbergia sissoo* and, to some extent, *Populus euphratica*.

### Mangrove forests

More or less dense evergreen forests of very low average height, further reduced by biotic agencies, occur in the Indus delta swamps on the coast of Karachi and Lasbela. *Avicennia marina* is the most important tree in these forests. Adverse factors have not allowed natural regeneration to take place.

Other tree associates are *Rhizophora mucrona* and *Ceriops fagal*. All the tree species are markedly gregarious and evergreen with leathery leaves. The best patches reach 6 to 7 m in height and are found on sites that are difficult to reach on account of soft mud; elsewhere the crop rarely reaches 3 m. These forests have not been managed scientifically so far.

### Irrigated plantations

These forests are the outcome of human efforts on submarginal lands where irrigation water is available. Plantations are created after the vast tropical thorn forests have been cleared. Plantations are spread over the plains of Pakistan, primarily in the provinces of Punjab and Sindh. Their areas vary from 200 to 8 000 ha. Major species grown include *Delbergia sissoo*, *Morus alba*, *Bombax ceiba*, *Eucalyptus camaldulensis*, *Acacia nilotica*, *Melia azedarach*, *Populus* spp. and *Salix* spp.

### Linear plantations

These consist of trees planted along rail, road and canal sides. The main species are *Dalbergia sissoo* and *Acacia nilotica*. These forests are mainly for protection and aesthetic purposes.

### Forest areas

Forest areas in Pakistan are difficult to assess, as all estimates include the area under orchards as forest. The best estimates available are those of FSMP study of 1992; the latest figures on forests collected by IGF are given in the following tables.

**Forest area under the jurisdiction of provincial forest departments, 2004/2005 (thousand ha)**

Type	NWFP	Punjab	Sindh	Balochistan	AJK	Northern Area	Total
Coniferous	994.0	68.9	-	131.0	407.0	284.9	1 885.7
Irrigated plantation	-	138.6	98.2	0.3	-	4.0	241.1
Riverine forests	-	51.5	241.1	45.0	-	-	337.6
Scrub forests	63.0	289.6	-	141.4	9.3	-	503.3
Coastal	-	-	344.8	-	-	-	344.8
Private plantation	764.0	-	-	15.0	-	-	779.0
Range lands	150.0	2 680.2	457.6	795.0	150.0	1 601.0	5 833.8
Miscellaneous	-	-	-	-	-	-	-
<b>Total</b>	<b>1 971.0</b>	<b>3 228.8</b>	<b>1 141.7</b>	<b>1 127.7</b>	<b>566.3</b>	<b>1 889.9</b>	<b>9 925.4</b>

Sources: Provincial Forest Departments.

**Area of forests by legal classification, 2004/2005 (thousand ha)**

Category	Punjab	NWFP	Balochistan	Sindh	AJK	Northern Areas
State	-	-	684.0	-	567.0	-
Reserve	324.4	100.0	-	323.4	-	-
Protected	224.7	590.0	403.0	802.4	-	65.3
Unclassed	64.2	64.0	-	13.5	-	-
Resumed lands	6.4	22.0	-	2.4	-	-
Guzara	40.3	261.0	-	-	-	-
Communal	-	-	-	-	-	219.6
Section 38	17.6	30.0	-	-	-	-
Chos Act	1.3	-	-	-	-	-
Miscellaneous	50.8	764.0	-	-	-	-
<b>Total</b>	<b>729.6</b>	<b>1 831.0</b>	<b>1 087.0</b>	<b>1 141.7</b>	<b>567.0</b>	<b>284.9</b>

Sources: Provincial Forest Departments.

**ANNEX 8: EXCERPTS FROM FOREST WORKING PLANS ON RIGHTS OF LOCAL POPULATIONS IN STATE FORESTS OF SELECTED DISTRICTS****Revised working plan for the cantonment forests Murree (1971/1972 to 1980/1981)**

“In 1885 the residents of Birgran village were given rights to graze their cattle unlimitedly free in Gahrial forest, when first revenue settlement was completed” “taking two cows equal to four sheep the incidence of grazing over an area of 313 acres comes to 45 animals per acre, which is extremely heavy compared with carrying capacity.”

**Working plan for the scrub forests for Rawalpindi district (1966/1967 to 1975/1976)**

“The reserved forests in Murree Tehsil are in addition open to free grazing of kine, horses and donkeys. The divisional forest officer may, however, close one-quarter of the area at a time for regeneration to ensure cooperation of the local people in preventing incendiary fires.”

**Working plan for Utror Desan forests Kalam valley, Swat**

“The landowners having land adjoining the forest are entitled to grazing of their livestock in the forest. They could also realize fees from gujar nomads for allowing them to graze their cattle in forest adjoining their lands.”

**Working plan for Giddar forests Hazara**

“Although the tract dealt with was declared the sole property of the Khan of Giddarpur during the settlement of 1872/1873, rights such as grazing and grass cutting were admitted and recorded in favour of all residents of Gidarpur and its hamlets.”

**Working plan for Upper Kaghan forest Hazara (NWFP)**

“Guzara forests are the property of the local zamindars (and owners) jointly or exclusively. They enjoy every right unless suspended by the conservator of forests, Abbotabad for the preservation of these forests.”

**Working plan for Lower Siran and Agror Reserved Forests, Hazara (NWFP)**

“In case of the reserved forests of Siran forest division, included in this plan, the rights consist of grazing, grass cutting and collection of dry fallen wood for the bonafide domestic use of the right holders.”