

# OVERVIEW OF THE BALOCHISTAN FORESTS AND WILDLIFE

By

## Forest Department Balochistan

### 1.1 Introduction

Balochistan Forests and Wildlife Department (BFWD) has been working in Balochistan prior to independence of Pakistan. The Chief Conservator of Forests is heading the department. There are six conservators of forests (for support of the chief conservator) as heads of different wings within the department. The department's set-up is established in all districts of Balochistan. The head at district level is Executive District Officer, Forests and Wildlife.

### 1.2 Mandate of the Sector

Balochistan Forests and Wildlife Department has been mandated to carryout the following activities on regular and routine basis :

1. Management, protection and conservation of natural forests, rangeland and protected areas, especially state owned ones.
2. Management of wildlife all over Balochistan.
3. Raising forests nurseries to produce saplings in millions to meet the plants demand in the province.
4. Planting trees in millions each year during spring and summer Tree Planting Campaigns.
5. Raising and maintaining road and canal side plantations in the province.
6. Control of illegal cutting of trees and regulating transport of wood in transit both produced in the province and brought from other provinces.
7. Sand dune stabilization in different parts of the province.
8. Regulating Mazri movement in the province.
9. Propagation of Mangrove forests in the coastal belt of the province.
10. Management of protected areas, national parks and game sanctuaries.
11. Execution of forestry and environment sectors development projects that are entrusted to the department under different development programmes.
12. Regulating and supervision of trophy hunting in Balochistan.
13. Supporting farm and community forestry in Balochistan.

#### 1.2.1 Natural Forests in Balochistan

Natural forests in Balochistan comprise of Juniper Forests, Chilghoza Forests, Olive-Pistacia Forests, Olive-Acacia Forests, Tropical Desert Thorn Forests of Kandi, Tamarix, Pelo and Mangrove Forests of the coastal belt.

##### 1.2.1.1 Juniper Forests

*General Description* : The Juniper forest type occupies high mountainous areas. These are very old forests. Some of the Juniper trees are estimated to be more than 1500 years old. The forests is sparsely stocked. It has the characteristic of semi-arid conditions. *Juniper excelsa*

(obesht) is the main tree species with *Fraxinus xanthoxyloides* (wild ash) and *Pistacia khinjuk* as the main associate, which occupies favourable sites.

The main shrubs are *Prunus*, *Cotoneaster*, *Crataegus*, *Ephedra*, *Caragana*, *Berberis* and *Rosa* spp. The ground cover is constituted mainly by *Stipa himalacia*, *Dichanthium annulatum*, *Artemisia maritime*, *Chrysopogon aucheri* and *Cymbopogon* sp.

*Location* : There are some good patches of Juniper forests in Balochistan. These include Juniper forests of Zarghun, Zarakhu, Takatu, Murdar, Surghund, Ziarat, Khatuka, Chautair, Harboi in Kalat and Targhatu (Toba Kakari)

#### **1.2.1.2 Chilghoza Pine Forests**

*General Description* : The Chilghoza pine forests consist of open to dense stands of mature and over-mature trees. Over-mature trees have dead tops and dead branches. The broad-leaved associates are *Prunus amhgialis*, *Fraxinus xanthoxyloides* and *Pistacia Khinjuk*.

*Location* : It occupies the Shingher, Kaisaghar and Speraghat hills in Zhob and Sherani districts and the Torghar in Killa Saifullah district.

#### **1.2.1.3 Dry Temperate Forests – Olive-Pistacia-Ash Type**

*General Description* : A typical stand of Pistacia-Ash type constitutes an open to dense growth of Pistacia and Ash trees. Most of the trees and useful bushes have been eliminated from the forests. Only thorny bushes such as *Caragana* (makhi), *Prunus* and *Berberis* species are found occasionally. On the slopes, scanty growth of *Haloxylon* and *Artemisia* is found.

*Location* : This is predominant type of vegetation in Balochistan. It occupies lands above 1220 meter (4000 feet) and below the coniferous types. It is found in all over Balochistan. The forests owing to its location on medium slopes and usefulness has received the maximum damages at the hands of man and his livestock.

#### **1.2.1.4 Sub-Tropical Dry Semi-Evergreen Scrub Forests – Olive-Acacia Type**

*General Description* : The Olive-Acacia forests are generally composed of an open cover of savannah vegetation. The main trees are *Olea cuspidate* and *Acacia modesta*. The predominant shrubs are *Dodonaea*, *Gymnosporia spinosa*, *Nannorrhops ritcheana* and *Zizyphus nummularia*.

*Location* : This type is found in eastern parts of Sibi, Loralai, Musakhel, Zhob and Khuzdar districts and adjoining area of Lasbela district.

#### **1.2.1.5 Tropical Desert Thorn Forests**

*General Description* : This type of forest is very open. The main species are *Salvadora oleoides*, *Maerua crassifolia*, *Capparis deciduas* and *Acacia jacquemontii*.

*Location* : This type occurs in Mekran, Lasbela, Sibi and Khuzdar areas.

#### **1.2.1.6 Plains Desert Forests**

*General Description* : The Plains Desert forests is a part of the Indus Plains Tropical Thorn Forests. The main species are *Prosopis cineraria*, *Salvadora oleoides*, *Salvadora persica* and *capparis deciduas*.

*Location* : The main type occurs in alluvial plains of Porali River in Lasbela district.

#### **1.2.1.7 Mangrove Forests**

There are 18000 acres of Mangrove forests at the coastal belt of Balochistan in Gwadar and Lasbela districts.

Summary of the distribution of Natural Forests in Balochistan is given below.

S. No.	District	Forest Area in Acres
1	Quetta	199127
2	Pishin	65331
3	Killa Saifullah	50131
4	Zhob	32150
5	Loralai	149244
6	Musakhel	10311
7	Ziarat	171388
8	Sibi	668122
9	Jhal Magsi	80000
10	Mustung	52772
11	Chagai	944060
12	Kalat	160057
13	Kharan	314740
14	Khuzdar	42880
15	Lasbela	386172
16	Turbat	256
17	Gwadar	40840
	<b>Total</b>	<b>3367581</b>

Note : The areas shown above include all protected forests and national parks in Balochistan.

## 1.2.2 Artificial (Cultivated) Forests

**1.2.2.1 Road and Canal Side Plantations** : Balochistan Forests and Wildlife Department has established many road and canal side plantations in Nasirabad, Jaffarabad, Sibi, Quetta, Bolan, Kalat, Khuzdar, Zhob and Pishin districts over a length of 700 Av. Km.

**1.2.2.2 Sand Dunes Stabilization Plantations** : Sand dunes in Mastung, Mashkhail, Pasni, Gwadar, Pishukan and Nushki areas have been planted with *Tamarix aphylla*, *Calligonum* spp and *Prosopis juliflora*. Native plants have also come up in the area. The planted areas are spread over 5000 acres, and are well protected.

**1.2.2.3 Farm and Community Plantation** : Balochistan Forests and Wildlife Department provides plants and technical guidance to farmers and general population for planting of trees on their farms, in their houses and on other available spaces.

## 1.2.3 Forests Nurseries

Balochistan Forests and Wildlife Department has been maintaining many large nurseries in Quetta, Zhob, Khuzdar, Mastung, Uthal, Bolan, Nasirabad, Jafarabad, Sibi, Musakhail and Pishin districts. Besides, nurseries on small scale are also maintained in each district.

## 1.2.4 Management of National Parks and Wildlife

Balochistan Forests and Wildlife Department has been managing two internationally recognized national parks. These are Hingol National Park with an area of 619043 hectares in the districts of Lasbela, Gwadar and Awaran and Hazarganji-Chiltan National Park with an area of 27421 hectares in the districts of Quetta and Mastung.

The Hingol National Park is home to Marine estuaries and terrestrial fauna such as Marsh crocodile, Olive Ridley and Green turtles. Masher fish, Houbara bustard, Dalmatain pelican, Spot-billed pelican, Plumbeous dolphins, Sindh Ibex, Urial, Chinkara, Pangolin and leopard.

The Hazarganji-Chiltan National Park has been established to project Chiltan Markhor, which is a unique animal and endemic to this park. At present, the presence of more than 800 Markhors has been reported in the park.

The department also regulates the hunting of *Houbara bustard* (Taloor, a migratory bird) in Balochistan through permission granted by the Government of Pakistan both Foreign and Local People help local population in terms of temporary jobs, development of hospitals, schools, mosques and roads in the area and providing Hajj opportunity to some locals and staff of different government departments.

The field staff of BFWD works also for the protection of wildlife in the province. Presently, the department is supervising and regulating two trophy-hunting sites – one site is Toreghar in Killa Saifullah district and the other is Duraji in Lasbela district.

### 1.2.5 Development Projects

The Department's share in PSDP (Public Sector Development Plan) has been always nominal compared to other provincial departments in the province. In the current year (2009-2010), total development budget is Rs. 12.500 Million. However, two big development projects being funded by the Federal Government, through Ministry of Environment have been started in Balochistan. These projects are :

(a) Development of Forestry Sector Resources for Carbon Sequestration in Balochistan  
Total cost of the project is Rs. 1664.657 Million. The project will be implemented in Musakhail, Loralai, Zhob, Bolan, Nasirabad, Jaffarabad, Khuzdar, Jhal Magsi and Sibi districts over a period of 6 years. Major scope of work includes :

- Raising of 17.363 million nursery plants.
- Provision of 10.200 million plants to farmers for planting on farmlands.
- Institutional planting of 2.000 million plants.
- Raising of Hurri Plantation over 1200 acres.
- Raising of Block Plantation over 1500 acres.
- Raising of Canal-side Plantation over 4000 Av. Km.
- Dry Afforestation activities over 30,000 acres.
- Improvement and re-generation of State / Government Forests and Community Forests over 5,000 acres.

(b) Multi-Sectoral Project for Conservation of Juniper Forests in Balochistan. Total cost of the project is Rs. 493.166 million. The project will be implemented in potential Juniper bearing areas in the districts of Ziarat, Quetta, Loralai, Pishin and Sibi over a period of 7 years. Major scope of work includes :

- Increase the ground cover for protection of soil and provision of forage to grazing livestock (over 40,000 acres).
- Improve watershed values through soil and water conservation techniques (2 million cft works).
- Promote social forestry practices at the farm and community level (provision of 200,000 seedlings to the farmers).
- Development of eco-tourism infrastructure and provision of facilities to visitors (12 huts, 6 camping sites, 1 tourist information centre, 23 km trails, etc.)

- Introduction of improved varieties of fruit trees (100,000 fruit tree seedlings).
- Establishment of seed multiplication plots (145 plots).
- Provide scheduled livestock vaccination and treatments for farmer's adoption of practice (120,000 animals).
- Establish fodder plots (300 plots).
- Provide balanced animal fattening feed (1,000 lambs / kids).
- Provide improved breeds of goats and sheep from markets (200 goats and sheep).

## POTENTIAL OF THE SECTOR

### 2.1 Potential for Range and Watershed Management

Although the range and the watershed conditions are poor in Balochistan in terms of vegetation cover, the landscape has not completely lost its ability to improve with changes in management and supporting structures.

Potential for improving vegetation cover and biomass exists in government owned forests and in rangelands and watersheds owned by the mobilized communities. An increase of 10% in vegetation cover has been observed over a period of 2 years with the application of simple biological and earthen structures in the form of hillside ditches and micro catchments ponds planted with suitable trees and bushes. It is estimated that about one-third of the total forest and range area owned by the Department in Balochistan has potential for improvement of range and watershed conditions.

Rangeland vegetation quickly responds to management and rehabilitation activities compared to forests that take longer time to gain its healthy condition. The impact of management and conservation practices where applied in Balochistan clearly illustrates the ability of rangeland plant communities to recover with only a little change in the management practices.

In addition, rangeland rehabilitation works such as planting of indigenous and exotic forage bushes and trees in typical rangelands improves soil conditions, which in turn increases the vegetative cover and produce more bio-mass.

The current carrying capacity of rangelands is 5.00 hectare / EE /year (an example of Pishin Lora Basin is given below).

Name of Sub Basin	Basin area (ha)	Rangeland Area (ha)	DM Kg / ha	Total DM (Kgs)	Carrying Capacity (ha/ EE / year)	Total EE in PLB
Kalat	209892	156282	90	14065380	3.33	46885
Kolpur	32369	23827	85	2025295	3.53	6751
Kuchlak	207728	142365	75	10677375	4.00	35591
Mangochar	106710	67580	85	5744300	3.53	19148
Mastung	105152	60490	50	3024500	6.00	10082
Patki Shahnawaz	110155	75825	50	3791250	6.00	12638
Pishin	698002	467095	90	42038550	3.33	140129
Quetta	178958	117400	75	8805000	4.0	29350
Shirinab	122741	80980	50	4049000	6.0	13497
<b>Total</b>	<b>1771707</b>	<b>1191844</b>		<b>94220650</b>	<b>4.97</b>	<b>314069</b>

It means that 12 acres rangeland is needed to be fully grazed by one sheep in a year. Allowing 50% proper use factor, the requirement of one sheep to graze the range is 24 acres per year. Taking into account one-third of the total range and forest area owned by the Department i.e. 1122527 acres would be developed for commercial grazing. This range will accommodate about

93000 sheep and goats round the year. However, initial three years are required to improve vegetation cover and bring the management in place.

In addition, all communal rangelands also have potential for improvement. The present carrying capacity may be increased at least two times by bringing these ranges under Community Range Management System. According to livestock census of 2006, about 20.00 Million sheep and goats depend on these communal ranges for more than 50% of their forage requirement.

## 2.2 Establishment of Community Forests on Sailaba Land

More than 90% rainwater normally goes out of the province. This water can be used to develop Community Forests on Sailaba lands in each district of the province. Water requirement of forest trees such as Robinia, Tamarix, Sinjid, Ash, Acacias and Prunus is comparatively less than the agricultural crops and therefore there exists a Potential Opportunity to establish such community forests. Adopting the existing bandat system, forest blocks can be established using floodwater in each district at least on 500 hectares land over a period 10 years. It is estimated that net benefit comes to 37000.00 Rupees per hectare per year.

Estimated Cost for Development Community Forests					
Estimated Cost for Development of 1 hectare Community Forests on Sailaba Bandat					
S. No.	Activity	Details	Estimated Cost (Rupees)		
1	Construction of embankment 1 meter in height, leveling of land and compaction of embankment through bulldozer	Bulldozer charges for 25 hours @ Rs. 3500/- per hour	87500.00		
2	Construction of diversion channel, outlet etc.	10% cost of item 1 above	8750.00		
3	Excavation of pits for tree plantation	1000 pits @ Rs. 15.00 per pit	15000.00		
4	Cost of trees	1000 trees @ Rs. 5.00 per tree	5000.00		
5	Labour charges	Planting of 1000 trees @ 2.50 per tree	2500.00		
6	Miscellaneous cost		10000.00		
			<b>128750.00</b>		

Estimated Benefits of 1 hectare Community Forests					
S. No.	Expected success of trees	Estimated Benefits over 10 years	Estimated Quantity (Kg)	Price per Kg	Total Benefit
1	60%	Wood production 100 Kg per tree	60000	7.50	450000.00
2	60%	Forage production 30 Kg per tree	18000	3.00	54000.00
					504000.00
				Net Benefit	375250.00

## 2.3 Establishment of Commercial Nurseries

Balochistan Forests and Wildlife Department has full capacity to establish forest and ornamental nurseries in all over the province. So far, the Department has limited saplings production only to forest plants. Keeping in view the demand for ornamental plants in the province, the Department has a plan for producing ornamental plants, which would be started next year. About 0.500 Million forest and ornamental plants will be produced each year. It is estimated that production of one plant costs Rs. 10/-. In return average sale price is Rs. 20/- per plant. About Rs. 5.00 Million net profits is expected each year from sale of nursery plants.

## 2.4 Establishment of New Trophy Hunting Sites

The department can increase its revenue at least two times from trophy hunting if two or three new sites are established for trophy hunting. The revenue received by the Department during the past five years is given below.

S. No.	Year	Revenue in Million Rupees
1.	2004-2005	3.182
2.	2005-2006	4.095
3.	2006-2007	4.775
4.	2007-2008	5.129
5.	2008-2009	8.727
6.	2009-2010	9.769

## 2.5 Establishment of Irrigated plantations

The Nasirabad and Jaffarabad districts have canal irrigation system. A great potential exists here to establish block, canal and roadside plantations on large scale. There is a general policy in Pakistan that 10% of canal water with corresponding land is provided for irrigated plantation. This practice is missing in Balochistan. If canal water and land is provided for irrigated plantation, the province can meet its fuel wood and timber requirement.

## GENERAL PLAN TO TAP POTENTIAL

### Short Term (<5 years)

#### 3.1 Restructuring of Balochistan Forests and Wildlife department

Range and watershed management are the primary goals and objectives of the Balochistan Forests and Wildlife Department. However, the emphasis has remained predominantly focused on the management of forestry. In order to bring practical change in the management practices, a short-term plan envisaged is to create on urgent basis an *official cadre* of range and watershed management. Recent establishment of a research wing has not been so far functional and is, therefore, recommended to be renamed as range and watershed management circle (RWMC). It is highly recommended that the proposed management plan needs to be completed within 2 years to bring effective improvement.

#### 3.2 Preparation and Development of Grazing and Watershed Management Plans

It is recommended that the data collection for range and watershed management and subsequent analysis need to be prioritized at the department level preferably in shorter periods to initiate range and watershed projects. This includes the technical as well as financial departmental and government approvals such that the requisite datasets are collected on fast track basis and early management actions can be taken. Based on the results of the data, management plans for both community and government owned rangelands and watersheds are to be prepared on short-term basis.

#### 3.3 Improvement of Government Forests and Rangelands

Forests, rangelands and protected areas are comprised of approx 3367581 acres. It is estimated and assessed that almost one-third of this area (1122527 acres) is available for immediate range and watershed improvement works. In the present scenario, starting point for improvement and development activities is government forest and the rangeland areas because much of the social mobilization is needed prior to undertaking the development activities on communal lands.

#### 3.4 Establishment of Community Forests on Sailaba Land

Introduction of community forests on Sailaba lands in each district is proposed. Water requirement of forest trees is half of the agricultural crops and require less labour for planting and growth of trees. Initially, 500 hectare forest blocks are recommended for planting in each district will be a good starting point. This target requires 3-5 years to be achieved.

### **3.5 Establishment of commercial Nurseries**

Balochistan Forests and Wildlife Department has full capacity to establish forest and ornamental nurseries in all over the province. So far, the Department has limited saplings production only to forest plants. Keeping in view the demand for ornamental plants in the province, the Department has a plan for producing ornamental plants, which would be started the next year. About 0.500 Million forest and ornamental plants will be produced each year.

### **3.6 Strengthening the Vigilance of the Field Staff**

Lack of transport, communication and legal protection facilities has hampered the vigilance of field staff to control illegal cutting of trees, unauthorized grazing and collection of revenue, which is the mandate of the Department. There is acute need to strengthen the vigilance of the field staff by providing them the essential facilities. With the availability of field facilities and legal protection, their performance would increase resulting in better protection of forests, rangeland and environment, and collection of revenue. Provision of logistic facilities, communication equipment and legal protection to the field staff is recommended to be made available within the shortest possible period. Establishment of computerized system at all key check posts for collection of revenue on account of movement of forest produce is also recommended in order to eliminate corruption. In addition, the department will make efforts to have a special forest magistrate for quick disposal of forest offence cases, which are pending in thousands for a considerably long time.

### **Long Terms (5 – 10 years)**

### **3.7 Implementation of Grazing Systems and Watershed Management Activities**

In the long-term management plan, it is recommended that the grazing systems selected in consultation with the stakeholders shall be implemented in the pilot rangelands and watersheds. It is recommended that the staff of BFWD and concerned communities will implement the grazing systems as a participatory practice. Similarly, BFWD staff and community members will implement watershed management activities in the field.

The staff of Range and Watershed Management Circle (RWMC) will be required to continue collecting field data on regular basis and expedite the implementation of grazing systems and provide the necessary changes for improvements in the plans.

Range and Watershed Management Circle and forestry staff of the BFWD will perform all routine and developmental activities according to goals and objectives of the range and watershed management mandated to the department by the government and masses. The BFWD needs to prepare well-designed and feasible large size projects and explore donors through the Government of Balochistan for funding of the projects.

### **3.8 Establishment of Irrigated Plantations**

The Nasirabad and Jaffarabad districts have canal irrigation system. A great potential exists here to establish block, canal and roadside plantations on large scale. There is a general policy in Pakistan that 10% of canal water with corresponding land is provided for irrigated plantation. This practice is missing in Balochistan. If canal water and land is provided for irrigated plantation, the province can meet its fuel wood and timber requirement. The Department needs to enter into negotiations with irrigation and Power Department for making canal water available and land to establish irrigated plantation on a large scale. This target requires 5 – 10 years to achieve.

### **3.9 Capacity Building of Staff, Users and NGOs**

Range and watershed management staff and forestry professionals, users and NGOs involved in this field need to be educated and, therefore, their training in the form of capacity development is required to undertake the management of range and watershed resources, promote forestry and protect and manage wildlife and national parks. This will be a long term process and will continue as per need assessments.

### **3.10 Monitoring**

Range, watershed and forest management requires on long-term basis, a structured monitoring approach to register the implementation of policies and plans of improvement of grazing lands and watersheds. The proposed long-term monitoring is recommended on using suitable satellite imageries to evaluate the temporal improvement of decrease / increase in the forest and vegetation cover. The RWMC Staff and local forestry professionals shall carry out additional monitoring at plantation and stock level.

## **CONSTRAINTS**

### **4.1 Low Priority for Range and Watershed Management**

Communities and planners generally assign low priority to range, watershed forest management/development sectors as these do not indicate direct economic returns.

### **4.2 Lack of Research and Extension Services**

Research and extension activities are lacking in the field of range, watershed and forest management in Balochistan. Only sporadic research has been conducted by different organizations that is site specific and does not serve the purpose for large scale planning and management of the sector.

### **4.3 Land Tenure System**

Most of the rangelands and watersheds are common tribal or village property. Everybody is allowed unrestricted grazing. On the other hand, nobody is responsible for conservation. It is known as, "Tragedy of the commons". The rangeland and watershed degradation is a serious problem in the open rangelands mostly located in dry, highland areas of Balochistan, where large increase in human and livestock population have a profound impact on rangelands and watersheds.

### **4.4 Minimum Use of Flood Water**

After having electricity, the communities have installed tube wells for high intensive agriculture practices. This change has brought a low priority to centuries old floodwater use practice. The floodwater use still has great potential to produce forage for livestock and fuel wood for local population and to increase agricultural production.

### **4.5 Depleted Vegetative Cover**

Vegetation cover in watersheds has reduced considerably. It has resulted in serious soil erosion and high run off. Heavy silt is being transported into downstream water storage structures, which is a matter of great concern.

### **4.6 Lack of Participation**

As a general phenomenon, water benefits of watershed go to the down stream areas and the process of watershed rehabilitation is slow due to harsh climatic conditions. As a result, the communities in the watershed catchments do not participate in the management of watershed.

### **4.7 Natural Aridity and Drought**

Natural aridity and persistent drought in the province has seriously depleted vegetation in Balochistan. Many small bushes and grasses have disappeared from forests and rangelands. This is a matter of great concern for the sector.

### **4.8 Encroachment of Forest Land**

Encroachment of forest land for agriculture expansion is a big problem in many forests in Balochistan. Similarly, a big chunk of forest land has been allotted for non-forestry use. Ban on transfer of forest land for non-forestry use is required.