**WORKING PLAN**

**For**

**BAHRAIN PROTECTED FORESTS**

**Of**

**KALAM FOREST DIVISION**

**(2017-18 to 2031-32)**



**By**

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**INTRODUCTION AND ACKNOWLEDGEMENTS**

This planning document is revision of Haider Ali Khan’s working plan (1993-94 to 2007-2008). The expired plan was also a revision of Mr. Yar Muhammad Khan and Mr. Muhammad Ikram Khan’s plan (1984 to 1993). Haider Ali Khan while preparing the document which is being revised by me put in extraordinary efforts to bring out the maximum technical details of the area, critically reviewed the gaps in the implementation of Mr. Yar Muhammad Khan & Mr. Muhammad Ikram Khan plan’s and brought in writing the significant bitter realities which actually are still the basic root causes of the failure and a valid threats to appropriate forest management in Kalam Forest Divisions for which he deserves the tributes.

The revision of this working plan was entrusted to Usman Ghani DFO who worked in the area along with his team till April, 2013 when he got transferred before the completion of the task. The assignment shifted to Raja Imtiaz Ahmad DFO to complete the task, he has collected the remaining field data and has been transferred in February 2014 and has not completed the task. Ultimately the assignment got shifted to me being his successor for completion .The area under the plan being very vast comprising of 274 compartments, the balance work of secondary data collection, digitization, analysis, planning and shaping it up as a document is managed by me. The help support and cooperation of Rashid Khan DFO Kalam, Syed Rizwan SDFO Bahrain and his field team is worth mentioning.

I remained committed and determined to complete this task and grateful to ALLAH almighty, the beneficent, the merciful who gave me health, courage and stamina to accomplish this challenging assignment.

I also feel pleasure to acknowledge the guidance, support and leadership of Dr. Faizul Bari the Conservator of Forests, Forestry Planning and Monitoring Circle, Peshawar which enable me to complete the document timely.

It is pleasure to acknowledge the support of Malik Javid Khan the then Conservator of Forests, Forestry Planning and Monitoring Circle, Peshawar who guided us timely and taken keen interest in the preparation of this Management Plan.

My gratitude to Mr. Hashim Ali Khan , Chief Conservator of Forests South Region-I, Peshawar being in chairs for patronage for his valuable suggestion and guidance.

I feel pleasure in acknowledging the support and guidance given by Mr. Shah Wazir Khan Chief Conservator of Forests Northern Region-II and Mr. Afsarullah Khan Wazir Conservator of Forests East Northern Region-II.

M/s Dinar Khan, Aziz Khan, Mehboob Ur Rehman Foresters, Muhammad Irshad Forest Guard, Shafiq ur Rehman Khan GIS Specialist, Sajid Anwar, Zahid Shah and Haider Khan GIS experts and Mr. Amir Aslam, Steno deserve special commendations for their hard work, courage and endeavor. The field team often had to traverse precipitous and inaccessible forest areas and lived under miserable field conditions but they did not express any sign of retreat or resentment. All members of field teams proved to be honest and reliable even under extreme conditions and sometimes alone, this devotion of them made possible continuation of the fieldwork in remote and inaccessible forests.

I acknowledge again the services of all those who helped me a lot in checking, formatting and printing of computer generated results, correction of data in computer and formatting draft of the plan which is output of great sense of devotion and diligence.



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**PREFACE**

This working plan is the revision of outgoing working plan (1993-94 to 2007-2008) prepared by Mr. Haider Ali Khan, which covers the forests of Bahrain Tehsil. Compartment is the basic management unit and all treatment has based on compartment. Most of the forests of Bahrain are away from settlement and are in good condition.

The prescription of the plan are aimed at sustainable management of the natural resources to foster the economic and social well-being of the communities residing in the area, besides providing biodiversity conservation and full ecological benefits of watershed management to the downstream areas of the country.

This planning document is unique as it envisage new basic democracy model of the province, principles of current forest policy, objectives of Forest ordinance 2002 and guiding principles for achieving objectives of the ordinance, community participation rules 2004 and switch over to reformed Forestry planning Paradigm for integrated and sustainable natural resource management of the area.

I feel pleasure in acknowledging and commending the good work of author of this plan and his team in efficiently organizing the work and putting up a fine draft of the plan.

It is expected that new plan will be implemented in letter and spirit to achieve the major goal of restoration of scientific forest management. The success of the plan is a real challenge for the officers and officials of the Khyber Pakhtunkhwa Forest Department as well, who have to work hard with full commitment, diligence and sincerity for partnership in community Forestry/Joint Forest Management. To ensure success of the plan in all respect, adequate and timely funding, commitment and teamwork of Professionals and Para Professionals of the Khyber Pakhtunkhwa Forest Department are the pre-requisite.



**i**

Conservator of Forests

Planning & Monitoring Circle

Peshawar

**LIST OF ABBREVIATIONS**

|  |  |
| --- | --- |
| AmslCSA | Above mean sea levelCarbon Stock Assessment |
| Cft | Cubic foot  |
| Cum | Cubic meter |
| DFO | Divisional Forest Officer |
| FD | Forest Department |
| FMC | Forest Management Centre |
| GIS | Geographic Information System |
| GoKHYBER PAKHTUNKHWA | Government of Khyber Pakhtunkhwa Province |
| Ha | Hectare |
| HH | Household |
| JFM | Joint Forest Management |
| JFMCKP | Joint Forest Management CommitteeKhyber Pakhtunkhwa |
| Km | Kilometer |
| LU | Livestock Unit |
| MMM(mm) | MeterMillimeter |
| Md | Mound (40 kg weight) |
| Mm | Millimeter |
| M&E | Monitoring and Evaluation |
| NRM | Natural Resource Management |
| NTFPs | Non-timber Forest Products |
| PC-I | Planning Commission – I |
| PFI | Pakistan Forest Institute |
| REDD+RO | Reducing Emissions from Deforestation and forest DegradationRange Officer |
| SDFO | Sub-Divisional Forest Officer |
| Sq.m | square meter |
| UCUNFCCCVCVFOVDC | Union CouncilUnited Nations Framework Convention On Climate ChangeVillage CouncilVillage Forest OfficerVillage Development Committee |
| VLUPVP | Village Land Use PlanningVillage Plan |
| WCWO | Working CircleWoman Organization |

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**PART-I**

**SUMMARY OF THE FACTS ON WHICH PROPOSALS ARE BASED**

**CHAPTER-1**

**DESCRIPTION OF THE TRACT**

1. **SALIENT FEATURES**
	1. **Name and Location**

This management plan covers the forests of Swat Kohistan situated in Bahrain Tehsil of Swat District. Previously these forests were part of Swat Forest Division and then subsequently transferred to (KIDP) Kalam Integrated Development Project, creating Kalam Forest Division vide Government of Khyber Pakhtunkhwa forestry, fisheries and wildlife Department order No.SO(FT-II)AD/1-584/77/2280-84 dated 12.10.1998. The Kalam forest Division is comprised of, Kalam, Bahrain North, Bahrain South Forest Sub-Divisions and Utror Forest Range. The working plan area consists of ten blocks namely Chell, Beshigram, Bahrain, Gurnai, Ramet, Mankial, Balakot, Torwal, Daral and Tirat. The area is further proposed to be divided into two Sub-Divisions, namely Bahrain North and Bahrain South. All of the working plan area falls in four union councils namely Bahrain, Mankial, Balakot and Beshigram,

This plan is revision of Haider Ali Khan’s working plan (1993-94 to 2007-2008), and cover the Bahrain North and Bahrain South Forest Sub-Divisions. The tract lies between 35 – 04 - 0.7 to 35 – 28- 41.3 North latitudes and 72 – 22- 44.6 to 72 – 42- 30.6 East longitudes. It is bounded on the north by Kalam Tehsil, on the east by Shangla District, on the south by Khawaza khela and Matta Tehsils and on the West by Dir district.

The upper part of plan area is directly drained to River Swat via small tributaries and Lower and mid parts of the plan area is drained to Beshigram, Daral and Mankial khwars which falls into Swat River.

The total area of Bahrain Tehsil is 110500 ha (1105 sq km) out of which 38858 ha (35%) is under forest. The area suitable for agriculture practices is approximately 5525 ha (5%) while the remaining area comprises of alpine pastures, marginal lands, bare rocks, snow bound peaks, river and streams.

The main town of the valley, which is also a Tehsil headquarter is Bahrain. It is situated about 30 KM (17 miles) North of Mingora Swat. Electric, telephone and tap water facilities, as well as, other basic necessities of life like fresh fruit, milk packs, food and vegetables, gasoline station, photo copies and patent medicines are available here. However, television facility is non-existent. As a result of fast track growth and development in the field of Information Technology (IT) and satellite communication services mass media is accessible through digital satellite receivers for those who can afford and mobile communication services of many public and private companies are launched in the area. These innovations are now adopted in the life style of a fraction of population of this area.

Former Swat Forest Division was bifurcated into two forest divisions during 2002 namely;

Swat Forest Division with Head Quarter (HQ) at Mingora and Kalam Forest Division with Head Quarter (HQ) at Madyan.

* 1. **CONFIGURATION OF THE AREA**

The tract is mountainous with few land strips along both sides of Swat River from Madyan up stream. The main ridges on the east as well as on the west run parallel to the river. These main ridges are frequently interrupted by lateral spurs and depressions creating numerous side valleys. The main valley as well the side valleys are quite narrow, with steep slopes and very little agricultural terraces. Bahrain Tehsil is rougher than lower Swat but less rough than Mankial which is the highest peak in the area.

The main mountain ridge forming the Watershed divide between Kalam and Bahrain valleys is Karandokay Khwar.

The Forests are situated mainly between elevations of 1677 M (5500 ft.) and 3200 M (10,500 ft.) above mean sea level (msl). The main species growing in this altitudinal Range are Deodar (Cedrus deodara), Fir (*Abies pindrow*), Spruce (*Picea smithiana*), and Kail (*Pinus wallichiana*) The lower limit comes down to 1035 M (3400 ft.) , where broadleaved *Qurcus* (Shah Baloot) is the dominant species.

Aspects are much varied because of the multiplicity of main ridges and their offshoots. The Forests are generally better-stocked on northern and eastern aspects as compared to southern and western. The most degraded Forests are found on southern aspects especially on precipitous slopes. The limiting factor in such areas is the non-availability of adequate moisture to help establish tree growth on shallow-rocky soils.

Avalanches (snow slides) occur commonly in the higher parts of the valley. At sheltered places, in glaciated zone, and in the beds of most of the Khwars above 3963 M (13000 ft.), snow stays all year round. Landslips are very common in the area and soil erosion, weathering, scree formation and cloud bursts transporting huge masses of mud & debris are a regular phenomenon. During 2010 & 2011 floods and cloud bursts have resulted into devastation and destruction changing the socio- physical face of the area. The ultimate destruction pushed the dwellers of the area in more miseries than before and manifolds increased efforts for survival & livelihood earning.

* 1. **GEOLOGY, ROCKS AND SOIL**

In the geological map of Pakistan compiled by Bakr and Jackson (1964), an area over 18130 Sq Km (7000 sq., miles) in Hazara, Swat and Dir Kohistans, and the Southern part of Chitral and Gilgit is shown unmapped. According to a survey (1971) by the Geology Department of the University of Peshawar, the major geological formations in the area are the Swat granites, Kalam group and Kohistan basic complex (Hornblendic) group. The rocks are mainly granites, quartizites, siliceous schists, silt stones, shales, lime stones and hornblende felspar. Soil is fairly deep on the moderately steep slopes of the Southern exposures. On the whole the soil is capable of supporting a vigorous and good coniferous crop.

Comparison of the rocks from various parts of the northern west Pakistan shows that the Hornblendic Group of Martin et al (1962), extends from Chilas in Gilgit/Baltistan to at least western Dir a distance over 259 Km (160 miles) . There is a probability that the group may be extending in the adjacent eastern Afghanistan which is covered by the Hindu- Kush range.

* 1. **The Upper Swat Hornblendic group**

Martin et al. (1962) gave this name to the hornblende-rich rocks occupying a wide belt of country in the upper Swat. Recent work shows that the group extends from Chilas in the Gilgit/Baltistan to western Dir-a distance well over 259 Km (160 miles) and, as wide as, 97 Km (60 miles). The Norites occurring about 16 Km (10 miles) to the east of Chilas are petro-graphically similar to these of Kohistan area. Bakr and Jackson (1964), have tentatively placed such rocks, exposed south of Kalam along the Swat river, in the Precambrian. According to Martin et al, the Hornblendic group ranges in composition from hornblende – bearing schists and gneisses to diorites, and quartz-diorites and granites. In addition the group also contains more basic rocks such as Norites and peridotites.

* 1. **CLIMATE**

The climate of Bahrain Tehsil varies from sub moist to moist temperate. The area is cold in winter forcing the population at the high altitude to migrate with the bulk of their live- stock to the valley bottom. The precipitation is received in the form of snow and rain, the bulk of rain falls from December to May which varies with altitude. The average annual rain fall is 1050 mm whereas the average annual snow fall is 423.56 cm (Kalam observatory). There are two distinct drought periods; May to July and September to November. The relative humidity is high in monsoon which occurs in the months of July and August in the lower parts of Bahrain Tehsil. The snow status falling on high elevation by about middle of October and descends to the forest area in the last week of November. There is no metrological observatory in Bahrain Tehsil to record the data of rain, snow and temperature. However, there is one observatory of WAPDA at Kalam and one of metrological department at Saidu Sharif. The last thirty six years metrological rainfall data of the Mingora Observatory and eight years metrological data of Kalam observatory are given in Table-1(A) and 1(B).

According to a metrological data the forest areas receive an average of about 55 to 110 inches of snow annually. In the upper reaches of side valleys snow accumulates generally in depression and forms glaciers. The mean annual rain fall is estimated as 21” (500mm). The average maximum temperature is 26.32 c and the average minimum temperature is 2.4 C. The mean monthly temperature remains below 10 C for more than six months of the year.

* + 1. **Precipitation / Rainfall**

The distribution of rainfall is controlled by two factors namely moon-soon winds and the relative elevation. The tract receives more rainfall during moon-soon as the moon-soon winds are full of moisture on its arrival to the tract. Rainfall increased with increasing elevation up to 2134 M (7,000 ft.) And then decreases due to reduced humidity.

The forests generally occupy an elevation zone of 1675-3200M (5,500 -10,500 Ft.) and at this altitudinal range much of the precipitation is received in the form of snowfall.

**36 Year's Consolidated Rainfall (mm) Data of Saidu Sharif**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Year/****Month** | **Jan** | **Feb** | **March**  | **April** | **May**  | **June** | **July** | **August** | **Sept** | **Oct** | **Nov** | **Dec** | **Annual** |
| 1 | 1978 | 39.4 | 35.7 | 196.4 | 55.5 | 84.4 | 21 | 105 | 148.3 | 43.1 | 28.5 | 33.9 | 5.4 | 796.6 |
| 2 | 1979 | 86.8 | 132.3 | 203.2 | 136 | 108.8 | 29.1 | 88.3 | 79.7 | 49.9 | 2.5 | 18.4 | 14.6 | 949.6 |
| 3 | 1980 | 122.2 | 95.7 | 250.6 | 22.8 | 39.6 | 124.2 | 135.5 | 83.2 | 71.6 | 67.2 | 20.7 | 31.4 | 1064.7 |
| 4 | 1981 | 73.9 | 106.4 | 152.3 | 146.7 | 84.7 | 20.2 | 139.1 | 48.2 | 49.6 | 25.9 | 23.7 | 0 | 870.7 |
| 5 | 1982 | 34.4 | 96.3 | 98 | 112.5 | 112.1 | 20.1 | 50.7 | 101.8 | 31.6 | 37.3 | 104 | 100.5 | 899.3 |
| 6 | 1983 | 111.6 | 56.2 | 235.5 | 178.3 | 72.9 | 13.6 | 54.8 | 158 | 94.8 | 30.1 | 2.8 | 16.8 | 1025.4 |
| 7 | 1984 | 11.7 | 122.2 | 64.2 | 100.5 | 6.2 | 25.1 | 62.2 | 99.3 | 103.5 | 9.5 | 85.6 | 23.1 | 713.1 |
| 8 | 1985 | 56.1 | 5.8 | 45.8 | 46.2 | 32.7 | 2.6 | 177.4 | 102.6 | 28 | 95.6 | 30.5 | 176.8 | 800.1 |
| 9 | 1986 | 30.4 | 127.3 | 333.5 | NA | NA | NA | NA | 204.8 | 32.2 | 6.6 | 89.8 | 112 | IC |
| 10 | 1987 | 2.2 | 157 | 375.3 | 133.8 | 130.2 | 36.8 | 135.6 | 89.7 | 52.2 | 207.2 | NA | 29 | 1349 |
| 11 | 1988 | 101.6 | 122.8 | 248.4 | 22.3 | 20.2 | 83.6 | 311.5 | 163.4 | 99 | 22.2 | 0.5 | 120.9 | 1316.4 |
| 12 | 1989 | 129.9 | 54 | 123.3 | 83.1 | 99.1 | 55.4 | 286.5 | 269.3 | 75.2 | 66.2 | 40.9 | 100.6 | 1383.5 |
| 13 | 1990 | 101.2 | 227.6 | 359.5 | 134.7 | 15.2 | 34 | 156.8 | 277 | 147.7 | 95.4 | 17 | 84.8 | 1650.9 |
| 14 | 1991 | 30.9 | 187.2 | 236.8 | 387.2 | 199.1 | 29.8 | 252.1 | 105.6 | 118.2 | 3.8 | 13.4 | 9.8 | 1573.9 |
| 15 | 1992 | 276.4 | 64.4 | 195.9 | 166.5 | 109.6 | 29.2 | 125.4 | 98 | 159.8 | 89 | 18.2 | 38.8 | 1371.2 |
| 16 | 1993 | IC | 34.3 | 295.2 | 101.2 | 30.4 | 74.1 | 142.2 | 50.1 | 49.2 | 51.4 | 41 | 1.6 | IC |
| 17 | 1994 | 32.1 | 143.5 | 88.6 | 133.6 | 37.5 | 50.5 | 161.6 | 46.2 | 96 | 99.2 | 8 | 121.8 | 1018.6 |
| 18 | 1995 | 5.4 | 134.4 | 195.6 | 188.1 | 19.5 | 15.7 | 192.5 | 156 | 23.5 | 37.4 | 36 | 27.1 | 1031.2 |
| 19 | 1996 | 86.7 | 118.2 | 160.8 | 89.7 | 92.1 | 137.8 | 47.8 | 77.2 | 71.4 | 64 | 5.2 | 15.5 | 966.4 |
| 20 | 1997 | 40.1 | 42.1 | 118.3 | 229.7 | 119.2 | 60.7 | 83.6 | 144.8 | 28.6 | 58.2 | 49.5 | 14.7 | 989.5 |
| 21 | 1998 | 68.3 | 293.5 | 122.3 | 133.7 | 81.5 | 13.5 | 90.9 | 117.6 | 34.3 | 10 | 8.7 | IC | 974.3 |
| 22 | 1999 | 215.6 | 109.4 | 156.8 | 45.3 | 17.3 | 35.7 | 198.9 | 85.9 | 175.1 | 9.5 | 57.7 | IC | 1107.2 |
| 23 | 2000 | 89 | 66.9 | 85 | 9.3 | 60.4 | 74.1 | 76.2 | 87.6 | 118 | 26.2 | 9 | 29.1 | 730.8 |
| 24 | 2001 | IC | 14.6 | 41.4 | 92.5 | 6.8 | 154.8 | 280.7 | 34.6 | 14.9 | 25.6 | 49.5 | 12.3 | 727.7 |
| 25 | 2002 | 38.9 | 115.7 | 119.6 | 82.7 | 28 | 45 | 104.6 | 150.7 | 53.1 | 2 | 0.3 | 76.1 | 816.7 |
| 26 | 2003 | 32.3 | 216.8 | 140.3 | 134.6 | 72.5 | 106 | 67.1 | 141.8 | 104 | 9.2 | 99.5 | 59.1 | 1183.2 |
| 27 | 2004 | 104.2 | 65.8 | 7.5 | 86.6 | 32.8 | 70.7 | 218.4 | 81.2 | 72.6 | 179.5 | 14 | 71.3 | 1004.6 |
| 28 | 2005 | 133.7 | 227.9 | 138.2 | 70.9 | 68.1 | 51.4 | 126.1 | 94 | 62 | 30 | 38 | NA | 1040.3 |
| 29 | 2006 | 172.4 | 50.6 | 88.6 | 31 | 7.5 | 45.2 | 187 | 132.6 | 87 | 62.3 | 54 | 157.8 | 1076 |
| 30 | 2007 | 1.2 | 162.2 | 255.4 | 54 | 84.1 | 95.8 | 101.3 | 131.6 | 35.8 | NA | 22 | 8.7 | 952.1 |
| 31 | 2008 | NA | 66.4 | 25.7 | 253.7 | 60 | 91.5 | 189.7 | 123.8 | 53.5 | 37.2 | 42 | 4 | 947.5 |
| 32 | 2009 | 150 | 171 | 126 | 241 | 38 | NA | 57.1 | 99.1 | 65 | 4 | 39 | 3.1 | 993.3 |
| 33 | 2010 | 42 | 235 | 61 | 134 | 72 | 63 | 471 | 286 | 86 | 8 | NA | 4 | 1462 |
| 34 | 2011 | 22 | 250 | 78 | 103 | 12 | 74 | 82.7 | 92 | 54 | 73.1 | 16.6 | 2.1 | 859.5 |
| 35 | 2012 | 75.2 | 84 | 42 | 99.7 | 39 | 0.1 | 126.1 | 78 | 129 | 20.1 | 8.4 | 75.3 | 776.9 |
| 36 | 2013 | 20.1 | 316 | 128 | 65.2 | 38 | 194.2 | 119.3 | 314.9 | 57.1 | 46.1 | 33 | 1.7 | 1333.6 |
|   | **Average** | **36.9** | **80.1** | **60.5** | **63.3** | **27.4** | **38.3** | **82.9** | **68.8** | **39.5** | **22.3** | **16.4** | **19.0** | **1050.6** |
| NA | Not Available | IC | Incomplete | **Source:** Pakistan Meteorological Department  |

* + 1. **Temperature**

The averages of air temperature on monthly basis (Mean max) for Kalam station is given in the tables below:

**Table; 01(A) STATION - KALAM (2004 – 2011)**

|  |
| --- |
| **Monthly Mean Max. Temperature (C° )** |
| **YEAR** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** |
| 2004 | 3.4 | 8.0 | 14.0 | 18.0 | 23.4 | 24.8 | 25.3 | 25.3 | 24.2 | 16.6 | 15.9 | 8.2 |
| 2005 | 6.0 | 4.3 | 10.6 | 15.2 | 18.8 | 26.4 | 25.7 | 25.3 | 24.7 | 19.5 | 12.5 | 10.9 |
| 2006 | 5.4 | 11.3 | 12.5 | 18.2 | 26.1 | 25.5 | 26.9 | 25.2 | 23.6 | 21.1 | 12.5 | 7.8 |
| 2007 | 9.4 | 9.0 | 10.4 | 22.6 | 23.1 | 26.3 | 25.3 | 25.8 | 23.7 | 20.1 | 19.0 | 7.5 |
| 2008 | 2.4 | 9.0 | 15.7 | 16.8 | 24.3 | 26.6 | 26.4 | 25.3 | 23.3 | 21.0 | 14.6 | 9.3 |
| 2009 | 6.0 | 5.8 | 10.9 | - | - | - | - | 26.4 | 24.3 | 19.3 | 11.7 | 8.3 |
| 2010 | 11.4 | 5.0 | 12.1 | 17.8 | 21.2 | 23.7 | 25.8 | 24.3 | 22.6 | 20.8 | 16.2 | 11.2 |
| 2011 | 6.2 | 3.8 | 11.1 | 16.8 | 25.4 | 27.5 | 26.0 | 26.0 | 23.5 | 19.0 | 14.3 | 9.3 |

***Source:*** *Pakistan Metrological Department (NATIONAL AGROMET CENTRE) Islamabad.*

**Relative Humidity**

The average monthly humidity percentages collected at Kalam station for the period mentioned is given in tables below;

 **Table;1(B) STATION- KALAM (2004-2011)**

|  |
| --- |
| **MONTHLY MEAN HUMIDITY ( % ) AT 0800AM**  |
| **YEAR** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** |
| 2004 | 82 | 77 | 69 | 68 | 52 | 57 | 66 | 69 | 62 | 63 | 54 | 81 |
| 2005 | 84 | 86 | 76 | 60 | 65 | 48 | 67 | 66 | 62 | 58 | 65 | 65 |
| 2006 | 85 | 73 | 69 | 49 | 47 | 53 | 66 | 73 | 64 | 58 | 70 | 77 |
| 2007 | 75 | 75 | 69 | 40 | 55 | 54 | 67 | 67 | 67 | 59 | 49 | 73 |
| 2008 | 85 | 83 | 60 | 62 | 53 | 61 | 67 | 71 | 59 | 56 | 63 | 82 |
| 2009 | 87 | 91 | 76 | - | - | - | - | 64 | 61 | 60 | 78 | 84 |
| 2010 | 86 | 92 | 78 | 64 | 72 | 57 | 57 | 72 | 65 | 58 | 66 | 70 |
| 2011 | 88 | 95 | 72 | 63 | 43 | 45 | 63 | 67 | 71 | 65 | 68 | 69 |

***Source:*** *Pakistan Metrological Department (NATIONAL AGROMET CENTRE) Islamabad.*

**Table;1(C) STATION- KALAM (2003-2012)**

|  |
| --- |
| **MONTHLY TOTAL SNOWFALL(IN INCHES) DATA OF KALAM**  |
| **YEAR** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** |
| 2003 | - | - | - | - | - | - | - | - | - | - | - | 108 |
| 2004 | 110.0 | 62.0 | - | - | - | - | - | - | - | - | - | 55.0 |
| 2010 | 60.0 | 212.0 | - | - | - | - | - | - | - | - | - | 1.0 |
| 2011 | 19.5 | 79.5 | 70.0 | 2.0 | - | - | - | - | - | - | - | 3.5 |
| 2012 | 59.5 | 63.5 | 16.5 | - | - | - | - | - | - | - | - | - |

***Source:*** *Pakistan Metrological Department (NATIONAL AGROMET CENTRE) Islamabad.*

* + 1. **Water sources and usage**

Precipitation is the major source of water supply which is received in the form of rains and snow. The snow is the most important source of water supply which ultimately gives rise to springs and perennial streams. Water from the streams and spring is supplies through water channels and gravitational flow pipe lines to the nearby population both for irrigation and drinking purposes. Other source of water is the high altitude lakes, the lakes of Beshigram and Daral are the biggest among them and have great attraction for the tourists.

* 1. **Drainage**

The area is drained by Swat River. The important tributaries are Daral, Mankial, Laikot, Beshigram, Gurnai and Karandokay Khwars. All these perennial streams are fed by snow, springs and high altitude lakes. The flow in the streams increases with the snow melting during hot season generally by the end of June and gradually subsides by the first week of July. The water of these streams is used for irrigation and drinking.

* 1. **Disaster Trends in the area**

The recent unprecedented flood of July 2010 has caused devastation to both properties and infrastructure of the area. The sub-valley roads and paths were washed away. The rehabilitation and reconstruction works taken up by the state are not only inadequate but also at very slow pace resultantly may take many of years to get accomplished. The main Bahrain-Kalam road is in very bad condition. The area is highly prone to the hazards because of the fact that the forests, standing on these steep & precipitous slopes, have ruthlessly been cut during the past rendering the very fragile ecosystem highly susceptible to damages. It is foreseen and feared if present trend of resource abuse is not stopped by the state departments through efficient and effective workable strategies the area will be pushed towards immeasurable damages.

* 1. **Distribution of the area**

The Forests form more or less a continuous belt above the cultivated field and habitations, and below the alpine pastures. The areas of the Forest compartments vary in extent. Compartment areas have been calculated with GIS software’s by using G.T. Sheets of scale 1:50,000. The Forests areas taken up under Working Plan comprise of sizable expenses of coniferous species. The total area covered by this plan is 38858 ha which includes 2079 ha agriculture/habitation area and 10870 ha blank. The net forest area is 25909 ha. The abstract of block wise area is given in table. 1, whereas a detailed statement showing areas of each compartment is given in Appendix -I & II

**Table:1(D) Block wise forest, agriculture and blank areas**

| **S.No.** | **Block** | **Forest (Ha)** | **Blank(Ha)** | **Agriculture (Ha)** |  **Gross Area(Ha)** |
| --- | --- | --- | --- | --- | --- |
| 1 | Bahrain | 1782.26 | 597.96 | 87.66 | 2467.88 |
| 2 | Balakot | 2993.55 | 965.35 | 251.59 | 4210.49 |
| 3 | Beshigram | 3710.82 | 1060.91 | 390.60 | 5162.33 |
| 4 | Chell | 1676.99 | 648.69 | 380.16 | 2705.84 |
| 5 | Daral | 3350.46 | 1563.23 | 33.44 | 4947.13 |
| 6 | Gornai | 1833.26 | 1308.54 | 135.16 | 3276.96 |
| 7 | Mankial | 2508.90 | 1094.89 | 255.52 | 3859.31 |
| 8 | Pia | 687.17 | 409.56 | 203.37 | 1300.10 |
| 9 | Ramet | 3101.30 | 1752.13 | 163.55 | 5016.98 |
| 10 | Tirat | 2067.68 | 658.80 | 66.53 | 2793.01 |
| 11 | Torwal | **2196.59** | **810.13** | **111.31** | **3118.03** |
|   | **G.TOTAL** | **25908.97** | **10870.19** | **2078.89** | **38858.05** |

* 1. **STATE OF BOUNDARIES**

Regular land settlement in the area has been carried out in 1983 but so far the forests have not been delineated through masonry boundary pillars. The external boundaries of the compartments have been fixed along the permanent physical features like nullahs and ridges. The people have cleared some of the forest areas for cultivation; it is a difficult task to stop the people from encroachment upon forest area in the absence of permanent boundary pillars.

* 1. **SOCIAL AND LEGAL FEATURES**
		1. **Legal Status**

Before merger of Swat State in 1969 the legal situation of forests in the State was as follows:

1. Forests belonged to the State, 10% of sale proceeds from commercial timber sales were distributed among the land owners of the villages where the forests were situated.
2. Inhabitants of villages adjoining forests were entitled to use timber for their constructional needs free of charge on application to the local Tehsildar. But Deodar trees could only be granted by the Wale-e-Swat himself.
3. Timber needs of the people living away from the forests were met by awarding special contracts for supply of timber at concessional rates.
4. Breaking up new land for cultivation in forests areas was prohibited.
5. Local people could collect, free of charge, dry wood and fallen trees from the forests as firewood.
6. Export of timber and firewood from the state was not allowed but could be sold by individuals on a small scale locally.
7. Land owner could graze their livestock in the adjoining forests free of charge.

In September, 1972 the government of Khyber Pakhtunkhwa declared all forests situated in the former state of Swat as the property of government subject to payment of 15% of their income as royalty to the local right holders vide Notification No.10/16-SOTA-II/72/1521 Dated September 15, 1972.

In May, 1974 vide its Notification No. Legis.(9)/70 of May 20, 1974 the government of Khyber Pakhtunkhwa extended the forest act 1927 to the provincially administered tribal areas of Dir, Chitral, Swat and Kalam.

On December 20 1975 the government of Khyber Pakhtunkhwa applies the provisions of Chapter-IV of the Forest Act 1927 to all forest lands in Chitral, Dir, Swat and Kalam declaring them as protected forests vide Notification No. SOFT (FAD)V-168/71(i) December 20, 1975.

The governments of Khyber Pakhtunkhwa in exercise of powers conferred on it by section 30 of the Forest Act 1927 vide agriculture department notification No. SOFT (FAD) V-168/71(ii) dated 22.12.1975:

1. Declared all trees within protected forests as reserved.
2. Prohibited the removal of any forest produce and breaking up or clearing of land in any such forests

On December 24, 1975 government of Khyber Pakhtunkhwa issued the following rules for the management of such forests:.

1. No tree shall be removed from the forests except with the written permission of the Conservator of Forest Malakand or the Divisional Forest Officer.
2. Trees may be granted annually free of charge to the right holders and other local inhabitants entitled to this privilege for meeting their domestic needs. In Bahrain Tehsil the number of trees to be given annually as central and local quota is shown in Table.2.
3. Detail procedure for marking of trees as grants is given in Annexure-V

**Table: 1(E) Central and local quota in Bahrain Tehsil**

|  |  |  |
| --- | --- | --- |
| **Tract** | **No. of trees** | **Total** |
| **Central quota** | **Local quota** |
| Bahrain | 40 | 360 | 400 |
| Madyan | 30 | 270 | 300 |
| Total | 70 | 630 | 700 |

* 1. **RIGHTS AND CONCESSIONS**

The privileges and rights enjoyed by the locale at present are wholesome and are enumerated below;

1. Grazing of cattle is permitted free of charge.
2. No restriction on grass cutting and lopping.
3. Fuel wood is collected free but no green tree is to be cut.
4. Trees are granted for construction of houses according to the requirements subject to a maximum of 700 trees for the whole of Bahrain Tehsil.
5. Out of the sale proceeds 60% is paid to the villagers having ownership in the villages adjoining to the forests.

Government being the lawful owner of the Forests is competent to regularize faulty practices in order to ensure that these do not lead to the extinction of the renewable natural resources.

In the absence of land settlement of the area, Riwaj-Nama was maintained by Swat State which provided record of rights and concessions of the local people. This was later on modified by Government of KPK through notification NO. SOFT (FAD)V-168/71 (iii) dated 24.12.1975. According to which 85 percent of the sale proceeds were credited to Government and 15 percent were distributed among the locals. After the bloody clashes between Pak. Army and locals in Dir District during 1976 the then Prime Minister Mr. Zulfiqar Ali Bhutto announced liberal concessions to local concessionists. As a result of which the locals of Swat also benefited. Government of KPK issued a notification No. SOFT) FAD)V-405/77 dated 14.3.1977 wherein a share of 60% to locals and 40% to Government was admitted. Furthermore, the local right-holders were entitled to free use of timber for construction of their houses, free grazing and collection of dry/fallen trees and firewood.

* 1. **WILDLIFE ACT, 1975**

Khyber Pakhtunkhwa Wildlife (protection, preservation and management) Act 1975 does extend in the area, yet in actual practice locals have all the liberty to kill as many animals and birds as they can afford to do. The area falls under the administrative jurisdiction of Wildlife Division Swat with headquarter at Mingora. In spite of the fact that Wildlife has acquired the level of separate department through administrative intensification since long but every efforts should be made to protect, preserve and manage the Wildlife of the valley which actually is the most precious resource of the area, not less than the forest wealth, but is yet to be made use of as a sustainable marketable resources.

* 1. **FISHERIES ORDINANCE**

The West Pakistan Fisheries Ordinance, 1961 and the KPK Fisheries Rules 1976 have not yet been implemented in the area and as a result there is no control over fishing. Dynamites are put in the river for catching fish which is very destructive way of fishing rather an abuse of the resource. Fisheries and Forest Department with the help of district administration must provide protection to Fish against such ruthless destruction. River Swat is very suitable for Trout Fish Farming; therefore, initiatives and drives be triggered through Participatory Integrated Natural Resource Management framework for the development of Fish resources , as soon as , possible. This on the one hand will utilize the potential of the water through Aqua culture and on the other contribute to the socio-economic wellbeing of the people dwelling in the valleys as a livelihood support opportunity and high valued addition in the food basket.

**CHAPTER-2**

**SOCIO-ECONOMIC PROFILE**

1. **History and Population**

According to the population census of 1998, Bahrain Tehsil has a population of 87521 persons. As no population census has been carried out in sixteen years. The population is projected to have reached approximately 130000 persons on the basis of 3% growth rate per year.

**Table; 2(A) BAHRAIN TEHSIL PROFILE**

|  |  |
| --- | --- |
| Area | 1105 Sq. Kms. |
| Population – 1998 | 87521 persons |
| Male | 44428 (51 %) |
| Female | 43093(49 %) |
| Projected Population-2014 | 130000 persons |
| Sex Ratio (males per 100 females) | 124.4 |
| Population Density | 63.1 per Sq. Km |
| Average Household Size | 7.97 |
| Literacy Ratio | 20.72 % |
| Total Housing Units | 9688 |
| Pacca Housing Units | 8007 (82.6 %) |
| Housing Units having Electricity | 5443 (6.22 %) |
| Housing Units having Piped Water | 1139(1.3 %) |
| Administrative Units |
| Tehsils | 01 |
| Union Councils | 04 |
| Mauzas | 6 |
| Municipal Committees | - |
| Town Committee  | - |

 Source: Pakistan Bureau of Statistics**.**

**2.1** **PEOPLE**

The tract is inhabited by various clans of Kohistanis and Pathans. They are descendants of the ancient Indo-Aryan race. The Gorai tribe of Dir Kohistan is also of the same or allied stock. In early days Kohistanis were pushed into higher and inaccessible valleys by the Scythian tribes who invaded the area from time to time. The Kohistanis were lastly pushed by the Yousaf Zai Pathans who came from Ghazni via Kabul. The Madyan area and parts of lower Bahrain are inhabited by various clans of Yousaf Zai Pathans. They have occupied the better arable lands once owned by Kohistanis. The Kohistanis in turn subjugated the docile Gujars of the valley, who were already settled there when Kohistanis arrived.

Another major tribe in the area is Gujar. They are of two types those permanently settled and those migratory. They keep large herds of cattle and stay in alpine pastures during summer and migrate to lower areas of the valley during winter while the migratory Gujars move down to the plains of Pakistan in September, October. They always move about in search of better grazing grounds and pay a fee called Kalang to Maliks of local landowners for securing grazing rights in the alpine pastures. Both Kohistanis and Gujars are extremely poor and backward. Poverty, illiteracy, ill health, unemployment and malnutrition are some of the social maladies which they have inherited from their forefathers. The local language spoken over the entire area is Torwali (Kohistani) and Pashto. However, majority of the people can understand and speak Urdu. Some Torwali Maliks can also communicate in Urdu but they feel comfortable with Pashto. Amongst themselves the Gujars speak their typical Gaujri Language, which resembles Punjabi.

Women in Swat Kohistan are very badly treated. They are considered an acquired property of low value and are completely dominated by men. Mostly they are working

The people of Bahrain are divided into the following clans which have been given in the order of their number, probably might also. The percentage figures are approximate and have been collected through personal efforts from interviews with locals and, therefore, their absolute authenticity is not claimed

**2.2 Tribes**

According to KIDP report, Bahrain at a Glance (1988), the people in Bahrain Tehsil belong to different tribes, the main tribes are:

Torwali speaking: Torwalis

Pakhtu speaking: Akhund Khel, Syeds, Mulla Khel and Katanis

Gujari speaking: Gujars

Kohistani speaking: Akar Khel

Others: Chitralis and Kashmiris

**2.2 Religious customs**

Swatis are almost 100% Sunni Muslims. They are very religious people that are why ‘Maulanas” are usually elected from the area for legislative Assemblies. Most of the Swati’s wear caps, keep beard and pray five times a day. Amazingly many locals can act as Paish Imams all over Bahrain and others valleys. In almost all mosques of major villages young kids are taught preliminary Islamic books by Paish Imams and young boys are sent outside their homes to Islamic institutions in Swat, Buner, Akora Khattak, Peshawar, Rawalpindi, Lahore and Karachi. Besides asking the Paish Imam of the local mauzha, Swatis specially invite Paish Imams of other mauzhs having large number of pupils to attend funerals of their relatives because it is considered being auspicious. The dead bodies are usually buried as soon as possible. Purdah is very strictly observed throughout the valley and cases of adultery coming to surface are severely penalized.

* 1. **Organizations Working in the Area**
		1. **Khyber Pakhtunkhwa Forest Department**

Khyber Pakhtunkhwa Forest Department is the principal agency working in the area on the management of renewable resources. The plan area falls in the legal & administrative jurisdiction of Bahrain North and Bahrain South Forest Sub Divisions of Kalam Forest Division. The Sub Divisional Forest Officer Bahrain North is supported by four (4) Foresters and eight (8) Forest Guards in discharging day-to-day functions of protection and management of forests with Office located at Bahrain. Whereas The Sub Divisional Forest Officer Bahrain South is supported by six (6) Foresters and fourteen (14) Forest Guards in discharging day-to-day functions of protection and management of forests with Office located at Madyan.

* + 1. **Wildlife Department**

These Forests are rich in mammalian and avian Wildlife species, of which the following species are worth mention:

Snow leopard, Markhor and Leopard; Monal, Koklas and Tragopan Pheasants, Himalayan snow cook and snow partridge. The Wildlife of the area is ruthlessly destroyed by the locals since times. Pheasants are shot or trapped for their beautiful skins.

The whole Plan area falls in the management jurisdiction of Divisional Forest Officer, Swat stationed at Mingora. Khyber Pakhtunkhwa Wildlife (protection, preservation and management) Act 1975 does extend in the area, yet in actual practice locals have all the liberty to kill as many animals and birds as they can afford to do. This practice must be checked through implementation of Wildlife Act 1975 in true spirit, and giving incentives to locals. It is a well-established fact that underdeveloped and deprived areas throughout the country, province and region must now be placed at top priority for special development programs. The Development of Wildlife resources available in the area and commercializing these for the livelihood support through organized communities in the need of time. This can better be achieved through Village Plans based on “Participatory Integrated Natural Resource Management” framework.

* + 1. **Agriculture Department**

Agriculture Department is represented by Executive District Officer, Swat stationed at Mingora. Day-to-day affairs are looked after by his office related to agriculture sector.

* + 1. **Fisheries Department**

Khyber Pakhtunkhwa is a province so rich in natural resources and its Northern part is extremely rich for the harvest of natural resources opportunities and potentials but the trauma being not only the holistic mental backwardness of the dwellers of the area but also the sleepy existence of the state departments in the district.

Available fish Species in the plan area;

* Trout Fish
* Swati (Local Fish)

There is a complete district level set up of Fisheries Department headed by a District Officer and support team in different cadres stationed at Mingora. Presently there is private trout hatchery in Bahrain. Local varieties of fish are found in the valley but these are subjected to uncontrolled fishing usually through netting and blasting. The Fisheries Department has absolutely no control over the illegal fishing in the area. There is a dire need to rejuvenate the Fisheries Department set up and strengthen it to work towards “Community Fisheries” enabling the local dwellers to harvest the aquatic opportunity potential for livelihood support .This activity can result in revolutionary output by establishing the “Community Trout Culture Micro-enterprises” at village level as a part of Village Plans.

* + 1. **Livestock and Dairy Development Department**

This Department is represented by District Livestock Officer, Swat. There are a total of 27 No. of Civil Veterinary Hospitals/Dispensaries in the whole of Swat District, but the staff is not motivated due to lack of funds and facilities.

* + 1. **Local Government**

Local Government system was previously in vogue in the area. The activities carried out are related to development of infrastructure like construction of irrigation channels, foot paths, protection bands, bridges, water supply schemes, rope trolleys and construction of water storage tanks. Currently the local government has been dissolved and administrators appointed to look after the local government affairs.

* 1. **Education, health and communication facilities**

Although there are an adequate number of primary, middle, high and Maktab schools in the valley, some are not operative. The monitoring system prevailing in the provincial education department with special reference to Upper Swat is very poor hence the attendance of teachers, students, conducive learning environment and good condition of school buildings can hardly be ensured. A low literacy rate (<21%) is an indicator of such negligence which demands priority concern of the authorities at top decision level. Almost similar situation prevails in case of health facilities. Out of five Basic Health Units across the entire area, hardly a single is functional. There is not a single male or female doctor available to attend the patients. The nearest hospital is at Khawaza Khela and Saidu Sharif.

* 1. **Local institution**

The institution of traditional Jirga is still existing and major issues are decided by the Jirga but it is considered to be less effective as compared to the jirga in Kalam, the reason being the people are divided on ethnic and tribe basis and so are their interests conflicting. The society in Bahrain Tehsil is less rigid and the literacy rate is relatively higher than Kalam. Collective farming (Ashar) and exchange of labour is common. All these factors have contributed in the initiation of collective development. Many non-government organizations are coming up in the area the examples are, Youth Organization, Forest Protection Committee and Zakat Foundation (Bahrain at a Glance, 1988).

* 1. **Economic conditions**

The main sources of income of the people are outside labour, agriculture, livestock, forest royalty, part and full time local employment and various crafts. Outside labour is considered as the major source of income because more than 60% of the working class go outside the area for various types of works, like coal extraction in Quetta, sawing in Indus Kohistan and so many other jobs in the big cities of the country and even in the Middle East (Bahrain at a Glance, 1988). Agriculture is the second biggest source of income. The farmers have switched over to raise various vegetables like turnip, tomato and potato which have improved their income. Forest royalty is another important source of income but the sale of forest royalty to outside contractors deprives them of their due benefits. The tourism industry is also flourishing in the area which provides part and full time jobs apart from providing business opportunity to the local people.

* 1. **Agriculture**

Arab land is more or less steep and in the form of small terraces. It is moderately fertile and capable of producing many crops. The fertility of the land differs from place to place. The land holdings are generally small and majority of the population comprises of small and holders. In the north of Bahrain Tehsil the number of landless people and big land holders is lower while it seems to increase in the south.

* + 1. **Crops**

In the northern part of Bahrain Tehsil single crop is produced while in the southern part double crops are produced annually. The single cropped area includes the villages of Arianai, Peshmal, Laikot, Mankial, Balakot, Gurnai and upper villages of Daral valley. The main crops in this area are potato, maize, tomato and some vegetables such as sumchal, pumpkins and beans. The double cropped area includes Gham gari, Torwal, Darolai, Bahrain proper, Statal Gari, Ayeen, Shagram, tirat, Madyan, Chel and Beshigram. The summer crops in these villages are maize, tomato, potato and rice while the winter crops are wheat, onion, peas, turnips, radish, barseen and barley.

Cropping practices and agricultural implements are primitive and knowledge of improved crop production is very poor. There is a lack of seed of improved varieties and other planting materials. Vegetables and pulses are grown on very small scale and fruit trees are hardly cultivated despite considerable potential. Agricultural support services are almost non-existent and poor access and rugged terrain makes the import of agricultural inputs costly and difficult. There are no formal rural credit systems, and informal systems are generally exploitative.

* + 1. **Fruit Plants**

A variety of fruits are produced at different places in Bahrain Tehsil. The main fruit plants found in the area are apple, walnut, Amlook (Persimmon), apricot, plums, pears, peaches and grapes. Many of the fruit plants like walnut, Amlook (Persimmon), pears, and grapes grow naturally along the streams even inside the forests. There is a general trend among the farmers to plant fruit trees on the hill slopes adjoining the agriculture fields and also in the courtyard of their houses.

* 1. **Food situation**

The total arable land in Bahrain Tehsil is 5500 ha which 5% of the total area is. This shows that the land available for agriculture is very small which is not sufficient to produce enough food within the area. The main crops are maize, potato and some vegetables. The average yield is 1224 KG per hectare for maize and 11.4 tons per hectare for all kinds of vegetables (Agriculture statistics report 1990-91). The local food supply does not meet the demand of 89680 populations living in Bahrain Tehsil therefore the required food is imported from other areas. This indicates that Bahrain Tehsil is a food deficit area.

* 1. **Livestock and fodder**

There is no reliable data available regarding the population of livestock in Bahrain Tehsil. The people keep herds of domestic animals, like cows, goats, sheep, buffalos, donkeys, and chickens etc. for their domestic use and in few cases for commercial purposes. Cows and goats are in majority in the upper parts of Bahrain Tehsil and side valleys while buffalos are more in the lower parts, especially Tirat and Madyan. Mankiali bulls are famous all over Swat valley. There is no proper facility available in the area for any preventive measures and treatment of animals.

* + 1. **Livestock marketing**

There has been no adequate marketing system for livestock. Animals are sold in the area when cash is needed on urgent basis. Normally the animals are in their best health after grazing in alpine pastures but due to absence of proper marketing system at Bahrain and Madyan, surplus and old animals are sold in downside areas during winter months. However, in the process of walking long distances in down-country areas, the animals loose fat, become weak and do not fetch good prices.

* + 1. **Fodder**

In the south of Bahrain Tehsil people mostly rent their high altitude pastures to Gujar nomads while people in the north go with their herds of cattle and a part of their family to their respective pasture during summer for 3-4 months. Generally fodder crops are not grown in the fields but grazing lands close to the villages and even forests near the population are used for grazing animals. In the valley bottom fodder is insufficient due to small land holdings, lack of irrigation and technical know-how.

* 1. **Forestry**

Forests are of vital importance for subsistence of the local economy. People meet their day-to-day requirements from forests in respect of timber, firewood, fodder, grazing, grass, medicinal plants, wild vegetables, mushrooms, honey, fruits etc. Most important is the function of forests in maintaining the ecosystem which supports and sustains the other means of livelihood such as agriculture and livestock rearing.

The common forest produce sold out from Bahrain and Madyan valleys are timber, firewood, medicinal plants, mushrooms and honey. Oak firewood, though on small scale, is also cut for sale in lower areas. Timber harvesting is done under the control of Forest Development Corporation while the NTFPs are collected by local people without any restriction and are either used inside the valley or are sold to private dealers at Bahrain and Mingora.

The population depends largely on Forests for grass, grazing fodder and timber. There are no restrictions on grass cutting, grazing and lopping for fodder. The people can collect or cut dry trees and branches for firewood. They can even lop or cut green trees for fuel wood, agricultural implements and constructional purposes without the permission of local authorities if they reside at least 1.6 Km (1Mile) inside the valley from Main Kalam road. Hundred percent of the people use fuel wood for cooking and heating. About 15% of the households use kerosene for light and the rest use other sources. The demand on timber for constructional purposes is high because each household uses large quantities of timber. The demand of timber for agricultural purposes is not large and is met from the broadleaf trees. The sheep and goats are fed entirely on Oak leaves and hay except during summer months when the herds are taken to pastures in alpine zone.

Forestry is one of the main source of income, besides royalty, the people get a lot of other benefits like timber for house construction, firewood, fodder, edible plants and mushrooms, fruits and nuts, medicinal plants, and forest manure.

* 1. **Rights and ownership**

Regular land settlement in Bahrain Tehsil was carried out in 1983 under which the ownership of the forests rests with the KP government; however, the local inhabitants/tribes are entitled to 60% shares from the income of forests. The local people enjoy the rights of timber and fire wood for their needs, rights of grazing, collection of fodder, quarrying of stones and right of way, according to Bahrain at a Glance (1988).

The forests and pastures lying in the jurisdiction of Arianai, Badai/Serai, Mankial, Ramet, Gurnai, Darolai, Ayeen, Shagram, Tirat, Chel, and Beshigram villages are used by their respective inhabitants/tribes.

The forests, pastures and waste lands lying in the following areas are said to be common for use among the four tribes (Narit, Keyot, Butt and Braset) of torwali origin.

From the boundary of Kalam at Qaranduki to Asrait valley. This area is disputed between the Gujars of Peshmal/Laikot and Torwalis of Bahrain.

 From the boundary of Shagram at Maskkon Gul to the boundary of Torwal near Lambat.

The forests, pastures and waste lands lying in the jurisdiction of the following villages are used by their respective inhabitants/tribes.

- Torwal: Torwalis (Narit)

- Kedam: Kedamis Keyot (Dre-Khel) Khan Khel (Narit)

- Cham/Gari: But (Dre-Khel)

- Balakot: Baset (Dre-Khel)

* 1. **Royalty**

There are two systems of distribution of forest royalty and rent of pastures in the area (Bahrain at a Glance, 1988):

The villages of Satal, Gari, Ayen, Darolai, Ramet, Mankial and Badai distribute it by household (Smoke). A household means any smaller unit of a family consisting of husband, wife and children living together.

The villages of Tirat, Shagram, Punjigram, Chel, Beshigram, Zore Kalay, Bahrain proper, Gurnai, Towal, Kedam and Balakot distribute the royalty by “Dautar”, the unit of which is a “Rupee” or a share.

* 1. **Infrastructure:**
		1. **Roads and bridges**

Bahrain Tehsil is accessible through Saidu-Kalam highway which runs from south to north along the Swat River. The widening and metalling of the road between Bahrain and Kalam was started long ago and is still going on. This section of the road is frequently damaged during winter and monsoon season. From Madyan upward the road goes on the western side of the river while from Madyan downward it goes on the eastern side of the river. The side valleys are linked with small roads, paths and bridges over the river. The Chell/Beshigram link road is used for general traffic while other link roads are used by jeeps and other small vehicles for timber extraction etc.

* 1. **Education**

Generally the people in big villages like Madyan, Tirat, Shagram, Bahrain and Chell are more educated than the rest of the area. The ratio of girls education is quite lower than boys. In Bahrain Tehsil there are one higher secondary, seven high schools, eight middle schools and Sixty one primary schools for boys while for girls there is only one high, one middle school and about thirty nine primary schools at different villages in public sector.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Union Council** | **Primary** | **Middle** | **High** | **Higher Secondary** |
| ***Male*** | ***Female*** | ***Male*** | ***Female*** | ***Male*** | ***Female*** | ***Male*** | ***Female*** |
| Bahrain | 22 | 17 | 1 | 1 | 1 | 1 | \_ | \_ |
| Balakot | 18 | 6 | 2 | \_ | 3 | \_ | \_ | \_ |
| Beshigram | 8 | 6 | 2 | \_ | 1 | \_ | \_ | \_ |
| Mankial | 13 | 10 | 3 | \_ | 2 | \_ | 1 | \_ |

While in private sector, following are the school and colleges at different locations.

|  |
| --- |
| **Private Schools in Bahrain Tehsil** |
| ***Name*** | ***Address*** | ***Years of establishment*** | ***Level*** |
| Bahrain Public School & College | Bahrain | 1992 | Intermediate |
| Mustafa Model School & College | Bahrain | 1998 | Intermediate |
| Baraniyal Academy | Bahrain | 1996 | Intermediate |
| Swat Standard School | Bahrain | 2002 | Middle |
| Mhoon School | Bahrain | 2008 | Primary |
| Mhoon School | Kaidam | 2012 | Pre-primary |
| Mhoon School | Chell | 2013 | Pre-primary |
| Bright Future | Satal | \_ | High |
| Hira School | Peshmal | \_ | Middle |

* 1. **Health**

There is one hospital at Madyan and three basic health units at Laikot, Bahrain and Tirat. At Bahrain one maternity centre and at Cham/Ghari one dispensary are in operation. Two mobile vaccination teams for children and one mobile malaria eradication team are also working in the area.

**Heath Facilities in Bahrain Tehsil**

* BHU Bahrain 1 UC Bahrain
* BHU Laikot UC Balakot
* Dispensary 1 Cham Ghari UC Balakot
* Dispensary 1 Badai UC Balakot
* BHU 1 old Chail UC Beshigram
	1. **Irrigation system**

The irrigation system is traditional; farmers have constructed irrigation channels themselves. The source of irrigation water is spring and river water.

* 1. **Electricity**

The lowers parts of Bahrain Tehsil such as Tirat, Shagram, Chell, Madyan, Bahrain and the area up to Kaidam is connected with the regular power supply. In the upper part of Bahrain Tehsil a few villages like Peshmal and Aryanai are provided electricity from the local power station at Qarandukai.

* 1. **Skill resources**

Among the men folk masonry, carpentry, driving, motor mechanic and blacksmith etc. are the common professions besides farming. In some villages, Kashmiri and Katani tribes have specialized in crafts such as wool works, for examples, weaving, knitting, and blanket making, or wood carving, carpentry and gun making. The woman folk know a lot about traditional embroidery, knitting, sewing, local baskets, mud utensils, and traditional kitchen gardening.

* 1. **Supply/Demand situation of renewable natural resource**
		1. **Sources and use of timber**

The chief marketable produce is sawn timber. The demand of timber is quite high both at local level and outside the valley. The local people get timber free of charge for meeting their constructional requirements. Quite a high quantity of timber is locally consumed as usually second story structure of wooden planks is constructed on the houses for use as godown of firewood and hay. Since the timber in construction is used in a very crude manner, therefore more than fifty percent of the precious timber is wasted.

There is no proper local market except a limited quantity of deodar, which is demanded in Bahrain-Madyan town. The main timber markets are Dargai and Chakdara as the timber demand is very high in the down districts of the country. A quick and safe mean of timber extraction is the land route. The timber is mostly extracted through “Pathroo” beyond terminating points of these roads and then through jeeps upto Kalam-Mingora Road from where the timber is dispatched to Dargai and Chakdara markets under a valid transport pass issued by the Divisional Forest Officer, Kalam.

* + 1. **Firewood**

The local people meet their demand for firewood from conifers and broadleaf trees. In the past, considerable quantity of firewood has been supplied to down areas from Oak forests of the tract and hence these are at present in degraded form and hardly suffice the requirements of district Swat.

* 1. **Medicinal Herbs and other NTFPs**

Among the NTFPs some medicinal plants Zira (Carum species), honey, edible mushroom and Walnut fruit are exported on a very low scale. Most of the medicinal herbs found in the area are either used locally in medicines or are eaten by cattle, sheep and goats of the locals and nomad Gujars. Since the area falls in dry temperate zone hence the ground flora is low in diversity and density. In spite of all natural and man induced traumas to the land there is vivid scope for persuasion, culture and commercial exploitation of high valued medicinal herbs and other available NTFPs through organized communities following the innovative concept of Participatory Integrated Natural Resource Management and actualizing the Village Plans. This will support the livelihood at the household level and ultimately reduce the pressure on the tree crops.

* 1. **Existing Livelihoods**

The Valley is one of the under privileged areas of the Khyber Pakhtunkhwa. Poverty is widely prevalent in the area. The household economy is agro–pastoral and people rely mainly on income from livestock, farming and timber sales. Low literacy coupled with inaccessibility of the area has kept this region away from the facilities of modern age. Local communities practice a traditional transhumant system that involves mass migration of the local people along with their families, through seasonal camps, to and from alpine pastures. People derive multitude of products for their sustenance from natural forests such as timber, fuel wood, grass, vegetables, fruits, medicinal plants, torchwood and a number of Non Timber Forest Products (NTFPs). Small number of people derives income from services, business and labor.