

# 1 Pakistan

Pakistan covers an area of about 887,700 sq. km. The country is bordered by India to the east, Iran to the west, China and Afghanistan to the north and north-west, and the Arabian Sea to the south. Topographically Pakistan can be divided into six regions: the northern mountains; the northern plateau; the western mountains; the Balochistan plateau; the south-eastern desert; and the Indus plain. Politically it is divided into six provinces: Punjab, Sindh, North-West Frontier Province (NWFP), Balochistan, the Northern Areas (NAs), and Azad Jammu and Kashmir (AJK). The major river is the Indus, which rises in Tibet, meanders for 2,500 km towards the north-west, then drops south of the Himalayan mountains to irrigate a vast plain and form an immense delta where it empties into the Arabian Sea.

Pakistan's landscapes are constantly changing and being worn down by erosion, which is a natural geological process. The western Himalayas and their associated mountain ranges are dynamic and in constant motion as a result of the forces of gravity and earthquakes. But now people have superimposed their land use on to these unstable and often fragile mountain landscapes, and increased their susceptibility to rapid natural erosion by rain, ice, and wind.

The cumulative effect of the increasing population pressure in the upper watershed areas, and the resultant exploitative, destructive and unsustainable use of the land, are the main causes of watershed degradation in Pakistan. Erosion is thought to be responsible for as much

as 70 per cent of the sedimentation in streams and rivers. In terms of sediment load carried, the Indus River ranks fifth in the world. Sediment production is estimated at 4.49 tonnes per ha per year. About 14.2 million ha of land in the northern hills, and 6.5 million ha in the Potowar plateau, are subject to severe erosion. In certain areas of the Tarbela watershed, erosion is estimated at two to four kg per sq. m per year, which amounts to 20 to 40 tonnes per ha. A substantial quantity of sediment is being carried downstream and deposited in the reservoirs behind the Tarbela and Mangala dams. At the current rate of sedimentation, it is estimated that these dams will be completely filled by sediment in less than 100 years and will lose their capacity to generate hydropower and supply irrigation water to the plains. The tangible and intangible benefits that could be lost amount to Rs 2.3 billion annually.

## 1.1 Climate

Pakistan has a continental climate influenced by monsoon rains. The rainfall pattern is erratic. The bulk of the summer precipitation falls in the northern mountain region, which comprises the Himalayan foothills of the NWFP, AJK, and the northern Punjab. This area receives 500 to 1,500 mm or more of rain annually, while the driest area, the southern part of Balochistan, receives less than 50 mm (Kureshi 1997). Temperatures also vary from region to region. Mean monthly temperatures in July range from below 20°C in the north-eastern region, to above 35°C in the country south of the Murree

Hills. The mean monthly temperatures in January lie below 10-15° C, but above 15° C in the southern coastal and southern inland area.

## 1.2 Population

In 1981, according to the official census, Pakistan had a population of 99.6 million. The present population is estimated at 137 million. Seventy-two per cent of the population live in rural areas. The population growth has been accompanied by a considerable increase in livestock. At present there are an estimated 30 million head of cattle dependent on the forests and rangelands. In the hill areas, which form the watersheds, landholdings are too small to provide sustenance for these animals and incessant grazing and faulty agricultural practices in the vicinity of state forests are common. The winters are cold and long, and trees are cut indiscriminately to keep homes and hearths warm. Population growth and dependence on woody biomass to meet domestic energy needs are major factor affecting the forestry resources of Pakistan. Cutting of trees and other effects of population pressure have contributed to accelerated soil erosion, landslides, and the accretion of silt in the reservoirs of the multi-purpose dams constructed along the rivers Indus and Jhelum.

## 1.3 Land Use

The Forestry Sector Master Plan for Pakistan (FSMP) of 1992 reports that only five per cent

of the total area of the country is forested. The natural distribution of forests, which mostly consist of conifers, is influenced largely by the monsoon rainfall. Eighty per cent of the forests are naturally distributed in the Himalayan, Karakoram and Hindu Kush mountain ranges. The overall land use statistics for Pakistan are shown in Table 1.

## 1.4 Forests by Vegetation Type

The total forest area is shown in Table 2 and the distribution of forests by type is shown in Table 3. Forests, scrub, and trees planted on farmlands cover 4.27 million ha or 4.8 per cent of the country. In the Himalayan region (AJK, the NAs, and NWFP) most of this is coniferous forest. Scrub woodland is found in low rainfall areas. Irrigated plantations and riverine forests are classed as highly productive. Mangrove forests grow mostly in the Indus delta. Agricultural lands occupy 20.6 million ha of which 91 per cent are irrigated and nine per cent rainfed.

## 1.5 Legal Classification of Forests

Forests are managed according to their legal classification and type of tenure, rather than according to species and ecology. The distribution of forests by legal class is shown in Table 3. Forests are categorised as State Owned or Privately Owned and then further divided into different classes. The categories are described in more detail below.

**Table 1: Land Use Statistics (in million ha)**

Land Use	Punjab	Sindh	NWFP	Balochistan	NAs	AJK	Total
1. Geographical Area	20.63	14	10.17	34.81	7.04	1.33	87.98
2. Forest Area	0.57	0.68	1.41	0.3	0.95	0.36	4.27
3. Uncultivable Area	2.71	6.2	4	11.95	N.A.	0.77	25.63
4. Culturable Waste	1.85	1.6	1.05	4.77	N.A.	0.33	9.6
5. Cultivated Area (5i+5ii)	11.85	5.45	1.88	1.5	6.09	0	26.77
5i. Current Fallow	1.01	2.96	0.49	1	N.A.	N.A.	5.46
5ii. Net Area Sown	10.84	2.49	1.39	0.5	6.09	N.A.	21.31
6. Total Area Reported							0
(2+3+4+5)	16.98	13.93	8.34	18.52	7.04	1.46	66.27

**Table 2: Distribution of Forests by Type (in '000 ha)**

Forest Type	Punjab	Sindh	NWFP	Balochistan	NAs	AJK	Pakistan
Coniferous	46	-	1105	131	285	361	1928
Scrub	324	10	115	163	658	1	1271
Riverine	54	241	-	5	-	-	300
Mangrove	-	345	-	-	-	-	345
Irrigated plantations	136	82	-	-	2	-	220
Linear plantations	14	-	2	-	-	-	16
Mazri	-	-	24	-	-	-	24
Private Plantations	-	-	159	-	-	-	159
Rangelands	2722	1168	150	787	2104	362	7293
Total	3296	1846	1555	1086	3049	724	10711

Source: Reported by Provincial Forest Departments, 1998.

**Table 3: Forest Area by Legal Class (in '000 ha)**

Category	Punjab	Sindh	NWFP	Balochistan	Total
<b>State Owned Forests</b>					
Reserved	329	172	94	1087	1682
Protected	646	344	4	-	994
Unclassed	23	-	20	-	43
Municipal/ Cantonment	116	-	92	-	208
Resumed Lands	8	57	35	-	100
<b>Privately Owned Forests</b>					
Guzara Forests	37	-	585	-	622
Chos Act Areas	3	-	-	-	3
Section 38 Areas	6	-	42	-	48
Communal Forests	69	-	809	-	878
TOTAL	1237	573	1681	1087	4578

Source: FPD 1987, PFI 1987

### 1.5.1 State Owned Forests

State Owned forests are sub-divided into four classes on the basis of the legal protection provided to them: Reserved Forests, Protected Forests, Unclassed Forests, and Resumed Lands.

- **Reserved Forests**—These were designated after the first settlement of ownership and granting of forest user rights in 1872. These forests are generally devoid of rights and concessions, and all acts are prohibited unless permitted specifically by the government through a notification.
- **Protected Forests**—These differ from Reserved Forests in two ways. First, they

have not passed through the lengthy process of admittance or extinction of rights or concessions for local people; and second, all acts are permitted unless prohibited specifically by the government in a notification.

- **Resumed Lands**—These are lands surrendered by big landlords because they were in excess of the ceiling fixed under the Land Reforms Act of 1959. In the Hazara Civil Division (NWFP) and Attock District (Punjab), big landlords retained cultivated lands and surrendered the wooded lands they owned. Under the Pakistan Forest Act of 1927, the Resumed Lands were given the legal status of Protected Forests.

- **Unclassed Forests**—Unclassed Forests are forest lands owned by the government but not notified as Reserved or Protected forests under the Pakistan Forest Act of 1927.

### 1.5.2 Privately Owned Forests

Privately Owned Forests are divided into five categories: *Guzara* Forests, Communal Forests, Chos Act Areas, Section 38 Areas and Farm Forest Areas.

- **Guzara Forests**—*Guzara* literally means subsistence. When forests were reserved for government ownership and management in Hazara at the time of the first settlement of land ownership in 1872, sizeable patches of wooded lands close to habitations were set aside to meet the bonafide domestic needs of the local communities. Such forests were designated as *Guzara* Forests. Their ownership is vested in local people, either as individual property or as joint (communal) property called 'village *shamilat*'.
  - **Communal Forests**—Communal Forest is *Guzara* Forest. Essentially Communal Forest is owned by the entire village. This type of forest is mostly found in the Rawalpindi Civil Division in Punjab Province.
  - **Chos Act Area**—Privately-owned lands that are subject to erosion hazards and thus endanger vital public installations or structures can be taken over by the government under the Chos Act, 1900. These areas are returned to the original owners after treatment.
  - **Section 38 Areas**—Private owners can offer their lands to Forest Departments for afforestation and management for an agreed period ranging from 10 to 20 years under Section 38 of the Pakistan Forest Act, 1927. Section 38 states that:

*"The owner of any land or, if there be more than one owner thereof, the owners of shares therein amounting in the*

*aggregate to at least two-thirds thereof may, with a view to the formation or conservation of forests thereon, represent in writing to the Collector their desire: that such land be managed on their behalf by the Forest Officer as a Reserved or a Protected Forest on such terms as may be mutually agreed upon; or that all or any of the provisions of this Act be applied to such land."*

- **Farm Forest Areas**—Farm Forests are linear or compact plantations of trees on private farmlands. These trees are owned individually or jointly by a family. These forests are found on farmlands in rainfed and irrigated areas.

### 1.5.3 The De Jure and De Facto Status of Legal Categories of Forest

There is a widening gap between the legal status of forests and the actual practice of forest management in the various categories. This is illustrated in the comparison of the *de jure* and the *de facto* positions in some classes of forest laid out in the Box.

### 1.6 Sharing of Forest Product Benefits

In the Hindu Kush-Himalayas, the use of forest resources was traditionally based on the needs of the communities. Mountain communities lived in an environment of plenty. Sufficient resources were available to meet their day to day needs, ensure food security, and contribute to the quality of life. Decisions related to access to and distribution of benefits, management of the resource, and responsibilities were deeply rooted in sociocultural mechanisms like the *Jirga* system (Council of Tribal Chiefs). Penetration of external market and related forces remained minimal because of the inaccessible terrain. In recent times, this system has been weakened as a result of societal conflicts.

## Box 1

### A COMPARISON OF *DE JURE* AND *DE FACTO* POSITIONS IN FOREST ACTIVITIES

#### *DE JURE* POSITION

##### Reserve Forest

Reserved forests are public forests free of all rights except those admitted in the settlement process, which must precede the declaration of an area as Reserved Forests. Such rights are limited. The land on which these forests exist is state land.

##### Protected Forests

Prohibitions. The protected forests are public forests but are open to all uses by people residing around them, except those which may have been prohibited by special government notifications. Such prohibition usually applies to harvesting of trees, setting fire to the forest, encroachment of forest land, and cultivation in the forest.

The forests are not demarcated and the local people do not allow the process of demarcation and official settlement of rights. This leads to continuous forest encroachment by the people, for agriculture. Illicit felling of trees is common.

Many local communities claim the ownership of protected forests. In most cases, the government has agreed to pay 60-80% of the timber sales to locals as royalty, signifying government acknowledgement of such ownership. The distribution of the proceeds from commercial sale of timber is generally fair but very time consuming. Local people frequently cultivate any large opening, which may be made in the forest canopy as a result of timber harvesting.

There are no arrangements for meeting the domestic needs of the non-right holders. Therefore, they frequently either buy timber issued to the right holders for their domestic needs (which is illegal) or obtain it themselves by illicit means. The right holders complain about low

#### *DE FACTO* POSITION

All Reserved Forests are used for unrestricted grazing, except small areas which might have been fenced and/or guarded by special watchers for regenerating trees; there is no involvement of the people living in or around the forest with forests departments. Illicit removal of trees and encroachment of forestland is quite common.

Revenue Sharing. People having customary rights in Protected Forests are entitled to 60% share net sale proceeds of timber in Malakand Civil Division and 80% share in Hazara Civil Division from areas which are harvested according to the forest management plans under the supervision of the Forest Department. The payments are made by the forest department to the revenue authorities that have detailed records of the heads of the communities entitled to the payments and are conversant with the system of distributing the share among the various households.

Domestic Use. Under their rule making powers, the forest departments prescribe a certain quantity of timber to be issued to right holders for their assessed domestic use, but not for sale.

quotas prescribed by the forest department for meeting their domestic needs.

Grazing. People owning cultivated lands in the village with customary rights in a forest can graze their livestock in the forest. People who do not own such land but reside in such villages are also allowed this privilege. People not belonging to such villages must obtain the permission of the right holders before grazing their livestock in the forest.

### **Guzara Forests**

Dry wood may be used without restriction for meeting domestic needs by the owners and right holders, and also by non-right holders residing in the village so long as the owners and right holders do not raise any objections to this practice.

Green trees for domestic purposes may be cut by the owners and right holders with the permission of the Conservator of Forests in accordance with prescribed rules. Non-right holders are not allowed to cut green trees. *Guzara* Forests that are dense enough to be capable of sustaining timber harvesting are harvested in accordance with the prescriptions of their management plans. The owners of these forests are entitled to an 80% share in the sale proceeds and the government retains 20% as departmental charges.

Torch Wood. No person is allowed to lop, debark, or remove torch wood from coniferous trees.

Medicinal Plants. Collection and removal of medicinal plants is prohibited except as authorised sales, 80% of the sales' proceeds going to the owners and 20% to the forest department.

Grazing. Beside owners, right holders as well as resident non-right holders may graze their livestock in the *Guzara* Forests. Non-resident, non-right holders must obtain permission to graze from their owners, on payment of the agreed amount.

### **Communal Forests**

According to local tradition, only the owners of cultivated land have the right to any income that might accrue from sale of timber trees from the adjacent mountains.

All people resident in a village, whether land owners or landless, may graze their livestock and collect firewood from communal forest land belonging to the village. No outsiders are allowed these privileges except with the permission of the village elders, on payment of an agreed sum.

The management and use regulations concerning *Guzara* forests are generally carried out according to the de jure position. However, beside *Guzara* owners and right holders, resident non-right holders have traditionally been collecting firewood from *Guzara* forests.

Illicit felling in *Guzara* forest is quite common.

All these practices are common.

The forest department cannot rigorously enforce these legal provisions without undue harassment.

Grazing pressures adversely affect tree regeneration and the hydrological cycle.

Large land owners in the mountains have generally moved to cities or towns, with the result that communal and private forest lands are now being used for grazing and collection of firewood by small land owners and the landless. Yet large landowners, although they no longer reside in the villages, will still consider communal forest land as their property. This introduces a major complication in the advance of social forestry: the communities residing in the mountains have little incentive plant and/or manage timber trees because on maturity they may be claimed by the non-resident large land owners.

The rights in forests are recorded in the 'Wajib-ul-Arz' (a revenue document prepared for each village at the time of land settlement). The book of rights is maintained by the *Tehsildar* (Revenue Official). Concessions or rights in a forest are guided by the over-riding principle that all acts are prohibited in a 'Reserved Forest' unless specifically permitted and all acts are permitted in all other types of forest unless specifically prohibited. The general list of rights and concessions is as follows.

- Shares in royalties (from *Guzara* forests in Hazara)
- Trees for construction of houses, household furniture, and agricultural implements in Hazara, Malakand, Rawalpindi, Murree Hills, Azad Kashmir, and the Northern Areas
- Timber at concessional rates in Malakand, Azad Kashmir, and the Northern Areas
- Grazing of domestic animals either free or on payment of a nominal fee (full rights)
- Collection of grass (full rights)
- Rights of way
- Cutting of dry trees and collection of such things as fuelwood, cones, and pine needles.

### 1.6.1 Rights in Forests

The legal status of forests and the rights and concessions enjoyed by the local people are spelled out in the Forest Working Plans. Some of the rights and concessions recorded in some typical Forest Working Plans covering three different categories of forests are summarised below as an example.

#### Government Reserved Forests

- **Cantonment Forests in the Murree Hills (1971-72)**—In 1885, when the first revenue settlement was completed, the residents of Birgran village were given unlimited rights to graze their cattle in Gharial forests without payment. Taking one cow equal to two sheep and one buffalo equal to four sheep, the incidence of grazing over an area of 313 acres comes

to the equivalent of 45 sheep per acre, much heavier than the calculated carrying capacity.

- **Scrub Forests in Rawalpindi District (1966-67 to 1975-76)**—The Reserved Forests in Murree *Tehsil* are open to free grazing of kine, horses, and donkeys. The Divisional Forest Officer may, however, close 1/4th of the area at a time for regeneration. This concession was granted to ensure the cooperation of local people in preventing incendiary fires.
- **Murree Kahuta Forests of Rawalpindi District (1965-66 to 1984-85)**—According to a Government Notification, all Reserved Forests shall be open to free grazing of kine, mules, horses, and donkeys, except such forests as the Divisional Forest Officer may consider necessary to close for the purposes of regeneration. The area of the forest closed at any one time shall not exceed 1/4th of the total area of the Reserved Forest.
- **Keran and Sharda Forests of AJK (1974-1983)**—No rights are recognised in the demarcated forests, but Zamindars (land owners) residing within three miles of these forests have been granted liberal concessions. The rules regulating the grant of these concessions are fully defined in the Kashmir Forest Notice. The concessions are revocable, however, at the pleasure of the Government. They are primarily for the *bona fide* domestic and agricultural use of Zamindars (landlords) and cannot be sold, bartered or exchanged. All villagers in the presently constituted Keran and Sharda Forest Divisions are entitled to these concessions. The more important features of the concessions that influence the forest management are described below.
  - Trees, except deodar, are granted for construction of buildings and agricultural implements on payment of a very nominal fee. Zamindars residing within three miles of demarcated forests get timber at 1/6th of the Zamindari rates, and those living beyond this limit at full Zamindari

rates. The concession is further reduced to half of these rates in the Keran Forest Division subject to a maximum of Rs10 and Rs five per tree of kail and fir respectively of any size, and to Rs five and 2.5 in the Sharda Division.

- The concessionaires are also entitled to remove from forests, free of any charge, natural fallen dead trees or timber – including broad-leaved trees of any size. Deodar poles 3' in girth at the base, or naturally broken pieces of it under 3' in length and of any girth, can also be removed.
- The concessionaires are granted kail and fir trees free of cost for their houses in the case of natural calamities such as fire, avalanches, earthquakes, and floods. Timber, including that of deodar, is also granted free of cost for the construction of mosques, primary, and middle school buildings.
- The concessionaires may also use broad-leaved trees, other than special classes of trees as defined in the Forest Kashmir Notice, free of charge for their *bona fide* use and for agricultural implements.
- Grazing and grass cutting in all forests are free of charge. The grazing tax levied earlier on grazers was abolished by the Azad Government of the State of Jammu and Kashmir soon after its inception through Government Order No.84/1949. The grazing tax was suspended as a temporary measure in order to afford relief to the refugee graziers from Jammu Province.

#### Private (Guzara) Forests

- **Guzara Forests of Haripur Forest Division (1984-85 to 1993-9)**– According to the Hazara Forest Act 1936, and rules made thereunder, and subject to the rights and powers of the government in respect of seignorage and forest conservancy as defined under the relevant act, all wastelands are the property of

individuals or are held jointly by the community. Such owners are entitled to a free grant of trees for their *bona fide* needs. The owners have full rights for the grazing of domestic animals, grass cutting, and collection of dry wood for fuel. The right to timber for domestic use is subject to prior sanction by the District Forest Office (DFO) and is restricted to the actual requirement not exceeding the limit laid down in the *Wajib-ul-Arz*. The owners recorded in *Wajib-ul-Arz* are entitled to the proceeds of any sale, less 20 per cent departmental charges and any seignorage fee leviable under the Hazara Forest Act, 1936.

#### Private (Communal) Forests

- **Khandia-Uthor Forests of Kohistan Forest Division (1985-86 to 1999-2000)**– Since the rights in private (communal) forests have not been settled administratively, the extent of lawful rights and concessions enjoyed by the local people have not been properly defined. However, the rights practised by local people at present are substantial. Some examples are listed below.
  - Right-holders are allowed unrestricted grazing of domestic livestock, grass cutting, and lopping of trees for fodder, free of charge.
  - Villagers can obtain construction timber and firewood for domestic purposes from all kinds of trees.
  - Right-holders may collect a fee (*kalang*) from nomadic grazers for grazing cattle, sheep, and goats in alpine pastures. The government does not share this fee.
  - Villagers can hunt wild animals and birds without regard to restrictions on species, sex, size, or breeding period.
  - Villagers can fish using nets and dynamite.
  - Villagers can cut trees, burn stumps and use logs along field boundaries to prepare land for cultivation of agricultural crops.

## 1.7 Land Tenure

### 1.7.1 Agricultural Tenure

The land tenure system in Pakistan is complicated. It has been identified as one of the major causes of low productivity in agriculture; the gradual disappearance of trees from wastelands (both unclassified government lands and common village wood lots); and the degradation of pastures resulting from unregulated grazing. It is deep-rooted in history, tradition, and laws.

According to the Muslim Family Laws, sons and daughters inherit property in a ratio of 2:1 and divide it physically. This process continues until the holding becomes uneconomical or the owner loses interest in the land. The process of fragmentation of landholdings was accelerated as a result of the land reforms introduced in 1959. The 1959 Act prescribed a maximum ceiling of 500 acres of individual ownership of irrigated and 1,000 acres of unirrigated land. This resulted in the resumption of about a million hectares of land, for which tenants were given first choice of purchase. However, the 1959 Act could not be enforced effectively, partly, perhaps, as a result of the provisions of the Muslim Family Laws, and agricultural land was further fragmented.

Another wave of land reforms was initiated in 1971. The ceiling on landholdings was reduced by 70 per cent to a maximum ownership of 150 acres of irrigated or 300 acres of unirrigated land, or an area equivalent to 12,000 Produce Index Units (PIU), whichever was greater. The owner of a tubewell or tractor was allowed an additional 2000 PIUs. In addition, the reforms provided extra security to tenants, prohibited arbitrary eviction of tenants, defined cost and crop sharing relations between landowners and tenants, and laid down a policy for the distribution of resumed lands (January 1993).

### 1.7.2 Forest Tenure

None of the forest policies, except the draft Forestry Sector Policy 1998, recommends institutionalising land-use planning, not even

in the hilly terrain where it is most needed. Privately-owned forests held in proprietorship by individual families or communities have to contend with the requirements of non-right holders. Lack of clearly defined property rights inhibits these groups, which may include tenants, landless people, and nomads, from investing in the forests. In such cases, common properties become open access regimes. Even forestry projects that considered this factor did not provide incentives to these groups. Many crop areas are share cropped by tenants, and their interest in planting trees is low as a result of the uncertainty of tenure over the trees and the long gestation period of tree plantations.

In the NWFP and the NAs, communities and individuals own *Guzara* Forests. The rights in these forests are defined locally as property rights. All the villagers are stakeholders in the *Guzara* forests. Revenue from timber sales is split, with 80 per cent going to the community and 20 per cent to the government. If a forest contractor tries to purchase forest royalties, he (they are always men) encounters the difficult task of getting all the stakeholders to agree to his proposal.

An interesting feature of the land tenure prevalent among Pashtuns in the northern high hills of Pakistan is the system of periodic land rotation (*re-allotment*) known as *wesh*. According to *wesh*, which means division, lineage segments have shares in alpine pastures and forest, and occasionally also in agricultural land. After a specified interval, the lineages shift land between themselves, thus segment A takes control of land formerly used by segment B, and segment B in turn takes control of land formerly used by C, and so on.

Continuity of joint ownership has served to protect the forests in these areas because logging cannot proceed unless the ownership and distribution of royalties have been resolved. In the lower reaches of the Palas Valley, temporary user rights are gradually being replaced by private property rights. Despite a continuation of disputes between sub-tribes over the distribution of royalties, privatisation and road construction have

opened the area for commercial harvests of forests.

In Swat in Malakand Division, all the private forests were declared as government property and in 1974 as Protected Forests. A year later, they were re-classified as Reserved Forests, which is the strictest tenure class under the Pakistan Forest Act, 1927. People reacted violently, and this forced the government to concede that, although the classification of the forests as Reserved Forests would remain, they would be managed as Protected Forests, and 60 per cent forest royalties would be paid to the local concessionaires.

Under the Kalam Integrated Development Project (KIDP) being implemented in Swat, efforts were started to modernise local agriculture by introducing potato cultivation. When the Federal Government first placed a three-year moratorium on logging operations in 1993, and subsequently extended it for another three years, the project activities under KIDP did not suffer. One problem that the KIDP could not solve is that of forest regeneration. High grazing pressure in these forests hinders natural regeneration. The entitlement of local communities to collect

fuelwood free of charge contributes to increased tree cutting and depletion of the forests. The potential for cultivation of potato and other cash crops has also paved the way for encroachment of forest areas after logging, and the local communities do not allow forest areas to regenerate.

### **1.7.3 Grazing Tenure**

Grazing is an important tenure practised in alpine pastures and forest areas in the mountain region. Policies that provided incentives to commercial dairy industries led to an increased demand for fodder production. The impacts of such policies have not reached the remote mountain areas where livestock herding is carried out in the traditional way. In the absence of grazing associations, unregulated grazing is practised in range watersheds. Transhumant herds of Afghan refugees have further accentuated the problem. With the increase in livestock population, grazing pressure on alpine pastures and forest areas in uplands has continued with ominous consequences for soil erosion, leading to heavy siltation of water reservoirs and reduced capacity of water conveyance systems in downstream areas.