Nuristân Natural Resource Assessment

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Map 1. Nuristân Province: Political and Physical.
1 Executive Summary

Pursuant to a grant funded by USAID through LGCD, IFHope conducted a natural resources assessment of Nuristan Province beginning in the fall of 2008. The natural resource bases of five of Nuristan’s eight districts were surveyed including Dôâb, Nurgrâm, Wâmâ, Wâygal and the Central District (Pârun and Kântiwâ). The surveyors collected information on both the supply of available natural resources as well as demand and usage information by resource users.

A proper assessment requires an evaluation of change in the condition of natural resources over time. Unfortunately, due to the dearth of reliable resource information, there was little to no baseline information to compare with. To address that, the survey included informant interviews which asked for subjective assessments of change over the past five years for each of the natural resource categories.

Furthermore, one of the objectives of this project was to collect baseline data, so that further natural resource assessments can be more informed with a basis of comparison. Some of this information appears as measurement data displayed in tables listed by resource sector in this document. The evaluation of the data demonstrates the nature of resource degradation and shows significant degradation of rangeland (pasture) and forest. A more detailed analysis is included under each resource section in Section 3.2 of this document.

The following natural resource sectors were evaluated: cropland, forest, pasture, livestock, water and mining. According to the findings of the Nuristân Natural Resource Assessment survey conducted in 30 of the province’s communities in five provincial districts, survey results showed that all sectors of the resource base are deteriorating in Nuristan Province because of persistent drought and increasing population pressure.

Drought was mentioned by survey respondents as a major problem affecting the natural resource base. Consequences of drought range from moderate to severe, depending on altitude and westerliness. Each climatic zone has been adversely affected in most communities surveyed. Current assessments and recent environmental trends elicited from surveyors and surveyed residents appear in Table 32 and Table 33; they indicate drought as the major problem.

Increasing population pressure was given by most survey respondents as the second reason why the resource base is damaged and diminishing. Increased population means increased livestock pressure on forests and rangelands, as well as increased pressure to clear forestland for agriculture. The overall population is suffering from this increasing pressure on a decreasing supply of pasture and cropland. Pastureland is being lost through erosion and cropland is being lost through erosion and flooding. Women in particular are suffering, through increasing distances they have to travel to collect wood and water.

Traditional Nuristân institutions of resource management worked well up to the onset of climatic warming and international hostilities in the 1970s. Since then lack of security and governance has allowed outsiders to plunder Nuristân’s resources by undermining the traditional institutions of governance and regulation.

The fact that most of the areas surveyed are suffering from moderate to severe natural resources is due to a cycle of degradation. Population pressure is leading to overharvest of trees for fuel, building materials, and fodder, resulting in loss of ground cover leading to erosion, loss of pasture, rapid snow melt, downstream flooding, and further loss of pasture and arable land. A problem in one area will lead to a cycle of problems in other areas of the natural resource system.

The Nuristân Natural Resource Assessment has resulted in the recommendation for the development of a series of Integrated Catchment Development Programs (ICDP). These programs would be based on district administrative boundaries since Nuristan’s district boundaries correspond to watershed catchment boundaries.

ICDPs would involve both a top-down approach with the Ministry of Agriculture, Irrigation, and Livestock (MAIL) taking the lead in developing a coordinated plan. Capacity building and technical support would be provided to assist with the development of a systematic plan that would be based on prioritized needs in a particular catchment, with consideration of the greatest risk to the overall
catchment, likelihood of success, sustainability, cost efficiency, and cost/benefit analysis, as well as stakeholder input.

The time-proven traditional resource management institution (called the *ura*, *under*, *malavié*, or *irin* in the Nuristânî languages) should have a central role at the village level. Working with the village elders and planning ministry responsible for an overall catchment plan, the *ura* should have a central role in implementing natural resource interventions at the village level. They would represent stakeholder interests to the planning process, as well as communicate overall catchment planning priorities to the villagers.

One overarching consideration is that NRM strategies should focus on livelihood enhancement where possible to incentivize the participants. Specific elements of an ICDP would include:

- **Fuelwood Production**: Establish woodlots on private land close to villages.
- **Pasture Management/Slope Stabilization**: Stabilize slopes with pasture regeneration program including perennial grasses and bushes/shrubs. Soil surface cover is more important than forest cover for protecting against soil erosion and can be accomplished more quickly and easily with grasses and shrubs than trees.
- **Forestry Management and Reforestation**: Develop long term reforestation program in conjunction with village institutions using adaptable native species. Control logging by promoting community regulatory institutions, by interdicting outsiders from exploiting Nuristân’s timber resources, and by reducing demand for firewood through more efficient cooking and heating technology.
- **Orchard development**: Incorporating lessons learned from previous orchard programs to establish adaptable fruit and nut orchards. Livelihoods will improve and there will be less pressure to harvest natural forest resources for sale.
- **Nursery establishment**: Establish private nurseries to produce fuelwood saplings, saplings for reforestation and adaptable fruit and nut saplings for livelihood enhancement.
- **Irrigation enhancement**: Implement irrigation enhancement programs to increase agricultural production, including water storage for livestock and small-scale irrigation, river bank protection using gabion weave or cement structures, culverts to reduce erosion, spring capture, stone check dams, and terracing programs. Improve irrigation efficiency by building intakes, installing hydraulic ram pumps and improving delivery systems.
- **Drinking water**: Develop piping systems for water delivery from local springs. This would benefit women and reduce the distance they need to travel to collect water and reduce the need to obtain water from closer but lower quality river sources.
- **Crop Production**: Provide training in basic scientific agriculture within the local ecosystem, focusing on improving crop yields through soil analysis, organic vs. commercial fertilizer usage, and pest and disease control.
- **Animal Husbandry**: Improve veterinary practices and services, including identifying and treating common livestock disease and sanitary practices. Establish veterinary clinics (a frequent request from the villages surveyed.)
- **Mining**: Provide training and assistance with locating gem and mineral deposits, evaluating gem deposits, operating mines, identifying and grading gemstones, and increasing mine production.
- **Education and Training**: Provide environmental and conservational educational curricula starting in elementary school, and provide education to manage the development of resource commodities.

To ensure sustainability, an evaluative process should be implemented for all interventions that would strive for continuous improvement by looking beyond accomplishing project objectives. Five parameters would be considered including effectiveness, impact, efficiency, sustainability and relevance. Sub-projects should be implemented that focus on results and impact on stakeholders and the natural resource environment, rather than just on project deliverables.
2 Introduction
This report, henceforth the Nuristan Natural Resource Assessment (NNRA), summarizes the results of a natural resource assessment of Nuristan Province, pursuant to USAID/DAI RFP No. RFP-JLB-NINF-001, Nuristan Natural Resource Assessment

2.1 Purpose and Scope of the Nuristan Natural Resource Assessment
This report addresses the knowledge gap in the Nuristan PRT’s understanding of the resource situation in Nuristan, as requested in the above-mentioned RFP:

Nuristan province has historically been a region with an economy closely tied to natural resources, in particular its forest and timber trade, animal husbandry, selling dairy products, working in jewelry mines, wood engraving & handcrafts. The lack of reliable natural resources baseline data limits effective watershed and reforestation planning efforts and subsequent development. After an initial review of available information by the PRT, a Natural Resources Assessment has been requested by the PRT.

In past Nuristan is an underserved province with little donor activity. The purpose of this assessment is to inform the development strategy of the Nuristan PRT…. (RFP, p. 3)

The NNRA integrates previous research with the results of a five-district survey of natural resources and their usage that was conducted as part of this assessment. Recommendations arising out of the data of the NNRA are proposed in this report’s conclusion.

2.2 Background: An Overview of Nuristan
Nuristan lies on the southern slopes of the Hindu-Kush mountains in northeastern Afghanistan, encompassing the watersheds of the upper Alingar (Laghman) River in western Nuristan, the upper Pech River in central Nuristan, and the Landai Sin and Kunar Rivers in eastern Nuristan. It is the homeland of an ethnically unique group of tribal peoples, called Nuristanis, who fled and resisted Islam as it spread eastward. In 1895-96 the Nuristanis were subjugated by the Afghan ruler Abdur Rahman Khan, and the people were obliged to abandon their ancient religious beliefs in favor of Islam.

Nuristanis comprise some fifteen ethnic groups speaking five separate languages. Pashto and Farsi are spoken among much of the adult male population as second languages.

In addition to the Nuristanis, smaller populations of Pashai, Afghani, and Gujar peoples are included in Nuristan Province’s western districts of Nurgram and Dobb. These populations are ethnically and linguistically distinct from the “true” Nuristani population.

Nuristan Province comprises approximately 130 communities, ranging in size from 200 – 3000 inhabitants. No reliable census of the region exists; estimates of population range between one and two hundred thousand, with 125,700 as the Central Statistics Office’s 2005 estimate.

Nuristan manage their internal affairs through traditions of classic community-level democracy. Decisions affecting the community as a whole are made in open community councils, with the guidance of community elders. Within a community decisions and rules affecting resource management are enforced by an annually elected body of men, who are empowered to levy fines against transgressors. Disputes are always settled through mediation and the payment of just compensation. Infrastructure is maintained through traditionally organized work groups that encompass the entire adult male population. However, in the aftermath of the Soviet-Afghan war these traditional institutions of governance have been increasingly disrupted by jihadist activists.

The languages, cultures, and national characters of the Nuristanis differ markedly from those of the surrounding Afghans and Tajiks. These differences, along with the Nuristanis’ relatively late acceptance of Islam, characterize them as “wild men” (vahshi) in the view of Afghanistan’s majority populations, with the result that Nuristan has remained a backwater of development within the country.
2.3 Previous Research on Resources and Resource Management in Nuristân

Because of its ethnographic and strategic interest, Nuristân was the subject of several European scientific and reconnaissance expeditions from the late 1800’s to the mid 20th century, as reported by Robertson (1896), Vavilov & Bukinich (1929), Scheibe (1937), and Køie and Rechinger (1954-1963). More recently, individual scholars have added to the knowledge of society and resources in Nuristân, including Humlum (1959), Fischer (1970), A. Y. Nuristân (1973), Strand (1975), Petocz and Larsson (1977), Edelberg and Jones (1979), Katz (1981), Strand (1997-present), Favre and Kamal (2004), Larsson (2006), Strand (2008). The environmental assessment of Afghanistan published by the UNEP (2003) covers Nuristân in certain details.

Transcription of native terms herein follows Strand (2007).

2.4 Historical Trends of Resource Management in Nuristân

Until the onset of the Soviet-Afghan War in 1978 Nuristânis famously managed their pasture- and forestlands in a traditional way that minimized environmental degradation and maintained Nuristân’s forests. The effectiveness of the Nuristânis’ longstanding management practices is still visible in the contrast between the forested lands of the Nuristânis versus the denuded, degraded environment of neighboring lands managed by Afghâns.

Under the traditional system Nuristânî villagers annually elected a body of “resource-policemen” (called ura, uri, iri:n, or malavîne in the various Nuristânî languages) to control horticultural harvesting and the transhumant cycle of livestock migration. These men had the power to fine villagers for transgressions against the environment, notably prohibitions to keep livestock away from agricultural growing-areas and to keep people from picking unripe tree products. Regulation of the yearly herding and picking schedules tended to minimize damage to the forests, as goats were funneled quickly through vulnerable woodlands to their summer residence in the mountain pastures. Pasturelands were used in well-scheduled rotation to minimize overgrazing.

Continuing degeneration of traditional Nuristânî institutions of resource management in the 100 years since the Afgâns conquered Nuristân has resulted in accelerating depletion of forestland and mountain pastureland, with consequential flooding and erosion of scarce farmland. Since the Soviet-Afghan war elections for the “resource-policel” have disappeared as communities have come under the control of commander- or cleric-dominated shonas.

Since the mid 1960’s motorable roads have slowly penetrated Nuristân to allow commercial trade in timber and walnuts. In road-serviced areas revenues from timber cutting have transformed local economies from full subsistence to incipient consumerism. However, affected communities lacked institutional experience to deal with the large-scale operations of external timber merchants, and from the early 1990’s until the Karzai government imposed a moratorium in 2003, many valleys were overlogged or even clear-cut. After feeling the effects of increased flooding and erosion caused by loss of forest cover, some Nuristânî communities have evolved institutional ways to regulate logging, as well as to distribute timber revenues. Local management of Nuristân’s commercially-exploited resources remains an evolving issue.
3 Resources and Resource Consumption in Nuristân

This section integrates the results of the NNRA survey with previous research to portray an overall assessment of resources in Nuristân. The portrayal recognizes three systemically interacting levels of "terrain," which encompass and impact the overall resource base; they are:

- the governmental terrain,
- the resource terrain, and
- the human terrain.

Where possible, native-language inventories of resource and social categories are given to help align the outsider’s perspective with the local conceptualization of the environment. Native terminology is best documented for the Kâmši dialect of Kâmši-vari (see below; Table 16); terminology in other languages is less documented.

3.1 The Governmental Terrain

The government (hukumāt) maintains administration and control through a hierarchy of ministerial outposts located in each provincial district. As Nuristân is a recently formed province, its administrative boundaries have undergone adjustments since 2001 and are still in flux. An overview of the administrative districts of Nuristân Province appears in Table 1; their locations appear on Map 1. Until now there has been minimal governmental influence on resource management.

<table>
<thead>
<tr>
<th>Current District Name</th>
<th>Former District Name</th>
<th>Watershed</th>
<th>Population (2005 CSO est.)</th>
<th>Center</th>
<th>Ethnic Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Center)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wâmâ</td>
<td></td>
<td>Pech</td>
<td>11,700</td>
<td>PaShki</td>
<td>Vâsî, Kâta</td>
</tr>
<tr>
<td>Wâygâl</td>
<td></td>
<td></td>
<td>9,600</td>
<td>Wâmâ</td>
<td>Kâta, saNu, Kalasha, Pashaî</td>
</tr>
<tr>
<td>Šâmâshâk</td>
<td></td>
<td></td>
<td>17,000</td>
<td>Wânt</td>
<td>Kalasha: Vai, Chima-Nishei; Tregâmi</td>
</tr>
<tr>
<td>Kâmâstî</td>
<td></td>
<td></td>
<td>21,900</td>
<td>Kâmâshâk Woluswâlî</td>
<td>Kom, Mumo, Kâta, Kšto, Binio, Jâmcho, Jâsha</td>
</tr>
<tr>
<td>Nîrîstân</td>
<td></td>
<td></td>
<td>13,400</td>
<td>Bargimâtal</td>
<td>Kâta</td>
</tr>
<tr>
<td>Döâb</td>
<td></td>
<td></td>
<td>28,100</td>
<td>Nûrgârm</td>
<td>ÂShkun-saNu, Pashâi, Pakhtun</td>
</tr>
<tr>
<td>Mandol</td>
<td></td>
<td>Alingâr</td>
<td>6,800</td>
<td>Döâb</td>
<td>Kâta, ÂShkun-saNu, Pashâi</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17,200</td>
<td>Mandol</td>
<td>Kâta, Pashaî</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>125,700</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Provincial Districts of Nuristân (after Strand 2008).

Since the Nuristânîs were conquered by the Afghâns in 1895-6, they have mostly seen the national government as a nuisance to be tolerated. Although their tribal boundaries and tribal autonomy have been formally recognized by earlier regimes, Nuristânîs have never recognized national-governmental ownership of forest and mineral resources on their lands.

Since 2002 NGOs, international donors, regional PRTs, and CERP funds have had an accelerating impact on the local economy, with developing dependency. The survey shows that many households have benefitted from developmental programs within the past five years. There was explicit appreciation of recent NSP projects, but strong criticism of a recent DAI/ADP/E horticulture project. The impact of the recently formed Nuristân Conservation Corps has yet to be measured.

The NNRA survey questioned householders on whether they were recently affected by calamities and whether they had recently received some kind of outside mitigating assistance (including community projects). The survey findings are summarized in Table 2.

Governmental institutions for disaster relief, particularly from floods, are undeveloped.

In much of the province, particularly the three unsurveyed districts of Mandol, Bargimatal, and Kâmâshâk, the anti-government insurgency precludes assistance projects. Until security returns to Nuristân, developmental intervention is minimized and impact is negligible.
### Table 2. Incidence of Calamities and Acts of Outside Assistance in Surveyed Households.

<table>
<thead>
<tr>
<th>Source of assistance received by family in last 5 years (% of households)</th>
<th>GoA Governmental bodies</th>
<th>NGOs</th>
<th>International organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drought n. years</td>
<td>20%</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>Flood n. years</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Pest/Disease n. years</td>
<td>40%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Civil unrest n. years</td>
<td>50%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Average</td>
<td>95%</td>
<td>75%</td>
<td>95%</td>
</tr>
</tbody>
</table>

3.2 The Resource Terrain

The resource terrain encompasses the hydrosphere, divided among three watersheds, the biosphere, divided among six major climate zones, and the geosphere, encompassing gem and mineral deposits.

#### 3.2.1 Watersheds

Nuristán covers the upper reaches of Afghanistan’s eastern Hindu-Kush watershed, which ranges in altitude from about 1000–6000 m. This watershed region drains the snowpack, glacial, and rainfall runoff from the southern slopes of the Hindu-Kush range into the Kābul River via the Laghmān and Kunar rivers. Nuristán straddles three south-flowing basin systems: the Alingar basin in western Nuristán, the Pech basin in central Nuristán, and the LanDay Sin basin in eastern Nuristán. The Alingar flows into the Laghmān River; the Pech and LanDay Sin flow into the Kunar River. Watershed data are summarized in Favre and Kamal (2004:192-194).
Watersheds are drained by a hierarchy of watercourses, the levels of which are aptly recognized in the local languages (see Appendix 1, Table 74).

Springs are abundant in the region and are the primary drinking-water sources for most Nuristani communities. Water from most strongly flowing springs is of good quality. Mountain ponds and lakes are important sources of water for livestock and herdsman during their summer sojourns in the alpine pastures.

Because of Nuristan’s steep terrain and decreasing forest cover, floods are increasingly common and destructive in all watersheds.

3.2.1.1 The Alingar Watershed

The Alingar watershed arises on the crest of the Hindu Kush range in western Nuristan and completely drains the districts of Mandol, Dōāb, and Nurgrām. Roughly two-thirds of the watershed lies in Nuristan; the lower third lies in eastern Laghmān Province.

From its source and throughout Mandol District the uppermost Alingar Valley is known locally as Řângal (otherwise known as the Pushāl River), becoming the Alingar proper at its juncture with the Kulem Valley. Řângal and Kulem are inhabited by Kāta-vari-speaking Nuristānis. Further down on the left bank lie the Bajagal (bāātgal), Kolatān (māse:gal), and Titin valleys, inhabited by Ashkun-speaking Nuristānis. On the right bank shorter and drier tributary valleys join the Alingar; notable are the Junyā, Shāmā, Pashagar, and Nangarach Valleys, inhabited primarily by Pashaīs.

Benchmark statistics for total outflow of the Alingar, including the portion in Laghmān Province, appear in Graph 1.

![Graph 1. Discharge curves on the Alingar River, 1978 (Favre and Kamal 2004: 192).](image)

3.2.1.2 The Pech Watershed

The Pech watershed arises on the crest of the Hindu Kush range in central Nuristan and completely drains Nuristan’s Central District and the districts of Wārnā and Wāygal. Roughly two-thirds of the watershed lies in Nuristan, while the lower third lies in western Kunar Province.

Two valleys, the Kāntiwā (Ktivi) and the Pārun, carry the watershed’s uppermost outflow to their confluence, whence the Pech Valley proper commences. The Kāntiwā Valley is home to the Kāta Nuristānis; the Pārun is home to the Vāsi Nuristānis. The Pech Valley down to Caprigal is inhabited by Ashkun-speaking Nuristānis, known as saNu in their central village, Wārnā. At the Pech’s bend to
the east the Kordar Valley enters from the west. Further east, in Kunar Province, the Pech receives the Wāygal and KaTār Rivers, which drain Nuristān’s Wāygal District, home to various Kalasha Nuristāni communities.

Benchmark statistics for total outflow of the Pech, including the portion in Kunar Province, appear in Graph 2.


3.2.1.3 The LanDay Sin Watershed

The LanDay Sin watershed arises on the crest of the Hindu Kush range in eastern Nuristān and completely drains the districts of Bargimatāl and Kāmdesh.

In its highest reaches the LanDay Sin takes on the Shkurigul River on its right; further down the MaNalgal and Popshigal streams flow in from the east and the Alnu stream from the west; this portion of the watershed belongs to the Kāta people. Below them lies the territory of the smaller Mumo tribe. Above the confluence of the Nichingal Valley on the right, the territory of the Kom tribe begins, whence it occupies the watershed down to (and across) the Kunar Valley. As it passes through Kom territory the LanDay Sin is fed notably by the Meroīm, Pitigal, and Gawardesh Valleys on its left and the Kāmu Valley on its right.

The LanDay Sin watershed was not included in this assessment because of high security risks to survey teams. Floods have periodically devastated the Pitigal, Kamu, and Gawardesh Valleys since they were opened to commercial logging in the 1990’s.

### 3.2.1.4 Watershed-Survey Results

Methods and findings of the stream- and river-outflow survey include:

- The water discharge at main streams and rivers was measured by floater to determine the stream flow at various places and total outflow from the district watershed; see Table 3 and Table 4 for details.
- Note that the flow measurement was taken in November, when the surface run-off from rains was finished. Run-off from snow melt does not start until summer. The only source seems to be the subsurface and base flow.
- The flow from Đôâb district was measured at Watsir, Shuk and Wâygalak to estimate the total flow from this watershed. The flow from all these streams unites at Dahane Pyâr village. The total accumulating flow from these three streams was measured as 7.02 m$^3$/second.
- The flow from Nurgrâm district was measured at Moin, Chenjak and Nangaraj to estimate the total flow from this watershed. The flow from all these streams unites at Kotalay village. The total accumulating flow from these three streams was measured as 2 m$^3$/second.
- The flow from the Central district was measured at Pashki and Kântivâ Suflâ to estimate the total flow from this watershed. The flow from all these streams unites at Buni village. The total accumulating flow from these three streams was measured as 46.03 m$^3$/second.
- The flow from Wâmâ district was measured at Kordar Nishâ to estimate the total flow from this watershed. The total flow from this watershed was measured as 10.36 m$^3$/second.
- The flow from Wâygal district was measured at Âmeshoz and Arans to estimate the total flow from this watershed. The flow from all these streams unites at Tâzâ Gul village. The total accumulating flow from these three streams was measured as 19.27 m$^3$/second.
- It is important to mention that the water flow of 7 m$^3$/second arising from Đôâb is reduced to merely 2 m$^3$/second at Nurgrâm. It means that most of the water is diverted for irrigation.
purposes in Dōâb and Nurgrām. Similarly, water discharge of 46 m³/second arising from the Central District is reduced to 10 m³/second at Wâmâ.

- Almost all of the main rivers were perennial, used for drinking by animals and humans and also for irrigating scattered patches of cropland.

<table>
<thead>
<tr>
<th>District</th>
<th>Name of stream or nearest village</th>
<th>Draining into:</th>
<th>Stream discharge at main streams (m³/sec)</th>
<th>Total outflow from district (m³/sec)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dōâb</td>
<td>Kulem: Wacir</td>
<td>Alingar River</td>
<td>5.19</td>
<td>7.02</td>
<td>The total flow accumulated at Dahane Pyâr village</td>
</tr>
<tr>
<td></td>
<td>Kulem: Shuk</td>
<td>Alingar River</td>
<td>0.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kulem: Wâýgalak</td>
<td>Alingar River</td>
<td>1.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurgrām</td>
<td>Mâ‘in</td>
<td>Alingar River</td>
<td>0.34</td>
<td>1.96</td>
<td>The total flow accumulated at Kotalay village. The data for Nangaraj is a rough estimate.</td>
</tr>
<tr>
<td></td>
<td>Chenjak</td>
<td>Alingar River</td>
<td>1.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nangaraj</td>
<td>Alingar River</td>
<td>0.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central</td>
<td>Pashki</td>
<td>Pârun-Pech River</td>
<td>44.3</td>
<td>46.0</td>
<td>The total flow accumulated near Buni village</td>
</tr>
<tr>
<td></td>
<td>Kântiwâ suflâ</td>
<td>Kântiwâ-Pech River</td>
<td>1.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wâmâ</td>
<td>Kordan Nishâ</td>
<td>Pech River</td>
<td>10.36</td>
<td>10.36</td>
<td></td>
</tr>
<tr>
<td>Wâýgal</td>
<td>Ameshoz</td>
<td>Pech River</td>
<td>4.12</td>
<td>19.27</td>
<td>The total flow accumulated near Tâza Gul Kalay</td>
</tr>
<tr>
<td></td>
<td>Arans</td>
<td>Pech River</td>
<td>15.16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Water discharge at main streams and total outflow from districts.
Table 4. Stream discharge measured at various villages in all 5 districts.

<table>
<thead>
<tr>
<th>District</th>
<th>Village</th>
<th>Draining into</th>
<th>Discharge (m³/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dôâb</td>
<td>Shahdesh</td>
<td>Alingar River</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>Shuk</td>
<td>Kulem River</td>
<td>0.54</td>
</tr>
<tr>
<td></td>
<td>Soraj</td>
<td>Alingar River</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>Geel</td>
<td>Alingar River</td>
<td>12.69</td>
</tr>
<tr>
<td></td>
<td>Bahaderi</td>
<td>Alingar River</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td>Wacir</td>
<td>Kulem River</td>
<td>5.19</td>
</tr>
<tr>
<td></td>
<td>Paglâm</td>
<td>Kulem River</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>Wâygalak</td>
<td>Kulem River</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>Wâygalak</td>
<td>Kulem River</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>Chenjak</td>
<td>Kulem River</td>
<td>1.18</td>
</tr>
<tr>
<td>Nurgrâm</td>
<td>Daaba</td>
<td>Alingar River</td>
<td>3.66</td>
</tr>
<tr>
<td></td>
<td>Daaba</td>
<td>Alingar River</td>
<td>3.45</td>
</tr>
<tr>
<td></td>
<td>Tongrak</td>
<td>Kolatan River</td>
<td>0.13</td>
</tr>
<tr>
<td></td>
<td>Malkia</td>
<td>Kolatan River</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td>Ziarat Kalay</td>
<td>Alingar River</td>
<td>0.31</td>
</tr>
<tr>
<td></td>
<td>Ziarat Kalay</td>
<td>Alingar River</td>
<td>0.26</td>
</tr>
<tr>
<td></td>
<td>Kotgal</td>
<td>Kolatan River</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>Galkha khel</td>
<td>Kolatan River</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>Malil</td>
<td>Alingar River</td>
<td>0.37</td>
</tr>
<tr>
<td></td>
<td>Moin</td>
<td>Alingar River</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>Awik</td>
<td>Kolatan River</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>Awik</td>
<td>Koshogal river</td>
<td>1.05</td>
</tr>
<tr>
<td>Wâmâ</td>
<td>Kordar nishâ</td>
<td>Pech River</td>
<td>10.36</td>
</tr>
<tr>
<td></td>
<td>Kordar kuz kalay</td>
<td>Pech River</td>
<td>5.69</td>
</tr>
<tr>
<td></td>
<td>Barg desh</td>
<td>Pech River</td>
<td>5.76</td>
</tr>
<tr>
<td>Central</td>
<td>Dewa</td>
<td>Pârun River</td>
<td>15.22</td>
</tr>
<tr>
<td></td>
<td>Dewa</td>
<td>Pârun River</td>
<td>28.56</td>
</tr>
<tr>
<td></td>
<td>Eshtiwe</td>
<td>Pârun River</td>
<td>36.8</td>
</tr>
<tr>
<td></td>
<td>Eshtiwe</td>
<td>Pârun River</td>
<td>34.86</td>
</tr>
<tr>
<td></td>
<td>Kântiwâ Suflâ</td>
<td>Kântiwâ River</td>
<td>1.74</td>
</tr>
<tr>
<td></td>
<td>Kântiwâ Ulyâ</td>
<td>Kântiwâ River</td>
<td>13.04</td>
</tr>
<tr>
<td></td>
<td>Kântiwâ Ulyâ</td>
<td>Kântiwâ River</td>
<td>22.08</td>
</tr>
<tr>
<td></td>
<td>Pashki</td>
<td>Pârun River</td>
<td>44.29</td>
</tr>
<tr>
<td></td>
<td>Pashki</td>
<td>Pârun River</td>
<td>16.4</td>
</tr>
<tr>
<td>Wâygal</td>
<td>Kun</td>
<td>Wâygal River</td>
<td>2.22</td>
</tr>
<tr>
<td></td>
<td>Gambir bar kalay</td>
<td>KaTâr River</td>
<td>0.98</td>
</tr>
<tr>
<td></td>
<td>Gambir ghalamtaa</td>
<td>KaTâr River</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>Wâygal kuz kalay</td>
<td>Wâygal River</td>
<td>2.21</td>
</tr>
<tr>
<td></td>
<td>Wâygal shachagal</td>
<td>Wâygal River</td>
<td>1.30</td>
</tr>
<tr>
<td></td>
<td>Ameshoz</td>
<td>Wâygal River</td>
<td>4.12</td>
</tr>
<tr>
<td></td>
<td>Arans</td>
<td>Wâygal River</td>
<td>15.16</td>
</tr>
<tr>
<td></td>
<td>Nisheigrâm</td>
<td>Wâygal River</td>
<td>4.55</td>
</tr>
<tr>
<td></td>
<td>Nisheigrâm bar kalay</td>
<td>Wâygal River</td>
<td>0.28</td>
</tr>
</tbody>
</table>

Methods and findings of the spring-outflow survey include:

- Springs found in the area were surveyed for number and discharge of water, type of springs and method of water harvesting from springs in 5 districts; see Table 5 for details.
- According to the survey data, the average number of springs per village was 5 in Nuristân Province, with highest number recorded in Wâygal (11 springs per village), followed by the
Central District and Dôâb (each having 4 springs per village). Most of the springs were perennial in nature (97%).

- The discharge from one spring in each village was measured using the volumetric method of discharge measurement. According to this data, the average discharge per spring in Nuristân was only 0.5 Liters/second. The highest spring discharge was recorded in Eshtïwe in Central District where it was about 8 Liters per second. The very low spring discharge is attributable to the time of the survey at the end of November, in the dry period after monsoon rains are finished.

- Due to a very low discharge at that time, most of the springs were used for drinking by humans (87% springs) and animals (62% springs). Very few were used for irrigating the croplands.

- No advanced methods of harvesting water from springs are used in the survey area. Water is collected manually from almost 65% of springs. In only 24% of cases is some sort of pipe system installed to carry water to the villages.

<table>
<thead>
<tr>
<th></th>
<th>Dôâb</th>
<th>Nurgrâm</th>
<th>Central</th>
<th>Wâmâ</th>
<th>Wâygâl</th>
<th>Nuristân Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average number of</td>
<td>3.8</td>
<td>1.4</td>
<td>4.3</td>
<td>2.8</td>
<td>11.1</td>
<td>4.7</td>
</tr>
<tr>
<td>springs per village</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average water discharge</td>
<td>0.3</td>
<td>0.5</td>
<td>1.3</td>
<td>0.2</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>per spring (L/sec)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highest discharge</td>
<td>0.5</td>
<td>0.6</td>
<td>7.9</td>
<td>0.3</td>
<td>1.7</td>
<td>7.9</td>
</tr>
<tr>
<td>(L/Sec)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place of highest</td>
<td>Soraj</td>
<td>Tongrak</td>
<td>Eshtïwe</td>
<td>Asarabad, Ameshoz Chamsh Dogool</td>
<td>Eshtïwe</td>
<td></td>
</tr>
<tr>
<td>discharge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seasonal springs</td>
<td>0</td>
<td>7.7</td>
<td>0</td>
<td>7.1</td>
<td>0</td>
<td>3.0</td>
</tr>
<tr>
<td>(%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perennial springs</td>
<td>100</td>
<td>92.3</td>
<td>100</td>
<td>92.9</td>
<td>100</td>
<td>97.0</td>
</tr>
<tr>
<td>(%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used for drinking</td>
<td>88.9</td>
<td>92.3</td>
<td>54.5</td>
<td>100</td>
<td>100</td>
<td>87.1</td>
</tr>
<tr>
<td>(%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used for animals</td>
<td>100.0</td>
<td>30.8</td>
<td>54.5</td>
<td>57.1</td>
<td>69.2</td>
<td>62.3</td>
</tr>
<tr>
<td>(%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used for irrigation</td>
<td>66.7</td>
<td>23.1</td>
<td>36.4</td>
<td>28.6</td>
<td>76.9</td>
<td>46.3</td>
</tr>
<tr>
<td>(%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Method of harvesting</td>
<td>100.0</td>
<td>84.6</td>
<td>66.7</td>
<td>28.6</td>
<td>46.2</td>
<td>65.2</td>
</tr>
<tr>
<td>of water (Manual)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Method of harvesting</td>
<td>0.0</td>
<td>15.4</td>
<td>33.3</td>
<td>71.4</td>
<td>0</td>
<td>24.0</td>
</tr>
<tr>
<td>of water (Pipes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total spring water</td>
<td>1.14</td>
<td>0.7</td>
<td>5.59</td>
<td>0.56</td>
<td>4.44</td>
<td>2.5</td>
</tr>
<tr>
<td>available (L/sec)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5. Assessment of Springs in Nuristân Province.

3.2.2 Climate and Vegetation Zones

Nuristân lies on the northwestern edge of the Indian-Ocean monsoon, which provides it with rainfall during July and August. Eastern Nuristân receives somewhat more monsoonal activity than the western part. Snowfall is normally heavy from mid-December to mid-February, and spring rains fall is April and May.

Vegetation zones are altitudinal. Basically there are six main zones: lowland-wasteland, river-basin-oak, transitional-deciduous, needle-forest, mountain-pastureland, and mountain-wasteland. Finer
categorization of landcover types is seen in statistics presented by Favre and Kamal (2004), as shown in Table 6 to Table 8:

<table>
<thead>
<tr>
<th>Landcover Types</th>
<th>Area (Ha)</th>
<th>Area (Sq. km)</th>
<th>% Watershed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Snow</td>
<td>158,771</td>
<td>1,587.7</td>
<td>25.45</td>
</tr>
<tr>
<td>Rock Outcrop / Bare Soil</td>
<td>148,410</td>
<td>1,484.1</td>
<td>23.79</td>
</tr>
<tr>
<td>Rangeland (grassland/forbs/low shrubs)</td>
<td>130,746</td>
<td>1,307.5</td>
<td>20.96</td>
</tr>
<tr>
<td>Natural Forest (closed cover)</td>
<td>105,248</td>
<td>1,052.5</td>
<td>16.87</td>
</tr>
<tr>
<td>Natural Forest (open cover)</td>
<td>50,944</td>
<td>509.4</td>
<td>8.16</td>
</tr>
<tr>
<td>Irrigated: Intensively Cultivated (2 Crops/year)</td>
<td>10,335</td>
<td>103.4</td>
<td>1.66</td>
</tr>
<tr>
<td>Degenerate Forest/High Shrubs</td>
<td>10,154</td>
<td>101.5</td>
<td>1.63</td>
</tr>
<tr>
<td>Irrigated: Intensively Cultivated (1 Crop/Year)</td>
<td>5,806</td>
<td>58.1</td>
<td>0.93</td>
</tr>
<tr>
<td>Irrigated: Intermittently Cultivated</td>
<td>3,292</td>
<td>32.9</td>
<td>0.53</td>
</tr>
<tr>
<td>Water Bodies</td>
<td>143</td>
<td>1.4</td>
<td>0.02</td>
</tr>
<tr>
<td>Rain fed Crops (sloping areas)</td>
<td>87</td>
<td>0.9</td>
<td>0.01</td>
</tr>
<tr>
<td>Totals:</td>
<td>623,938</td>
<td>6,239.4</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 6. Landcover Types (after Favre and Kamal 2004)

“[Table 7] shows that Alingar watershed is roughly divided in four quarters; rangeland (25%), Natural forest (24% in 1993), bare soil (21%) and others that account for approximately 30% but out of which 17% is permanent snow. Irrigated land in found in narrow strips on valley floors and it represents approximately 1.7% of the watershed area, out of which more than half (53%) is suitable for double cropping.” (Favre and Kamal 2004: 192)

<table>
<thead>
<tr>
<th>Landcover Type</th>
<th>Area (Ha)</th>
<th>Area (Sq. km)</th>
<th>% Watershed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Forest (closed cover)</td>
<td>443,677</td>
<td>4,436.8</td>
<td>38.04</td>
</tr>
<tr>
<td>Rangeland (grassland/forbs/low shrubs)</td>
<td>277,520</td>
<td>2,775.2</td>
<td>23.79</td>
</tr>
<tr>
<td>Permanent Snow</td>
<td>209,615</td>
<td>2,096.1</td>
<td>17.97</td>
</tr>
<tr>
<td>Rock Outcrop / Bare Soil</td>
<td>122,800</td>
<td>1,228.0</td>
<td>10.53</td>
</tr>
<tr>
<td>Natural Forest (open cover)</td>
<td>48,246</td>
<td>482.5</td>
<td>4.14</td>
</tr>
<tr>
<td>Irrigated: Intermittently Cultivated</td>
<td>19,708</td>
<td>197.1</td>
<td>1.69</td>
</tr>
<tr>
<td>Degenerate Forest/High Shrubs</td>
<td>16,183</td>
<td>161.8</td>
<td>1.39</td>
</tr>
<tr>
<td>Irrigated: Intensively Cultivated (1 Crop/Year)</td>
<td>11,863</td>
<td>118.6</td>
<td>1.02</td>
</tr>
<tr>
<td>Rain fed Crops (sloping areas)</td>
<td>5,902</td>
<td>59.0</td>
<td>0.51</td>
</tr>
<tr>
<td>Irrigated: Intensively Cultivated (2 Crops/year)</td>
<td>5,897</td>
<td>59.0</td>
<td>0.51</td>
</tr>
<tr>
<td>Marshland Permanently inundated</td>
<td>8,329</td>
<td>83.2</td>
<td>0.41</td>
</tr>
<tr>
<td>Water Bodies</td>
<td>122</td>
<td>1.2</td>
<td>0.01</td>
</tr>
<tr>
<td>Totals:</td>
<td>1,166,352</td>
<td>11,663.6</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 7. Landcover Types in the Alingar Watershed (after Favre and Kamal 2004: 192)

“[Table 8] shows that Kunar watershed is roughly dominated by natural forests (38% in 1993), rangeland (24%) permanent snow (18%) and bare soil (11%). Irrigated land in found in narrow strips on valley floors and it represents approximately 3.2% of the watershed area. Some rain-fed cultivation is also practiced (0.5%).” (Favre and Kamal 2004: 194)

<table>
<thead>
<tr>
<th>Landcover Type</th>
<th>Area (Ha)</th>
<th>Area (Sq. km)</th>
<th>% Watershed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Forest (closed cover)</td>
<td>443,677</td>
<td>4,436.8</td>
<td>38.04</td>
</tr>
<tr>
<td>Rangeland (grassland/forbs/low shrubs)</td>
<td>277,520</td>
<td>2,775.2</td>
<td>23.79</td>
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<tr>
<td>Permanent Snow</td>
<td>209,615</td>
<td>2,096.1</td>
<td>17.97</td>
</tr>
<tr>
<td>Rock Outcrop / Bare Soil</td>
<td>122,800</td>
<td>1,228.0</td>
<td>10.53</td>
</tr>
<tr>
<td>Natural Forest (open cover)</td>
<td>48,246</td>
<td>482.5</td>
<td>4.14</td>
</tr>
<tr>
<td>Irrigated: Intermittently Cultivated</td>
<td>19,708</td>
<td>197.1</td>
<td>1.69</td>
</tr>
<tr>
<td>Degenerate Forest/High Shrubs</td>
<td>16,183</td>
<td>161.8</td>
<td>1.39</td>
</tr>
<tr>
<td>Irrigated: Intensively Cultivated (1 Crop/Year)</td>
<td>11,863</td>
<td>118.6</td>
<td>1.02</td>
</tr>
<tr>
<td>Rain fed Crops (sloping areas)</td>
<td>5,902</td>
<td>59.0</td>
<td>0.51</td>
</tr>
<tr>
<td>Irrigated: Intensively Cultivated (2 Crops/year)</td>
<td>5,897</td>
<td>59.0</td>
<td>0.51</td>
</tr>
<tr>
<td>Marshland Permanently inundated</td>
<td>8,329</td>
<td>83.2</td>
<td>0.41</td>
</tr>
<tr>
<td>Water Bodies</td>
<td>122</td>
<td>1.2</td>
<td>0.01</td>
</tr>
<tr>
<td>Totals:</td>
<td>1,166,352</td>
<td>11,663.6</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 8. Landcover Types in the Kunar Watershed (after Favre and Kamal 2004: 193).
3.2.2.1 Climate
Nuristân’s climate is mostly temperate, varying according to altitude. At 2000 m. altitude temperature ranges from 5° F. in winter to 98° F. in summer have been noted.
A current period of prolonged drought was a major theme of survey respondents throughout Nuristân. As early as the late 1960’s Nuristânîs in the highest valleys began to notice serious diminishment of highland grassland (ZamânXân and Strand 1998). A comparison of the traditional herding calendars from 1891 (Robertson 1896) and 1969 (Strand, personal data) shows that the beginning of spring came earlier by about a month over the 78-year period. Since then the drought has steadily increased, affecting almost every region of the province. Survey respondents in Wâygal District did report a slight amelioration of drought during the last two years.

3.2.2.2 Cultivable Land
Relatively flat land (ptul, găv‘â:R, tol, ütnyok) suitable for cultivation is scarce in Nuristân’s mountainous terrain. Table 7 and Table 8 show that only 3.13% of the Alingar watershed and 3.23% of the Kunar watershed is under some sort of cultivation. Flat alluvial deposits along watercourses form much of the arable ground in Nuristân. Communities located away from watercourses usually adjoin relatively level areas of arable mountain terrain, which do not need terracing. In some narrower valleys Nuristânîs bring in regional Afghân or Chitrali experts to build steep agricultural terraces. Population increase has resulted in much arable forestland coming under clearing and cultivation in recent decades. Five-year evaluations of cropland appear in Table 33.

3.2.2.3 Forests
Nuristân encompasses a major portion of Afghanistan’s forests. There are two major forest zones: the needle forest, lying roughly between 2000 and 3000 m. in altitude, and the oak forest, lying between 1000 and 2000 m. Interspersed between the two zones and in the valley bottoms of larger rivers lie stands of broadleaf trees.
The needle-forest zone comprises deodar cedar, pine, fir, spruce, and juniper, with stands of birch at the highest elevations. The oak forest comprises at least three species of evergreen oak, the most ubiquitous being Quercus baloot. Broadleaf trees include numerous species of wild fruit and nut trees as well as willow, plane, poplar, cottonwood, olive, and other species. Native inventories of tree species are given in Appendix 1, Table 75, Table 76, and Table 80.
All indicators point to a decrease of up to 50% in forest cover across Afghanistan’s eastern zone, as illustrated in Figure 1. Commercial logging, cutting for local building, clearing for cropland, and overcutting of firewood and fodder branches by local residents are responsible for much of the deforestation in the lower or more accessible portions of the forestland. But human consumption does not seem a probable cause for the extensive deforestation in the highest, northerly areas of Nuristân, as those areas are inaccessible to loggers. Climate change with concomitant drought would seem to be the leading culprit.
Regional Afghânîs degrade the forest environment, as can be seen in a comparison of denuded Afghân-owned uplands vs. Nuristânî forests. Most human-caused forest depletion in Nuristân is attributable to exploitation by Afghân timber traders from both sides of the Durand Line.
Evaluations of forestland appear in Table 32 and Table 33.

**Survey results:**

The forest resources in Nuristân can be assessed for their health on the basis of species composition, density, undergrowth land cover, and status of regeneration. The elevation above sea level impacts these elements. In the survey districts, the Central District has the highest elevation (2500 m to 3000 m), while Nurgrâm and Wâygâl are least elevated (1600 m and 1900 m respectively). The Central District was followed by Dôâb (1800-2750 m) and Wâmâ (1850 – 2200 m).

At lower elevations Nurgrâm and Wâygâl exhibited a species diversity of 3 and 6 respectively, which may be attributed to summer rains; these areas can be classified as moist temperate vegetational zones. The species composition in Wâygâl showed that it contained more broadleaf species in addition to conifers, which is a sign of good forest condition. The forest vegetation in Nurgrâm reveals that it can be classified as a near-to-climax stage of plant succession.

In such a forest there is more than one storey, usually dominated by one or two dominant species (Quercus and Pinus wallichiana in this case). Such a forest is usually capable of providing a range of goods and services, e.g., better protection of the watershed against erosion and provision of firewood and commercial timber. In addition, the undergrowth in the forest may also be a source of medicinal plants and biodiversity.

If we analyse the land cover by grasses and shrubs underneath the forest trees in Wâygâl (Table 14), the landcover categories of more than 60% shrubs and grasses was found highest in Wâygâl (17% shrubs and 8% grasses). This shows a rich forest resource where degradation has not yet accelerated.

In Dôâb, Wâmâ, and the Center, the vegetation is mainly dominated by conifers, with no or very few broadleaf species. This is a sign of disturbed vegetation, where the climax forest vegetation has been removed by deforestation, and it will take long to reach climax again. Due to the limited number of species, the goods and services available from the forest are also limited. If we observe the landcover under the forest in these districts, we find that the cover category of less than 30% for shrubs and grasses is highest in Dôâb, Wâmâ and the Central District.
These three districts (Dôâb, Wâmâ and Central), being located at higher elevations, lie in the dry temperate climatic zone, where precipitation is mainly received in the form of snow and less in the form of rainfall. In such a climatic zone, the growing period is usually very short and the degradation caused to the resource base may take several decades to recover because of the harsh climate and short growing season. Elevation, man-made degradation, and deforestation contribute to the much lower tree count per hectare in Dôâb, Wâmâ and the Central districts. The figures in the table of regeneration status (Table 12) also support the same conclusions. One can see that number of seedlings in Wâygal and Nurgrâm is highest as compared to other three districts.

All these conclusions lead to the recommendation that deforestation and animal-grazing activities be curtailed in Wâygal and Nurgrâm districts to preserve the species diversity of the forest and also to ensure a sustained supply of environmental services and economic goods to the communities there. In the case of Dôâb, Wâmâ and the Center, where degradation has already taken place, rehabilitation activities may be supported through establishing nurseries, plantation campaigns, and awareness-raising activities to increase people’s knowledge about the importance of resources, the degradation processes and its causes, and the need to protect their precious resources. In addition, farmland plantations and plantations in or around houses and communities may be promoted to provide an alternate source of fuel and timber to local communities.

The figures given below provide an estimate of resource availability in the form of timber and fuelwood. The figures of fuelwood (small wood) and timber are on a per-hectare basis. The total tree count per hectare of the forest area in all 5 districts surveyed was 229.

- *Quercus spp.*, *Pinus wallichiana* and *Cedrus deodara* were the most abundant tree species having 101, 61 and 41 trees per hectare respectively in the forested area of Nuristán.
- The highest number per hectare of *Quercus spp.* was found in Wâmâ, that of *Pinus wallichiana* in the Central District and that of *Cedrus deodara* in Wâygal. *Quercus spp.* were found in all 5 districts; see Table 9 for details.
- The volume of timber per hectare of the forest area was also estimated. The highest amount of timber present in the forest was that of *Pinus wallichiana* (1414 cubic feet per ha.), followed by *Quercus spp.* (784 cubic feet per ha.) and *Cedrus deodara* (319 cubic feet per ha.) respectively. Other commercial species like *Abies spectabilis*, *Picea smithiana*, and *Pinus roxburghii* were found in limited quantity; see Table 10 for details.
- The fuelwood content of the forest in Nuristán was also estimated as small wood available on different trees growing within the forest area. According to the assessment, *Quercus spp.* were the highest source of fuelwood. Available fuelwood amount of this species was 398 cu. feet per ha., followed by *Pinus wallichiana* with 165 cu. ft per ha. *Quercus spp* were most abundant in Wâmâ district, followed by Wâygal; see Table 11 for details.
- The number of trees, timber and small wood quantities related to other species like olive, *Picea smithiana* and *Abies spectabilis* are shown in Table 9 to Table 11.
- The status of regeneration of these species in the forest was also estimated. The number of seedlings of size less than 1 foot, 1 to 3 feet, and 3.1 to 5 feet was counted in sample plots.
- According to the regeneration survey, the number of seedlings was highest for *Quercus spp.* (1692 seedlings per ha.), followed by *Pinus wallichiana* (942 seedlings per ha.), *Cedrus deodara* (284 seedlings per ha.), and *Abies spectabilis* (275 seedlings per ha.). Other species like *Pinus gerardiana* and *Picea smithiana* were also regenerating well in the forest. See Table 12 for details.
- The mortality rate in new seedlings was highest in *Quercus spp.*, followed by *Abies spectabilis* and *Cedrus deodara* respectively.
### Average No. of trees per ha per district

<table>
<thead>
<tr>
<th>Species</th>
<th>Dôâb</th>
<th>Wâmâ</th>
<th>Parun</th>
<th>Nurgrâm</th>
<th>Wâygal</th>
<th>Average Nuristân Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cedrus deodara</td>
<td>0</td>
<td>0</td>
<td>4.8</td>
<td>0</td>
<td>157.5</td>
<td>40.6</td>
</tr>
<tr>
<td>Pinus wallichiana</td>
<td>0</td>
<td>0</td>
<td>96.4</td>
<td>11.8</td>
<td>197.3</td>
<td>61.1</td>
</tr>
<tr>
<td>Abies spectabilis</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>35.9</td>
<td>7.2</td>
</tr>
<tr>
<td>Picea smithiana</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>26.8</td>
<td>5.4</td>
</tr>
<tr>
<td>Pinus gerardiana</td>
<td>12.5</td>
<td>0</td>
<td>3.5</td>
<td>0.0</td>
<td>3.8</td>
<td>4.0</td>
</tr>
<tr>
<td>Pinus roxburghii</td>
<td>10.6</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
</tr>
<tr>
<td>Quercus sp.</td>
<td>75.4</td>
<td>116.6</td>
<td>24.7</td>
<td>103.4</td>
<td>185.8</td>
<td>101.2</td>
</tr>
<tr>
<td>Olea ferrugineae</td>
<td>0.0</td>
<td>0</td>
<td>0</td>
<td>28.3</td>
<td>0</td>
<td>5.7</td>
</tr>
<tr>
<td>Salix sp.</td>
<td>8.4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.7</td>
</tr>
<tr>
<td>Total</td>
<td>107.0</td>
<td>116.6</td>
<td>129.5</td>
<td>143.4</td>
<td>607.2</td>
<td>228.8</td>
</tr>
</tbody>
</table>

Table 9. Average No. of trees per ha per district.

### Volume of timber (cubic feet) per ha of forest area

<table>
<thead>
<tr>
<th>Species</th>
<th>Dôâb</th>
<th>Wâmâ</th>
<th>Parun</th>
<th>Nurgrâm</th>
<th>Wâygal</th>
<th>Average Nuristân Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cedrus deodara</td>
<td>0</td>
<td>0</td>
<td>60.7</td>
<td>0</td>
<td>1534.7</td>
<td>319.1</td>
</tr>
<tr>
<td>Pinus wallichiana</td>
<td>0</td>
<td>0</td>
<td>5139.4</td>
<td>93.3</td>
<td>1839.0</td>
<td>1414.4</td>
</tr>
<tr>
<td>Abies spectabilis</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>489.4</td>
<td>97.9</td>
</tr>
<tr>
<td>Picea smithiana</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>426.4</td>
<td>85.3</td>
</tr>
<tr>
<td>Pinus gerardiana</td>
<td>137.2</td>
<td>0</td>
<td>32.4</td>
<td>0</td>
<td>85.4</td>
<td>51.0</td>
</tr>
<tr>
<td>Pinus roxburghii</td>
<td>63.7</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>12.7</td>
</tr>
<tr>
<td>Quercus sp.</td>
<td>483.5</td>
<td>929.4</td>
<td>1173.2</td>
<td>432.9</td>
<td>898.3</td>
<td>783.5</td>
</tr>
<tr>
<td>Olea ferrugineae</td>
<td>0.0</td>
<td>0</td>
<td>63.5</td>
<td>0</td>
<td>0.0</td>
<td>12.7</td>
</tr>
<tr>
<td>Salix sp.</td>
<td>4.2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Table 10. Volume of timber (cubic feet) per ha of forest area.

### Volume of smallwood per hectare (cubic feet) of forest area

<table>
<thead>
<tr>
<th>Species</th>
<th>Dôâb</th>
<th>Wâmâ</th>
<th>Parun</th>
<th>Nurgrâm</th>
<th>Wâygal</th>
<th>Average Nuristân Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cedrus deodara</td>
<td>0</td>
<td>0</td>
<td>16.7</td>
<td>0</td>
<td>303.3</td>
<td>64.0</td>
</tr>
<tr>
<td>Pinus wallichiana</td>
<td>0</td>
<td>0</td>
<td>347.9</td>
<td>37.7</td>
<td>435.3</td>
<td>164.2</td>
</tr>
<tr>
<td>Abies spectabilis</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>98.9</td>
<td>19.8</td>
</tr>
<tr>
<td>Picea smithiana</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>77.7</td>
<td>15.5</td>
</tr>
<tr>
<td>Pinus gerardiana</td>
<td>46.0</td>
<td>0.0</td>
<td>11.2</td>
<td>0</td>
<td>15.9</td>
<td>14.6</td>
</tr>
<tr>
<td>Pinus roxburghii</td>
<td>53.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>10.8</td>
</tr>
<tr>
<td>Quercus sp.</td>
<td>329.1</td>
<td>566.2</td>
<td>194.9</td>
<td>344.0</td>
<td>555.4</td>
<td>397.9</td>
</tr>
<tr>
<td>Olea ferrugineae</td>
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<td>0.0</td>
<td>75.8</td>
<td>0</td>
<td>15.2</td>
</tr>
<tr>
<td>Salix sp.</td>
<td>13.2</td>
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<td>0.0</td>
<td>0</td>
<td>0</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Table 11. Volume of smallwood per hectare (cubic feet) of forest area.
<table>
<thead>
<tr>
<th>Species</th>
<th>Size of seedlings (feet)</th>
<th>Dôâb</th>
<th>Wâmâ</th>
<th>Parun</th>
<th>Nurgrâm</th>
<th>Wâygal</th>
<th>Average Nuristân Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak</td>
<td>Less than 1</td>
<td>181.8</td>
<td>218.8</td>
<td>0.0</td>
<td>326.9</td>
<td>3211.1</td>
<td>787.7</td>
</tr>
<tr>
<td></td>
<td>1 to 3</td>
<td>193.2</td>
<td>250.0</td>
<td>0.0</td>
<td>480.8</td>
<td>1255.6</td>
<td>435.9</td>
</tr>
<tr>
<td></td>
<td>3.1 to 5</td>
<td>272.7</td>
<td>229.2</td>
<td>0.0</td>
<td>432.7</td>
<td>1405.6</td>
<td>468.0</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>647.7</strong></td>
<td><strong>697.9</strong></td>
<td><strong>0.0</strong></td>
<td><strong>1240.4</strong></td>
<td><strong>5872.2</strong></td>
<td><strong>1691.7</strong></td>
</tr>
<tr>
<td>Salix</td>
<td>Less than 1</td>
<td>93.75</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>18.8</td>
</tr>
<tr>
<td></td>
<td>1 to 3</td>
<td>125</td>
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<td>0.0</td>
<td>0.0</td>
<td>25.0</td>
</tr>
<tr>
<td></td>
<td>3.1 to 5</td>
<td>125</td>
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</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>343.75</strong></td>
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<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>68.75</strong></td>
</tr>
<tr>
<td>Pinus gerardiana</td>
<td>Less than 1</td>
<td>125</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>25.0</td>
</tr>
<tr>
<td></td>
<td>1 to 3</td>
<td>41.7</td>
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<td>0.0</td>
<td>8.3</td>
</tr>
<tr>
<td></td>
<td>3.1 to 5</td>
<td>125</td>
<td>0.0</td>
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<td>0.0</td>
<td>25.0</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>291.7</strong></td>
<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>58.3</strong></td>
</tr>
<tr>
<td>Pinus wallichiana</td>
<td>Less than 1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>125.0</td>
<td>1583.3</td>
<td>341.7</td>
</tr>
<tr>
<td></td>
<td>1 to 3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>500.0</td>
<td>333.3</td>
<td>254.2</td>
</tr>
<tr>
<td></td>
<td>3.1 to 5</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1187.5</td>
<td>291.7</td>
<td>345.8</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>1687.5</strong></td>
<td><strong>812.5</strong></td>
<td><strong>2208.3</strong></td>
</tr>
<tr>
<td>Olive</td>
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<td>35.7</td>
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<td></td>
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<td>196.4</td>
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<td>232.1</td>
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<td><strong>Total</strong></td>
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<td><strong>0.0</strong></td>
<td><strong>464.3</strong></td>
<td><strong>0.0</strong></td>
<td><strong>92.9</strong></td>
</tr>
<tr>
<td>Cedrus deodara</td>
<td>Less than 1</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>640.6</td>
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<tr>
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<td>0.0</td>
<td>328.1</td>
<td>65.6</td>
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<tr>
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<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>1421.9</strong></td>
<td><strong>284.4</strong></td>
</tr>
<tr>
<td>Abies spectabilis</td>
<td>Less than 1</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>708.3</td>
<td>141.7</td>
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<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>1375.0</strong></td>
<td><strong>275.0</strong></td>
</tr>
<tr>
<td>Picea smithiana</td>
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<td>0.0</td>
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<td>500</td>
<td>100.0</td>
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<tr>
<td></td>
<td>3.1 to 5</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>375</td>
<td>75.0</td>
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<td><strong>Total</strong></td>
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<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>875.0</strong></td>
<td><strong>175.0</strong></td>
</tr>
<tr>
<td>Pinus gerardiana</td>
<td>Less than 1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>1 to 3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>500</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>3.1 to 5</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>375</td>
<td>75.0</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>0.0</strong></td>
<td><strong>875.0</strong></td>
<td><strong>175.0</strong></td>
</tr>
</tbody>
</table>

Table 12. Status of regeneration in the forest area.
### Table 13. Average No. of seedlings per hectare of forest area.

<table>
<thead>
<tr>
<th>Species</th>
<th>Size of seedlings (feet)</th>
<th>Dōâb</th>
<th>Wâmâ</th>
<th>Parun</th>
<th>Nurgrâm</th>
<th>Wâygal</th>
<th>Average Nuristân Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak</td>
<td>up to 3 feet</td>
<td>647.7</td>
<td>697.9</td>
<td>0.0</td>
<td>1240.4</td>
<td>5872.2</td>
<td>1691.7</td>
</tr>
<tr>
<td>Salix</td>
<td>up to 3 feet</td>
<td>343.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>68.8</td>
</tr>
<tr>
<td>Pinus gerardiana</td>
<td>up to 3 feet</td>
<td>291.7</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>58.3</td>
</tr>
<tr>
<td>Pinus wallichiana</td>
<td>up to 3 feet</td>
<td>0.0</td>
<td>0.0</td>
<td>1687.5</td>
<td>812.5</td>
<td>2208.3</td>
<td>941.7</td>
</tr>
<tr>
<td>Olive</td>
<td>up to 3 feet</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>464.3</td>
<td>0.0</td>
<td>92.9</td>
</tr>
<tr>
<td>Cedrus deodara</td>
<td>up to 3 feet</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1421.9</td>
<td>284.4</td>
<td></td>
</tr>
<tr>
<td>Abies spectabilis</td>
<td>up to 3 feet</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1375.0</td>
<td>275.0</td>
<td></td>
</tr>
<tr>
<td>Picea smithiana</td>
<td>up to 3 feet</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>875.0</td>
<td>175.0</td>
<td></td>
</tr>
<tr>
<td>Pinus gerardiana</td>
<td>up to 3 feet</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>875.0</td>
<td>175.0</td>
<td></td>
</tr>
</tbody>
</table>

**Land Cover under Forests**

- The land cover under forests was assessed to know the extent of vegetation and density of forest resources; see Table 14 for details.
- According to these data, 42% of forest area has a density between 30-60%, 36% has less than 39% density, while 22% of forest has the highest density of more than 60%. The density of forest resource was highest in Dōâb where 92% of forest area has a density of 60% or above. Most of the area in Wâmâ and Wâygal Districts (67%) has a tree density equal to or less than 30%.
- The ground cover under forest trees was grouped as grasses and shrubs. Few shrubs in the forest were found in Nuristân, where 68% forest area has a shrub cover of less than 30%. The highest shrub cover (more than 60% cover) was found in Wâygal (17% of the forest area).
- Average highest grass cover (more than 60% cover) is found on only 4% of the forest in Nuristân province. Average grass cover of 30-60% is found in Dōâb (92% of forest area having this density) and Wâygal (67% of forest area having this density).

### Table 14. Assessment of Under-Forest Land Cover in Nuristân Province.

<table>
<thead>
<tr>
<th>Vegetation type</th>
<th>Districts data (% area)</th>
<th>Dōâb</th>
<th>Wâmâ</th>
<th>Parun</th>
<th>Nurgrâm</th>
<th>Wâygal</th>
<th>Average Nuristân Province</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grasses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cover &lt; 30 %</td>
<td></td>
<td>8.3</td>
<td>58.3</td>
<td>69.2</td>
<td>25</td>
<td>40.2</td>
<td></td>
</tr>
<tr>
<td>Cover 30-60 %</td>
<td></td>
<td>91.7</td>
<td>41.7</td>
<td>23.1</td>
<td>66.7</td>
<td>55.8</td>
<td></td>
</tr>
<tr>
<td>Cover &gt; 60 %</td>
<td></td>
<td>0.0</td>
<td>0.0</td>
<td>7.7</td>
<td>8.3</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td><strong>Shrubs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cover &lt; 30 %</td>
<td></td>
<td>83.3</td>
<td>66.7</td>
<td>57.1</td>
<td>84.6</td>
<td>50</td>
<td>68.4</td>
</tr>
<tr>
<td>Cover 30-60 %</td>
<td></td>
<td>8.3</td>
<td>33.3</td>
<td>42.9</td>
<td>15.4</td>
<td>33.3</td>
<td>26.6</td>
</tr>
<tr>
<td>Cover &gt; 60 %</td>
<td></td>
<td>8.3</td>
<td>0.0</td>
<td>0.0</td>
<td>16.7</td>
<td>0.0</td>
<td>5.0</td>
</tr>
<tr>
<td><strong>Trees</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cover &lt; 30 %</td>
<td></td>
<td>8.3</td>
<td>66.7</td>
<td>16.7</td>
<td>23.1</td>
<td>66.7</td>
<td>36.3</td>
</tr>
<tr>
<td>Cover 30-60 %</td>
<td></td>
<td>0.0</td>
<td>33.3</td>
<td>66.7</td>
<td>76.9</td>
<td>33.3</td>
<td>42.0</td>
</tr>
<tr>
<td>Cover &gt; 60 %</td>
<td></td>
<td>81.7</td>
<td>0.0</td>
<td>16.7</td>
<td>0.0</td>
<td>0.0</td>
<td>21.7</td>
</tr>
</tbody>
</table>

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3.2.2.4 Rangeland

Rangeland in Nuristân falls into highland and lowland zones. Highland grasslands (so*, sâ*, su, sa), found above the treeline from about 3000 m., supply the major source of fodder for dairy production. Scrubland mingles with the oak forests in the lowest and driest valleys to constitute a source for goat fodder in the winter.

Native inventories of rangeland plant species are given in Appendix 1, Table 77 and Table 81.

Survey results:

Rangeland is the largest land-use type in the survey area. This land supports a large population of livestock, mainly goats and cattle, which in turn provide a number of food items to the local population. The importance of this land resource for subsistence is thus very high. Areas other than forestland, cropland, and habitation may all be considered coming under this category. In addition, many areas under the forest are used for grazing livestock. Similarly, croplands when fallow are usually used for sedentary grazing by local herdsmen.

The survey data show that the average land cover was not more than 63% and the total forage production per hectare was only 14 tones per hectare. In normal conditions this can be classified as a degraded resource, where overgrazing and improper resource use have led to weakening of the resource base. The land cover in the Central District and Nurgrâm is alarmingly low (35% and 49% respectively). This shows that degradation of range vegetation cover is at a high rate. Forage production is least in Parun (3.8 per hectare), which is much lower than normal range conditions.

The reduction of land cover also leads to invasion of the land by undesirable range vegetation species. Table 15 shows that wherever land cover is less, the emergence of unwanted species is greater, as in the Central and Wâmâ districts. The section on visible classification of rangeland degradation also supports this conclusion, where the percent of area under the category of very degraded is highest in Wâmâ, Central, and Nurgrâm districts. The visible signs of degradation in the form of soil erosion and landslides have emerged at many places.

All these observations lead us to conclude that rangelands are in a degraded condition, and that the process needs to be halted before the rangelands become unable to support the livestock of the area, and before the soil resource on hilly slopes becomes unstable due to lack of soil cover. The proper use of rangelands may be advocated at this stage, supported by range rehabilitation activities. After detailed consultations with the local communities, some sort of rotational or restricted grazing patterns may be adopted. Reseeding of land on degraded sites, coupled with plantation of multipurpose trees and shrubs suitable to that area, can be a good strategy against this degradation. To avert degradation process on highly degraded sites and slopes, soil conservation measures may be adopted to reduce soil erosion.

The following figures and facts provide an estimate of the availability of forage from rangelands.

- The rangelands in 5 districts were surveyed, spreading over an elevation ranging from 1660 meters to 2700 meters above sea level, with an average alevation of 2073 meters above sea level.
- The rangeland-attribute studies included rangeland vegetation cover, forage production, and range condition. See Table 15 for details of these parameters in the survey area.
- According to the survey data, the average land cover on rangelands was 63% in all districts, including 48.1% for grasses, 7.6% for forbs and 7.6% for shrubs. The barren soil in rangelands was 13.1%, whereas 9.7% was found under rocks.
- The highest ground cover was found in Wâmâ (82%) and lowest in the Central District (35%). A considerable portion of land in the Central District was under snow and could not be estimated for vegetation cover.
- The weight of forage available in the form of grasses, forbs and browse from shrubs was estimated using a 1 meter square quadrate. The total forage available was 14.7 tones per hectare average in Nuristân Province. The highest forage was available in Dôâb (33.3 t/ha), followed by Wâygal (15.8 t/ha) and Nurgrâm (11.8 t/ha). It is important to note that the time
of survey was November, when most of the grasslands were shorn of grass for use as cattle fodder in winter months.

- It is also important that the land cover was greater on northern aspects as compared to southern aspects in the range area. The degradation of land was more on northern aspects, indicating an over-grazing of land on northern aspects.

- Various parts of the rangeland were categorized as very good, good, average, slightly degraded and very degraded. According to the survey data, 55% of rangeland could be categorized as average and 43.3% as slightly degraded. Only 10% and 21.7% of rangeland was categorized under very good and good conditions respectively.

- Degraded rangelands were found in all five surveyed districts. The visible signs of degradation were sheet and gully erosion, landslides, and consequent loss of vegetation cover. Landslides were mainly found in Dôâb, Wâmâ, and the Central districts, whereas sheet erosion was highest in Dôâb (66.6%), Wâmâ (33.3%), and Wâygal (33.3%).

- The range area was also invaded by unwanted range species. A total of 16 different species were recorded that were graded as unwanted, unpalatable and undesired by local people. The most abundant species found were *zahar buti*, *leghoni*, *khar ghwagey*, and *dadem*. These were reported in 27%, 23%, 2%, and 22% of surveyed villages, respectively.

Respondents’ and surveyors’ evaluations of pastureland appear in Table 32 and Table 33.
3.2.3 Fauna

Nuristān’s wild animals are under heavy pressure from loss of forest habitat and hunting. The leopard, markhor goat, monal pheasant, and musk deer, traditional icons in Nuristānī culture, are endangered, as are most other larger animals found in the region. A native inventory of fauna in eastern Nuristān appears in Table 78.
3.2.4 Gemstones and Minerals
Since the late 1960's Nuristânis have become aware that their region contains significant deposits of marketable, high quality gemstones. Most important is tourmaline, followed by kunzite, aquamarine, spodumene, beryl, and garnet. Additionally, there are reported deposits of emerald and peridot. Most of the gem deposits are in remote, mountainous areas, and with Nuristân’s hard winters, some are accessible for only a few months of the year.

Major known gemstone deposits are located in Mandol and Kâmdeșh districts, outside the NNRA survey area. Exact locations of gemstone deposits are usually kept secret from outsiders.

Nuristânis do not have a well-developed native vocabulary for gemstones beyond the word for “stone” (voT, vâT); instead, they use words borrowed from Dari, such as binuj ‘tourmaline’ and zâmârut ‘emerald’. Words for other stones, such as kunzite, are borrowed from English.

In addition to gemstones, the mountains of Nuristân undoubtedly contain undiscovered exploitable mineral deposits.

Map 3. Gemstone-Mining Areas in Nuristân (shown in orange).

3.2.5 Historical Resource Trends
Comparisons of earlier observations of Nuristân’s resources with current survey responses and anecdotal observations indicate moderate to severe climatic and population pressure on resources over the past few decades, as summarized in Table 32 and Table 33.

3.3 The Human Terrain
Nuristân Province is defined by the ethnicity of its majority inhabitants, the Nuristânis. As a group Nuristânis are culturally and linguistically distinct from other peoples of Afghanistan, having a social status there somewhat analogous to that of Native Americans in North America. They have sustained a 1000-year enmity with Afghâns, culminating in the Afghan conquest of the various Nuristâní tribes in 1895-96. Since their subsequent incorporation into the Afghân state, the Nuristâní tribes have retained a modicum of their traditional self governance. Boundaries of tribal lands and the mutual relationships of the tribes and the national government were reiterated in agreements signed during the reigns of Kings Nâder Shâh and Zâher Shâh. Until the Soviet-Afghân war in 1978 the Afghân
government ruled Nuristân relatively benignly, while engendering little respect for its governance or its claims of sovereignty over resources. Since then much or all of Nuristân has been under control of local jihadist commanders, many of whom have evolved under the influence of global jihadism from being secularly oriented defenders against “Godless communism” in the 1970’s to being radicalized defenders against “Western infidelism” today.

3.3.1 Ethnolinguistic Groups

Linguistic and ethnographic scholars classify the peoples of Nuristân into a system based on the evolution of their languages, using time-tested classificatory methods that are analogous to those used in genetic evolutionary-tree reconstruction today. The languages spoken in Nuristân all belong to the Indo-Iranian branch of the Indo-European language family. The Nuristânis proper speak languages that form a distinct sub-branch within the Indo-Iranian branch. Non-Nuristânî ethnolinguistic populations included within Nuristân Province include Pashaî, Afghân, and Gujar groups in the western portions of Dôâb and Nurgrâm Districts, along with Pashaî-speaking people in southernmost Wâmâ District. Table 16 and Table 17 along with Map 4 summarize the distribution of ethnolinguistic groups in Nuristân Province.

Among the Nuristânîs each of the named ethnic groups regards the others as distinctly foreign from themselves, much as the nationalities of Europe regard each other. However, there is a basic division, linguistically and culturally, between the northern Nuristânîs and the southern Nuristânîs. The former are further divided linguistically into two culturally distinct groups, the Vâsi of Pârun and the Kâmkata-speaking population of Kântivâ, Mandol, Dôâb, and the LanDay Sin watershed, who are divided into several tribes. The southern Nuristânîs all call themselves “KalaSha” but are further divided across three languages into various named tribal groups (see Table 16).

3.3.2 Social-Organizational Principles

Patrilineality is the basic organizing principle of Nuristânî society. Nuristânîs fall into named tribal groups based on descent through the male line from a putative founding ancestor. Often the tribal name will reflect an ancient place of origin rather than a founder’s actual name; thus, the Kâta are from Almond Grove (Kântivâ), the Kom are from Kâma (in Nangarhâr), the KShto are from Kust (in the Central District), etc. The southern Nuristânîs reckon themselves in a hierarchy of ethnicity; thus in Wâygal District all the people are KalaSha, but they are in turn divided into the Vâi and the Chima-Nishei, with further divisions among the various villages.

In the strongly patriarchal Nuristânî household, seniority carries authority. The senior male in each household has total authority over household members; elder brothers have authority over younger ones.
All the founder’s male descendants reckon themselves as his “boys” (dāra, dār, dāre, deri, tāthā), and all his boys constitute a corporate agnatic group that controls its common patrimonial rangeland.


<table>
<thead>
<tr>
<th>District</th>
<th>Pashto Name</th>
<th>Local Name</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandol</td>
<td>Kântozi</td>
<td>Kāta</td>
<td>Kāta</td>
</tr>
<tr>
<td>Pashai</td>
<td>Pashai</td>
<td>Pashai</td>
<td>Pashai</td>
</tr>
<tr>
<td>Gujari</td>
<td>Gujari</td>
<td>Gujar</td>
<td>Gujar</td>
</tr>
<tr>
<td>Nurgrâm</td>
<td>Pashai</td>
<td>Pashai</td>
<td>Pashai</td>
</tr>
<tr>
<td>Gujari</td>
<td>Gujari</td>
<td>Gujar</td>
<td>Gujar</td>
</tr>
<tr>
<td>Central</td>
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<td>Kāta</td>
<td>Kāta</td>
</tr>
<tr>
<td>Paruni</td>
<td>Vāsī</td>
<td>Vāsī-vari</td>
<td>Vāsī-vari</td>
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<tr>
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<td>GrāmsaNa</td>
<td>Ashkun</td>
<td>Ashkun</td>
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<tr>
<td>Gujari</td>
<td>Gujari</td>
<td>Gujar</td>
<td>Gujar</td>
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<tr>
<td>Kântozi</td>
<td>Kāta</td>
<td>Kāta</td>
<td>Kāta</td>
</tr>
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<td>Tregami</td>
<td>Tregami</td>
<td>Tregami</td>
</tr>
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<td>Kalasha: Vai</td>
<td>Kalasha-ala</td>
<td>Kalasha-ala</td>
</tr>
<tr>
<td>Bārgimatl</td>
<td>Kântozi</td>
<td>Kāta</td>
<td>Kāta</td>
</tr>
<tr>
<td>Kântozi</td>
<td>Kâta</td>
<td>Kâta</td>
<td>Kâta</td>
</tr>
<tr>
<td>Kântozi</td>
<td>Kâta</td>
<td>Kâta</td>
<td>Kâta</td>
</tr>
<tr>
<td>Bīnozi</td>
<td>Bīno</td>
<td>Kamviri</td>
<td>Kamviri</td>
</tr>
<tr>
<td>Jamjozi</td>
<td>Jāmcho</td>
<td>Kamviri</td>
<td>Kamviri</td>
</tr>
<tr>
<td>Kushtozi</td>
<td>Kšto</td>
<td>Kamviri</td>
<td>Kamviri</td>
</tr>
<tr>
<td>Mandagali</td>
<td>Mumo</td>
<td>Mumviri</td>
<td>Mumviri</td>
</tr>
</tbody>
</table>

Table 17. Ethnic Groups by Provincial District (after Strand 1997, 2008).

Households typically consist of the senior male, his wife or wives (up to four at one time), and his unmarried children. Each wife must have her own hearth in a separate room, as must the wives of male children when they marry. As a man’s family grows, he strives to keep his sons together with him to tend the family’s livestock. Inevitably, senior married sons will move off to start independent households, at which time the father will give them their portions of the current estate. The youngest remaining son typically inherits the family’s house.

Sons inherit shares in their fathers’ mountain pasturelands. The chain of inheritance extends back to the man who first appropriated the pasture for his use. All the founder’s male descendants reckon themselves as his “boys” (dāra, dār, dāre, deri, tāthā), and all his boys constitute a corporate agnatic group that controls its common patrimonial rangeland.
Genealogical knowledge is important for maintaining inheritance claims, and many Nuristânis can trace their pedigrees back thirty or more generations to the putative founders of their tribes.

Traditionally, all property was owned by, inherited from, and controlled by men. Nowadays, under Islamic law, women are entitled to a share of their fathers’ estates; but even if a woman receives such a share, she usually passes it back to her brothers. In any event, she will not inherit rights to summer pastures, which are strictly under control of males in the patriline.

Beyond patrilineality, alliances between men form the interlocking networks that bind tribes and communities together. Major types of alliance include:

- marriage alliances, which bind different families together through their descendants;
- economic alliances, in which men pool their resources for dairying, logging, mining, or contracting with outsiders;
- political alliances, including jihadist alliances between some clerics and their supporters.

In many villages of Nuristân there are one or two low castes of artisans who were slaves in pre-Islamic Nuristâni society. Although they are no longer slaves, they are not considered “freemen” and do not intermarry with the “freemen” of the upper caste. Artisan-caste men do not have rights to pastures and therefore cannot raise livestock, although they may keep a milch cow if they can arrange to feed it. Traditionally, they made most of the material items in Nuristân, including the famous wood carvings of the region.

Nuristânis have a strong independent streak. “Freemen” traditionally do not take orders from anyone except their agnatic elders, and they would rather hire someone than sully their reputations as freemen by working subserviently for someone else.

3.3.3 Villages

Communities (grôm, grâm, gam) in Nuristân take the form of villages ranging in size from 200 – 3,000 inhabitants. Major villages of Nuristân Province are listed in Table 18 to Table 20.
Village communities are the primary social units in Nuristan. Their residents are typically from multiple agnatic groups of the same tribe, although smaller communities dominated by a single agnatic group are not uncommon. Neighborliness is a virtue that binds Nuristani villagers together, as does a strong feeling of community. Community members govern themselves through open community meetings under the guidance of village politicians, who are called “elders” in the local languages.

### 3.3.3.1 Demography

Official CSO estimates of population by district in Nuristan appear in Table 1; the estimate of total population for the whole province 125,000. This estimate is double the population of 60,000 estimated in the 1960’s and seems more realistic than the higher estimates that appear in less-informed sources.

<table>
<thead>
<tr>
<th>National Name</th>
<th>Local Name</th>
<th>Ethnic Group</th>
<th>District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nangarach</td>
<td>nangaraj</td>
<td>Pasha'i</td>
<td>Nurgan</td>
</tr>
<tr>
<td>Malil</td>
<td>malil</td>
<td>Pasha'i</td>
<td>Nurgan</td>
</tr>
<tr>
<td>Tinin</td>
<td>tinin</td>
<td>Ashkun</td>
<td>Nurgan</td>
</tr>
<tr>
<td>Kohlan</td>
<td>khotan</td>
<td>Ashkun</td>
<td>Nurgan</td>
</tr>
<tr>
<td>Pakgal</td>
<td>pakgal</td>
<td>Kafa</td>
<td>Dobjab</td>
</tr>
<tr>
<td>Pyar</td>
<td>pyar</td>
<td>Pasha'i</td>
<td>Dobjab</td>
</tr>
<tr>
<td>Nigal</td>
<td>nigal</td>
<td>Kafa</td>
<td>Dobjab</td>
</tr>
<tr>
<td>Anish</td>
<td>anish</td>
<td>Kita</td>
<td>Mandol</td>
</tr>
<tr>
<td>Kiwshı̈</td>
<td>kivishit</td>
<td>Kita</td>
<td>Mandol</td>
</tr>
<tr>
<td>Mandol</td>
<td>manos ul</td>
<td>Kita</td>
<td>Mandol</td>
</tr>
<tr>
<td>Limar</td>
<td>limar</td>
<td>Kita</td>
<td>Mandol</td>
</tr>
<tr>
<td>Gadwäl</td>
<td>gadwäl</td>
<td>Kita</td>
<td>Mandol</td>
</tr>
<tr>
<td>Pashal</td>
<td>pashal</td>
<td>Kita</td>
<td>Mandol</td>
</tr>
<tr>
<td>Pashki</td>
<td>pashki</td>
<td>Väsi</td>
<td>(Center)</td>
</tr>
<tr>
<td>Eshtiwe</td>
<td>eshtiwe</td>
<td>Väsi</td>
<td>(Center)</td>
</tr>
<tr>
<td>Shripu</td>
<td>shripu</td>
<td>Väsi</td>
<td>(Center)</td>
</tr>
</tbody>
</table>

Table 18. Major Villages in the Alingar Watershed.

<table>
<thead>
<tr>
<th>National Name</th>
<th>Local Name</th>
<th>Ethnic Group</th>
<th>District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gambir</td>
<td>gamir</td>
<td>Tregami</td>
<td>Wäygal</td>
</tr>
<tr>
<td>Wank</td>
<td>wani</td>
<td>Varata</td>
<td>Wäygal</td>
</tr>
<tr>
<td>Nishe'i</td>
<td>nisheir</td>
<td>Nisheir</td>
<td>Wäygal</td>
</tr>
<tr>
<td>Arans</td>
<td>aroshgal</td>
<td>Kalasha: Väi</td>
<td>Wäygal</td>
</tr>
<tr>
<td>Ameshkios</td>
<td>ameshkios</td>
<td>Kalasha: Väi</td>
<td>Wäygal</td>
</tr>
<tr>
<td>Wäygal</td>
<td>vägal</td>
<td>Kalasha: Väi</td>
<td>Wäygal</td>
</tr>
<tr>
<td>Wänä</td>
<td>wani</td>
<td>Sämä (Wänä)</td>
<td>Wänä</td>
</tr>
<tr>
<td>AchaNu</td>
<td>achaunu</td>
<td>Grämsänä (gräm</td>
<td>Grämsänä</td>
</tr>
<tr>
<td>Kantiwâ Ulǘ̈</td>
<td>kantiwã</td>
<td>Kita</td>
<td>(Center)</td>
</tr>
<tr>
<td>Pashki</td>
<td>pashki</td>
<td>Väsi</td>
<td>(Center)</td>
</tr>
<tr>
<td>Eshtiwe</td>
<td>eshtiwe</td>
<td>Väsi</td>
<td>(Center)</td>
</tr>
</tbody>
</table>

Table 19. Major Villages in the Pech Watershed.

<table>
<thead>
<tr>
<th>National Name</th>
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<th>Ethnic Group</th>
<th>District</th>
</tr>
</thead>
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<tr>
<td>Përigal</td>
<td>përigal</td>
<td>Kom</td>
<td>Kämdeš</td>
</tr>
<tr>
<td>Komu</td>
<td>komu</td>
<td>Kom</td>
<td>Kämdeš</td>
</tr>
<tr>
<td>Kämdeš</td>
<td>kambom</td>
<td>Kom</td>
<td>Kämdeš</td>
</tr>
<tr>
<td>Mandagal Sullá</td>
<td>mum ofim</td>
<td>Mumo</td>
<td>Kämdeš</td>
</tr>
<tr>
<td>Përok</td>
<td>përok</td>
<td>Kita</td>
<td>Kämdeš</td>
</tr>
<tr>
<td>Badmuk</td>
<td>badamuk</td>
<td>Kita</td>
<td>Bargmatal</td>
</tr>
<tr>
<td>Bargmatal</td>
<td>bargmatal</td>
<td>Kita</td>
<td>Bargmatal</td>
</tr>
</tbody>
</table>

Table 20. Major Villages in the Landay-Sin Watershed.
Survey results:

<table>
<thead>
<tr>
<th>Village Name</th>
<th>Shuk</th>
<th>Watsar</th>
<th>Palagal</th>
<th>Wâygal</th>
<th>Bajagal</th>
<th>Junyâ</th>
<th>Total</th>
</tr>
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<tr>
<td><strong>Doab</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total No. of Males:</td>
<td>691</td>
<td>562</td>
<td>1,286</td>
<td>390</td>
<td>1,292</td>
<td>2,028</td>
<td>6,249</td>
</tr>
<tr>
<td>Total No. of Females:</td>
<td>690</td>
<td>511</td>
<td>1,221</td>
<td>370</td>
<td>1,005</td>
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<td>594</td>
<td>219</td>
<td>668</td>
<td>1,086</td>
<td>3,373</td>
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<td>No. of Female Children:</td>
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<td>291</td>
<td>683</td>
<td>219</td>
<td>520</td>
<td>1,249</td>
<td>3,399</td>
</tr>
<tr>
<td>Total</td>
<td>1,382</td>
<td>1,073</td>
<td>2,507</td>
<td>760</td>
<td>2,297</td>
<td>4,068</td>
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<td>86</td>
<td>265</td>
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<td>3</td>
<td>1</td>
<td>8</td>
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<tr>
<td>Avg. People/House</td>
<td>6.0</td>
<td>6.0</td>
<td>10.1</td>
<td>8.8</td>
<td>8.7</td>
<td>9.6</td>
<td>8.4</td>
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<tr>
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<td>1.00</td>
<td>1.10</td>
<td>1.05</td>
<td>1.05</td>
<td>1.29</td>
<td>0.99</td>
<td>1.07</td>
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<td>Total No. of Males:</td>
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<td>426</td>
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<td>578</td>
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<td>819</td>
<td>362</td>
<td>865</td>
<td>548</td>
<td>369</td>
<td>3,004</td>
</tr>
<tr>
<td>No. of Female Children:</td>
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<td>562</td>
<td>283</td>
<td>668</td>
<td>411</td>
<td>315</td>
<td>2,270</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>2,022</td>
<td>936</td>
<td>1,237</td>
<td>1,147</td>
<td>7,728</td>
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<td>153</td>
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<td>3</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td>25</td>
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<tr>
<td>Avg. People/House</td>
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<td>6.8</td>
<td>6.5</td>
<td>8.3</td>
<td>5.2</td>
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<td>1.25</td>
<td>1.20</td>
<td>1.20</td>
<td>1.27</td>
<td>1.07</td>
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<td></td>
<td></td>
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<tr>
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<td>599</td>
<td>634</td>
<td>790</td>
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<td>203</td>
<td>3,923</td>
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<td>563</td>
<td>625</td>
<td>916</td>
<td>188</td>
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<tr>
<td>No. of Male Children:</td>
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<td>460</td>
<td>553</td>
<td>875</td>
<td>164</td>
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<td>No. of Female Children:</td>
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<td>383</td>
<td>389</td>
<td>631</td>
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<td>Total</td>
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<td>1,197</td>
<td>1,415</td>
<td>2,055</td>
<td>391</td>
<td>7,322</td>
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<tr>
<td>Houses</td>
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<td>177</td>
<td>175</td>
<td>236</td>
<td>266</td>
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<tr>
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<td>Avg. People/House</td>
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<td>6.6</td>
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<td>6.0</td>
<td>7.7</td>
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<tr>
<td>Male/Female Ratio</td>
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<td>1.06</td>
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<td>1.26</td>
<td>1.24</td>
<td>1.08</td>
<td>1.15</td>
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<tr>
<td><strong>Wâmâ</strong></td>
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<td>Total No. of Males:</td>
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<td>809</td>
<td>229</td>
<td>3,791</td>
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<tr>
<td>Total No. of Females:</td>
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<td>797</td>
<td>700</td>
<td>367</td>
<td>790</td>
<td>302</td>
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<td>No. of Male Children:</td>
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<td>564</td>
<td>277</td>
<td>573</td>
<td>159</td>
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<tr>
<td>No. of Female Children:</td>
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<td>469</td>
<td>258</td>
<td>552</td>
<td>232</td>
<td>2,464</td>
</tr>
<tr>
<td>Total</td>
<td>1,132</td>
<td>1,799</td>
<td>1,493</td>
<td>747</td>
<td>1,599</td>
<td>531</td>
<td>7,301</td>
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<tr>
<td>Houses</td>
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<td>209</td>
<td>230</td>
<td>108</td>
<td>233</td>
<td>71</td>
<td>997</td>
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<td>Neighborhoods</td>
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<td>2</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>23</td>
</tr>
<tr>
<td>Avg. People/House</td>
<td>7.8</td>
<td>8.6</td>
<td>6.5</td>
<td>6.9</td>
<td>6.9</td>
<td>7.5</td>
<td>7.3</td>
</tr>
<tr>
<td>Male/Female Ratio</td>
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<td>1.26</td>
<td>1.13</td>
<td>1.04</td>
<td>1.02</td>
<td>0.76</td>
<td>1.08</td>
</tr>
<tr>
<td><strong>Wâygal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total No. of Males:</td>
<td>1,332</td>
<td>497</td>
<td>849</td>
<td>934</td>
<td>1,197</td>
<td>636</td>
<td>5,445</td>
</tr>
</tbody>
</table>
Respondents from all villages stated that population has grown substantially over the past few decades.

3.3.3.2 Village Siting and Divisions
Communities are sited in well-watered, arable places that lie at the nexus of migratory herding routes between mountain pastures and winter quarters.
Large villages, such as Wâygal and Kâmdesh, comprise from two to four autonomous constituent villages, each with its own political leaders and mosque. All villages have named neighborhoods.

3.3.3.3 Dwellings
Nuristânis live in square, multi-storey, flat-roofed houses constructed of alternate layers of deodar-cedar timber and rock-and-clay mortar. On the ground floor is a storeroom and stable, the latter with a small section for human waste; above is the living room, which opens onto a veranda, and a toilet hole opening to the stable below.
Human waste is collected in the latrine portion of the stable. The entire floor of the stable and its contents of human and animal waste is periodically covered with basketfuls of dried hollyoak leaves and allowed to compost. In the spring the women mix up the compost, load the composted mixture into large carrying baskets, and take it to their fields as fertilizer.

3.3.3.4 Community Governance
Nuristâni villages are traditionally democratic, with all male freemen having a say at community meetings. Governing bodies traditionally include “community elders” and “policemen” elected at an annual community meeting; in the recent chaotic times, less democratic “shorâs” and “committees” have taken the place of the traditional democratic institutions.

3.3.3.4.1 Elders
“Elders” (jeST, düSTö, diST’o) are civically motivated men who have achieved status through peacemaking or valorous deeds that defend the community. At the beginning of spring a certain number of “community elders” (gřâŋjeST) is chosen from the elders at large to manage community affairs for the coming year.

3.3.3.4.2 Resource Police
Policemen (ura, malavîc, irîn, ur’î) are elected annually at the beginning of spring. Their primary duty is to enforce through fines village laws that control resources. Such laws include keeping livestock out of cropland and interdicting the picking of tree crops before they are ripe. In some communities they also regulate forest cutting.

3.3.3.4.3 Councils and Committees
New forms of community government have emerged in much of post-Soviet-War Nuristân, under the influence of Islamist and Pakistani custom. Usually called “councils” (shorâs), most of these governing bodies were formed by jihadist Soviet-War commanders or clerics; more recently, they were formed under incentives from OEF commanders, without full community support or claim to
institutional legitimacy. More secularly oriented “committees” (kumeTās) have appeared in villages like Pitigal; these function much as the “community elders” used to, with the addition of overseeing the distribution of timber-contract revenues to community members; but resource policing is not a priority, and a separate body of policemen no longer exists.

3.4 Subsistence-Level Resource Exploitation and Ownership

The people of Nuristân live at a subsistence level, with an economy based on a mixture of agriculture, arboriculture, and animal husbandry. The mountainous environment supports these economic pursuits adequately to maintain the present population, but any accumulation of wealth derived from this traditional economy is mostly contained and redistributed within Nuristân and provides little benefit to raising the overall standard of living through external economic exchange.

The division of subsistence labor between males and females is based on what each gender brings to the dinner table. In the Nuristânî view, a “balanced meal” consists of bread and “mixings,” which implies dairy products (Strand 1975). The women supply the bread; the men supply the mixings.

To supply the bread, women do all the agricultural work, from plowing and planting through irrigation and weeding to harvesting and grinding of the grain. In addition, they must build fires to cook the bread, which entails their gathering of firewood after the crops are harvested, and they must supply the water to form the dough, as well as all other water for the household. Nuristânî women never involve themselves in dairy production, unlike Gujar and Afghân women.

Men are in charge of all livestock raising and dairy production. In addition, they may do the plowing, and they are responsible for harvesting walnuts and other tree crops.

All land in Nuristân is owned, either individually or corporately by the community or agnatic lineage. Pastureland rights are passed from father to son and are not sellable outside the agnatic inheritance group (the “clan”); other land may be sold, but not to tribal outsiders. Among the Vâsi in Pârun pasturelands are held in common by the entire village. In some communities owners of rights to unused pastureland lease them to tribal outsiders (Gujars and highland Afghan tribes), but such arrangements often lead to hostilities between lessor and lessee. Needle-forest land is owned by the community as a whole.

All exploited land is named. The names of pasturelands, winter lands, forest lands, croplands, and water sources for each surveyed village appear in Section 4.2 below. These are meant to be used as starting points for more detailed mapping of Nuristân’s resources in future studies.

3.4.1 Water Usage

Nuristânî settlements are predicated on the traditional abundance of water in the eastern Hindu Kush. Water from the numerous springs and mountain streams has been the mainstay of agricultural life and relatively salubrious human sustenance. But climate-change-induced drought over the last four decades has diminished the former abundance, while need for more cropland to feed an increasing population prompts more water consumption for irrigation.

Water from rivers and streams is community property; springs are sometimes owned, but usually they are community property. Individuals may build mills and even microhydropower generators along watercourses, with the agreement of any affected community members.

3.4.1.1 Irrigation

Irrigation water comes from watercourses and springs. Intake structures direct a portion of the water into stone-lined ditches, which often traverse steep terrain. Wooden aqueducts are common features of Nuristânî irrigation systems.

Irrigation works are maintained in common by the owners of the fields that they irrigate (often everyone in a village). During the summer each field owner has a periodic turn to take irrigation water. In some areas irrigation is done overnight, for better absorption.

In times of drought fights between women over irrigation turns become common, and in recent years fights between whole communities in Nuristân Province (Kâmdesh vs. Kushtoz, Wâigal vs. Arans, Juniā vs. Piâr) have broken out over rights to drought-scarce water.

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3.4.1.2 Human Water Consumption

Almost all Nuristāni communities have springs as their source of drinking water. Spring water in Nuristān is generally clean and safe to drink, as long as the source has not been contaminated by livestock or children. Communities that lie along streams or rivers often draw drinking water from the watercourse. Such water contains pathogens that cause illness and high infant mortality; but those who survive are usually immune to waterborne parasites by the time they reach adulthood.

Women are responsible for bringing water to the household. The major complaint regarding drinking water was the distance that women had to go to get to the source. Pipe distribution systems have been installed in some villages under various assistance programs during recent years. The survey results showed this was a consistent need in the areas surveyed. Average water use per household for drinking, cooking and washing was 95 liters per day.

3.4.1.3 Animal Water Consumption

Water for livestock is adequately available from watercourses and mountain ponds. In some villages there are wooden water troughs provided for cattle.

3.4.1.4 Water Mills and Microhydropower

Most villages have water mills sited along nearby streams or canals. Mills are owned by individuals, who usually collect a small percentage of the ground flour as a fee from users. Many villages have adapted their water-mill technology to microhydropower installations. The earliest of these were built by local entrepreneurs, who continue to charge users on a per/bulb basis. NGOs and PRTs have more recently provided microhydropower facilities to an increasing number of villages in Nuristān.

3.4.1.5 Survey Results on Water Usage

<table>
<thead>
<tr>
<th></th>
<th>Dōāb</th>
<th>Nurgrm</th>
<th>Central</th>
<th>Wāmā</th>
<th>Wāygāl</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking water source:</td>
<td>spring, river</td>
<td>spring, river</td>
<td>spring, river</td>
<td>spring, river</td>
<td>spring, river</td>
<td></td>
</tr>
<tr>
<td>Distance of source from house (m)</td>
<td>226</td>
<td>205</td>
<td>969</td>
<td>633</td>
<td>595</td>
<td>526</td>
</tr>
<tr>
<td>Amount used per day (liters):</td>
<td>118</td>
<td>106</td>
<td>77</td>
<td>90</td>
<td>86</td>
<td>95</td>
</tr>
<tr>
<td>Transport of water to household:</td>
<td>human</td>
<td>human</td>
<td>human</td>
<td>human</td>
<td>human</td>
<td></td>
</tr>
<tr>
<td>Irrigation water source:</td>
<td>river, spring</td>
<td>river, spring</td>
<td>river, spring</td>
<td>river, spring</td>
<td>river, spring</td>
<td></td>
</tr>
<tr>
<td>Distance of source from fields (m)</td>
<td>675</td>
<td>439</td>
<td>2,437</td>
<td>1,361</td>
<td>1,332</td>
<td>1,249</td>
</tr>
<tr>
<td>Average No. of Days Irrigated:</td>
<td>3.5</td>
<td>1.7</td>
<td>14.0</td>
<td>0.8</td>
<td>6.6</td>
<td>5.3</td>
</tr>
<tr>
<td>Average No. of Nights Irrigated:</td>
<td>1.0</td>
<td>80.4</td>
<td>19.1</td>
<td>15.2</td>
<td>5.1</td>
<td>24.2</td>
</tr>
</tbody>
</table>

Table 22. Water Usage.

3.4.2 Land Usage

Nuristān distinguish four major categories of usable land: cropland (ptul), mountain pastures (so'), winter quarters (Sor), and forest (bān’a).

3.4.2.1 Agriculture

Agriculture is carried out on arable land adjoining the community. Additionally, most Nuristān have small fields and fruit- or walnut-tree plantings adjacent to their lower-altitude winter rangelands. Traditionally, all agricultural work was done by women. Nowadays, men mostly do the plowing, but sowing, hoeing, irrigating, weeding, fertilizing, and harvesting are all done by groups of matrilineally related women (grandmothers and their female descendants), who rotate among each other’s fields. Men help with the harvesting, women do the shucking and winnowing, men follow with the threshing, and the women store the grain and fodder.

Fields are intensively fertilized with composted manure and nightsoil. In the spring before seed germination and in the fall after harvest, men of the community bring their flocks of goats to the fields.

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for about a month to fertilize the land. Since chemical fertilizer first appeared in Nuristân around 1970, it has had variable acceptance, cost and accessibility being a hinderance to wider usage. In a few areas serviced by roads mechanization has made a modest appearance in the form of threshers and an occasional tractor. However, neither the terrain nor the local economy allows for wide-scale mechanization at the present stage of development.

3.4.2.1.1 Fields
Fields are sited on relatively level ground near the village or at winter quarters along lower-latitude watercourses. All fields require irrigation. Because of the increasing population, land on the lower margins of the needle forest continues to be cleared for new fields. All fields are irrigated, either by community-built irrigation systems supplying the agricultural area around a village or by individually-constructed systems for outlying fields. Fields usually contain a walnut tree and often other fruit trees. According to the survey, the average householder owns 1.6 jeribs of cropland (Table 23).

Fields are owned by men but worked by their wives. Men with multiple wives normally provide separate fields for their wives to work. Fields may be freely sold to other tribal members, with first buying rights going to close agnates and owners of neighboring fields; but land may not be sold to tribal outsiders.

The valuation of a field depends on the required amount of seed necessary to plant it, its flatness, and its distance from the village. Nuristânis do not measure land in square units, but rather in “bushels” of seed needed to plant it; consequently, local estimates of field size in jeribs are not likely to be too reliable. As a baseline example, forty years ago in Kâmdesh a well-kept field that took one “bushel” (one kâše, about 12 pounds) of maize seed to plant cost six cows if it was adjacent to the village, while fields far away cost as little as one cow. The yield from a good field from one “bushel” of maize seed was about twenty goatskin sacks (tića) of grain, worth two cows, plus one goat’s worth of fodder, while the yield from a poor field was only around five sacks of grain and one kid’s worth of fodder (Strand, personal data from Kâmdesh, 1969).

3.4.2.1.2 Crops
Most of Nuristân is suitable for double cropping during the agricultural cycle. The short growing season of the high valleys of Řâmgal, Pârun, and Kâtagal restricts the inhabitants there to a single yearly crop.

Crops grown include:
- grains: maize, wheat, fox-tail millet, pearl millet, barley, sorghum;
- legumes: various bean varieties, soybeans, lentils, peas (in the higher valleys);
- pumpkins and gourds;
- other: garlic, some onions, tobacco, minimal vegetables

Pumpkins and beans are intercropped with maize.

A native inventory of cultivars appears in Appendix 1, Table 79.
Survey results:

<table>
<thead>
<tr>
<th></th>
<th>Dōāb</th>
<th>Nurgrâm</th>
<th>Central</th>
<th>Wāmā</th>
<th>Wāygâl</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>This Year’s Production in Kg of:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>291</td>
<td>240</td>
<td>272</td>
<td>305</td>
<td>376</td>
<td>297</td>
</tr>
<tr>
<td>Maize:</td>
<td>486</td>
<td>175</td>
<td>1,045</td>
<td>400</td>
<td>861</td>
<td>594</td>
</tr>
<tr>
<td>Millet:</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Barley:</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>82</td>
<td>26</td>
</tr>
<tr>
<td>Legumes</td>
<td>34</td>
<td>42</td>
<td>130</td>
<td>53</td>
<td>78</td>
<td>67</td>
</tr>
<tr>
<td><strong>Income:</strong> (Afs)</td>
<td>4,300</td>
<td>15,159</td>
<td>14,986</td>
<td>13,798</td>
<td>28,228</td>
<td>15,294</td>
</tr>
<tr>
<td><strong>Change in production over Last 3 Years:</strong></td>
<td>0%</td>
<td>14%</td>
<td>0%</td>
<td>-12%</td>
<td>10%</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Own consumption %</strong></td>
<td>100%</td>
<td>98%</td>
<td>99%</td>
<td>100%</td>
<td>93%</td>
<td>98%</td>
</tr>
<tr>
<td><strong>Market %</strong></td>
<td>0%</td>
<td>2%</td>
<td>1%</td>
<td>0%</td>
<td>7%</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Self sufficient</strong></td>
<td>8%</td>
<td>2%</td>
<td>7%</td>
<td>12%</td>
<td>6%</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Size and tenure of agricultural lands:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Size:</strong> jeribs</td>
<td>1.3</td>
<td>0.6</td>
<td>2.7</td>
<td>1.1</td>
<td>2.1</td>
<td>1.6</td>
</tr>
<tr>
<td><strong>Number of farms:</strong></td>
<td>16.8</td>
<td>8.2</td>
<td>2.8</td>
<td>11.0</td>
<td>6.2</td>
<td>9.0</td>
</tr>
<tr>
<td><strong>Number owned:</strong> jeribs</td>
<td>1.3</td>
<td>0.6</td>
<td>3.3</td>
<td>1.0</td>
<td>1.8</td>
<td>1.6</td>
</tr>
<tr>
<td><strong>Number leased:</strong> jeribs</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.2</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>Field Management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Distance from home to field (m):</strong></td>
<td>1,119</td>
<td>1,167</td>
<td>1,309</td>
<td>461</td>
<td>2,786</td>
<td>1,368</td>
</tr>
<tr>
<td><strong>Seed Capacity:</strong> (size)</td>
<td>26.6</td>
<td>14.7</td>
<td>13.1</td>
<td>12.3</td>
<td>12.9</td>
<td>15.9</td>
</tr>
<tr>
<td><strong>Crops Planted:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average No. of Days Irrigated:</strong></td>
<td>3.5</td>
<td>1.7</td>
<td>14.0</td>
<td>0.8</td>
<td>6.6</td>
<td>5.3</td>
</tr>
<tr>
<td><strong>Average No. of Nights Irrigated:</strong></td>
<td>1.0</td>
<td>80.4</td>
<td>19.1</td>
<td>15.2</td>
<td>5.1</td>
<td>24.2</td>
</tr>
<tr>
<td><strong>Amount of Fertilizer Used:</strong></td>
<td>1,291</td>
<td>863</td>
<td>2,708</td>
<td>134</td>
<td>786</td>
<td>1,156</td>
</tr>
<tr>
<td><strong>Kg Commercial Fertilizer:</strong></td>
<td>0.0</td>
<td>19.4</td>
<td>47.6</td>
<td>13.5</td>
<td>28.1</td>
<td>21.7</td>
</tr>
<tr>
<td><strong>Cultivation: plowing, harvesting and transport:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Manually:</strong></td>
<td>91%</td>
<td>94%</td>
<td>78%</td>
<td>95%</td>
<td>72%</td>
<td>86%</td>
</tr>
<tr>
<td><strong>Animal:</strong></td>
<td>9%</td>
<td>6%</td>
<td>22%</td>
<td>5%</td>
<td>28%</td>
<td>14%</td>
</tr>
<tr>
<td><strong>No. Women in Each Summer Agricultural Coop:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of groups:</strong></td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td><strong>Women in each group:</strong></td>
<td>5</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 23. Agricultural Production.
(In this and subsequent tables, anomalous data are highlighted in magenta)

3.4.2.1.3 Arboriculture

Tree crops provide an important portion of the Nuristānis’ diet. Fruits include mulberries, apricots, pomegranates, grapes, apples, figs, jujubes, pears, peaches, and persimmons. Nut crops include walnuts, almonds, and edible apricot seeds. Since the 1960’s walnuts have provided a significant exportable source of revenue. Dried mulberries and apricots also are produced in surplus in some communities.

Trees are usually planted on the periphery of agricultural fields, close to irrigation channels. In some places, notably Wāmā Village and Pashki, there are large plantations of fruit trees. Commercially viable orchards are just now being introduced introduced in Nuristān, with preliminary mixed results.
Survey results:

<table>
<thead>
<tr>
<th></th>
<th>Dōāb</th>
<th>Nurgrām</th>
<th>Central</th>
<th>Wâmâ</th>
<th>Wâygâl</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Trees Owned:</td>
<td>19.8</td>
<td>11.9</td>
<td>10.9</td>
<td>24.8</td>
<td>10.9</td>
<td>15.6</td>
</tr>
<tr>
<td></td>
<td>(average per household per district)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walnuts</td>
<td>8.8</td>
<td>5.1</td>
<td>3.6</td>
<td>12.8</td>
<td>5.0</td>
<td>7.1</td>
</tr>
<tr>
<td>Mulberries</td>
<td>7.2</td>
<td>5.2</td>
<td>4.6</td>
<td>5.2</td>
<td>2.5</td>
<td>5.0</td>
</tr>
<tr>
<td>Apples</td>
<td>2.8</td>
<td>2.3</td>
<td>7.8</td>
<td>11.1</td>
<td>2.0</td>
<td>5.2</td>
</tr>
<tr>
<td>Apricots</td>
<td>1.9</td>
<td>1.9</td>
<td>2.4</td>
<td>7.4</td>
<td>2.9</td>
<td>3.3</td>
</tr>
<tr>
<td>Grapes</td>
<td>2.3</td>
<td>2.1</td>
<td>3.1</td>
<td>4.5</td>
<td>2.0</td>
<td>2.8</td>
</tr>
<tr>
<td>Other</td>
<td>1.0</td>
<td>7.0</td>
<td>4.3</td>
<td>0.1</td>
<td>0.5</td>
<td>2.6</td>
</tr>
<tr>
<td>Last Year’s Production (kg):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walnuts</td>
<td>345.0</td>
<td>87.7</td>
<td>139.6</td>
<td>273.1</td>
<td>140.2</td>
<td>197.1</td>
</tr>
<tr>
<td>Mulberries</td>
<td>149.8</td>
<td>68.4</td>
<td>36.2</td>
<td>22.8</td>
<td>34.7</td>
<td>62.4</td>
</tr>
<tr>
<td>Apples</td>
<td>37.5</td>
<td>7.5</td>
<td>113.6</td>
<td>30.1</td>
<td>34.8</td>
<td>44.7</td>
</tr>
<tr>
<td>Apricots</td>
<td>38.4</td>
<td>16.9</td>
<td>22.3</td>
<td>28.1</td>
<td>31.4</td>
<td>27.4</td>
</tr>
<tr>
<td>Grapes</td>
<td>63.5</td>
<td>33.7</td>
<td>29.7</td>
<td>30.2</td>
<td>45.9</td>
<td>40.6</td>
</tr>
<tr>
<td>Production (Kg/Tree):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walnuts</td>
<td>39.1</td>
<td>17.1</td>
<td>38.8</td>
<td>21.3</td>
<td>28.0</td>
<td>28.8</td>
</tr>
<tr>
<td>Mulberries</td>
<td>20.7</td>
<td>13.2</td>
<td>7.8</td>
<td>4.4</td>
<td>13.7</td>
<td>12.0</td>
</tr>
<tr>
<td>Apples</td>
<td>13.6</td>
<td>3.2</td>
<td>14.6</td>
<td>2.7</td>
<td>17.4</td>
<td>10.3</td>
</tr>
<tr>
<td>Apricots</td>
<td>20.7</td>
<td>9.0</td>
<td>9.3</td>
<td>3.8</td>
<td>10.9</td>
<td>10.7</td>
</tr>
<tr>
<td>Grapes</td>
<td>27.2</td>
<td>15.8</td>
<td>9.5</td>
<td>6.7</td>
<td>22.4</td>
<td>16.3</td>
</tr>
<tr>
<td>Aims for growing fruit trees:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market %</td>
<td>5%</td>
<td>5%</td>
<td>2%</td>
<td>30%</td>
<td>43%</td>
<td>37%</td>
</tr>
<tr>
<td>Own consumption %</td>
<td>92%</td>
<td>94%</td>
<td>62%</td>
<td>48%</td>
<td>52%</td>
<td>70%</td>
</tr>
<tr>
<td>Pleasure (garden) #</td>
<td>2%</td>
<td>3%</td>
<td>10%</td>
<td>0%</td>
<td>9%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Table 24. Tree-Crop Production.

ADP/E Orchard Planting in 2008

There were 171,000 fruit and nut saplings planted by DAI-ADP/E in 2008. The surveyors (some of whom were involved in the project) made the following observations:

- The trees were not distributed in a proper technical manner. The trees were taken to the districts and distributed to farmers without training and technical instruction on proper distance between trees and rows, digging planting holes, preparing basins, planting, heading back, irrigation and with little or no planting supervision.
- The trees were damaged during transportation and it took a long time during the transportation and distribution. Many saplings were dry at planting.
- After the trees were planted, there was no monitoring and follow up of the trees in the field.

The trees’ survival percentage is:

1. Pârûn planted by DAI and 5% alive
2. Dōāb planted by ACC, 20% alive
3. Nurgrâm planted by DAI, 70% alive
4. Wâygâl planted by DAI 30% alive
5. Wâmâ planted by DAI, 25% alive

Farmers request for better results in the future:

- Establishing fruit nurseries in the area where the planting will be done
- Establishing forest nurseries and rehabilitate the forest
- Establishing fruit orchards with adaptable varieties/cultivars
- Training farmers on nursery and orchard management
3.4.2.1.4 Fodder
Animal fodder comes from crop leftovers, planted fodder crops (alfalfa, clover), natural ground cover, and cut hollyoak branches.

Survey results:

<table>
<thead>
<tr>
<th></th>
<th>Dūb</th>
<th>Nurgrām</th>
<th>Central</th>
<th>Wāmā</th>
<th>Wāygal</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount Grown (Alfalfa, etc.):</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Amount from Harvest:</td>
<td>0</td>
<td>144</td>
<td>0</td>
<td>2,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Amount from Grassland:</td>
<td>257</td>
<td>93</td>
<td>6,386</td>
<td>7,694</td>
<td>2,207</td>
<td>3,327</td>
</tr>
<tr>
<td>Income: (Afs)</td>
<td>2,749</td>
<td>4,892</td>
<td>67,249</td>
<td>3,884</td>
<td>18,687</td>
<td>19,492</td>
</tr>
</tbody>
</table>

Table 25. Fodder Production: Average Kg. per Household.

3.4.2.1.5 Food-Gathering
Gathered food is an important part of the local diet, especially in early springtime before new crops are available. A native inventory of gathered edible plants appears in Appendix 1, Table 82. Two wild plants of excellent quality, morel mushrooms and cumin, have provided supplementary incomes for Nuristānīs who live in the areas where they grow. As with other exports, these are sold to Pakistani middlemen.

3.4.2.2 Animal Husbandry
Almost half the subsistence economy of Nuristân depends on an indigenous dairy industry that produces cheese, butter, ghee, and curds. A native inventory of dairy products from eastern Nuristân appears in Appendix 1, Table 83. These are consumed regularly in every Nuristānī household and are also coveted and occasionally bought by the populations surrounding Nuristân. Goats and cattle are the currency of Nuristân and are traditionally valued at a ratio of from five to seven goats to one cow, depending on region. They provide both milk for dairying and meat for local consumption. Animal hides are an important by-product of livestock raising.

Stockraising follows a transhumant migratory round (col, câl) that takes the animals to mountain pasturelands in the summer and back through the village to low-lying quarters in the winter. The transhumant routes are traditionally well-controlled so as not to overgraze the forestland and pastures that are traversed on the way to and from the highest rangelands. Livestock are strictly excluded from cropland while it is producing, but they are brought to fertilize the fields for a month each in the spring and fall on their way to and from the mountain pastures. In general, transhumant scheduling is tighter in tribal areas where pastureland is scarce, such as in southern Wāygal District, but looser in tribal areas where pastureland is abundant, such as Kâmdesh.

It is important to know the locations of transhumant migration routes, as these are potential pathways of overgrazing and habitat destruction. Names of the summer pastures and winter quarters used by each surveyed village appear in Section 4.2, as a starting point for more accurate mapping of rangeland use. Among the northern Nuristānī tribes, scheduling of the migratory round and dairying activities is encoded in their traditional calendar systems, which divides the year into 180 summer days and 180 winter days. The calendar year starts in the spring on a date that varies from village to village according to current climatic conditions. Figure 2 of Appendix 1 shows the months of the calendar used by the Kom tribe.

Most households do not own enough animals or command enough manpower to maintain themselves as independent dairy producers. To provide themselves greater security and greater quantities of milk for more efficient processing in the summer pastures, Nuristānī men form small, ad-hoc dairy cooperatives (pâl’ei, palâ·i) during the summer. They pool their personnel and divide the season’s produce proportionally. Scheduling and routing typically depends on the location of cooperative members’ pastures, which are each used in turn.

Annual losses in livestock can amount to 15-20% as a result of predators (leopards and wolves), disease, falls, drowning, and poisoning. Aside from locally produced turpentine to treat mange, veterinary services are still largely inaccessible.

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<table>
<thead>
<tr>
<th></th>
<th>Dōāb</th>
<th>Nurgrâm</th>
<th>Central</th>
<th>Wāmā</th>
<th>Wāygal</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>(average per household per district)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance to Summer Pastures (meters)</td>
<td>269</td>
<td>257</td>
<td>39,600</td>
<td>9,592</td>
<td>12,429</td>
<td></td>
</tr>
<tr>
<td>Fall</td>
<td>271</td>
<td>8,002</td>
<td>39,725</td>
<td>11,003</td>
<td>14,750</td>
<td></td>
</tr>
<tr>
<td>Distance to Winter Pastures (meters)</td>
<td>272</td>
<td>8,008</td>
<td>39,746</td>
<td>11,886</td>
<td>14,978</td>
<td></td>
</tr>
<tr>
<td>Spring</td>
<td>267</td>
<td>7,959</td>
<td>39,599</td>
<td>11,988</td>
<td>14,953</td>
<td></td>
</tr>
<tr>
<td>No. men who pool goats and labor during the summer:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. Men in Summer Dairy Coop with Householder:</td>
<td>3.3</td>
<td>3.1</td>
<td>3.7</td>
<td>4.6</td>
<td>6.2</td>
<td>4</td>
</tr>
<tr>
<td>No. of goats and sheep:</td>
<td>91</td>
<td>97</td>
<td>49</td>
<td>73</td>
<td>73</td>
<td>77</td>
</tr>
<tr>
<td>No. of Lactating Goats:</td>
<td>56</td>
<td>52</td>
<td>27</td>
<td>52</td>
<td>42</td>
<td>46</td>
</tr>
<tr>
<td>No. of Cattle (Kg):</td>
<td>92</td>
<td>88</td>
<td>88</td>
<td>84</td>
<td>22</td>
<td>61</td>
</tr>
<tr>
<td>No. of Lactating Cows:</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>This Year’s Production of Cheese (Kg):</td>
<td>77</td>
<td>51</td>
<td>237</td>
<td>58</td>
<td>66</td>
<td>98</td>
</tr>
<tr>
<td>Ghee (Kg):</td>
<td>46</td>
<td>19</td>
<td>77</td>
<td>46</td>
<td>41</td>
<td>46</td>
</tr>
<tr>
<td>Curds (Kg):</td>
<td>96</td>
<td>43</td>
<td>106</td>
<td>835</td>
<td>185</td>
<td>253</td>
</tr>
<tr>
<td>% Change of Dairy Production over Last 3 Years:</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>14</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Manure Production (Kg):</td>
<td>1,767</td>
<td>1,830</td>
<td>4,104</td>
<td>583</td>
<td>3,071</td>
<td>2,271</td>
</tr>
<tr>
<td>Animal Health:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animals treated per year</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Total expense (Afs)</td>
<td>1,947</td>
<td>5,429</td>
<td>1,766</td>
<td>7,218</td>
<td>2,434</td>
<td>3,759</td>
</tr>
<tr>
<td>Main diseases</td>
<td>FMD, bacteria, anthrax, anthertokzima, sephacx, PPR, parasite, black leg, pneumonia, CCP, sheep pox, mange, paposa, rinderpest, diarrheaa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animals vaccinated per year</td>
<td>2.2</td>
<td>1.7</td>
<td>0.0</td>
<td>0.0</td>
<td>1.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Total expense (Afs)</td>
<td>75</td>
<td>3,210</td>
<td>2</td>
<td>30</td>
<td>167</td>
<td>697</td>
</tr>
<tr>
<td>Type vaccine</td>
<td>FMD, PPR, Anthrax, ITV, Sheep Pox, CCPP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


3.4.2.3 Forests

Nuristāns exploit the forests for firewood, building material, and household furniture and utensils. Needle forests are public lands for the community that owns them, and anyone from the community may cut trees for building or firewood. In some forested areas local residents have expropriated plots of needle-forest land to be cleared for fields. Because of increasing pressure on the needle forests, some communities regulate the cutting of trees. Oak-forest land is owned by individuals, who use the oak branches for winter livestock feeding as well as for firewood.
Survey results:

<table>
<thead>
<tr>
<th></th>
<th>Dōāb</th>
<th>Nurgrām</th>
<th>Central</th>
<th>Wāmā</th>
<th>Wāygal</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Trees Cut for Building:</td>
<td>22</td>
<td>3</td>
<td>37</td>
<td>9</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Firewood:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yearly Firewood Usage (Kg):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hollyoak:</td>
<td>4,277</td>
<td>4,534</td>
<td>14,891</td>
<td>10,886</td>
<td>6,806</td>
<td>8,279</td>
</tr>
<tr>
<td>Conifer Wood:</td>
<td>228</td>
<td>855</td>
<td>1</td>
<td>0</td>
<td>292</td>
<td>275</td>
</tr>
<tr>
<td>Quantity of wood used (Kg per day):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in summer</td>
<td>10</td>
<td>10</td>
<td>21</td>
<td>24</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>in winter</td>
<td>21</td>
<td>18</td>
<td>52</td>
<td>56</td>
<td>137</td>
<td>57</td>
</tr>
</tbody>
</table>

Table 27. Forest Usage for Subsistence.

3.5 Commercial Resource Exploitation

Exceptions to a full subsistence economy occur in villages that have access to roads. Resource income derives from timber contracts, such as in Pitigal in Kâmdesh District, from gemstone mining, tree-crop sales, and other minor commercial pursuits.

Distributed throughout much of Nuristân are two natural resources, timber and gemstones, that can provide the basis for a significant boost in the region's economy, if managed and marketed properly. Within the last two decades these resources have begun to be exploited and sold on global markets, with some benefit to a portion of the population. Up till now haphazard exploitation practices have engendered ecological calamities in some locations.

Other traditional exports to surrounding regions include walnuts, apricot seeds, ghee, morel mushrooms, cumin, and animal hides.

3.5.1 Forest Products

Nuristân encompasses a major portion of Afghanistan's timber reserves. Deodar cedar is the primary timber commodity, with pine, fir, and spruce being less exploited. Because of the difficulty of the terrain, little commercial exploitation of Nuristân's forests occurred before the Soviet-Afghan war. As hostilities ceased after the fall of the communists, timber merchants from Pakistan aggressively moved into eastern Nuristân, enticing Nuristâni communities with meager amounts of much needed cash for the rights to whole valleys of timber. Some valleys were clear-cut, resulting in desiccation and loss of water resources. The timber merchants bulldozed roads into some valleys to more easily remove the cut timber, which is transported to Pakistan and sold as far away as the Arab Gulf States. They have made large profits on this trade with minimal investment, and the looting of Afghanistan's timber resources by outsiders engenders much of the hostility found along Afghanistan's eastern frontier.

The environmental degradation caused by large-scale timber cutting has given Nuristânis pause to reconsider their dealings with outsider timber merchants. They are now acutely aware of the dangers of clear-cutting, and they are strongly desirous to learn better ways to manage their most precious resource.

Survey results:

<table>
<thead>
<tr>
<th></th>
<th>Dōāb</th>
<th>Nurgrām</th>
<th>Central</th>
<th>Wāmā</th>
<th>Wāygal</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Trees Cut for Sale:</td>
<td>1</td>
<td>2</td>
<td>70</td>
<td>9</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td>Household Income from Contract Timber Revenue:</td>
<td>5,000</td>
<td>0</td>
<td>10,500</td>
<td>0</td>
<td>10,143</td>
<td>5,129</td>
</tr>
</tbody>
</table>

Table 28. Commercial Logging.
In addition to timber, morel mushrooms from the needle forests and wild cumin in the inter-forest zone provide an income in some areas of Nuristan (e.g., Pitigal), where they are gathered and sold to Pakistani traders.

### 3.5.2 Arboriculture

A commercial trade in walnuts has occurred since the introduction of roads into Nuristan. Commercial arboriculture is greatest in Wämâ and Wâygal Districts (Table 24), as well as in unsurveyed Kamdesh District. Edible apricot seeds are exported from Pârun.

Recent attempts at commercial orchard establishment have begun to produce results in some areas of Pârun, Wämâ, and Wâygal, and survey respondents expressed widespread interest in setting up commercial orchards.

### 3.5.3 Gemstones

About 500 miners work on a daily basis throughout Nuristan. Local miners equipped with small scale mining tools can only exploit surface deposits by digging with this primitive equipment and blasting with explosives, a practice that destroys many valuable crystals. In order to exploit deeper gemstone deposits and augment the economy, Nuristanis require more sophisticated mining equipment and training.

As with the timber trade, most marketing of Nuristan gemstones is done through Afghan middlemen, resulting in a minimal share of the overall profits of the trade going to the Nuristanis. Most stones are smuggled out to Pakistan for international sale, and smugglers sometimes collaborate with insurgents in anti-government activities. Little is known about the quantity of gemstones mined and the overall income from mining, as mine owners keep such statistics confidential.

#### Survey results:

Respondents from only two surveyed villages, Wetsir in Dôâb District and Kântiwâ in the Central District, reported income from mining activities.

<table>
<thead>
<tr>
<th>District</th>
<th>Dôâb</th>
<th>Nurgrâm</th>
<th>Central</th>
<th>Wämâ</th>
<th>Wâygal</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Householder Own or Work in a Gemstone Mine?</td>
<td>15%</td>
<td>No</td>
<td>2%</td>
<td>No</td>
<td>No</td>
<td>4%</td>
</tr>
<tr>
<td>Household Income from Mining:</td>
<td>15,688</td>
<td>0</td>
<td>8,000</td>
<td>0</td>
<td>0</td>
<td>11,844</td>
</tr>
<tr>
<td>location of mine</td>
<td>Mawe</td>
<td></td>
<td>Kust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>distance of mine from village (m)</td>
<td>14,875</td>
<td>0</td>
<td>6000</td>
<td>0</td>
<td>0</td>
<td>10,438</td>
</tr>
<tr>
<td>type of mine</td>
<td>emerald</td>
<td></td>
<td>tourmaline</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 29. Gemstone Production.

### 3.5.4 Livestock Products

Dairy products are sometimes sold to Afghan traders, but most is consumed locally. Livestock are sometimes sold to individual outsiders for profit, but Nuristanis rarely pursue commercial livestock trading because they feel disadvantaged by commercial traders. An active export trade in animal hides, through Afghan middlemen, has existed throughout local memory.

### 3.5.5 Artisan Products

Nuristanis are known regionally and among global collectors for their woodworked furniture, containers, and other artifacts. Income from such products is primarily confined to members of the artisan castes, who produce most of the items, but the far greater income from such products goes to retailers in Kabul.
### 3.5.6 Commercial and Employment Income

**Survey results:**

<table>
<thead>
<tr>
<th></th>
<th>Dörāb</th>
<th>Nurgrām</th>
<th>Central</th>
<th>Wāmā</th>
<th>Wāygāl</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Men of family working outside the farm:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>men n. days</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>hrs/month</td>
<td>148</td>
<td>22</td>
<td>278</td>
<td>9</td>
<td>199</td>
<td>131</td>
</tr>
<tr>
<td>Women n. days</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Government n. days</td>
<td>111</td>
<td>41</td>
<td>181</td>
<td>29</td>
<td>214</td>
<td>115</td>
</tr>
<tr>
<td>income</td>
<td>2,443</td>
<td>6,295</td>
<td>7,746</td>
<td>4,680</td>
<td>5,586</td>
<td>5,350</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>which sector</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National-Int. Organization n. days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>income</td>
<td>3,000</td>
<td>5,300</td>
<td>4,000</td>
<td>4,300</td>
<td>17,500</td>
<td>6,820</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>self employee n. days</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>income</td>
<td>4,913</td>
<td>6,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5,456</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>which sector</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private n. days</td>
<td>26</td>
<td>147</td>
<td>20</td>
<td>30</td>
<td>0</td>
<td>44</td>
</tr>
<tr>
<td>Income</td>
<td>3,063</td>
<td>b</td>
<td>100</td>
<td>5,000</td>
<td>0</td>
<td>1,633</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mining n. days</strong></td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Income</td>
<td>2,900</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td><strong>Abroad n. days</strong></td>
<td>0</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Income</td>
<td>0</td>
<td>10,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15</td>
</tr>
</tbody>
</table>

**Table 30. External Employment.**
4 Surveys

LGCD selected IFHope through an RfP process to conduct the NNRA survey in Nuristan. IFHope was tasked to conduct assessments in five districts including Nurgrâm, Wâmâ, Dôâb, Parun and Wâygal. Kamdesh, Mandol and Bargimatâl were not surveyed due to security issues. Veterinary vaccines were given to the livestock of community participants who assisted with conducting the assessment, as an act of good will and to manage expectations that would be raised during the assessment. 37,730 animals were vaccinated through the incentive program.

4.1 Strategy and Design

4.1.1 Technical Approach

The technical approach included the following steps:

1. Identification of stakeholders through personal contacts including provincial and government officials and ministries, district leaders, village elders and shuras, villagers, the PRT, LGCD and USAID.
2. In cooperation with the stakeholders, develop an assessment plan in keeping with both the objectives of the assessment project and further utilization for the development of an NRMP. The plan defined geographic coverage, needed personnel, the security situation, the incentive program, and determined resources and staffing needed to undertake the assessment.
3. Obtain any existing resource assessments including aerial and satellite imagery from USG and Afghan government sources.
4. Design the survey/assessment instruments.
5. Gain approval and support from the various stakeholders for the implementation of the assessment plan.
6. Maintaining close cooperation and communication with the stakeholders as a central component of IFHope’s implementation strategy. Problems encountered during implementation are more easily solved if there is good understanding and cooperation from the beginning.
7. Mobilize resources and undertake the assessment.
8. In conjunction with the assessment, ADA will coordinate a veterinary incentives program working through ministry officials focusing on approximately 500 large ruminants per district. Vaccination and de-worming medication will be provided as will automatic injectors and training of basic veterinary workers (BVW) for each district.
9. IFHope will keep the stakeholders informed.
10. Assessment results will be tabulated, summarized and analyzed.
11. The primary end product of this project will be an assessment report summarizing the results of the assessment for each district. The report will include an executive summary, assessment data as well as recommendations for the development of a natural resources management plan.

4.1.2 Teams and Scheduling

There were two survey teams in each of 5 districts: Nurgrâm, Doâb, Wâmâ, Central, and Wâygal. One team composed of two men: a MAIL representative of Afghân ethnicity; and a Nuristânî field researcher, from mixed but non-hostile Nuristânî ethnic groups and villages. Each team surveyed six villages per district. Because of the lateness of the project’s inception, the higher villages were surveyed first. One test village was selected for survey followed by a return to IFHope office for evaluation and modification of survey forms and methodology.

Trusted Local Hosts. Through high-level provincial officials, the field staff were introduced down the chain of command (deputy governor to woluswâl or acting woluswâl) to a trustworthy village elder, who was responsible for putting them up for the 3-6 days of the survey. Such hosts were responsible for the safety of the field staff. They personally led the field staff from the woluswâlî to the survey village and got them housed in the most suitable way. If a politically acceptable hujira was
available in the village, it was used as accommodation. At the end of the survey, they personally escorted the team back to the woluswâl.

Trustworthy Sources of Information. Villages usually had a traditional shora, unless there was deep political division within the community. Local shora members were identified and asked to act as key consultants for their local sub-communities. Another village institution from which key consultants were drawn were from the body of elected village policeman, known locally as irin (Nurgrâm and Wâmâ), malavre” (Wâygal), ura (Doâb), or uri (Pârun).

4.1.3 Survey Order
Four different surveys were completed for each village.

1. Village survey – The village survey was completed using the key consultant from the village. He was by the woluswâl. There was one village survey per village. The key consultant identified 4-6 sub-village or neighborhood contacts. These were respected men who provided information on each neighborhood and the families within it. Total surveys: 1 per village, 5-6 per district.

2. Neighborhood survey – Neighborhood consultant provided information on the neighborhood survey as well as on the families within each neighborhood. Total surveys: 4-6 per village, 24-36 per district.

3. Individual survey – Neighborhood consultant select 5-8 individuals who completed the “long format” of the survey. Total surveys: 20-40 per village, 120-240 per district.

4. Natural resources measurements – Survey team conducted natural resources measurements for water, forest and pasture resources. Total surveys: 2 per village, 12 per district.

4.1.4 Surveyed Villages
Target villages were selected to represent the most populated watersheds and valleys. In some cases two villages were identified in a similar area, with instructions to survey the one that was most willing and also less affected by security concerns.

The following table lists the six villages in each district that were surveyed – a total of 30.

<table>
<thead>
<tr>
<th>National Name</th>
<th>Wêtsir</th>
<th>Shuk</th>
<th>Palagal</th>
<th>Wâygalak</th>
<th>Bajagal</th>
<th>Junyâ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>vačīf</td>
<td>ūk</td>
<td>hâzāigal</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>National Name</th>
<th>Awîk</th>
<th>Kolatan</th>
<th>Malek</th>
<th>Sharuk</th>
<th>Malel</th>
<th>Wardawu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>âvîk</td>
<td>kolâtâ</td>
<td>mâlak</td>
<td>šodâlâm</td>
<td>mâlil</td>
<td>kandelâm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>National Name</th>
<th>Kântiwâ Ulyâ</th>
<th>Kântiwâ Sulfâ</th>
<th>Eshtiwi</th>
<th>Dewâ</th>
<th>Pashki</th>
<th>Khost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>kûvi</td>
<td>īşjîT</td>
<td>ūgu</td>
<td>īcîu</td>
<td>īşSût</td>
<td>küst</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>National Name</th>
<th>İslâmâbâd</th>
<th>Wâmâ</th>
<th>Bar Kâlay</th>
<th>Achanu</th>
<th>Chaprigal</th>
<th>Kordar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>wâw</td>
<td>sâma</td>
<td>grâmsaNâ grâm</td>
<td>sâbligal</td>
<td>kitar</td>
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</table>

<table>
<thead>
<tr>
<th>National Name</th>
<th>Wâygal</th>
<th>Ameshhoz</th>
<th>Arans</th>
<th>Nishe’ī</th>
<th>Konde Kâlay</th>
<th>Gambir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>vá gal</td>
<td>âmeš deʃ</td>
<td>Züme gal</td>
<td>niše grâm</td>
<td>akuN</td>
<td>gemir</td>
</tr>
</tbody>
</table>
4.1.5 Total Surveys Completed by District

Table 31a lists the total number of surveys completed in each district.

<table>
<thead>
<tr>
<th>District Name</th>
<th>Village</th>
<th>Neighborhood</th>
<th>Household</th>
<th>NRM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dōāb</td>
<td>6</td>
<td>23</td>
<td>189</td>
<td>12</td>
</tr>
<tr>
<td>Nurgrām</td>
<td>6</td>
<td>22</td>
<td>171</td>
<td>12</td>
</tr>
<tr>
<td>Central</td>
<td>6</td>
<td>24</td>
<td>162</td>
<td>12</td>
</tr>
<tr>
<td>Wāmā</td>
<td>6</td>
<td>23</td>
<td>196</td>
<td>12</td>
</tr>
<tr>
<td>Wāygāl</td>
<td>6</td>
<td>24</td>
<td>233</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>116</strong></td>
<td><strong>951</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

Table 31a. Number of Surveys Completed

Map 5. Nuristān Province, showing surveyed districts.
4.2 Survey Results and Assessment by Watershed and Provincial District

Table 32 and Table 33 summarize survey respondents’ and surveyors’ assessments of the major resource sectors in Nuristân. Details of assessments for each district and surveyed village appear subsequently.

<table>
<thead>
<tr>
<th>National Name</th>
<th>Wetsir</th>
<th>Shuk</th>
<th>Palagal</th>
<th>Wâyagalak</th>
<th>Bajagal</th>
<th>Junyâ</th>
</tr>
</thead>
<tbody>
<tr>
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<td>šuk</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Water</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
</tr>
<tr>
<td>Forests</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
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<tr>
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<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
</tr>
<tr>
<td>Cropland</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
</tr>
<tr>
<td>Livestock</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
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<td>disease</td>
<td>disease</td>
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</table>

<table>
<thead>
<tr>
<th>National Name</th>
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<th>Kolatan</th>
<th>Malek</th>
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<th>Malel</th>
<th>Wadawu</th>
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<tr>
<td>Native Name</td>
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<td>malák</td>
<td>šodálam</td>
<td>malá</td>
<td>kandélám</td>
</tr>
<tr>
<td>Water</td>
<td>drought</td>
<td>distant</td>
<td>drought</td>
<td>drought</td>
<td>drought</td>
<td>drought</td>
</tr>
<tr>
<td>Forests</td>
<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
</tr>
<tr>
<td>Pastures</td>
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<td>damaged</td>
<td>insufficient</td>
<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
</tr>
<tr>
<td>Cropland</td>
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<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
</tr>
<tr>
<td>Livestock</td>
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<td>disease</td>
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<table>
<thead>
<tr>
<th>National Name</th>
<th>Kántiwâ Ulyâ</th>
<th>Kántiwâ Süflâ</th>
<th>Eshtiwi</th>
<th>Dewâ</th>
<th>Pashki</th>
<th>Khost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
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<td>lisp T</td>
<td>Sugu</td>
<td>úü</td>
<td>uSüt</td>
<td>küst</td>
</tr>
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<td>Water</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
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</tr>
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<td>Forests</td>
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<td>overgrazed</td>
<td>overgrazed</td>
<td>overgrazed</td>
<td>overgrazed</td>
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<td>Cropland</td>
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<td>adequate</td>
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<td>Livestock</td>
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<table>
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<th>Achanu</th>
<th>Chaprigal</th>
<th>Kordar</th>
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</thead>
<tbody>
<tr>
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<td>sâmâ</td>
<td>âpis</td>
<td>grâmsa</td>
<td>nã grâm</td>
<td>sîbligal</td>
</tr>
<tr>
<td>Water</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
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</tr>
<tr>
<td>Forests</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
</tr>
<tr>
<td>Pastures</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
</tr>
<tr>
<td>Cropland</td>
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<td>flood damaged</td>
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<td>flood damaged</td>
<td>insufficient</td>
</tr>
<tr>
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<td>disease</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Ameshoz</th>
<th>Arans</th>
<th>Nisha’i</th>
<th>Kond Kälây</th>
<th>Gâbir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>vâ gal</td>
<td>âmeš deš</td>
<td>ūlî m</td>
<td>niše grâm</td>
<td>akûN</td>
<td>gemir</td>
</tr>
<tr>
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<td>diminished</td>
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<td>diminished</td>
</tr>
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<td>diminished</td>
<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
</tr>
<tr>
<td>Pastures</td>
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<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
<td>insufficient</td>
</tr>
<tr>
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<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
</tr>
<tr>
<td>Livestock</td>
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<td>disease</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
</tr>
</tbody>
</table>

Table 32. Surveyors’ Assessment of Current Resource and Subsistence Quality in Nuristân.
### Winter Quarters

<table>
<thead>
<tr>
<th>Native Name</th>
<th>National Name</th>
<th>Avaik</th>
<th>Kolatan</th>
<th>Malek</th>
<th>Sharuk</th>
<th>Malil</th>
<th>Wadamu</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Irrigation Water &amp; System</th>
<th>decrease from</th>
<th>decrease from</th>
<th>no change</th>
<th>decrease from</th>
<th>no change</th>
<th>no change</th>
<th>excellent since NSP rehabilitation</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Needle Forest</th>
<th>drought and cutting damage</th>
<th>cutting damage</th>
<th>drought damage</th>
<th>cutting damage</th>
<th>cutting damage</th>
<th>cutting damage</th>
<th>cutting damage</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Oak Forest</th>
<th>decrease from cutting</th>
<th>decrease from cutting</th>
<th>damage from drought and branch-cutting for fodder</th>
<th>decrease from cutting</th>
<th>drought and cutting damage</th>
<th>drought and cutting damage</th>
<th>drought and cutting damage</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Summer Pastures</th>
<th>drought damage</th>
<th>drought damage; flood erosion</th>
<th>drought damage</th>
<th>drought damage</th>
<th>more distant because of drought</th>
<th>drought damage</th>
<th>drought damage</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Winter Quarters</th>
<th>flood and snow damage</th>
<th>drought damage</th>
<th>drought damage</th>
<th>no change</th>
<th>drought damage</th>
<th>drought damage</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Cropland</th>
<th>drought damage</th>
<th>drought damage</th>
<th>damage from lack of stream water and floods</th>
<th>rain and flood damage</th>
<th>drought damage</th>
<th>drought damage</th>
</tr>
</thead>
</table>

### Needle Forest

<table>
<thead>
<tr>
<th>Native Name</th>
<th>National Name</th>
<th>Kântiwâ Üyâ</th>
<th>Kântiwâ Sulfâ</th>
<th>Eshtiwî</th>
<th>Dewâ</th>
<th>Pashki</th>
<th>Khost</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Irrigation Water &amp; System</th>
<th>drought damage to springs</th>
<th>no change</th>
<th>snow damage</th>
<th>rain and flood damage</th>
<th>flood damage</th>
<th>decrease from drought</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Needle Forest</th>
<th>snow damage</th>
<th>snow damage</th>
<th>[above forest]</th>
<th>[at treeline]</th>
<th>snow damage</th>
<th>decrease from cutting</th>
<th>no change</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Oak Forest</th>
<th>no change</th>
<th>no change</th>
<th>[above forest]</th>
<th>[above forest]</th>
<th>no change</th>
<th>no change</th>
<th>no change</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Summer Pastures</th>
<th>rain damage</th>
<th>no change</th>
<th>[above forest]</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Winter Quarters</th>
<th>avalanche damage</th>
<th>no change</th>
<th>avalanche damage</th>
<th>no change</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Cropland</th>
<th>rain and flood damage</th>
<th>no change</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
</tr>
</thead>
</table>

### Winter Quarters

<table>
<thead>
<tr>
<th>Native Name</th>
<th>National Name</th>
<th>Kântiwâ Üyâ</th>
<th>Kântiwâ Sulfâ</th>
<th>Eshtiwî</th>
<th>Dewâ</th>
<th>Pashki</th>
<th>Khost</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Irrigation Water &amp; System</th>
<th>drought damage to springs</th>
<th>no change</th>
<th>snow damage</th>
<th>rain and flood damage</th>
<th>flood damage</th>
<th>decrease from drought</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Needle Forest</th>
<th>snow damage</th>
<th>snow damage</th>
<th>[above forest]</th>
<th>[at treeline]</th>
<th>snow damage</th>
<th>decrease from cutting</th>
<th>no change</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Oak Forest</th>
<th>no change</th>
<th>no change</th>
<th>[above forest]</th>
<th>[above forest]</th>
<th>no change</th>
<th>no change</th>
<th>no change</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Summer Pastures</th>
<th>rain damage</th>
<th>no change</th>
<th>[above forest]</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Winter Quarters</th>
<th>avalanche damage</th>
<th>no change</th>
<th>avalanche damage</th>
<th>no change</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Cropland</th>
<th>rain and flood damage</th>
<th>no change</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
<th>avalanche damage</th>
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</thead>
</table>

### Winter Quarters

<table>
<thead>
<tr>
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<th>National Name</th>
<th>Islâmûbâd</th>
<th>Wâmâ</th>
<th>Bar Kâlây</th>
<th>Acharu</th>
<th>Chaprigal</th>
<th>Kôrdar</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Irrigation Water &amp; System</th>
<th>decrease</th>
<th>drought damage to springs</th>
<th>system is not good</th>
<th>periodically destroyed by floods</th>
<th>decrease from drought</th>
<th>damaged</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Needle Forest</th>
<th>drought damage</th>
<th>some drought damage</th>
<th>drought damage</th>
<th>slight changes</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Oak Forest</th>
<th>damaged</th>
<th>bad condition</th>
<th>livestock damage</th>
<th>drought damage</th>
<th>some areas are damaged</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Summer Pastures</th>
<th>damaged</th>
<th>becoming damaged</th>
<th>drought and disease damage</th>
<th>drought and disease damage</th>
<th>No changes</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Winter Quarters</th>
<th>damaged</th>
<th>bad condition</th>
<th>drought damage</th>
<th>livestock damage</th>
<th>snow-caused decrease</th>
<th>slight changes</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Cropland</th>
<th>damaged</th>
<th>no change</th>
<th>bad condition</th>
<th>damage from lack of stream water and floods</th>
<th>rain and flood damage</th>
<th>drought damage</th>
</tr>
</thead>
</table>

### Winter Quarters

<table>
<thead>
<tr>
<th>Native Name</th>
<th>National Name</th>
<th>Wäygal</th>
<th>Ameshoz</th>
<th>Arâns</th>
<th>Nîsâ’î</th>
<th>Könde Kâlây</th>
<th>Gambîr</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Irrigation Water &amp; System</th>
<th>potential decrease due to cutting of forest</th>
<th>decrease due to cutting of forest</th>
<th>decrease due to cutting of forest</th>
<th>drought-induced water shortages have eased somewhat</th>
<th>drought-induced water shortages have eased somewhat</th>
<th>decrease due to cutting of forest</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Needle Forest</th>
<th>decrease from cutting</th>
<th>decrease from cutting and soil erosion</th>
<th>decrease from cutting</th>
<th>decrease from cutting</th>
<th>snow damage, soil erosion</th>
<th>decrease from cutting</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Oak Forest</th>
<th>decrease and damage from overuse</th>
<th>decrease and damage from overuse</th>
<th>5% of oak trees are damaged, and 3% of soil is eroded</th>
<th>5% of oak trees are destroyed, and 5% of soil is eroded</th>
<th>decrease</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Summer Pastures</th>
<th>damage and decrease from overgrazing, precipitation, and erosion</th>
<th>damage from rain</th>
<th>damage and 6% decrease from overgrazing, precipitation, and erosion</th>
<th>decrease from rain</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Winter Quarters</th>
<th>erosion from</th>
<th>decrease and</th>
<th>30 % soil erosion</th>
<th>30 % soil erosion</th>
<th>decrease</th>
</tr>
</thead>
</table>

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4.2.1 Ailingar Watershed

4.2.1.1 Mandol District (not surveyed)
Mandol District was not included in the survey plan due to poor security.

4.2.1.2 Dôâb District

<table>
<thead>
<tr>
<th>National Name</th>
<th>Weisir</th>
<th>Shuk</th>
<th>Palagal</th>
<th>Waygalak</th>
<th>Bajagal</th>
<th>Junyâ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>vařf</td>
<td>šuk</td>
<td>hâzâgal</td>
<td>hâzâgal</td>
<td>hâzâgal</td>
<td>hâzâgal</td>
</tr>
<tr>
<td>Irrigation Water &amp; System</td>
<td>periodically destroyed by floods</td>
<td>no change</td>
<td>no change</td>
<td>destroyed by flood</td>
<td>70% destroyed by flood</td>
<td>broken</td>
</tr>
<tr>
<td>Needle Forest</td>
<td>no change</td>
<td>no change</td>
<td>damaged by fire</td>
<td>fire damage</td>
<td>no change</td>
<td></td>
</tr>
<tr>
<td>Oak Forest</td>
<td>no change</td>
<td>no change</td>
<td>no change</td>
<td>50% loss to cutting</td>
<td>no change</td>
<td></td>
</tr>
<tr>
<td>Summer Pastures</td>
<td>no change</td>
<td>no change</td>
<td>no change</td>
<td>no change</td>
<td>no change</td>
<td></td>
</tr>
<tr>
<td>Winter Quarters</td>
<td>no change</td>
<td>no change</td>
<td>no change</td>
<td>no change</td>
<td>no change</td>
<td></td>
</tr>
<tr>
<td>Cropland</td>
<td>no change</td>
<td>no change</td>
<td>no change</td>
<td>periodically destroyed by flood</td>
<td>drought caused desiccation</td>
<td>no change</td>
</tr>
</tbody>
</table>

Table 34. Survey Respondents’ Previous-Five-Year Assessments of Resources, Dôâb.
Dôâb lies between Nurgrâm and Mandol districts and includes the Kulem and Bajagal Valleys in the east and the smaller Junyâ Valley in the west, all flowing into the Alingar River.

Major natural resources issues include forest destruction, poor irrigation, and lack of soil for cropland and pastureland.

- **Forest:**
  Dôâb District’s forests are not as good as those of the other districts. Dôâb’s forests consist of oak, pine, pistacia khinjuk, and a small amount of cedar and wild olive. The mountains are not as fully covered by forest than in the other districts, because of cutting for firewood, construction, animal feeding, and a small amount of previous commercial logging. Forests are not now cut for selling, only personal use, because of tribal regulation. In addition, this district’s mountains do not have enough soil for forest trees to grow well.

- **Water:**
  Water coming from alpine watercourses is used for drinking and irrigation purposes. Dôâb has abundant springs in each village, which provide people with irrigation water; but in some cases they are a long distance from the villages.

  The irrigation canals and water intakes are bad. They cannot catch enough water for irrigation and are repeatedly destroyed by flood. Intakes in Palagal, Paglâm, Junyâ, and Bajagal villages need to be reconstructed. Much of the land is not cultivated due to the lack of water.

- **Soil:**
  Soil is eroded by floods due to lack of protections walls along rivers. There is less land for agricultural purposes than other districts

- **Pasture**
  The pastures are very weak. This district has little pastureland due to its terrain and soil. The valleys are narrow and mountains are closer together, with less arable land. Because pastureland is lacking, people need to cut the forest for fodder, resulting in the destruction of the forests.

- **Animals:**
  The condition of livestock is also bad, due to disease and diminished forage. Diseases include FMD, CCPP, PPR and anthrax. There is no program of veterinary services for vaccination, treatment, or training. Wild animals are disappearing due to bad forest conditions.

- **Crops:**
  The main crops are maize, wheat, bean, and a little barley, but crops are insufficient for the villagers due to a shortage of agricultural land. The main reasons for the insufficiency are diminished agricultural land, improper agriculture practices, and old seed, which are the same varieties that have been used for decades. Dôâb has abundant water for agricultural use; but less land with abundant water does not allow enough crop production. Average cropland is about one jerib per family.

  Respondents’ main requests were for certified seed and fertilizer to raise their income.

  There is no systematic orchard production. The main fruit species are walnut, pomegranate, grapes, wild pistachio, and persimmon. Respondents expressed strong desire for orchards and fruit tress, but the district governor and village elders added that they do not want trees the way DAI and ACC distributed them last year.

---

<table>
<thead>
<tr>
<th>National Name</th>
<th>Wetsir</th>
<th>Shuk</th>
<th>Palagal</th>
<th>Waygalak</th>
<th>Bajagal</th>
<th>Junyâ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>sudîr</td>
<td>suk</td>
<td>Palagal</td>
<td>Waygallak</td>
<td>Bajâgal</td>
<td>Junyâ</td>
</tr>
<tr>
<td>Water</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
</tr>
<tr>
<td>Forests</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
</tr>
<tr>
<td>Pastures</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
</tr>
<tr>
<td>Cropland</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
</tr>
<tr>
<td>Livestock</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
</tr>
</tbody>
</table>

Table 35. Surveyors’ Assessment of Current Resource and Subsistence Quality, Dôâb.
• Transportation:
Most villages lack roads, and goods must be carried in by people (especially women) and animals. Only Bajagal village has a road for about 2-3 Km off the main road near Gaiel. The educational level is very low regarding modern knowledge. People are desirous to get an Islamic education, including the women. School facilities are not available for each valley or village.

People’s requests:
Construction of roads, clinics for human health and animals, certified seed, establishment of orchards, training, construction of canals and protection walls, electricity facilities, livestock farms, handicraft facility, schools.

4.2.1.2.1 Shuk

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>Shuk</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Aisar, Esh nar, Achal, Rajina, Tatarik</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>15</td>
</tr>
<tr>
<td>SubVillageSummerPasture5 Yr Evaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Gandrad, Boker nar, Washar</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>2</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5 Yr Evaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Bar Salok, Baritol, Ziknartol, Pisartol</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>1</td>
</tr>
<tr>
<td>SubVillageFieldLands5 Yr Evaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Raji nar, Paraksha, Pacholi nar, Pashlog nar</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>15</td>
</tr>
<tr>
<td>SubVillageNeedleForest5 Yr Evaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageOak ForestLocations</td>
<td>Baz nar, Pansa nar, Wari</td>
</tr>
<tr>
<td>SubVillageOak ForestDistances</td>
<td>5</td>
</tr>
<tr>
<td>SubVillageOak Forest5 Yr Evaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Palakaro, Zig nar, Pash nar Nashya</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>1</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5 Yr Evaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Nashodar, Sangdar, Mandar, Shala</td>
</tr>
</tbody>
</table>

Table 36. Shuk.

Beyond the overall assessment given above for the district, no specific observations were noted for this village.
4.2.1.2.2 Wetsir

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>Wasar</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Mangal, Terwat</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>22.5</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Tanki Bala, Almaai</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>13.5</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Mahipar, Almaai, Shtowa, Pansashal, Kolni</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>7.5</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>0</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>0</td>
</tr>
<tr>
<td>SubVillageOak ForestLocations</td>
<td>Badaria, Odal Wasar</td>
</tr>
<tr>
<td>SubVillageOak Forestdistances</td>
<td>2.5</td>
</tr>
<tr>
<td>SubVillageOak Forest5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Jadirik, Pol nar</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>2</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>Destroyed by flood. Mud retaining walls were constructed but were subsequently destroyed. Need for more permanent flood protection.</td>
</tr>
</tbody>
</table>

Names of Clans in Sub-Village | Wata Dara, Kol Dara

Table 37. Wetsir.

Beyond the overall assessment given above for the district, no specific observations were noted for this village.

4.2.1.2.3 Palagal

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>Paglam</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Badad Sir, Bada Shalta</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>7</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>No Changes</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Pasal Sira, Kam Kot</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>2.5</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>No Changes</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Pachin cha, Saknar, Ma woon Sha</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>2.6</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>No Changes</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Chol Gol nar</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>10</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>No Changes</td>
</tr>
<tr>
<td>SubVillageOak ForestLocations</td>
<td>Pel, Pigal, Pit Kama</td>
</tr>
<tr>
<td>SubVillageOak Forestdistances</td>
<td>5</td>
</tr>
<tr>
<td>SubVillageOak Forest5YrEvaluation</td>
<td>No Changes</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Jadrik, Pol nar</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>0.9</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>No Changes</td>
</tr>
</tbody>
</table>

Names of Clans in Sub-Village | Dronik Dar, Bangata Dar, Korik Shi Dar, Goshir

Table 38. Palagal.

Beyond the overall assessment given above for the district, no specific observations were noted for this village.
4.2.1.2.4 Wâygalak

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>Waigalak</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Motok, Gak Ato, Chal Malo, Masom Gala, Gono Gal</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>9.5</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Jamkoni, Shamkolti, Nachak Kari, Mar Nagi, Saidamiri Koti</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>1.5</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Gona Gal, Shamkolti, Chal Malo, Shalkolti</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>0.6</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>Land lost due to flood damage</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Motok, Gak Ato, Chal Malo, Masom Gal</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>9.5</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>Burned and drought occurred</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Achom Koti, Kon Gal, Naik cho, Saida Mir Koti</td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>0.5</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Gon Gal Khola, Shal Koti, Narang</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>0.8</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>Irrigation system is 70% damaged by flood</td>
</tr>
</tbody>
</table>

Table 39. Wâygalak.
Beyond the overall assessment given above for the district, no specific observations were noted for this village.

4.2.1.2.5 Bajagal

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>Shadis</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Sormew (Aga Koni), Sotar gowa, Andel Satrak, Botri</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>19</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>No Changes</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Adwan, Palarak, Damand, Jang</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>8</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>there is no grass because of drought</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Kil, Kari, Palarak, Adwan</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>5</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>Before Adwan village was cropland, but now it has dried out from drought</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Dast pato, Bonri, Andel Satrak</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>10.5</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>Two years ago 2 Km² of needle forest burned</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Bodol Sili, Soridarik, Saka dar Nechak</td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>0.6</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>Forest is cut and 50% percent is finished</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Shader Amka, Domrak, Watang Darkon</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>0.9</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>Irrigation system is 70% damaged by flood</td>
</tr>
</tbody>
</table>

Table 40. Bajagal.
Beyond the overall assessment given above for the district, no specific observations were noted for this village.
### Junyā

<table>
<thead>
<tr>
<th>SubVillageSummerPastureNames</th>
<th>Bahadari, Chorak, Pand Gal, Shandlona</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>13</td>
</tr>
<tr>
<td>SubVillageSummerPasture 5 Yr Evaluation</td>
<td>No Changes</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Goz, Lar Gal, Gada, Selan, Gafa, Shal Kando</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>2.6</td>
</tr>
<tr>
<td>SubVillageWinterQuarters 5 Yr Evaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Khar, Raga, Sawadi, Kandali</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistsances Km</td>
<td>0.8</td>
</tr>
<tr>
<td>SubVillageFieldLands 5 Yr Evaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Gafa, Mandol</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>0.9</td>
</tr>
<tr>
<td>SubVillageNeedleForest 5 Yr Evaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageOak ForestLocations</td>
<td>Bahadari, Nicho</td>
</tr>
<tr>
<td>SubVillageOak ForestDistances</td>
<td>6.5</td>
</tr>
<tr>
<td>SubVillageOak Forest 5 Yr Evaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocation</td>
<td>Wato dar, Tangi, Sar dar</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>2.5</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources 5 Yr Evaluation</td>
<td>Irrigation system is in poor shape and needs rebuilding</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Shami dari, Sharga dari, Shab Khel, Jakha dari, Khan dari, Bai Kheli, Taryan</td>
</tr>
</tbody>
</table>

**Table 41.** Junyā.

Beyond the overall assessment given above for the district, no specific observations were noted for this village.
4.2.1.3 Nurgrâm District

Map 7. Nurgrâm District.

Overall District Summary:

<table>
<thead>
<tr>
<th>National Name</th>
<th>Awik</th>
<th>Kolatan</th>
<th>Malek</th>
<th>Sharuk</th>
<th>Malel</th>
<th>Wadawu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>âvík kolâtâ mâlak šodâlâm mali</td>
<td>kandelâm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation Water &amp; System</td>
<td>decrease from drought; decrease from drought; no change</td>
<td>decrease from drought; no change; no change</td>
<td>excellent since NSP rehabilitation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needle Forest</td>
<td>drought and cutting damage; cutting damage</td>
<td>drought damage</td>
<td>drought damage</td>
<td>cutting damage</td>
<td>cutting damage</td>
<td></td>
</tr>
<tr>
<td>Oak Forest</td>
<td>decrease from cutting</td>
<td>decrease from cutting</td>
<td>damage from drought and branch cutting for fodder</td>
<td>decrease from cutting</td>
<td>drought and cutting damage</td>
<td></td>
</tr>
<tr>
<td>Summer Pastures</td>
<td>drought damage; drought damage; drought damage</td>
<td>drought damage</td>
<td>drought damage</td>
<td>more distant because of drought</td>
<td>drought damage</td>
<td></td>
</tr>
<tr>
<td>Winter Quarters</td>
<td>flood and snow damage</td>
<td>drought and flood damage</td>
<td>drought damage</td>
<td>no change</td>
<td>drought damage</td>
<td></td>
</tr>
<tr>
<td>Cropland</td>
<td>drought damage</td>
<td>drought and flood damage</td>
<td>drought damage</td>
<td>no change</td>
<td>drought damage</td>
<td></td>
</tr>
<tr>
<td>Livestock</td>
<td>disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 42. Survey Respondents’ Previous-Five-Year Assessments of Resources, Nurgrâm.

<table>
<thead>
<tr>
<th>National Name</th>
<th>Awik</th>
<th>Kolatan</th>
<th>Malek</th>
<th>Sharuk</th>
<th>Malel</th>
<th>Wadawu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>âvík kolâtâ mâlak šodâlâm mali</td>
<td>kandelâm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>drought</td>
<td>distant</td>
<td>drought</td>
<td>drought</td>
<td>drought</td>
<td></td>
</tr>
<tr>
<td>Forests</td>
<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
<td>diminished</td>
<td>damaged</td>
</tr>
<tr>
<td>Pastures</td>
<td>damaged</td>
<td>damaged</td>
<td>insufficient</td>
<td>damaged</td>
<td>damaged</td>
<td></td>
</tr>
<tr>
<td>Cropland</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td></td>
</tr>
<tr>
<td>Livestock</td>
<td>disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 43. Surveyors’ Assessment of Current Resource and Subsistence Quality, Nurgrâm.
Nurgrâm is in the western part of Nuristân province and comprises seven main valleys, including Wadawu, Sham, Malìl, Pashágâr, Titin, Pandâw and Kolatan. Some are remote valleys which are located a distance from the district center. The NSP (National Solidity Program) has implemented many projects in each valley including construction of roads, pipe schemes and micro hydropower.

Major natural resources issues include problems due to drought with negative impact on pasture, forest and crop production.

- **Fores**ts:
  Forests consist of conifer, oak, pine nuts, olive, cedar, walnuts, and some wild almonds. These forests were over-harvested for selling in the former Mujahedin government. After the Taliban, people implemented tribal restrictions on cutting. Forests are still harvested for firewood and construction poles and branches for fodder. Harvest for sale is limited.

  Overall, forests are damaged due to previous overharvest, current population pressure and current drought. There is a need for reforestation and for slope stabilization, as well as to provide wood for fuel and construction.

- **Soil**
  Soil erosion caused by floods is a factor in narrow valleys, causing a loss of land for agricultural production. People have insufficient land to meet their needs.

- **Water**:
  Each valley contains a main river that carries the snowmelt and rain from the mountains. Water volume has been affected by drought and overharvest of forests since 1995. Irrigation systems are not effective, which limits crop production.

  There is a need for improving irrigation systems to increase land for cultivation as has been accomplished in some areas through the NSP program.

- **Animals**:
  Animal husbandry is an important aspect of people’s livelihood in Nurgrâm, as is true in other parts of Nuristân. Unfortunately, there is a lack of veterinary services with a negative impact on production of dairy and other animal products.

- **Pastures**:
  Due to drought there is a lack of available forage. Forests are impacted as villagers cut trees as a source of fodder, causing damage to the forest and multiplying environmental effects for erosion and flooding.

- **Crops**:
  Crop production is relatively good, with the main crops being wheat, maize, and beans. Other vegetables are not typically grown by people, although areas like Nangraj village of Wadawu Valley can produce vegetables easily.

  People are very poor and their education level is very low; most of the people are illiterate. Men do not work outside jobs, as their main business is livestock raising. Women do very hard manual labor in the fields, as well as collecting wood in the mountains and transporting water.

**Recommendations:**

This district needs more development projects, such as schools, reforestation, certified seed, establishment of fruit orchards, chemical fertilizer, health clinics for human and animals, rehabilitation of the irrigation systems and pipe systems for drinking water.
4.2.1.3.1 Awik

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>avik</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Gizhgal</td>
</tr>
<tr>
<td>SubVillageSummerPastureDistances Km</td>
<td>3</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>The pasture condition is not good due to drought</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Gizhgal</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>3</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>From flood and snow fall the condition is not good</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Gizhgal</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>3</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>From the reason of drought the condition is not good</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Akoni</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>3</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>Poor condition due to population pressure and drought</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Akoni</td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>3</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>Population pressure causing overharvest of forest.</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Panar</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>0.1</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>The condition is not good because of drought</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Wâmâyi</td>
</tr>
</tbody>
</table>

Table 44. Awik.

Awik Survey Summary Points:
- Forests are damaged by drought and overharvesting. The oak forests are also harvested for firewood and fodder.
- Lack of cropland leaves people short of basic food needs. They depend on animal production, which gives a small income from their land.
- Drinking water also is a big problem. The distance between river and houses is too long and makes it hard to get water for drinking.
- There are neither schools nor any health clinic for animals and humans.

People strongly requested reforestation, establishment of fruit orchards, and establishment of schools and health clinic for animal and humans.
4.2.1.3.2 Kolatan

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>Kolatan</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Manja Gal, Lotkari, Ochari Gal, Stan Gal, Potat, Kosho Gal</td>
</tr>
<tr>
<td>SubVillageSummerPastureDistances Km</td>
<td>6-9</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>Erosion from floods, drought</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Chinjak, Yatoot, Maka Gal, Kosa Gal, Ajon, Potat, Ajon</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>Damage by flood and drought</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Yatun, Kaltan, Kosa Gal, Maka Gal Osasti, Kosho Gal, Potat</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>1.5</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Pashoda, Pashkok, Kosho Gal, Makil</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>8</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>Overharvested from population increase</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Kaltan, Osasti, Makil, Shalna</td>
</tr>
<tr>
<td>SubVillageOakForesIdistances</td>
<td>2.5</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>Decrease from cutting and burning</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>River, spring</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>1.5</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>Decreased water flow from drought and flooding in heavy melt period</td>
</tr>
</tbody>
</table>

Table 45. Kolatan.

Kolatan Survey Summary Points:
- In this valley natural resources are suffering. Forests are damaged by overharvest due to overpopulation. Heavy rains and snows cause avalanche and flood damage, resulting in the destruction of many pine forests.
- Oak forests are also harvested for firewood and fodder.
- Water is not well-used for irrigation due to a long distance between the river and agricultural land. Water is available in the river but is not well-used for irrigation or micro-hydro.
- There is inadequate agricultural land to supply basic food needs.
- Drinking water is located a long distance from the village. Women suffer from the long travel. In some cases animals are used to transport water.

The people’s requests were: reforestation of pine and oak forests, rehabilitation of pastures, rehabilitation the irrigation system and canals, pipe scheme, establishment the fruit orchards such as almond, apple, pomegranate, and apricot, clinics, and schools.
4.2.1.3.3 Malak

<table>
<thead>
<tr>
<th>SubVillageName Local</th>
<th>Malak</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Gono, Mazdar</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>10</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>Pasture condition is not good because of drought</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Noshir, Somekok</td>
</tr>
<tr>
<td>SubVillageWinterQuartersDistances Km</td>
<td>2.5</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>condition is not good because of drought</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Lazhdera, Gana, Noshir, Mamigo</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>3.5</td>
</tr>
<tr>
<td>SubVillageFieldLocation5YrEvaluation</td>
<td>Field conditions are not good because of drought</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Gono, Mazdar, Zona</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>15</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>The forest is weak from drought</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Kotona, Kokona, Badadak, Promanogi</td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>11</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>The forests are damaged by drought</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Noshir, Sangorak, Lazhdera, Pazhiksal, gana</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>1</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSource5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Dokik, Kamal Din Dar, Malik Kan Dar, Natun Dar</td>
</tr>
</tbody>
</table>

Table 46. Malak.

Malak Survey Summary Points:
- Strong drought played role and it affected the soil leaving much of it bare due to loss of groundcover.
- Based on the above reason, the pasture was in so critical condition, fodder and grass were not sufficient to meet the animals’ daily demands.
- Drinking water is also a big problem in Malak and Shok village. People are using spring water and it is so far away, people were suffering to bring water from the springs.
- The second problem of this village was flour mill, people were processing the wheat and maize in Sourill village and it is taking hours to travel to produce flour.
- Village animals are also facing with the lack of water on grazing land.
- Another big problem of people was the bridge on Kolatan river which is difficult to cross during periods of high water in the spring.
- The irrigation water is also another factor, water is flowing in the river in spring season but causes soil erosion, but after the three-four months there is little water flow.

People requested small dams/water catchments during the peak water so that stored water can be used for animals and also for irrigation purposes. People complained of lack of equity and equal distribution of aid from donor agencies.
4.2.1.3.4 Titin

<table>
<thead>
<tr>
<th>SubVillageNamePashto</th>
<th>Sharook</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageNameLocal</td>
<td>Shodlam</td>
</tr>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Diga1</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>15</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>The pasture condition is not good because of drought</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Oskon</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>5</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>The winter area condition is not good from drought</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Balik, Pikak, Koshar, Pashkon</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>5</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>Agriculture land condition is not good because of drought</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Gidok, Koshna Wari, Wendrok</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>7</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>The forest condition is not good because of drought</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Patrobalik, Martokna</td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>3.5</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>Damage from drought and branch cutting for forage</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Pona, Gawhar, Balik</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>0.2</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>Poor condition because of drought</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Asa, Takina</td>
</tr>
</tbody>
</table>

Table 47. Titin.

Beyond the overall assessment given above for the district, no specific observations were noted for this village.
4.2.1.3.5 Malil

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>Malil</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Chon Chatak, Ginckmen, Andok, Wedchal, Shanri, Wana, Dawa, Lohan Gail, Sho Shoring, Shinglish</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>10</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>distance is far because of drought</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Moe Nari, Sweet Goma, Babon, Shada Khodak, Doryalak, Yamander, Dado Dor, Kamer Goma, Sharik, Kikach, Andwali, Gash</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>1.5</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Godor, Moe Nari, Nacha Tal, Lashtolak, Kola Wanda, Shaman, armena, Matishwa, Dershayi, Soram Shotak, Khil, Andabagh, Lamatak, Mansho</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>0.8</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Tat</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Waram Jaltak</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>4</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>the forest is decreased from cutting</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Tat, Waram Jaltak, Chil, Yamander, Sharik, Kamargoma, Kikach</td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>1.5</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>the forest is diminished from over-cutting</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Godor, Moe Nari, Shatolak, Kola Wanda, Matishwa, Dershayi, Soram Shotak, Andabagh, Lamatak, Mansho</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>0.8</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Raijdari</td>
</tr>
</tbody>
</table>

Table 48. Malil.

Malil Survey Summary Points:
- People are suffering a lot by drought; it affects crops, agricultural land and livestock, in addition, the drought caused a decrease in pastures and forests.
- The forest position is not good in this village because the most of forests were cut by people during the Mujahidin government; oak forests are still cut for firewood and fodder.
- Drinking water is obtained from the river which is not clean and suitable for drinking. Some people are using spring water, but it is farther away from the village than the rivers.
- People have not received assistance with improved seed and agricultural issues.
- Animal diseases are a considerable problem. One program is running for training of farmers by USAID/LGCD in Malil and Titin villages with good results. Such programs should be expanded.
4.2.1.3.6 Wadawu

<table>
<thead>
<tr>
<th>SubVillageNamePashto</th>
<th>Ziarat Kali</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageNameLocal</td>
<td>Kandlam</td>
</tr>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Waden, Batizh, Kojli Waro, Samok</td>
</tr>
<tr>
<td>SubVillageSummerPastureDistances Km</td>
<td>12</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>The pasture areas are damaged by drought</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Songloon, Andra Kandlo, Jang, Achnon</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>4.5</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>Winter quarters are damaged from drought</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Doranli, Olshata, Daranawak</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>3.5</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>The agricultural land has low production because of drought</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Samok, Kojli Waro, Jangla</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>11</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>People are cutting the forest for their home building</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Mechi, Mim, Andra Kandlo, Kojarit</td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>5</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>The Oak Forest harmed from overharvest and drought</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Jandadora, Olshata, Sadarakati</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>3.5</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>The stream condition is very very good because of N.S.P Program Construction and rehabilitation efforts</td>
</tr>
</tbody>
</table>

Names of Clans in Sub-Village: Marna Dari, Kalash Dari, Soz Khan Dari

Table 49. Wadawu.

Wadawu Survey Summary Points:

- People’s basic problem is drinking water as they are using the river. Springs are located far from their homes.
- Forest were also cut in the past by people for construction purposes.
- Pasture condition was not good due to the drought. The main problem for pastures is drought and lack of water in the area affecting both pastures and forests.
- ADP-E trees survival rate was 70%. People are requesting more assistance with orchard establishment.
4.2.2 Pech Watershed

4.2.2.1 Central District (Pârun and Kântiwâ)

Map 8. Central District (Pârun and Kântiwâ).

Overall District Summary:

<table>
<thead>
<tr>
<th>National Name</th>
<th>Kântiwâ Ulyâ</th>
<th>Kântiwâ Suflâ</th>
<th>Eshtîwi</th>
<th>Dewâ</th>
<th>Pashki</th>
<th>Khost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>kūtī</td>
<td>əspīT</td>
<td>Supu</td>
<td>əcci</td>
<td>əsūt</td>
<td>kūsti</td>
</tr>
<tr>
<td>Irrigation Water &amp; System</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>drought damage to springs</td>
<td>no change</td>
<td>snow damage</td>
<td>rain and flood damage</td>
<td>flood damage</td>
<td>decrease from drought</td>
<td></td>
</tr>
<tr>
<td>Needle Forest</td>
<td>snow damage</td>
<td>snow damage</td>
<td>no change</td>
<td>[above forest]</td>
<td>[at treeline]</td>
<td>snow damage</td>
</tr>
<tr>
<td>Oak Forest</td>
<td>no change</td>
<td>no change</td>
<td>[above forest]</td>
<td>[above forest]</td>
<td>no change</td>
<td>no change</td>
</tr>
<tr>
<td>Summer Pastures</td>
<td>rain damage</td>
<td>no change</td>
<td>drought damage</td>
<td>drought damage</td>
<td>avalanche damage</td>
<td>avalanche damage</td>
</tr>
<tr>
<td>Winter Quarters</td>
<td>avalanche damage</td>
<td>no change</td>
<td>avalanche damage</td>
<td>no change</td>
<td>avalanche damage</td>
<td>avalanche damage</td>
</tr>
<tr>
<td>Cropland</td>
<td>rain and flood damage</td>
<td>rain and flood damage</td>
<td>avalanche damage</td>
<td>avalanche damage</td>
<td>rain and flood damage</td>
<td>drought damage</td>
</tr>
</tbody>
</table>

Table 50. Survey Respondents’ Previous-Five-Year Assessments of Resources, Central District.

<table>
<thead>
<tr>
<th>National Name</th>
<th>Kântiwâ Ulyâ</th>
<th>Kântiwâ Suflâ</th>
<th>Eshtîwi</th>
<th>Dewâ</th>
<th>Pashki</th>
<th>Khost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>kūtī</td>
<td>əspīT</td>
<td>Supu</td>
<td>əcci</td>
<td>əsūt</td>
<td>kūsti</td>
</tr>
<tr>
<td>Water</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
<td>sufficient</td>
</tr>
<tr>
<td>Forests</td>
<td>damaged</td>
<td>damaged</td>
<td>[none]</td>
<td>diminished</td>
<td>damaged</td>
<td>damaged</td>
</tr>
<tr>
<td>Pastures</td>
<td>overgrazed</td>
<td>overgrazed</td>
<td>overgrazed</td>
<td>overgrazed</td>
<td>overgrazed</td>
<td>overgrazed</td>
</tr>
<tr>
<td>Cropland</td>
<td>adequate</td>
<td>adequate</td>
<td>adequate</td>
<td>adequate</td>
<td>adequate</td>
<td>adequate</td>
</tr>
<tr>
<td>Livestock</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
<td>disease</td>
</tr>
</tbody>
</table>

Table 51. Surveyors’ Assessment of Current Resource and Subsistence Quality, Central District.
The Central District contains two major rivers, the Kântiwâ and the Pârun, which join at the southern end of the district to form the Pech River.

Major natural-resource issues include drought-impacted forests, poor irrigation and drinking-water infrastructure, low crop yields, and livestock diseases.

- **Forests:**
  Forests consist of pine nuts, other conifers, and some oak. Conifers are overharvested for home firewood, heating the stables for animals in winter, and building houses. The government is restricting forest harvest, but people are girdling the trees, and when they die after one year the trees are harvested. People are cutting only dead trees for firewood, but many trees are dying every year. In addition, for the past 3-4 years drought has been a big problem, causing destruction of the forests. Mountains are bare from cutting and drought, and this process is continuing. Another cause of damage to forests is avalanches.

- **Land (soil):**
  This district has less agricultural land but has good soil structure. Soil erosion is caused by floods, overharvesting of forests, and lack of protection walls.

- **Water:**
  Water for drinking is provided by spring and river, but in some areas people have problems with the long distance between river or spring and village. Spring water flows off into rivers, and people do not have a system to utilize it in their villages. Irrigation water is sufficient in this district, but irrigation canals are in very poor condition. More than half the water is lost on the way between river and irrigated land.

- **Crops:**
  The main crops are maize, beans, and a little wheat. Because of the climate, most of the land produces one crop in a year. There is not enough yield, because of an outmoded agricultural system and non-use of chemical fertilizer and certified seed. The main fruits grown are apple, apricot, grapes, jujube, and persimmon. Nuts include walnuts and pine nuts. Fruits produce very well, especially apples. One farmer planted apples on his half jerib of land; and although his orchard was not planted scientifically, it yielded 30,000 afs worth of crop, compared to only 2,000 afs worth of maize before the orchard was planted.

- **Animals:**
  People depend on livestock, but animal health is poor. Livestock are dying from different diseases because of unavailability of clinics and specialists. Because of lack of fodder, people are selling their animals in winter.

- **Pastures:**
  Pârun has abundant pasture, the only problem being snow during the winter. People store grasses in summer for winter feeding, but the storage system is bad because of the decay of grasses. Fodder sources are pastures and the oak forest in the lower areas of the district, but both pastures and the oak forest are deteriorating from overgrazing.

- **Wildlife:**
  80% of the wildlife has disappeared because of habitat loss and hunting.

- **Roads:**
  Lack of roads is a problem for the people. Transportation of goods is done by animals and women.

- **Education:**
  This is the main problem in the area; most of the residents are illiterate. Schools and Islamic madrassas are not available for the younger generation.
Surveyors’ views based on the villagers’ requests:
They need reforestation, rehabilitation of the pastures, animal health clinics, human health clinics, schools, roads, irrigation canals, water distribution projects, establishment of fruit nurseries and orchards, certified seed, chemical fertilizer, and wildlife conservation.

4.2.2.1 Eshtiwé

<table>
<thead>
<tr>
<th>SubVillageName</th>
<th>Pashto</th>
<th>Shupu</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>SubVillageWinterQuarter Names</td>
<td>Tanangak, Engam, Man Nish, Tat Lakm Aw arik, Aw naryok</td>
<td></td>
</tr>
<tr>
<td>SubVillageWinterQuarter Distances Km</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Naryok, zha rewk, Tansha, Toto Nak, Tochi, Bogom</td>
<td></td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>[none]</td>
<td></td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>affected by drought</td>
<td></td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>[none]</td>
<td></td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>[none]</td>
<td></td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Chashma Awal (Spring one), Chashma Doyam (spring two)</td>
<td></td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSource5YrEvaluation</td>
<td>Damage by the reason of snow slide</td>
<td></td>
</tr>
</tbody>
</table>

Names of Clans in Sub-Village
Paksha, Pozhod, Pabadka, Aniw Watig, Pyag, Pazgam

Table 52. Eshtiwé.

Beyond the overall assessment given above for the district, no specific observations were noted for this village.

4.2.2.2 Dewa

<table>
<thead>
<tr>
<th>SubVillageName</th>
<th>Pashto</th>
<th>Padi, Pazgam, Pot Nomi</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageName</td>
<td>Local</td>
<td>Padi, Pazgam, Pot Nomi</td>
</tr>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Samgal, Ramgal, Tija, Shot To</td>
<td></td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>affected by drought</td>
<td></td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Tip yash,, Sori, Erek, Tizha Rok</td>
<td></td>
</tr>
<tr>
<td>SubVillageWinterQuarter Distances Km</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>No changes</td>
<td></td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Oskam, Chatka, Pazik, Tozhok</td>
<td></td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>affected by insects and drought</td>
<td></td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>[none]</td>
<td></td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>[none]</td>
<td></td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>they use flood water</td>
<td></td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSource5YrEvaluation</td>
<td>damaged by rain and flooding</td>
<td></td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Padi, Pazgam, Pot Nomi</td>
<td></td>
</tr>
</tbody>
</table>

Table 53. Dewa.
Dewa Survey Summary Points:
- In Dewa village people are suffering from lack of drinking water in the winter season. There is only one spring and it is far away from the village. People have to use firewood to melt snow for drinking water and there is a lack of firewood.

4.2.2.1.3 Pashki

<table>
<thead>
<tr>
<th>SubVillageNamePashto</th>
<th>Pashki</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageNameLocal</td>
<td>Pashki</td>
</tr>
<tr>
<td>SubVillageSummerPastureDistances Km</td>
<td>7</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>damaged from snowslide</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Tawa yok, Abdali yok, Ogra yok, Tasta yok, Tazang Li, Tekrik, Toyo Chamo</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>1</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>damaged from snowslide</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Tawa yok, Abdali yok, Temetik, Toka yok, Ogra yok, Mandi, Tasta yok, Amawal</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>2</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>damaged from rain and flood</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Satrok, Aba, Tekrik, Yoshlok, Akomati, Ayi Chi Sa, Echag</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>3.5</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>damaged from snowslide</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Pashki</td>
</tr>
<tr>
<td>SubVillageOakForestdistances</td>
<td>0.5</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Pârun river, village spring</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>1</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>damaged from flood</td>
</tr>
</tbody>
</table>

Names of Clans in Sub-Village:
- Pashrost, Pashpar, Dondar, Pashlok osta, Pesteni tatba, Pokchi, Pazater, Pamanjok

Table 54. Pashki.
Beyond the overall assessment given above for the district, no specific observations were noted for this village.
### 4.2.2.1.4 Kântiwâ Ulyâ

<table>
<thead>
<tr>
<th>SubVillageNamePashto</th>
<th>Kantiwa Qat kali</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SubVillageSummerPastureNames</strong></td>
<td>Dara Kosht, Bo yots, Chaman , Dara pasi gala, Sosom, Som, Dara Setik, Yakota, Bade Sa, Zhazhi, Yanisha, Karmak</td>
</tr>
<tr>
<td><strong>SubVillageSummerPasture Distances Km</strong></td>
<td>19</td>
</tr>
<tr>
<td><strong>SubVillageSummerPasture5YrEvaluation</strong></td>
<td>Pastures are damaged from rainfall</td>
</tr>
<tr>
<td><strong>SubVillageWinterQuarterNames</strong></td>
<td>Yatsi gala, Pashroka, Tots, Kota Shal, Shi sha, Jah, Yam , isha, Patwi, Bari</td>
</tr>
<tr>
<td><strong>SubVillageWinterQuarterDistances Km</strong></td>
<td>1.5</td>
</tr>
<tr>
<td><strong>SubVillageWinterQuarters5YrEvaluation</strong></td>
<td>Damaged by snowslide</td>
</tr>
<tr>
<td><strong>SubVillageFieldLocationNames</strong></td>
<td>Bago am, Ba atoli, Ata Ati, Pa yok, Madrasa, Shi sha, Chaman , Zha, Bali get, Aw ak, Bada yos</td>
</tr>
<tr>
<td><strong>SubVillageFieldLocationDistances Km</strong></td>
<td>1.5</td>
</tr>
<tr>
<td><strong>SubVillageFieldLands5YrEvaluation</strong></td>
<td>damaged from rainfall and flood</td>
</tr>
<tr>
<td><strong>SubVillageNeedleForestLocation</strong></td>
<td>Cho at , , Mom, Yazh gal, Madrasa, Aza ti</td>
</tr>
<tr>
<td><strong>SubVillageNeedleForestDistances</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>SubVillageNeedleForest5YrEvaluation</strong></td>
<td>damaged by snowslide</td>
</tr>
<tr>
<td><strong>SubVillageOak ForestLocations</strong></td>
<td>Shi sha, Tos, Atosh, Ata ti, Cho at, Pazha, Mum, Aza</td>
</tr>
<tr>
<td><strong>SubVillageOak ForestDistances</strong></td>
<td>9</td>
</tr>
<tr>
<td><strong>SubVillageOak Forest5YrEvaluation</strong></td>
<td>No Changes</td>
</tr>
<tr>
<td><strong>SubVillageIrrigationWaterSourceLocations</strong></td>
<td>village springs, Kântiwâ river</td>
</tr>
<tr>
<td><strong>SubVillageIrrigationWaterSourceDistances</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>SubVillageIrrigationWaterSources5YrEvaluation</strong></td>
<td>a lot of spring are dry because of drought</td>
</tr>
<tr>
<td><strong>Names of Clans in Sub-Village</strong></td>
<td>Gan dara, Gaba dara, Labi dara, Garosh dara, Mashad dara, Kocha dara, Dami dara, Konz dara, Chakni dara</td>
</tr>
</tbody>
</table>

Table 55. Kântiwâ Ulyâ.

Beyond the overall assessment given above for the district, no specific observations were noted for this village.
4.2.2.1.5 Kântiwâ Suflâ

<table>
<thead>
<tr>
<th>SubVillageNamePashto</th>
<th>Islamabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageNameLocal</td>
<td>Aspit</td>
</tr>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Marra sa, Shati, Asa, Mawae, Palota dara, Tekar gar dara, Patil dara</td>
</tr>
<tr>
<td>SubVillageSummerPastureDistances Km</td>
<td>10</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>No Changes</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Anash, Wasi, Marra, Bin, Shata, Basolla, Kamshal, Pakorati, Madrasa</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>3</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>No Changes</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Tarmashi youts, Arga am, Patang na, Badrosta, Ashka, Patil</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>1.5</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>Damaged by a lot of rainfall and flood</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Bean, Shata, Patatok Tol, You seya, Shodrom, Anash, Bo wati</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>14</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>Damaged by snowslide</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Patil pit, Mavi pit</td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>1.5</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>No Changes</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Patil pa nar, Ashka wala, Mavi nar</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>2.5</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>No Changes</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>hemach dara, Zhma dara, Kol dara, Chakna dara, Lata dara, Newa dara, Walok dara, Wich dara, Pal dara, Gan dara, land rawi dara, Remach dara</td>
</tr>
</tbody>
</table>

Table 56. Kântiwâ Suflâ.

Beyond the overall assessment given above for the district, no specific observations were noted for this village.
Table 57.  Kusht.

Beyond the overall assessment given above for the district, no specific observations were noted for this village.
4.2.2.2 Wâmâ District

Overall District Summary:

<table>
<thead>
<tr>
<th>National Name</th>
<th>Islâmâbâd</th>
<th>Wâmâ</th>
<th>Bar Kalay</th>
<th>Achanu</th>
<th>Chaprigal</th>
<th>Kordar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>wâw</td>
<td>sâma</td>
<td>wâw</td>
<td>sâmân</td>
<td>sâbligal</td>
<td>kitar</td>
</tr>
<tr>
<td>Irrigation Water &amp; System</td>
<td>decrease drought damage to springs system is not good periodically destroyed by floods decrease from drought damaged</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needle Forest</td>
<td>damaged damage bad condition some drought damage drought damage slight changes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oak Forest</td>
<td>damaged damaged bad condition livestock damage drought damage some areas are damaged</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer Pastures</td>
<td>damaged becoming damaged drought damage drought and disease damage drought and disease damage No changes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter Quarters</td>
<td>damaged bad condition drought damage livestock damage snow-caused decrease slight changes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cropland</td>
<td>damaged no change bad condition damage from lack of stream water and floods drought, insect, and disease damage some flood damage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 58. Survey Respondents’ Previous-Five-Year Assessments of Resources, Wâmâ.

<table>
<thead>
<tr>
<th>National Name</th>
<th>Islâmâbâd</th>
<th>Wâmâ</th>
<th>Bar Kalay</th>
<th>Achanu</th>
<th>Chaprigal</th>
<th>Kordar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>wâw</td>
<td>sâma</td>
<td>wâw</td>
<td>sâmân</td>
<td>sâbligal</td>
<td>kitar</td>
</tr>
<tr>
<td>Water</td>
<td>sufficient sufficient sufficient sufficient sufficient sufficient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forests</td>
<td>diminished diminished diminished diminished diminished diminished</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pastures</td>
<td>diminished diminished diminished diminished diminished diminished</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cropland</td>
<td>flood damaged flood damaged flood damaged flood damaged flood damaged insufficient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Livestock</td>
<td>disease disease disease disease disease disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 59. Surveyors’ Assessment of Current Resource and Subsistence Quality, Wâmâ.
Wâmâ District encompasses the Pech watershed immediately south of the Central District. It includes several short tributary valleys that join the right bank of the Pech, the largest being the Kordar Valley that joins the Pech as it bends toward the east.

Major natural-resource issues include drought-impacted forests, poor irrigation and drinking-water infrastructure, and crop production.

- **Forest:**
The forests of Wâmâ district comprise conifers, cedar, and oak. All are in bad condition due to cutting and drought.

Forests are cut with permission from the *shura*, and people are allowed to cut only dead trees for their personal construction purposes, not for commercial sale. Wâmâ is the only surveyed district that has strong *shura* regulation for the cutting of the forests. The government has also imposed some rules, but the *shura* is stronger than the government.

The main reasons for forest cutting are construction and feeding of livestock; and although there are strong rules, the Wâmâ forests are already about 20-25% cut. Needle forests are not overharvested, because they are at higher elevations. In the lower elevation closer to the villages there are oak forests, which are protected for pasturing and fodder.

People get firewood by collecting dried branches and collecting wood which is brought by floods from Pârûn.

- **Water:**
Water for drinking comes mainly from springs, but they are far away from the villages. Some villages, such as Achanû, Wâmâ Ulyâ, and Islâmâbâd, have pipe scheme facilities.

Water for irrigation comes from rivers and springs. Small catchment dams have been made in some places for irrigation purposes.

The irrigation system is in very poor condition. The main problem is bad irrigation canals, which run 2-4 km from river to field. More than half the water is wasted over this long distance. In some places water is available from the river, but water channels do not exist for proper utilization for irrigation.

- **Soil:**
Soil erosion has resulted from floods, lack of protection walls, and overharvest of timber.

- **Pasture:**
Pastureland is in the same position as the forest; 10-15% is already demolished by drought, floods, and bad management.

- **Livestock:**
Livestock is in poorer condition than in the past. Animals are dying from disease such as FMD, CCPP, PPR and anthrax. Vaccination and treatment services are lacking. People depend on livestock and get 80% of their income from this source. Their stock includes goats, cows, mules, and a few donkeys per family.

- **Crops and vegetables:**
There is limited agricultural land, about 1-1.5 jerib per family. These small landholdings suffer greatly from floods because of lack of protection walls.

Crops include maize, wheat and beans. This district produces two crops per year. Only a small amount of okra and tomato is produced in Achanû.

Orchards are growing well. The main fruit of Wâmâ district are apricot, wild persimmon, walnut, pomegranate, and wild jujube. Achanû’s pomegranates are the most famous fruit in this district.

DAI-distributed trees are not doing well. 20% of trees are alive but in poor shape, and the rest have died due to late distribution and bad transportation. Crop seed is used for too many years and does not produce good yields. Chemical fertilizer is not used.
• **Wildlife:**
Wildlife such as monal pheasant, mountain cock, wolf, markhor, monkey, vulture, and other animals are suffering from loss of forest habitat.

• **Transportation:**
Roads are a big problem for residents. Some villages lack roads, and existing roads are destroyed by rockslides and large potholes. A road to Chaprigal village has been constructed by the NSP program. Wâmâ Ulyâ and Achanû roads are about 40% constructed.

4.2.2.2.1 Wâw

<table>
<thead>
<tr>
<th>SubVillageNamePashto</th>
<th>Asar Abad</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageNameLocal</td>
<td>Aps, Astat Pini</td>
</tr>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Manjigal, Talankon</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>30</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>damaged</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Andro, Peni</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>0.7</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>damaged</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Peni, Toniak, Palonga, Dawaw</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>1</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>damaged</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Wâw</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>5</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>the forest is damaged from drought</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Around the village</td>
</tr>
<tr>
<td>SubVillageOakForestdistances</td>
<td>0.1</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>damaged</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>mountain spring</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>2</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>water decrease</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Gawsi Dar, Dronic, Namto Dar, Say Dar, Kasab gar</td>
</tr>
</tbody>
</table>

Table 60. Wâw.

**Wâw Survey Summary Points:**
- As there is no vet clinic in the whole district, their basic need is vet clinic.
- Waw, a sub village of Islâmábâd, has a lot of springs, and the agricultural land is irrigated through these springs. Constructing ponds for these springs will help the people of Wâw in irrigating agriculture land.
4.2.2.2 Wâmâ

Wâmâ Village (Old Wâmâ) Survey Summary Points:
This village is located at the top of the mountain and has small area and a big population; their problems include:

- The people of this village are busy in livestock; most of their animals are suffering from diseases, but they do not have access to a livestock clinic. Construction of a livestock clinic will help them in solving their livestock disease problem.
- This village has a big orchard but some of the trees suffered from different diseases, so they need medicine to be applied on them.
- Irrigation system needs to be rehabilitated.

<table>
<thead>
<tr>
<th>SubVillageNamePashto</th>
<th>Landi Cham</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageNameLocal</td>
<td>Wili Jamad</td>
</tr>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Shoti Gara, Fafish, Echigal, Pashok, Palosa</td>
</tr>
<tr>
<td>SubVillageSummerPastureDistances Km</td>
<td>30</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>The pastures are on the way to damage</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Buni, around the village</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>1</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>The winter area condition is not good</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Buni, Bagh</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>7.5</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Buni, Apnista</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>25</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>Damage</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Masro Ran, Posi, Esik, Posi Araji, Posi Atash, Sik jat</td>
</tr>
<tr>
<td>SubVillageOakForestdistances</td>
<td>15</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>damaged</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>spring, river</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>1.7</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>decrease because of drought</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Gos Dar, Kasab Gar</td>
</tr>
</tbody>
</table>

Table 61. Wâmâ.
### 4.2.2.2.3 Bar kali

<table>
<thead>
<tr>
<th>SubVillageNamePashto</th>
<th>Nawabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageNameLocal</td>
<td>Nawabad</td>
</tr>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Aktaban, Trina, Dasangal, Balkton</td>
</tr>
<tr>
<td>SubVillageSummerPastureDistsKm</td>
<td>32.5</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>Damage by the reason of drought</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Ashri, Ashrak, Astat, Trina, Akataban, Dasangal</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistsKm</td>
<td>12.5</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>Damage by the reason of drought</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Wiba, Pampai, Astat Pina, Astat</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistsKm</td>
<td>2.5</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>The condition is bad</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Akataban, Trina, Dasangal</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistsKm</td>
<td>32.5</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>The condition is bad</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Around the village</td>
</tr>
<tr>
<td>SubVillageOakForestDistsKm</td>
<td>0.5</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>The condition is bad</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Local Springs</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistsKm</td>
<td>1.5</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>The irrigation system is not good</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Sopak Dar, Dawan Dar, Sharik Dar</td>
</tr>
</tbody>
</table>

Table 62. Bar Kalay.

Beyond the overall assessment given above for the district, no specific observations were noted for this village.
### 4.2.2.2.4 Achanu

| SubVillageNamePashto | SubVillageNameLocal | SubVillageSummerPastureNames | SubVillageSummerPasture Distances Km | SubVillageSummerPasture5YrEvaluation | SubVillageWinterQuarterNames | SubVillageWinterQuarterDistances Km | SubVillageWinterQuarters5YrEvaluation | SubVillageFieldLocationNames | SubVillageFieldLands5YrEvaluation | SubVillageNeedleForestLocation | SubVillageNeedleForestDistances | SubVillageNeedleForest5YrEvaluation | SubVillageOak ForestLocations | SubVillageOak Forestdistances | SubVillageIrrigationWaterSourceLocations | SubVillageIrrigationWaterSourceDistances | SubVillageIrrigationWaterSources5YrEvaluation | Names of Clans in Sub-Village |
|----------------------|----------------------|-----------------------------|-------------------------------------|-------------------------------------|-------------------------------|-------------------------------------|-------------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| AchaNu              | GrãmsãNã grãm        | Karik, Ond, Sas, Pint       | 10                                  | The condition is bad because of drought and disease | Padi Rak, Waina, zhagozh Kos, Dako, Maran, paqala, Pakona, Pichakarak | 4                                  | winter pasture is damaged from increase in livestock | Panasha, Mantana, Arak Dera, Arsho, Ponak, Promest, Pasangwa, Shashi Gal | decreased production from floods and lack of irrigation | Shashi Gal, Shaz, Kok | 3.5                             | some trees are dead because of drought | around the village | 4 | Acharu Gãlly                    | 1.5 | every year streams are damage by flood | Kansok Dar, Masha Dar, Khachrok Dar, Dayosh Dar |

**Table 63. Achanu.**

**Achanu Survey Summary Points:**
- They have agriculture lands but do not have proper irrigation systems.
- They have a lot of springs full of water but the people go far places for drinking water so implementing pipe scheme projects will help them in solving this problem.
- Schools and Madrasas are very important for their children to be built in this village.
- Improving of livestock will increase the income of people in the area.
- Roads do not exist in Archanu village and people are carrying fire wood from a long distance.
4.2.2.2.5 Chaprigal

<table>
<thead>
<tr>
<th>SubVillageNamePashto</th>
<th>Bargadish</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageNameLocal</td>
<td>Bargadish</td>
</tr>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Si Nar, Gori Sal, Zamo</td>
</tr>
<tr>
<td>SubVillageSummerPastureDistances Km</td>
<td>20</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>The condition is bad because of drought and disease</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Samar Bagh</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>0.2</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>food decrease because of snow</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Bargadish</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>0.15</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>drought, insects, disease</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Mand galak</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>25</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>damage from drought</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Bargadish</td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>0.2</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>damage from drought</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Sapligal Gully</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>0.1</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>decrease of gully water because of drought</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Gojer, shoriki</td>
</tr>
</tbody>
</table>

Table 64. Caprigal.

Chaprigal Upper Village Survey Summary Points:
- No availability of vaccination to be applied to livestock
- Lack of Orchards
- Irrigation system should be improved
- No availability of certified seeds and chemical fertilizer
- Chaprigal village has the most critical situation for drinking water. Water comes from springs which are too far away. People live in higher parts of the area, while springs and rivers are too far below their villages.
4.2.2.2.6 Kordar

<table>
<thead>
<tr>
<th>SubVillageNamePashto</th>
<th>Mala Abad</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageNameLocal</td>
<td>Mala Abad</td>
</tr>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Gas Kandek, Zhoayi Hori, Aich Nari</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>5</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>No changes</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Gawlishti, Ban Nori Gal, Ernar Nori</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>0.7</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>a little change</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Lilo, Shila Lam, chana watan, zhoyi Danag</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>1</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>some agricultural land damaged by flood</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Ban Nori Gal, Gawlishti, Aich Nari</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>1.5</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>a little change</td>
</tr>
<tr>
<td>SubVillageOak ForestLocations</td>
<td>around the village</td>
</tr>
<tr>
<td>SubVillageOak ForestDistances</td>
<td>0.1</td>
</tr>
<tr>
<td>SubVillageOak Forest5YrEvaluation</td>
<td>some area are damaged</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Kordar Gully</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>3.5</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>streams are damaged</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Shami Dar, Gorka Dar, Samara Dar, Orak Dar</td>
</tr>
</tbody>
</table>

Table 65. Kordar.

Kordar Survey Summary Points:
- Kordar is a large village in Wâmâ district, and most of the people are jobless.
- Villagers want to improve livestock.
- They have less agricultural land and an improper irrigation system.
- The land does not give them enough production, and that is why they want to plant fruit trees, especially apples, on their land, because apples are highly adaptable in this area and will give high yields.
- Schools and madrasas are very important to be built for the children in this village.
- It would help to have graveled roads allow small outlying villages access to the local bazaar.
- The government should provide job opportunities for women, because they work hard in the fields and mountains and also do their home chores.

The government and NGOs do help them, but it is not sufficient for them; so they request the government and NGOs to help them sufficiently to solve their problems.
4.2.2.3 Wâigal District

Map 10. Wâigal District.

<table>
<thead>
<tr>
<th>Overall District Summary:</th>
<th>Wâigal District: Villages</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Name</td>
<td>Wâigal</td>
</tr>
<tr>
<td>Native Name</td>
<td>vâ gal</td>
</tr>
<tr>
<td>Irrigation Water &amp; System</td>
<td>potential decrease due to cutting of forest</td>
</tr>
<tr>
<td>Needle Forest</td>
<td>decrease from cutting</td>
</tr>
<tr>
<td>Oak Forest</td>
<td>decrease and damage from overuse</td>
</tr>
<tr>
<td>Summer Pastures</td>
<td>damage and decrease from overgrazing, precipitation, and erosion</td>
</tr>
<tr>
<td>Winter Quarters</td>
<td>erosion from cutting and overuse</td>
</tr>
<tr>
<td>Cropland</td>
<td>insufficient due to population increase</td>
</tr>
</tbody>
</table>

Table 66. Survey Respondents’ Previous-Five-Year Assessments of Resources, Wâigal.
Wâygal District: Villages

<table>
<thead>
<tr>
<th>National Name</th>
<th>Wâygal</th>
<th>Ameshoz</th>
<th>Arans</th>
<th>Nishâ’i</th>
<th>Konde Kâlay</th>
<th>Gambir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Name</td>
<td>vä gal</td>
<td>ämeš deš</td>
<td>Zönd gal</td>
<td>nisä' gal</td>
<td>akuN</td>
<td>gemir</td>
</tr>
<tr>
<td>Water</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
</tr>
<tr>
<td>Forests</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
<td>diminished</td>
</tr>
<tr>
<td>Pastures</td>
<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
<td>damaged</td>
</tr>
<tr>
<td>Cropland</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
<td>insufficient</td>
</tr>
<tr>
<td>Livestock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 67. Surveyors’ Assessment of Current Resource and Subsistence Quality, Wâygal.

The NRM survey started with a meeting of shura and elders. After the briefing of elders, their contribution and cooperation was very good.

- **Forest:**
  Wâygal district has a lot of forests, and fortunately the forests are not overharvested for timber sales. After the civil war, people established committees and shuras to help manage forests, and they effectively prohibited traders and smugglers from harvesting forests for timber sales. Forest harvesting for selling continues to be prohibited by the people. There is current pressure on the forests due to population pressure as people need forage for livestock, fuel and building materials. Oak and other trees are harvested for firewood by women, which is a difficult and laborious task. The Ameshoz village forests are badly overharvested. Due to harvest restrictions, people girdle the trees to kill them and then harvest them. Snows cause snowslides which damage the needle forests. There is increasing pressure on forests from cutting fodder, construction poles, and firewood, as well as from floods and drought.

- **Water:**
  Water for drinking is becoming an increasing problem due to damage to the water system. For instance, the Arans village spring is 6 km away from the village and is becoming damaged from overuse. Irrigation system is in poor shape although there is water available in streams. There is lack of water in the summer due to rapid melting of snow and overcutting of the forest in Ameshoz. Wâygal Kuz Kalay has a little more water than other villages; but the land still has a water shortage problem, because the river is too far below the agricultural area. Irrigation water is provided by rivers and springs, but it decreased due to the drought and people faced with the problem of lack of water for irrigation, watering animals and drinking.

- **Soil**
  Soil erosion is caused by floods and lack of protection walls. Overharvesting of forests, especially in summer, leads to flood damage and erosion. Decrease in agricultural land leads to a decrease in food production.

- **Pasture**
  Pasture is decreasing due to the increase of animals, harvesting of forests and lack of oak trees. Pastures are also affected with the excess population of animals, drought and floods. The distance is increasing between villages and pastures due to the excesses of animals and population. Floods and heavy rains caused the pastures to be destroyed and leave the soil bare.

- **Crops and vegetables:**
  The main crops are maize, wheat and beans. Agricultural practices are based on old technology. There is low production from using old seed. There is a lack education in agricultural management. Fruit trees such as apple, pomegranate, apricot, peach, and walnut give the best results, but the main problem is availability of certified varieties and lack of sapling stocks and nurseries. People are not using chemical fertilizer due to their low economic condition and unavailability of product.
4.2.2.3.1 Wāygal Village

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>Pokol Dari, Brak Dari, Shi Dari</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Agoli, Amivli, Atangrai, Alwant, Ashidal, Agok, Pomsana</td>
</tr>
<tr>
<td>SubVillageSummerPastureDistances Km</td>
<td>20</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>Animal increase, a lot of rain and snowfall, soil erosion, and in some places landslides have decreased pastureland</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>3</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>soil erosion from cutting of oak trees</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Orant, Shacha Gal, Awank, Balansa, Beshta Awa, Akchori, Degal, Eash, Poch, Wata tan, Yanik, Shacha Nisha, Ashmarok, Awram, Wisgal, Achwi, Amoli, Adoi was, Ocha, Ago Gal, Etok, Aso, Atmarra, Awzia</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>3</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>agricultural production is not enough for people because of increase in population</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>4</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>forest loss from cutting for house construction; government should start a reforestation program</td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>3</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>Oak is being cut for fodder and firewood.</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Degal Ganta, Akchori Ganta, Eash Ganta, Yankont, Wita, Awcha, Balansa, Achwi</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>1.5</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>“If we do not prevent the cutting of the forest, water shortage will increase”</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Pakol Dari, Shepan Dari, Dama Dari, Dobshi Dari, Veli-Vai Dari</td>
</tr>
</tbody>
</table>

Table 68. Wāygal Village.

Wāygal Village (Kuz Kalay) Survey Summary Points:
The village survey started with a meeting with elders and shura members, and they received a brief explanation of the survey program. They showed good interest and promised to help in coordination.
The following problems were noticed during the survey period:
- The drinking water was providing by river and people are getting this water from long distances. The villagers requested for wells and pipe scheme projects
- Three decades ago the mountains of this village were full of oak forests but unfortunately now the forests are cut off and soil erosion and land sliding is visible in some parts of the area. The forests are harvested mainly for firewood, construction and fodder purposes.
• The pasture ranges are reduced because livestock increased and the forests are decreased near the village.
• The Erâm area of this village has more agriculture land but there is no irrigation water to irrigate the land, the river is lower than the village and the people are not able to solve this problem.
### 4.2.2.3.2 Ameshoz

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>Mural dari chim, Ota dari chim, sultan dari chim, dabok dari chim</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>33</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>Winter and spring rains created soil erosion, which caused diminishing of pastures</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Gajinda, Kamik, Akos, Ouchah, Kantok Dos, Aprika, Tili kont, Aw gram, Shansh, Ashok, Azim, Doshto Gari, Amishak, Atoch, Awtken, Ada Gul, amar, Nori, akangari, Apent</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>12</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>Cutting of oak trees for firewood causes reduction of fodder for livestock</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Awtok, Adamok, Barobir, Kashra galak, Koshatar, Oushalak, gasho, wata gorak, ashok, nilogari, pashtama, dilwa, gont kala, dor, kachok shal, apishat, min, amok, shelfie, ashi, achacho, Apis, ashik, wakosh, Aza, gawta, nagora, prish, adgal, Amar, Atoch, amrik, ashok, torangal, shansh, Owgram, Gul, Jowensh, Chatras, Agorak, Pilesa, kusht, Komari</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>16</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>Production decrease from drought and population increase portend lack of food</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Awcha, Agzha, Azho, min, print</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>6</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>Over-cutting of trees for houses, soil erosion, climate change</td>
</tr>
<tr>
<td>SubVillageOak ForestLocations</td>
<td>Kontgala, Dewan, dilwa, gramda, Kamik, Awehah, outakan, Doshto gari, Awgram, shansh, amrik, pashikont, kajenda, kochoha, Kantok Dosh, waranda, nori, Asho, Azim</td>
</tr>
<tr>
<td>SubVillageOak Forestdistances</td>
<td>12</td>
</tr>
<tr>
<td>SubVillageOak Forest5YrEvaluation</td>
<td>Population increase of humans and livestock causes more cutting of oak trees for fodder and burning</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Winsdo, Brober kanta, Ashor kanta, dilwi kanta, pashtama, kanta, mi kanta, Apeps kanta, Azha kanta, amok kanta, agoda kanta, gramgala kanta, adagul kanta, koshat kanta, ansha kanta, atoch kanta, amrik kanta, ashok kanta, shamgana kanta, shansh kanta, Awgram kanta, asoodo kola kanta, Aprila kanta, jawish kanta</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>6</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>Cutting of trees caused water reduction</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Moral dari, Oto dari, Dabok dari, sultan dari</td>
</tr>
</tbody>
</table>

Table 69. Ameshoz.
Ameshoz Survey Summary Points:
Survey started on 28th of November in this village, first we met the elders and Islamic scholars and explained our survey program to them and then started the survey. The following points were noticed during the survey period:

- Forests were more affected than in the past due to the excess of population and animals. Oak forests were harvested for feeding the animals and firewood.
- Due to the cutting of the forests, the mountains cannot hold the snow for a long period. Snows are melting from rain and sunlight because of deforestation.
- When the snow melts and rain occurs, it causes floods and destruction of agricultural lands and irrigation canals. After the summer season, the water availability is very low causing many problems for irrigation.
- Irrigation water is provided by spring and a pipe scheme project that seems to work sufficiently well and people do not have much problem with delivery, only availability.
- Lack of water has caused another problem, the non-availability of flour mills. People are traveling 4-5 Km distances to reach the flour mills.
4.2.2.3.3 Arans

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>Let dari chem</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Amish Ban, Aso Soma, Shankri, Konadas, Shogi, Asrank, Azhok Brisa, Barsa, Aga Dak, Trintha, Miasa, Lon Gal, Antlogal, Darom Sana</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>40</td>
</tr>
<tr>
<td>SubVillageSummerPasture5Yr Evaluation</td>
<td>increase of animals, soil erosion, landslides, much snowfall in winter, and much rain in summer all have negative impact on pastureland</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Adishi, Amish Ban, Shi Kaw, Acha Nisha, Bashti Garam, Ori Wa, Ataza, Abanla, Ensa, Ensa Patai, Amar Gana, Jamch Gal</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>25</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5Yr Evaluation</td>
<td>soil erosion, human food decreasing</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Awtrant, Kachora, Atoa, Wat Majic, Chokari, Ashari, Konda, Azhda, Gada Onaw, Sata Gal, Ako kani, Apro Rik, Ensa, Amar Gana, Ataza, Nish Garam, Shink, Garmatal, Akshok</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>9</td>
</tr>
<tr>
<td>SubVillageFieldLands5Yr Evaluation</td>
<td>irrigation water decreased from cutting of forest; need improved seeds and orchards</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Adishi, Shogi, Amish Ban, Shankri, Konda</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>7</td>
</tr>
<tr>
<td>SubVillageNeedleForest5Yr Evaluation</td>
<td>increased deforestation from cutting of trees for house construction</td>
</tr>
<tr>
<td>SubVillageOak ForestLocations</td>
<td>Acha Nisha, Ataza, Bishti Gram, Amar Gana, Deshsda, Adeshe, Adrang, Tapi Kaw, Akshok, Azhda, Soor Gal</td>
</tr>
<tr>
<td>SubVillageOak Forestdistances</td>
<td>24.5</td>
</tr>
<tr>
<td>SubVillageOak Forest5Yr Evaluation</td>
<td>population increase of people and livestock has brought negative effects to the oak forest</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Desh Kanta, Bishti Gram, Konda, Abanla, Chokri , Ashari, Shink Kanta, Garmatal Kanta, Washam Kanta, Darop Kanta, Aso Kanta, Shoki Kanta, Ashikal Kanta, Amokia</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>6</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5Yr Evaluation</td>
<td>cutting of forest decreased water and dried up springs</td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Jni Opiji, Kabod Way Opiji, Kawik Opiji, Eris Opiji, Nadi Shang Opiji, Wai Deen Opiji, Kacha Malo Opiji, Alam Khan Opiji, Drapdari</td>
</tr>
</tbody>
</table>

Table 70. Arans.

Arans Survey Summary Points:
This village survey started with a meeting of elders and Islamic scholars of this village who were briefed about the survey program.

The following problems were noticed during the survey period:
- Forests are affected due to overcutting for fire wood, construction use, and livestock feeding.
- One problem is lack of education in sustainable forest management.
- Water comes from the mountains and used for drinking and irrigation purposes. Twenty years previously MADERA constructed MHP (Micro Hydropower) in this village, but now it is not working well.
- Canal rehabilitation is a big demand, because most of the water is lost before it reaches the land.
• Since the plants and crops are growing well, most of the community members are requesting Orchard establishment projects.

### 4.2.2.3.4 Nishei Grâm

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>Atrö Chem, Brom Chem, Pem Chem, Mia Chem, Shüvala Chem</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Oshag, Naskana, Wasa, Somani, Dangal, Sari Gal, Wani, Awoot, Goshing, Adi, Sees, Abongera, Achalak, Ashtagal, Awsha, Boshgon</td>
</tr>
<tr>
<td>SubVillageSummerPastureDistances Km</td>
<td>9.5</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Shpa Dark, Pashog, Abiti, Dangal, Golser, Doshigal, Watita, Abli Grog, Ashla, Magarma</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>5.4</td>
</tr>
<tr>
<td>Soil erosion and snow load has damaged pastures 6%</td>
<td></td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Awtrant, Pit, Matigal, Mori, Abiti, Pril, Awtorwega, Domalish, Akongal, Fim, Kalg</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>4</td>
</tr>
<tr>
<td>Increase of population caused lack of food</td>
<td></td>
</tr>
<tr>
<td>SubVillageNeedleForestLocationNames</td>
<td>Bartolag, Achlak, Adorigal, Bosh Kon, Magar, Ashalwi, Galag, Agola, Watadog, Gawmera, Kalmata</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>7</td>
</tr>
<tr>
<td>Forest is in danger from cutting of trees for construction</td>
<td></td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Arwi, Tiz, Ayon Gabar, Achalak, Ashtigar, Awshal, Boshi, Kon</td>
</tr>
<tr>
<td>SubVillageOakForestdistances</td>
<td>5</td>
</tr>
<tr>
<td>5% Oak trees are damaged, and 3% soil erosion</td>
<td></td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Masti Gal, Mori, Tiz, Agola, Magar, Par Tong</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>6.5</td>
</tr>
<tr>
<td>Three years ago there was severe drought and water shortage, nowadays water has increased a little bit</td>
<td></td>
</tr>
<tr>
<td>Names of Clans in Sub-Village</td>
<td>Astan dare, PaTül dare, Kosük dare, KaNmm dare, Sanki dare, Sunarat dare, Nali dare, DamDe dare, BuRa dare, Bfâm dare, Shüvala</td>
</tr>
</tbody>
</table>

Table 71. Nishei Grâm.

Beyond the overall assessment given above for the district, no specific observations were noted for this village.
4.2.2.3.5 Kond Kalay

<table>
<thead>
<tr>
<th>SubVillageNameLocal</th>
<th>Waram Chem, Baram Chem, Sholi Chem, Kantodok, Pakam Ten</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Awin, Sorik, Agtakov, Paro list, Dewri, Nil Panti, Ashntara, Gala, Chal Barsik, Kev Maro, Marang ji Takra, Berim Dâ, Ganja Pori, Shamoral</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>10.7</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>Soil erosion from winter snowfall damaged 5% of pasture</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Zardok, Paratol, Azhodak, gotla, Aplâ wart, Azn doq, Kolo, Kana, Bali Kanda, Prichi Wat, Want Gata, Koshal, Badrist</td>
</tr>
<tr>
<td>SubVillageWinterQuarterDistances Km</td>
<td>4.5</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>5% house increase and in winter much snowfall damaged 30% of rangeland, forest, and soil</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Awtrant, Baratol, A zandok, Sovrik, Pakamten, Gotla, Aran, Amirik, Bali Kanda, Wânt Gata, Wânt</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>6</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>population increase and drought have caused lack of food</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Awichag, Agat Kaw, Sorik Ban, Dewri, Nil Panti, Komro, Ashtara Gala, A meen Cho, Chal Bar seek, Marangji Takra, Shamral, Ganja Pori</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>11</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>much snowfall in winter has damaged needle forest through soil erosion</td>
</tr>
<tr>
<td>SubVillageOak ForestLocations</td>
<td>Agototok, Amrik, Okashri, Pakamten, Soram Shal, Andrish, Barata, Chiti Gal, Ganisha, Kolo Kana, Bali Kanda, Prichi Wat, Agol Shal, Badrist, Want Gata, Kanto Doak, Koshal, Ashokora, Shtan</td>
</tr>
<tr>
<td>SubVillageOak Forestdistances</td>
<td>9.5</td>
</tr>
<tr>
<td>SubVillageOak Forest5YrEvaluation</td>
<td>5% of oak forest is finished and 5% soil erosion has occurred</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>2.6</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5Yr Evaluation</td>
<td>three years ago water was less but now a days is ok</td>
</tr>
</tbody>
</table>

Table 72. Kund Kalay.

Beyond the overall assessment given above for the district, no specific observations were noted for this village.
### Gambir

<table>
<thead>
<tr>
<th>SubVillageName Local</th>
<th>Ghulamta, Lokil, Sokil</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubVillageSummerPastureNames</td>
<td>Karen, Ayi Kan, Wama Gal, Kachang, Trana Dok, Wata God, Shirok, Water Kas, Wrando, Kiro Shakoda, Gamberchok, Gajawat</td>
</tr>
<tr>
<td>SubVillageSummerPasture Distances Km</td>
<td>5</td>
</tr>
<tr>
<td>SubVillageSummerPasture5YrEvaluation</td>
<td>pasture is damaged from rain and snow runoff</td>
</tr>
<tr>
<td>SubVillageWinterQuarterNames</td>
<td>Nellomar, Gentol, Watlok, Zhosham Galla, Agon</td>
</tr>
<tr>
<td>SubVillageWinterQuarters5YrEvaluation</td>
<td>oak forest in danger, and livestock lack food</td>
</tr>
<tr>
<td>SubVillageFieldLocationNames</td>
<td>Agora, Sokil, Adesh Da, Azrool, Wasti, Kasteli, Bashar, Gom</td>
</tr>
<tr>
<td>SubVillageFieldLocationDistances Km</td>
<td>2.5</td>
</tr>
<tr>
<td>SubVillageFieldLands5YrEvaluation</td>
<td>lack of food because of increasing of population</td>
</tr>
<tr>
<td>SubVillageNeedleForestLocation</td>
<td>Sarka Gora, Ghulamta, Nelok, Banshe Watla, Dola Shala, Karikot, Wala Goda</td>
</tr>
<tr>
<td>SubVillageNeedleForestDistances</td>
<td>3</td>
</tr>
<tr>
<td>SubVillageNeedleForest5YrEvaluation</td>
<td>Cutting for house construction has put the forest in jeopardy</td>
</tr>
<tr>
<td>SubVillageOakForestLocations</td>
<td>Wata Goda, Benshi Watla, Sam Dobi Shala, Natli Goda, Mata Gir, Asrankal</td>
</tr>
<tr>
<td>SubVillageOakForestDistances</td>
<td>3</td>
</tr>
<tr>
<td>SubVillageOakForest5YrEvaluation</td>
<td>negative effects on oak forest are increasing</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceLocations</td>
<td>Adangal, Sarka Goda, Kama Chang, Azdol, Agoda</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSourceDistances</td>
<td>3</td>
</tr>
<tr>
<td>SubVillageIrrigationWaterSources5YrEvaluation</td>
<td>decrease of water from cutting of forest</td>
</tr>
</tbody>
</table>

**Table 73. Gambir.**

Beyond the overall assessment given above for the district, no specific observations were noted for this village.

### 4.2.3 LanDay Sin Watershed (not surveyed)

The LanDay Sin watershed, comprising Kâmdesh and Bargimatâl Districts, was not included in the survey plan due to poor security.
5 Conclusions and Recommendations

I. Summary:

Most of the areas surveyed are suffering from moderate to severe natural resources degradation. Population pressure is leading to over harvest of trees for fuel, building materials and fodder resulting in loss of ground cover leading to erosion, loss of pasture, rapid snow melt, downstream flooding and further loss of pasture and arable land. The problems are not isolated. A problem in one area will lead to a cycle of problems in other areas of the natural resource system.

Drought was mentioned by survey respondents as a major problem affecting the natural resource base. Consequences of drought range from moderate to severe, depending on altitude and westerliness. Each climatic zone has been adversely affected in most communities surveyed. Current assessments and recent environmental trends elicited from surveyors and surveyed residents appear in Table 32 and Table 33; they indicate drought as the major problem.

Increasing population pressure was given by most survey respondents as the second reason why the resource base is damaged and diminishing. Increased population means increased livestock pressure on forests and rangelands, as well as increased pressure to clear forestland for agriculture. The overall population is suffering from this increasing pressure on a decreasing supply of pasture and crop land. Pastureland is being lost through erosion and cropland is being lost through erosion and flooding. Women in particular are suffering through increasing distance they have to travel to collect wood and water.

Traditional Nuristani institutions of resource management worked well up to the onset of climatic warming and international hostilities in the 1970s. Since then the lack of security and governance has allowed outsiders to plunder Nuristan’s resources by undermining the traditional institutions of governance and regulation.

These problems are complex in that they are connected and interrelated. Dealing with one issue of natural resource management without understanding the whole and the interactions involved would have limited results. Especially at the natural resources management planning level, there should be a comprehensive and systematic approach.

II. Recommendations for Mitigation:

A. Natural Resource Mitigation: Natural Resource Mitigation should be planned as part of a comprehensive and integrated approach. Rather than focusing on just one natural resource problem, an integrated approach would consider the relationship between the differing resources affected, how impacts are felt in different parts of a catchment basin and how the management of one resource affects another. As mentioned previously, deforestation causes soil erosion, loss of pasture, downstream flooding and further loss of arable land downstream. It is important to understand that the resources are part of an integrated ecosystem and should be managed as such.

For the interventions to have a positive impact on watershed conditions, the adoption of the following principles is encouraged. The principles were proposed by Perez and Tschinkel (2003):

• Concentrate on contiguous sites defined by the threats to the landscape, chances of success and cost-effectiveness of the investment, where landscape and economic improvement will be self-evident.
• Include all stakeholders in watershed management rather than only the poor farmers in the target areas, as is the current practice among most development organizations.
• Select preventive rather than curative activities, and base them on land use capacity and income generating potential for maximum cost-effectiveness.
• Treat farmers, large and small, as informed clients to whom development organizations are accountable and who are capable of deciding what is good for them in the light of their resources, priorities and values.

B. Natural Resource Management for Nuristan: NRM management for Nuristan presents some unique challenges. Stakeholders are not accustomed to working together in committees to solve issues affecting a larger population or to address issues as complex as NRM. District shuras exist but
they are very limited in effectiveness and do not typically meet often. They tend to be non-functional or dysfunctional. This report is recommending an approach that factors in cultural considerations and that includes both a top-down and bottom-up approach.

**Top-Down Planning:** Overall NRM planning should be entrusted to a line ministry. The Environment Directorate supposedly operates directly under President Karzai, but it is unclear how active it is. If that Directorate is empowered, it would make sense to work with it as the lead planning agency. Otherwise MAIL would be appropriate since their responsibilities encompass many areas of NRM. There would need to be coordination with MRRD, but one Ministry should take the lead. The lead ministry would have the responsibility for intervention planning that encompasses an entire catchment area. This is important since Nuristan’s have a difficult time working together in a village structure let alone groups of villages in a catchment area that may cross cultural and linguistic boundaries.

The lead Ministry would look at entire catchment and take the responsibility for planning interventions. Although interventions will contain discreet program elements, planners are encouraged to adopt a systems approach and address the entire watershed catchment as a planning unit. As a method of prioritization this includes for each catchment determining the following (suggested by Perez and Tschinkel 2003):

1. Where is the greatest risk of watershed degradation in the future?
2. Where is the highest probability of showing sustainable success quickly?
3. Where is the highest benefit for expended cost and effort?

Since district boundaries in Nuristan correspond exactly to catchment boundaries, a natural division for watershed catchment management would be at the district level. Further divisions would be based on populations inhabiting side valleys, their feeder streams and corresponding catchments. Watershed management projects need to start with rapid but systematic analyses of the nature and roles of stakeholders in the watershed. These analyses will be critical to design interventions that address the threats to and opportunities for watershed management created by the stakeholders’ conditions and goals. Again, because of the linguistic and cultural diversity within Nuristan, and a cultural framework that does not support cooperative planning and decision making between villages, an outside ministry would be best positioned to undertake planning activities.

Existing ministries do not yet have the capacity to undertake such systematic planning activities that address many areas of Natural Resource Management. One of the first steps therefore would be to develop a capacity building program using outside experts to work with line ministries to develop a systematic approach and integrated catchment development plan.

**Bottom-up Approach:** Of the existing and traditional cultural structures in Nuristan, the time-proven traditional resource management institution called the *ura*, *under*, *malavre*, or *iri*, should have a central role at the village level. They control fruit harvest, transhumance migration, and forest cutting. They are elected annually by the villagers to act as “resource police” and have an important role in natural resource management. Working with the village elders and planning ministry responsible for an overall catchment plan, the *ura* should have a central role in implementing natural resource interventions at the village level. They would represent stakeholder interests to the planning process as well as communicate overall catchment planning priorities to the villagers.

To be effective, watershed management requires interagency and multi-user interactions and agreements regarding land-use decisions. It is critical for program implementers to engage in dialogue with citizens, village leaders and local governments to promote planning, management and evaluation of upland and downstream activities as a whole. This will require bridging several local government, cultural and political boundaries (*i.e.*, village, sub-villages, tribes, and districts) within the watershed, fostering an understanding of environmental interactions and taking into account the many government, religious and customary laws and local norms that regulate access to natural resources. All of these considerations should be part of an Integrated Catchment Development Program (ICDP).

**C. Integrated Catchment Development Program (ICDP):** Components of an Integrated Catchment Development Program (ICDP) would some of the following elements. They should be
selected based on prioritized needs in a particular catchment following the criteria outlined above with consideration to greatest risk to the overall catchment, likelihood of success, sustainability, cost efficiency and cost/benefit analysis as well as stakeholder input.

One overarching consideration is that NRM strategies should focus on livelihood enhancement where possible to incentivize the participants. Other catchment development programs, including lessons learned by Mercy Corps in from a Kunduz Watershed Program implemented in 2007, have emphasized the importance of focusing on livelihood enhancement.

**Fuelwood Production:** Provide alternative source of fuelwood and building materials. Establish woodlots on private land close to villages. These will have beneficial impact on women who have to travel great distances to collect wood. Use faster growing trees for fuel wood and building material. Given the shortage of arable land, this might have to be combined with irrigation programs that increase the land available for planting.

**Pasture Management/Slope Stabilization:** Stabilize slopes with pasture regeneration program including perennial grasses and bushes/shrubs. Soil surface cover is more important than forest cover for protecting against soil erosion and can be accomplished more quickly and easily with grasses and shrubs than trees. Develop pasture management committees to monitor progress and regulate use. Pasture management plans need to be improved to include seeding plans and long-term rotations, perennial grasses.

**Forestry Management and Reforestation:** Reforestation is too long term to protect against soil erosion. Develop a long-term reforestation program in conjunction with village institutions using adaptable native species. Develop training and education programs in forestry management, including basic ecology and forest management, reforestation methods, selecting trees for harvesting, minimizing damage to cut trees, transportation methods, and marketing of timber.

Control logging by promoting community regulatory institutions, by interdicting outsiders from exploiting Nuristán’s timber resources, and by reducing demand for firewood through more efficient cooking and heating technology. Afghâns and Gujars have a track record of degrading the environment, as can be seen in a comparison of denuded Afghân lands vs. Nuristâni forests. Most of the human-caused forest degradation in Nuristán can be attributed to exploitation by Afghan timber traders from both sides of the Durand Line. Keep the Afghâns and Gujars out of Nuristán, and let the Nuristânis maintain their own environment in the way they used to.

**Orchard development:** Most respondents expressed desire for assistance orchard establishment. Modify the minimally successful ADP/E program by incorporating lessons learned to establish adaptable fruit and nut orchards. Livelihoods will improve and there will be less pressure to harvest native forest resources for sale. An education and training program should focus on the basics: planting, pruning, fertilizing; establishing nursery stock; pest and disease control; marketing techniques for fruits and nuts.

**Nursery establishment:** Establish private nurseries to produce fuelwood saplings, saplings for reforestation and adaptable fruit and nut saplings for livelihood enhancement. Community nurseries would not be sustainable.

**Irrigation enhancement:** Implement irrigation enhancement programs to increase agricultural production, including water storage for livestock and small-scale irrigation, river bank protection using gabion weave or cement structures, culverts to reduce erosion of roads where streams cross them, spring capture to provide water for hillside tree plots, stone check-dams, and terracing programs. Improve irrigation efficiency by building intakes, installing hydraulic ram pumps and improve delivery systems.

**Drinking water:** Develop piping system for water delivery from local springs. This would benefit women and reduce the distance they need to travel to collect water and reduce the need to obtain water from closer, but lower quality river sources.

**Crop Production:** Provide training in basic scientific agriculture within the local ecosystem, focusing on improving crop yields through soil analysis, organic vs. commercial fertilizer usage, and pest and disease control. Evaluate alternative crops that have cash income potential. Provide access
to certified seed and chemical fertilizer, which could improve subsistence-crop yields; but cropland is so scarce that producing commercial yields will be a challenge.

**Animal Husbandry:** Improve veterinary practices and services, including identifying and treating common livestock diseases and sanitary practices. Establish veterinary clinics (a frequent request of the villages surveyed). Provide training and support in dairy practices, including biological processes in dairy production, sanitary practices, and marketing techniques.

**Mining:** Provide training and assistance for locating gem and mineral deposits, evaluating gem deposits, operating mines, identifying and grading gemstones, increasing mine production, reducing damage to gem crystals during mining, marketing rough-cut gems, and establishing an Internet-based gem market for foreign buyers.

**Education and Training:** Provide environmental and conservational educational curricula starting in elementary school, and provide education to manage the development of resource commodities. NRM education would address and be part of each of the resource areas cited above. Curricula should be developed in the local languages to reinforce cultural acceptance.

**Other Relevant Areas:** Although these are not directly part of NRM, the following areas are important and do exert a significant impact on natural resources and/or natural resource management programs:

- provide education for family planning and birth control;
- stabilize inter-ethnic conflict zones by settling tribal-boundary disputes;
- ensure security; environmental concerns fall well below security concerns in the volatile, hostile environment of Nuristan.

**Evaluation and Continuous Improvement:** Finally, it is suggested that interventions be developed based on feedback from farmers and other stakeholders. Too often USAID and its prime contractors focus on deliverables and accomplishing objectives. While these are important steps in project implementation, they are only first steps in what should be an integrative evaluative process. The lead author of this section, Du Bruille, developed a five point evaluation scheme used to evaluate the largest Afghan NGO working in Afghanistan in 1994. The approach included answering five basic questions and is recommended for interventions planned for Nuristan:

1. **EFFECTIVENESS:** Did the project meet its objectives. Too often evaluation stops here.
2. **IMPACT:** What were the results of achieving the objectives; what difference did the intervention make in the lives of the stakeholders?
3. **EFFICIENCY:** At what cost? What was the relationship between cost and resulting impact? What was the measure of bang for the buck?
4. **SUSTAINABILITY:** Can the impact of the project be sustained on its own or with limited additional input? Will it last? Can it be spread to other areas?
5. **RELEVANCE:** This question involves taking a step back and looking at overall development goals or at an organization’s vision and mission. Do the answers to the previous four questions contribute to overarching objectives?

Evaluation should be an ongoing process that seeks participation from farmers and other stakeholders and continues to modify its approach, evaluate assumptions and strive for continuous improvement.

**D. Follow-up Assessment and Natural Resource Monitoring**

One of the objectives of the NNRA was to establish benchmark data. To gain the most long-term value of this assessment, periodic and regular follow-up natural resource assessments should be conducted in the surveyed districts. Through the information gathered, a much greater sense of natural resource degradation could be obtained by evaluating impact over time. Also some of the measurements were seasonally based, such as stream flow, and should be measured at different times of the year to further establish baseline data. A few data points in the current survey are questionable (highlighted in magenta in this document) and may reflect poor translation in one of the three survey languages with a misunderstanding of the questions asked or a recording error. These data should be revisited during follow up assessments.
6 Bibliography


# Appendix 1 – Native Inventories of Resources

<table>
<thead>
<tr>
<th>English</th>
<th>Kâmviri</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Watercourses</strong></td>
<td></td>
</tr>
<tr>
<td>stream arising from snow deposit</td>
<td>trâsn'ôř</td>
</tr>
<tr>
<td>tributary stream</td>
<td>n'oř čoa</td>
</tr>
<tr>
<td>stream</td>
<td>n'oř</td>
</tr>
<tr>
<td>river (in a steep-sided valley)</td>
<td>gâl'oa</td>
</tr>
<tr>
<td>wide river (in a flat-bottomed valley or on flat land)</td>
<td>nân'i</td>
</tr>
<tr>
<td>lake (formed from a river)</td>
<td>nil'a</td>
</tr>
<tr>
<td><strong>Other Hydrological Features</strong></td>
<td></td>
</tr>
<tr>
<td>spring (of water)</td>
<td>uns'oa</td>
</tr>
<tr>
<td>pond</td>
<td>âž'o</td>
</tr>
<tr>
<td>mountain lake or pond</td>
<td>s'ur</td>
</tr>
<tr>
<td>water from a mountain lake</td>
<td>sâr'oa</td>
</tr>
<tr>
<td>wet place; swamp</td>
<td>n'ol</td>
</tr>
<tr>
<td>swampy place</td>
<td>nâlt'ô~</td>
</tr>
</tbody>
</table>

Table 74. Native Inventory of Hydrological Features (Strand 1999).

<table>
<thead>
<tr>
<th>English</th>
<th>Kâmviri</th>
</tr>
</thead>
<tbody>
<tr>
<td>deodar cedar <em>(Cedrus deodara)</em></td>
<td>ř'uˌ kâno</td>
</tr>
<tr>
<td>pine <em>(Pinus excelsa)</em></td>
<td>p'íačiˌ kâno</td>
</tr>
<tr>
<td>spruce <em>(Picea smitheana)</em></td>
<td>câšk' uˌ kâno</td>
</tr>
<tr>
<td>fir <em>(Abies spectabilis)</em></td>
<td>pT'uˌ kâno</td>
</tr>
<tr>
<td>juniper</td>
<td>sâř'eć kâno</td>
</tr>
<tr>
<td>small, spread-out juniper-like tree</td>
<td>višt'aˌ kâno</td>
</tr>
<tr>
<td>juniper-like bush</td>
<td>řâm'ik dâa</td>
</tr>
</tbody>
</table>

Table 75. Native Inventory of Conifers (Strand 1999).

<table>
<thead>
<tr>
<th>English</th>
<th>Kâmviri</th>
</tr>
</thead>
<tbody>
<tr>
<td>tree with small purple berries</td>
<td>š'ü</td>
</tr>
<tr>
<td>tree with apple-like fruit</td>
<td>s'o ̰ pâľa</td>
</tr>
<tr>
<td>small tree with red berries</td>
<td>gum'ok</td>
</tr>
<tr>
<td>tree with cherry-like fruit</td>
<td>št'ény</td>
</tr>
<tr>
<td>tree with small dark berries</td>
<td>t'üřuk</td>
</tr>
<tr>
<td>tree with red berries</td>
<td>s'urik</td>
</tr>
<tr>
<td>tree with small black berries</td>
<td>bř'ećć</td>
</tr>
<tr>
<td>tree with small, sweet black berries</td>
<td>gâr'u</td>
</tr>
<tr>
<td>tree with grape-like berries (&quot;crow grape&quot;)</td>
<td>k'ur#dros</td>
</tr>
<tr>
<td>kind of nut-bearing tree</td>
<td>yâns'îük</td>
</tr>
<tr>
<td>kind of walnut tree (small, hard nuts)</td>
<td>váT'ânî</td>
</tr>
<tr>
<td>wild almond</td>
<td>kât'o, kâtk'ano</td>
</tr>
<tr>
<td>wild olive</td>
<td>k'uˌ kâno</td>
</tr>
<tr>
<td>tree with shiny leaves (poplar?)</td>
<td>ź'umˌ kâno</td>
</tr>
<tr>
<td>kind of tree</td>
<td>c'â ̰trak kâno</td>
</tr>
<tr>
<td>plane tree</td>
<td>'uštamˌ kâno</td>
</tr>
<tr>
<td>English</td>
<td>Kâmviri</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>meadow grass and small plants used for fodder</td>
<td>nin‘ila=üs</td>
</tr>
<tr>
<td>alfalfa</td>
<td>mü·k’üS</td>
</tr>
<tr>
<td>clover</td>
<td>tr’e p Tik üs</td>
</tr>
<tr>
<td>kind of grass used for fodder</td>
<td>Poć</td>
</tr>
<tr>
<td>kind of plant</td>
<td>üv‘o</td>
</tr>
<tr>
<td>kind of plant</td>
<td>mus’a üs</td>
</tr>
<tr>
<td>kind of plant</td>
<td>taj‘úha=üs</td>
</tr>
<tr>
<td>hemp</td>
<td>bâŋ’oa üs</td>
</tr>
<tr>
<td>plantain (Platago major)</td>
<td>j’a váa por</td>
</tr>
<tr>
<td>kind of plant</td>
<td>g’o dić</td>
</tr>
<tr>
<td>long grass found above the timber line</td>
<td>bâl‘i</td>
</tr>
<tr>
<td>plant used for brooms</td>
<td>dr’üm</td>
</tr>
<tr>
<td>medicinal plant used to make tea to calm malarial fever</td>
<td>s’o’ drüm</td>
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<td>fragrant plant</td>
<td>š’aš</td>
</tr>
<tr>
<td>fragrant root</td>
<td>sâm’k’ařü</td>
</tr>
<tr>
<td>bush growing on mountain top</td>
<td>sâk‘u</td>
</tr>
<tr>
<td>kind of bush</td>
<td>câN‘aa üs</td>
</tr>
<tr>
<td>kind of bush</td>
<td>câN‘aa tâńi</td>
</tr>
<tr>
<td>kind of plant</td>
<td>t’ic āmâř</td>
</tr>
<tr>
<td>kind of plant (&quot;crow barley&quot;)</td>
<td>k’urřići</td>
</tr>
<tr>
<td>name of a plant</td>
<td>Suŋ’uř ćoa</td>
</tr>
<tr>
<td>kind of plant</td>
<td>tâńi křu</td>
</tr>
<tr>
<td>plant with milky sap</td>
<td>ž’u váa üs</td>
</tr>
<tr>
<td>mountain plant eaten by goats</td>
<td>trâk‘a mäćia</td>
</tr>
<tr>
<td>spring plant with small seeds found in cultivated fields, eaten as stomach medicine [Psht. jin ’iR]</td>
<td>câTk’oš</td>
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</table>
mountain plant with onion-like bulb, dried and mixed with antimony as an eye medicine | pār'as por_vāa ūs

mountain plant, the root of which is dried, ground, and cooked with ghee as a purgative | s'o" ěvāo

mountain plant eaten by goats | zān'o

wheat-like mountain plant growing in marshes, eaten by cows | un'o

broad-leaved plant found in shade by streams | 'ič dāšpār

plant with black berries used as black dye | P'ē' kāřū

mountain plant eaten by goats, used to make thorny fence around cheese to protect it from mice | must'aňi

mountain plant eaten by goats, causing high milk production | mřāŋć'uňik

a mountain plant | 'oaća ūs

red-berried mountain plant eaten by goats, the skin of which is used as tinder | d'e' Dūn_kāno

kind of grass | lāk'aňik

kind of grass | S'añik

kind of poisonous plant | ās'am

kind of poisonous plant | DāT'am

Table 77. Native Inventory of Rangeland Plants (Strand 1999).

<table>
<thead>
<tr>
<th>English</th>
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</tr>
</thead>
<tbody>
<tr>
<td>WILD HOOFED ANIMALS</td>
<td></td>
</tr>
<tr>
<td>male markhor (full-grown)</td>
<td>sār'u</td>
</tr>
<tr>
<td>female markhor (full-grown)</td>
<td>mī'oš</td>
</tr>
<tr>
<td>markhor kid</td>
<td>tām'ū</td>
</tr>
<tr>
<td>markhor kid (1 year)</td>
<td>mīŋć'umuk</td>
</tr>
<tr>
<td>young markhor</td>
<td>šārk'oT</td>
</tr>
<tr>
<td>young markhor</td>
<td>k'ěč dāšša</td>
</tr>
<tr>
<td>kind of animal</td>
<td>mīŋć'um</td>
</tr>
<tr>
<td>kind of animal</td>
<td>mīŋć'anši</td>
</tr>
<tr>
<td>mountain sheep</td>
<td>ār'aň muSala</td>
</tr>
<tr>
<td>mountain sheep (female)</td>
<td>ār'aň ve</td>
</tr>
<tr>
<td>musk deer</td>
<td>fā-k'ūš</td>
</tr>
<tr>
<td>wild boar; pig</td>
<td>k'iS go</td>
</tr>
<tr>
<td>ibex</td>
<td>mür'űS</td>
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<tr>
<td>NON-HOOFED WILD MAMMALS</td>
<td></td>
</tr>
<tr>
<td>leopard</td>
<td>j'ūt</td>
</tr>
<tr>
<td>small leopard-like animal</td>
<td>j'ūt jāpšši</td>
</tr>
<tr>
<td>bear</td>
<td>t'ěc</td>
</tr>
<tr>
<td>porcupine</td>
<td>sāp'āa</td>
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<td>fox</td>
<td>věš'ika</td>
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<td>monkey</td>
<td>māk'āř</td>
</tr>
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<td>wolf</td>
<td>Š'ol</td>
</tr>
<tr>
<td>jackal</td>
<td>Š'er Siol</td>
</tr>
<tr>
<td>weasel</td>
<td>Št'ūk</td>
</tr>
<tr>
<td>marmot (large)</td>
<td>uš'a</td>
</tr>
<tr>
<td>squirrel</td>
<td>Šk'ulluk</td>
</tr>
<tr>
<td>mouse</td>
<td>mus'a</td>
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<td>rat</td>
<td>Dill'ik</td>
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</table>

© 2009 by International Foundation of Hope
<table>
<thead>
<tr>
<th>Animal Type</th>
<th>Local Name</th>
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<tbody>
<tr>
<td>Large bat</td>
<td>čáv'ol</td>
</tr>
<tr>
<td>Small bat</td>
<td>řâb'ra mřâŋćuk</td>
</tr>
<tr>
<td>Otter</td>
<td>'oa váčuřuk</td>
</tr>
<tr>
<td>Birds</td>
<td></td>
</tr>
<tr>
<td>Fowl</td>
<td></td>
</tr>
<tr>
<td>Chicken; Hen</td>
<td>kâk'ok</td>
</tr>
<tr>
<td>Rooster</td>
<td>bâŋg'i</td>
</tr>
<tr>
<td>Young Hen</td>
<td>kur'ařik</td>
</tr>
<tr>
<td>Young Rooster</td>
<td>kur'ařuk</td>
</tr>
<tr>
<td>Wildfowl</td>
<td>bânk'akok</td>
</tr>
<tr>
<td>Male Monal (Impeyan) Pheasant</td>
<td>vâč'ia</td>
</tr>
<tr>
<td>Female Monal (Impeyan) Pheasant</td>
<td>š'om</td>
</tr>
<tr>
<td>Kind of Pheasant (Tragopan?)</td>
<td>āř'üs</td>
</tr>
<tr>
<td>Wild Hen</td>
<td>bâk'ara</td>
</tr>
<tr>
<td>Quail</td>
<td>uř'ä</td>
</tr>
<tr>
<td>Duck; Aquatic Bird</td>
<td>jâl'âa</td>
</tr>
<tr>
<td>Birds of Prey, Vultures</td>
<td></td>
</tr>
<tr>
<td>Lammergeyer Vulture</td>
<td>pâT'ol</td>
</tr>
<tr>
<td>Vulture</td>
<td>lut'ra , lut'ra pâTol</td>
</tr>
<tr>
<td>Lammergeier</td>
<td>āT'i iula pâTol</td>
</tr>
<tr>
<td>Kind of Vulture</td>
<td>s'er pâTol</td>
</tr>
<tr>
<td>Hawk</td>
<td>mâr'e&quot;</td>
</tr>
<tr>
<td>Kind of Hawk</td>
<td>Z'ia přočó mâre&quot;</td>
</tr>
<tr>
<td>Kind of Hawk</td>
<td>mus'a iula mâre&quot;</td>
</tr>
<tr>
<td>Falcon (?)</td>
<td>Sâmv'ucia mâla mâre&quot;</td>
</tr>
<tr>
<td>Small, Black Bird of Prey</td>
<td>dâm'u pialuk</td>
</tr>
<tr>
<td>Large Owl</td>
<td>k'ũrũk</td>
</tr>
<tr>
<td>Raven</td>
<td>k'ũara</td>
</tr>
<tr>
<td>Miscellaneous Small Birds</td>
<td></td>
</tr>
<tr>
<td>Small Bird; Songbird; Bird (Meat)</td>
<td>mîŋâŋč'a</td>
</tr>
<tr>
<td>Small Owl</td>
<td>št'o åce&quot;vo</td>
</tr>
<tr>
<td>Parrot</td>
<td>čãr'om</td>
</tr>
<tr>
<td>Large Woodpecker</td>
<td>št'umduřuk</td>
</tr>
<tr>
<td>Small Woodpecker</td>
<td></td>
</tr>
<tr>
<td>Cuckoo</td>
<td>kâk'ui&quot;</td>
</tr>
<tr>
<td>Pigeon</td>
<td>kâv'ëk</td>
</tr>
<tr>
<td>Dove</td>
<td>cãTk'are&quot;</td>
</tr>
<tr>
<td>Bird Like a Pigeon</td>
<td>vâns'i_kor</td>
</tr>
<tr>
<td>Hoopoe</td>
<td>pâr'o mâNuk</td>
</tr>
<tr>
<td>Kind of Bird with Call Like a Whippoorwill's</td>
<td>kumli'k pâkoalik</td>
</tr>
<tr>
<td>Sparrow</td>
<td>lâT'uk</td>
</tr>
<tr>
<td>Kind of Bird (Quail ?)</td>
<td>kâň'ã mâroT</td>
</tr>
<tr>
<td>Kind of Bird</td>
<td>b'eruk</td>
</tr>
<tr>
<td>Kind of Bird</td>
<td>Z'ia beruk</td>
</tr>
<tr>
<td>Kind of Bird</td>
<td>j'aaki</td>
</tr>
<tr>
<td>Kind of Sparrow-sized Bird; Male Has Black Head and Red Body; Female Has Grey Back and Head with Yellow Speckled Belly</td>
<td>p'uTik</td>
</tr>
<tr>
<td>Kind of Bird</td>
<td>Mâlk'i</td>
</tr>
</tbody>
</table>

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 builds hanging nests in pomegranate trees

| kind of bird | ćič’ik |
| kind of bird | Z’ia ćičik |
| kind of bird | t’ürilik |
| kind of bird | Sâg’âs |
| kind of bird | d’âa_kâřük |
| kind of bird | kil’iňuk |
| kind of bird | pë’u’z puNâluk |
| kind of bird | ks’ař |
| kind of bird | ’oa_Suřuk |
| kind of bird | nilp’aTäk |
| kind of bird | kâns’arïk |
| kind of bird | sâr’i_kânsârïk |
| kind of bird ( = sâr’i_kânsârïk ) | štr’uŋ’i_kânsârïk |
| kind of bird | ș’aňik |

**REPTILES & AMPHIBIANS**

guš small lizard [about 10 cm. long]
| small lizard [about 10 cm. long] | l’dänša |
| lizard [about 25 cm. long] | yâsk’âm |
| large lizard [about 60 cm. long] | čâć’am |
| snake | bâb’ista |
| kind of snake [Prs. mangare ’krai’?] | lâND’ei bâbista |
| kind of snake [Prs. Sotor mâr] | ’oa bâbista |
| kind of snake [Prs. ablaq] | štr’uŋ’i bâbista |
| kind of small snake | p’eDlik |
| frog | ’oa mâc’i |
| tadpole | pâns’uře ielik |

**FISH**

| fish | ’oa mâc’i |

**BUGS & WORMS**

<p>| bug; worm | g’u |
| earthworm | nâlg’u |
| kind of worm | pS’uk |
| snail | k’ür âpsoali gu |
| fly | t’ürük |
| mass of fly eggs | nilm’âca’ |
| mosquito | nâSt’ürük |
| scorpion | wP’a |
| spider | trim’uk |
| kind of large spider | s’ut âsa váa trimuk |
| hornet | bâŋ’o |
| large black wasp | s’üñi bâŋo |
| kind of wasp | d’is kârik |
| small bee | ušp’ik |
| honey bee | mâC’arïk |
| butterfly; moth | prüšp’ulik |
| ant | râm’ïk |
| cricket | șapk’aňik |
| grasshopper | g’u_șâruk |</p>
<table>
<thead>
<tr>
<th>English</th>
<th>Kâmviri</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CEREAL PLANTS</strong></td>
<td></td>
</tr>
<tr>
<td>grain</td>
<td>kâT'i</td>
</tr>
<tr>
<td>granule; measure for grain and grain-like objects</td>
<td>p'ul</td>
</tr>
<tr>
<td>crop planted in the spring</td>
<td>vâst'a_kâTi</td>
</tr>
<tr>
<td>crop planted after winter crop ripens</td>
<td>ŝar'eu_kâTi</td>
</tr>
<tr>
<td>crop planted before winter (ripens in spring)</td>
<td>ė'âňma</td>
</tr>
<tr>
<td>unirrigated winter crop</td>
<td>dum'âňma</td>
</tr>
<tr>
<td>wheat</td>
<td>g'um</td>
</tr>
<tr>
<td>barley</td>
<td>ŕ'ič</td>
</tr>
<tr>
<td>corn (maize)</td>
<td>juv'or</td>
</tr>
<tr>
<td>millet (generic)</td>
<td>'âň_kâTi</td>
</tr>
<tr>
<td>millet (Panicum millaceum)</td>
<td>ř'oa</td>
</tr>
<tr>
<td>fox-tail millet (Setaria italica)</td>
<td>kâč'o</td>
</tr>
<tr>
<td>sorghum (classified as a kind of millet ['âň_kâTi]).</td>
<td>tâj'ũň</td>
</tr>
<tr>
<td>rice (unhusked) [not planted in Nuristân]</td>
<td>sâl'ĩ</td>
</tr>
<tr>
<td><strong>LEGUMES</strong></td>
<td></td>
</tr>
<tr>
<td>bean (red)</td>
<td>ĕ'âňa~kSü</td>
</tr>
<tr>
<td>string bean</td>
<td>kâsl'o ĕâňa~kSü</td>
</tr>
<tr>
<td>kind of string bean</td>
<td>m'oŠ</td>
</tr>
</tbody>
</table>

*Table 78. Native Inventory of Fauna in Eastern Nuristân (Strand 1999).*
### Native Inventory of Cultivated Plants (Strand 1999)

<table>
<thead>
<tr>
<th>Plant Type</th>
<th>Common Name</th>
<th>Local Names</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VEGETABLES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>soybean</td>
<td>k'S'ëë</td>
</tr>
<tr>
<td></td>
<td>mung bean</td>
<td>c'ël mo</td>
</tr>
<tr>
<td></td>
<td>kind of red lentil [Prs. «dâl-e nask»]</td>
<td>căn'n'uk</td>
</tr>
<tr>
<td></td>
<td>pea</td>
<td>Z'üm</td>
</tr>
<tr>
<td></td>
<td>squash (pumpkin-shaped)</td>
<td>âl'oa</td>
</tr>
<tr>
<td></td>
<td>gourd</td>
<td>'oa_áve_áloa</td>
</tr>
<tr>
<td></td>
<td>onion</td>
<td>căk'uNuk</td>
</tr>
<tr>
<td></td>
<td>potato</td>
<td>âl'u</td>
</tr>
<tr>
<td></td>
<td>pepper</td>
<td>m'oč</td>
</tr>
<tr>
<td><strong>MISCELLANEOUS CULTIVATED PLANTS AND PLANT PRODUCTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cotton</td>
<td>pâc'a vâruk</td>
</tr>
<tr>
<td></td>
<td>tobacco</td>
<td>tâmk'ü</td>
</tr>
<tr>
<td></td>
<td>opium</td>
<td>târ'i'ok</td>
</tr>
<tr>
<td></td>
<td>walnut</td>
<td>iâm'ë'u</td>
</tr>
<tr>
<td></td>
<td>mulberry</td>
<td>kuml'ik</td>
</tr>
<tr>
<td></td>
<td>black mulberry</td>
<td>Z'ia_kumlik</td>
</tr>
<tr>
<td></td>
<td>pink mulberry</td>
<td>br'âmkuni</td>
</tr>
<tr>
<td></td>
<td>white mulberry</td>
<td>kâš'ari kumlik</td>
</tr>
<tr>
<td></td>
<td>small white mulberry</td>
<td>m'us kumlik</td>
</tr>
<tr>
<td></td>
<td>variety of mulberry</td>
<td>mîšk'oni kumlik</td>
</tr>
<tr>
<td></td>
<td>wild mulberry</td>
<td>ŋ'ul kumlik</td>
</tr>
<tr>
<td></td>
<td>fig</td>
<td>kiv'it</td>
</tr>
<tr>
<td></td>
<td>variety of large fig (&quot;Kâbul fig&quot;)</td>
<td>kôbl'i kivit</td>
</tr>
<tr>
<td></td>
<td>pomegranate</td>
<td>âm'âr</td>
</tr>
<tr>
<td></td>
<td>variety of pomegranate (&quot;sour pomegranate&quot;)</td>
<td>căN'âa âmâr</td>
</tr>
<tr>
<td></td>
<td>variety of pomegranate</td>
<td>âr'usâa âmâr</td>
</tr>
<tr>
<td></td>
<td>variety of pomegranate</td>
<td>căN'âa muri âmâr</td>
</tr>
<tr>
<td></td>
<td>apricot</td>
<td>căr'ë</td>
</tr>
<tr>
<td></td>
<td>variety of apricot with edible seed</td>
<td>vič'ë'ë cări</td>
</tr>
<tr>
<td></td>
<td>apricot with bitter nut inside pit</td>
<td>kâř'âa cări</td>
</tr>
<tr>
<td></td>
<td>apple</td>
<td>pâřa</td>
</tr>
<tr>
<td></td>
<td>variety of apple (&quot;sour apple&quot;)</td>
<td>căN'âa pâřa</td>
</tr>
<tr>
<td></td>
<td>variety of apple (&quot;sweet apple&quot;)</td>
<td>m'uri pâřa</td>
</tr>
<tr>
<td></td>
<td>variety of apple (&quot;sweet and sour apple&quot;)</td>
<td>căN'âa muri pâřa</td>
</tr>
<tr>
<td></td>
<td>variety of apple (&quot;bitter apple&quot;)</td>
<td>kâř'âa pâřa</td>
</tr>
<tr>
<td></td>
<td>peach</td>
<td>âr'u</td>
</tr>
<tr>
<td></td>
<td>variety of peach</td>
<td>buC'â våå āru</td>
</tr>
<tr>
<td></td>
<td>variety of peach</td>
<td>CₙC'â_āru</td>
</tr>
<tr>
<td></td>
<td>pear</td>
<td>T'ün</td>
</tr>
<tr>
<td></td>
<td>wild pear</td>
<td>T'âğuri</td>
</tr>
<tr>
<td></td>
<td>jujube</td>
<td>sunš'a</td>
</tr>
<tr>
<td></td>
<td>species of jujube</td>
<td>bât'ar</td>
</tr>
<tr>
<td></td>
<td>species of jujube [Prs. sonjet]</td>
<td>bil'â_ sunša</td>
</tr>
<tr>
<td></td>
<td>grape</td>
<td>dr'os</td>
</tr>
<tr>
<td>bunch of grapes (measure)</td>
<td>š'oć</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>red grape</td>
<td>āt'eC dros</td>
<td></td>
</tr>
<tr>
<td>kind of red grape</td>
<td>māČ'iaˇ dros</td>
<td></td>
</tr>
<tr>
<td>large green grape</td>
<td>kârT'uk dros</td>
<td></td>
</tr>
<tr>
<td>variety of grape</td>
<td>'oa māřuk dros</td>
<td></td>
</tr>
<tr>
<td>variety of grape ('cow-teat grape')</td>
<td>g'o ŋo dros</td>
<td></td>
</tr>
<tr>
<td>variety of grape</td>
<td>ŋaŋ'aNo dros</td>
<td></td>
</tr>
<tr>
<td>variety of grape</td>
<td>sk'ānšol dros</td>
<td></td>
</tr>
<tr>
<td>variety of grape (&quot;black-crunchy grape&quot;)</td>
<td>Ž'la pTaňi dros</td>
<td></td>
</tr>
<tr>
<td>variety of grape (&quot;round-raceme grape&quot;)</td>
<td>puN'r'a ŋoč dros</td>
<td></td>
</tr>
<tr>
<td>variety of grape (&quot;rat grape&quot;)</td>
<td>Dill'ik dros</td>
<td></td>
</tr>
<tr>
<td>variety of grape (&quot;pumpkin-leaved grape&quot;)</td>
<td>āl'oa por vāa dros</td>
<td></td>
</tr>
<tr>
<td>variety of grape (&quot;sling grape&quot;)</td>
<td>mit'i-oNi dros</td>
<td></td>
</tr>
<tr>
<td>persimmon</td>
<td>gâlm'unuk</td>
<td></td>
</tr>
</tbody>
</table>

**Table 80. Native Inventory of Cultivated Trees (Strand 1999).**

<table>
<thead>
<tr>
<th>FODDER</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>fodder</td>
<td>'īs tíš</td>
</tr>
<tr>
<td>corn or millet stalk used for fodder</td>
<td>kâT'e&quot;</td>
</tr>
<tr>
<td>fodder from crop planted after winter crop</td>
<td>Š'ar'ea_kâTe&quot;</td>
</tr>
<tr>
<td>straw; chaff</td>
<td>p'ūř</td>
</tr>
<tr>
<td>empty millet ear used for fodder</td>
<td>t'īš</td>
</tr>
<tr>
<td>large pieces of straw left after threshing</td>
<td>gâNp'ūř</td>
</tr>
<tr>
<td>chaff</td>
<td>truc'p'ūř</td>
</tr>
<tr>
<td>haystack (measure)</td>
<td>g'oT</td>
</tr>
<tr>
<td>stack of grass or grain stalks</td>
<td>'īș gōT</td>
</tr>
<tr>
<td>stack of straw</td>
<td>p'ūř gōT</td>
</tr>
<tr>
<td>pile of grass, stalks, etc.</td>
<td>b'o</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FODDER PLANTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>meadow grass and small plants used for fodder</td>
<td>nin'ila=ūś</td>
</tr>
<tr>
<td>alfalfa</td>
<td>mü·k'ūS</td>
</tr>
<tr>
<td>kind of grass used for fodder</td>
<td>ŋoč</td>
</tr>
<tr>
<td>clover</td>
<td>tr'e pTik ūś</td>
</tr>
</tbody>
</table>

**Table 81. Native Inventory of Fodder Types and Plants (Strand 1999).**

<table>
<thead>
<tr>
<th>EDIBLE WILD GREEN PLANTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>greens</td>
<td>ē'o</td>
</tr>
<tr>
<td>mint</td>
<td>y'ě'i'uk</td>
</tr>
<tr>
<td>lambs quarter</td>
<td>trātr'a</td>
</tr>
<tr>
<td>coriander [?]</td>
<td>kânl'ik</td>
</tr>
<tr>
<td>nettle</td>
<td>dāč'ū&quot;</td>
</tr>
<tr>
<td>edible plant</td>
<td>s'iS</td>
</tr>
<tr>
<td>edible plant</td>
<td>ā'ūnik</td>
</tr>
<tr>
<td>kind of edible plant</td>
<td>dāň'atlik</td>
</tr>
<tr>
<td>edible plant that grows in cultivated fields</td>
<td>g'um īś</td>
</tr>
<tr>
<td>kind of edible plant found in winter-crop fields («lām'aroT» dialect)</td>
<td>gulgul'ā-Ti</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>English</th>
<th>Kâmviri</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind of wild onion</td>
<td>k’u pon</td>
</tr>
<tr>
<td>kind of wild onion</td>
<td>ár’uS</td>
</tr>
<tr>
<td>leek (wild)</td>
<td>p’on</td>
</tr>
<tr>
<td>kind of wild turnip</td>
<td>cánl’ü kuřuk</td>
</tr>
<tr>
<td>wild rhubarb</td>
<td>čáv’o</td>
</tr>
<tr>
<td>rhubarb-like plant</td>
<td>ár’os</td>
</tr>
<tr>
<td>wild strawberry</td>
<td>b’üm ânSuk</td>
</tr>
<tr>
<td>cumin</td>
<td>âí’o</td>
</tr>
<tr>
<td>thyme [Prs. «zamc»]</td>
<td>sâtrk’aň</td>
</tr>
<tr>
<td>MUSHROOMS</td>
<td></td>
</tr>
<tr>
<td>morel mushroom</td>
<td>g’o kTluk</td>
</tr>
<tr>
<td>white morel mushroom</td>
<td>kâš’ara go kTluk</td>
</tr>
<tr>
<td>black morel mushroom</td>
<td>Z’ia go kTluk</td>
</tr>
<tr>
<td>kind of edible mushroom (like morel)</td>
<td>u’i vo go kTluk</td>
</tr>
<tr>
<td>edible mushroom</td>
<td>gřän-č’ok</td>
</tr>
</tbody>
</table>

Table 82. Native Inventory of Gathered Edible Plants (Strand 1999).
| Kilpřoč | Soft cheese made in midwinter
| Kilpřoč | Cheese made from milk after goats eat hollyoak leaf buds in early spring
| Kilpřoč | Cheese made from the curds that form from adding one part buttermilk to two parts boiling milk
| Kilpřoč | Food (normally a dairy product) eaten with bread
| Kilpřoč | Cheese pickled in brine or vinegar

Table 83. Native Inventory of Dairy Products from Eastern Nuristan (Strand 1999).

Figure 2. Kom Nuristani Traditional Calendar, Showing Names of Months in White and Alignment with the Gregorian Calendar on 18 March 1969 (after Strand 1999).
Appendix 2 – Survey Forms

1 English

1.1 Village-Level

Nuristān Resource-Users Survey
Village-Level Survey Form

No: _______ Survey Date: _____________ Surveyor’s Name: ____________________________ Consultant’s Name: 
District Name: ____________________________ Consultant’s Neighborhood: 
Main-Village Name (Pashto): ____________________________ Main-Village Name (Local): 
Sub-Village Name (Pashto): ____________________________ Sub-Village GPS Lat: ____________
Sub-Village Name (Local): ____________________________ Sub-Village GPS Long: ____________ Evaluations include change in size, distance, and quality:
Sub-Village Summer Pasture Names and Distances: ____________________________ Summer Pasture: 5-Yr Evaluation: 

Sub-Village Winter-Quarter Names and Distances: ____________________________ Winter Quarters: 5-Yr Evaluation: 

Sub-Village Field-Location Names and Distances: ____________________________ Field Lands: 5-Yr Evaluation: 

Sub-Village Needle-Forest Locations and Distances: ____________________________ Needle Forest: 5-Yr Evaluation: 

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Sub-Village Oak-Forest Locations and Distances: ____________________________

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Sub-Village Irrigation-Water Source Locations and Distances: __________________

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Names of Clans in Sub-Village:
1.2 Neighborhood-Level

Nuristân Resource-Users Survey
Neighborhood-Level Survey Form

No: _______ Survey Date: _______________ Surveyor’s Name: ___________________________ Consultant’s Name: ___________________________
District Name: ___________________________ Consultant’s Neighborhood: ___________________________
Main-Village Name (Pashto): ___________________________ Main-Village Name (Local): ___________________________
Sub-Village Name (Pashto): ___________________________ Sub-Village Name (Local): ___________________________
Neighborhood Name (Local): ___________________________
Neighborhood Drinking-Water Sources (Type and Names): ___________________________ Drinking-Water: 5-Yr Evaluation: ___________________________

Neighborhood Household Survey

House No. on Sketch Map: _______ Householder’s Name: ___________________________ Householder’s Gender (M/F): ___________________________
Householder’s Father’s Name: ___________________________ Householder’s Maximal Clan: ___________________________ Sub-Clan: ___________________________
Total No. of Males: _______ Total No. of Females: _______ No. of Male Children: _______ No. of Female Children: _______ No. of Mothers: _______
Where are their Flocks in the Summer: ___________________________ Where are their Flocks in the Winter: ___________________________

House No. on Sketch Map: _______ Householder’s Name: ___________________________ Householder’s Gender (M/F): ___________________________
Householder’s Father’s Name: ___________________________ Householder’s Maximal Clan: ___________________________ Sub-Clan: ___________________________
Total No. of Males: _______ Total No. of Females: _______ No. of Male Children: _______ No. of Female Children: _______ No. of Mothers: _______
Where are their Flocks in the Summer: ___________________________ Where are their Flocks in the Winter: ___________________________
House No. on Sketch Map: ______  Householder’s Name: ___________________________  Householder’s Gender (M/F):

Householder’s Father’s Name: ___________________  Householder’s Maximal Clan: ___________________  Sub-Clan:

Total No. of Males: ______  Total No. of Females: ______  No. of Male Children: ______  No. of Female Children: ______  No. of Mothers:

Where are their Flocks in the Summer: ____________________________  Where are their Flocks in the Winter:

House No. on Sketch Map: ______  Householder’s Name: ___________________________  Householder’s Gender (M/F):

Householder’s Father’s Name: ___________________  Householder’s Maximal Clan: ___________________  Sub-Clan:

Total No. of Males: ______  Total No. of Females: ______  No. of Male Children: ______  No. of Female Children: ______  No. of Mothers:

Where are their Flocks in the Summer: ____________________________  Where are their Flocks in the Winter:

House No. on Sketch Map: ______  Householder’s Name: ___________________________  Householder’s Gender (M/F):

Householder’s Father’s Name: ___________________  Householder’s Maximal Clan: ___________________  Sub-Clan:

Total No. of Males: ______  Total No. of Females: ______  No. of Male Children: ______  No. of Female Children: ______  No. of Mothers:

Where are their Flocks in the Summer: ____________________________  Where are their Flocks in the Winter:

House No. on Sketch Map: ______  Householder’s Name: ___________________________  Householder’s Gender (M/F):

Householder’s Father’s Name: ___________________  Householder’s Maximal Clan: ___________________  Sub-Clan:

Total No. of Males: ______  Total No. of Females: ______  No. of Male Children: ______  No. of Female Children: ______  No. of Mothers:

Where are their Flocks in the Summer: ____________________________  Where are their Flocks in the Winter:

House No. on Sketch Map: ______  Householder’s Name: ___________________________  Householder’s Gender (M/F):

Householder’s Father’s Name: ___________________  Householder’s Maximal Clan: ___________________  Sub-Clan:

Total No. of Males: ______  Total No. of Females: ______  No. of Male Children: ______  No. of Female Children: ______  No. of Mothers:

Where are their Flocks in the Summer: ____________________________  Where are their Flocks in the Winter:

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### 1.3 Household-Level

#### Nuristan Resource-Users Survey

**Household-Level Survey Form**

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#### Age and Relation of each Male to You:

| Male 1:                         |                                           |
| Male 2:                         |                                           |
| Male 3:                         |                                           |
| Male 4:                         |                                           |
| Male 5:                         |                                           |
| Male 6:                         |                                           |
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| Male 8:                         |                                           |
| Male 9:                         |                                           |
| Male 10:                        |                                           |

#### Age and Relation of each Female to You:

<p>| Female 1:                       |                                           |
| Female 2:                       |                                           |
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Household-Level Survey Form

No:____  Survey Date:______________  Surveyor’s Name:__________________________  Neighborhood and House No.:__

1. Animal Production:

Route of Flocks to Summer Pastures (Give Time at Each Stop and Distances between Stops):

Route of Flocks to Winter Quarters (Give Time at Each Stop and Distances between Stops):

Number of Men in Summer Dairy Coop with Householder:______  No. Stables (shâl, sâl, pshol):______  No. Summer Stables (machâl, moshol):

No. of goats and sheep:______  No. of Lactating Goats:______  No. of Cattle:______  No. of Lactating Cows:______  No. Other Livestock:

This Year’s Production of Cheese:______  Ghee:______  Curds:______  % Change of Dairy Production over Last 3 Years:_____  Sufficient?

Manure production and utilization (fuel, fertilizer): Amount ______________ Utilization ______________

Fodder:

Amount Grown (Alfalfa, etc.):______  Amount from Harvest:______  Amount from Grassland:______  Income:______

Animal Health
Animals treated per year n_______, total expenses ______, Main disease: _____________________________

Animals vaccinated per year N. ______, total expenses ______, Type vaccine: ___________________

---

**Household-Level Survey Form**

No:_____ Survey Date:_____________ Surveyor's Name:________________________ Neighborhood and House No.: 

2. Agricultural Production:

This Year's Production in Kg of:  Wheat:_____ Maize:_______ Millet:_______ Barley:_______ Legumes:_______

Income: ___________Afs;  Change in production over Last 3 Years:____________;

Utilization of field crop:  Own consumption _______%;  Market _______%;  Self-sufficient? ____________

Size and tenure of agricultural lands:  Size: jeribs_______; number of farms_______; owned: jeribs_______; leasing: jeribs_______

Cultivation: plowing, harvesting and transport:  Manually: jeribs_______, n. tools _________  Animal: jeribs_______

Number of men who pool their goats and labor during the summer:  Number of groups_____  Women in each group _________

Number of Women in Each Household-Woman’s Summer Agricultural Coop Work Group:  Number of groups_____  Women in each group _________

Field 1 Location:_____________________ Distance:_______ Seed Capacity:_______ Crops Planted:

  Field 1 No. of Days Irrigated:_______ No. of Nights Irrigated:_______ Amount of Fertilizer Used:_______ Kg Commercial Fertilizer:

Field 2 Location:_____________________ Distance:_______ Seed Capacity:_______ Crops Planted:

  Field 2 No. of Days Irrigated:_______ No. of Nights Irrigated:_______ Amount of Fertilizer Used:_______ Kg Commercial
### Household-Level Survey Form

<table>
<thead>
<tr>
<th>No:</th>
<th>Survey Date:</th>
<th>Surveyor's Name:</th>
<th>Neighborhood and House No.:</th>
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</thead>
</table>

**Field 5**
- Location: _____________
- Distance: _____
- Seed Capacity: _____
- Crops Planted:
- Field 5 No. of Days Irrigated: ______
- No. of Nights Irrigated: ______
- Amount of Fertilizer Used: ______ Kg Commercial

**Field 6**
- Location: _____________
- Distance: _____
- Seed Capacity: _____
- Crops Planted:
- Field 6 No. of Days Irrigated: ______
- No. of Nights Irrigated: ______
- Amount of Fertilizer Used: ______ Kg Commercial

**Field 7**
- Location: _____________
- Distance: _____
- Seed Capacity: _____
- Crops Planted:
- Field 7 No. of Days Irrigated: ______
- No. of Nights Irrigated: ______
- Amount of Fertilizer Used: ______ Kg Commercial

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3. Horticulture Production:

No. of Trees owned: Total _______ Walnuts: _______ Apricots: _______ Mulberries: _______ Grapes: _______ Apples: _______ Other: _______

Last Year's Production (kg): Walnuts: _______ Apricots: _______ Mulberries: _______ Grapes: _______ Apples: _______ Other: _______ Other: _______

Aims for growing fruit trees: Market ☐ Own consumption ☐ Pleasure (garden) ☐ Commercial Income: __________

4. Forest Resource:

Timber:


Firewood:


Alternative question: Quantity of wood used (kg per day): in summer _______, in winter _______,

5. Water Resource:

Drinking water source: River ☐, spring ☐, other _______ ☐, Distance of source from house _______ meters

Household-Level Survey Form

No: _______ Survey Date: ___________ Surveyor’s Name: ___________________________ Neighborhood and House No.: ___________
Amount used per day (liters): ______________  Transport of water supply to the household:  Human ☐, Animal ☐, other ______☐
Irrigation water source:  River ☐, spring ☐, other____☐, Distance of source from fields _______meters

6. Gemstones:

Does Householder Own or Work in a Gemstone Mine? ________  Household Income from Mining: ________
Location of Mine: ___________ Distance of Mine from Village: ________ Type of Mine: ________ Mine annual production ________

7. Resource Ownership Rights

Permanent forestry ☐, describe forestry ownership ____________________________, Share of community rights ________
Pasture ☐, describe pasture ownership ____________________________, Share of community rights ________
Cropland ☐, describe cropland ownership______________________________, Share of community rights ________
Describe water rights ____________________________, Share of community water rights ________

---

Household-Level Survey Form

No:_____  Survey Date:___________  Surveyor’s Name:_________________________  Neighborhood and House No.:_____________

8. Employment:

Number person of family working outside the farm: Men n. days_____ hours/day____  Women n. days_____ hrs/day____
Sectors:
- Government: n. days _____, income _____
- National-Int. Organization: n. days _____; income _____, which sector ______.
- Self-employee: n. days _____; income _____, which sector(e.g. crafting, gem stone)______.
- Private: n. days _____; income _____, which sector ______
- Mining: n. days _____; income _____
- Abroad: n. days _____; income _____

9. General
Community Decision-making: Shura ☐; elders ☐; commanders ☐; government administrators ☐; youth ☐

Calamities: Have in the past 5 years any of the following events affected the site?
- Drought ☐ n. years;
- Flood ☐ n. years;
- Pest/Disease ☐ n. years;
- Civil unrest ☐ n. years;
- Other (please, specify) ☐

Assistance: Did the family receive technical/economical assistance (e.g. seeds) at least once during the last five years? Yes ☐; No ☐

If yes, from which of the following groups?
- Government bodies ☐
- NGOs ☐
- International organizations ☐
- Private sector (e.g. seed traders) ☐
- Other (please, specify) ☐
## 1.4 Resources

### Data Sheet

**Forest Resource Survey**  
Nuristân Province, Afghanistan

Plot No.: F / / 

Date of data collection: 
Name of data collector: 
Locality (or nearest village): 
District name: 

Aspect (North or South): 
Slope (in percent): 
Elevation above sea level:

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Data Sheet
Land Cover and Regeneration Survey
Nuristán Province, Afghanistan

Plot No.: F / / 

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Name of data collector: 
Locality (or nearest village): 
District name: 

Aspect (North or South): 
Slope (in percent): 
Elevation above sea level: 

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Regeneration Status
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Data Sheet
Range Resource Survey
Nuristân Province, Afghanistan

Plot No.: R /
Date of data collection:
Name of data collector:
Locality (or nearest village):
District name:

Aspect (North or South):
Slope (in percent):
Elevation above sea level:

Land Cover (percent %):
  Grasses:
  Forbs:
  Shrubs:
  Barren soil:
  Rocks:

Forage weight (Kg/grams):
  Grasses:
  Forbs:
  Browse:

Range Condition (tick mark):
Average:

Good:

Very good:

Slightly degraded:

Very degraded

Visible degradation (tick mark):

Landslides:

Soil erosion:

Reduced cover:

Unwanted species:

Any unwanted species (names):

1.

2.

3.
## Data Sheet
### River/stream Survey
#### Nuristan Province, Afghanistan

**Plot No.:** W / / 

**Date of data collection:**  
**Name of data collector:**  
**Locality (or nearest village):**  
**District name:**  

**Catchments name:**  

**River type:** Seasonal Perennial:  

**Method of measurement:** Volumetric Floater  

**Uses:** Drinking Animals Irrigation  

**Water sample number:**  

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<tr>
<th>Section</th>
<th>Velocity</th>
<th>Area</th>
<th>Flow</th>
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<td>Distance (m)</td>
<td>Time (Sec)</td>
<td>m/sec</td>
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### Data Sheet
### Spring Survey
### Nuristan Province, Afghanistan

Plot No.: W /

Date of data collection:

Name of data collector:

Locality (or nearest village):

District name:

Catchments name:

Spring type: Seasonal Perennial:

Method of measurement: Volumetric Floater

Water sample number:

Uses: Drinking Animals Irrigation

Water collection method: Manual Pipes

Number of springs in the village:

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<th>S. No.</th>
<th>Time (Sec)</th>
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<th>Liters/sec</th>
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د نورستان دمنابعو د استعمالونکو سروی
د کلی دسطحی پا لول د سروی فورمه

2 Pashto
2.1 Village-Level

د مشاور یا د مشاور یا هماکار گاوندیتوب:
د مشاور یا هماکار گاوندیتوب:

__د اصلی کلی نوم (په محی ژبه):__

__د فرعي کلی نوم (پښتو):__

__د فرعي کلی نوم (پښتو):__

__د فرعي کلی نوم یه محی ژبه:__

__د فرعي کلی نوم یه محی ژبه:__

__د فرعي کلی نوم د دوبی د ځر خاپولو نومونه او فاصلی:__

__د فرعي کلی نوم د دوبی د ځر خاپولو نومونه او فاصلی:__

__د دوبی ځر خاپولو پنځه کلته ارزابایی:__

__د دوبی ځر خاپولو پنځه کلته ارزابایی:__

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__د دوبی ځر خاپولو پنځه کلته ارزابایی:__

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د اوبه خور د اوبو پنځه کتنه

اسصياتي

### Neighborhood-Level

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<tr>
<th>نمبر دسرى نیپه:</th>
<th>دسروى کونکی نوم</th>
<th>کاوندیتوب:</th>
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**دکورنی به اساس دسروی کولو فورم‌ه**

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<th>دسروی کولیک نوم</th>
<th>کانونیتوب</th>
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<th>ددی کال تولید(کیلوگرام)</th>
<th>دماغش(کیلوگرام)</th>
<th>شماری</th>
<th>عاید</th>
<th>ملبوست</th>
<th>بسیار</th>
<th>ضایعات</th>
<th>عیراث</th>
<th>نیپتکنیک</th>
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پو تیرو دری کلونو کی به حاصلاتو کي بدلون

دتلولد نوي فصل استعمال: به خيله یي مصرف كوي؟

ايادخيل خان لباره یي كفايت كوي؟

دجاجاد د زراعتي خسي اندمازه: توله اندمازه جريبه ديبتو تعداد: %

خيلي خمه يي جريبه اجارة خمه

كرنه: قلبه كول، ربيل او دهدگي انتقالول: به لاس سره

داهه کسانو تعداد كوم چي به اوري کي ددواي مالونه به مزدوری یا حشر سره تولوي: دمربونو تعداد

دارينه و تعداد به هركروب کي: 

به هره كورني کي دهه بخشه و تعداد کوم چي به اوري کي به گروبي شکل سره زراعتي كارونه كوي:

دکروبونو تعداد دهاي ـ دبخشه و تعداد به هركروب کي:

دلومري ساحي موقيعت: فاصله (M) دتخت اندمازه (Kg)

دلومري ساحي دايوي خور دورخو شمير داپوي خور دشي شمير ديواني سري داستعمال اندمازه

(Кг) د کيمياوي سري د استعمال اندمازه به

دلومري ساحي موقيعت: فاصله (M) دتخت اندمازه (Kg)

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درومي ساحي دايوي خور دورخو شمير داپوي خور دشي شمير ديواني سري داستعمال اندمازه

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دلونمي ساحي موقيعت: فاصله (M) دتخت اندمازه (Kg)

دلونمي ساحي دايوي خور دورخو شمير داپوي خور دشي شمير ديواني سري داستعمال اندمازه

(Кг) د کيمياوي سري د استعمال اندمازه به

دبنخشي ساحي موقيعت: فاصله (M) دتخت اندمازه (Kg)
شیبب‌پی دنیا ساحی داوبه خور دوشی شماره (Kg) د کیمیایی سیر د استعمال اندیزه به (Kg) دشپږهي ضبحی داًبو خور دوشی شماره (M) فاسله‌ی د (Kg) دشپږهي ضبحی داًبو خور دوشی شماره (Kg) د کیمیایی سیر د استعمال اندیزه به (Kg)

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د اوبه خور د  اب منابع: سیند، چینه، دور

معنی کلی:
آیا کورنی غری دغمود کاوو به کان کی کار کوي؟
کان خخل د وگی راغلی عاید: د کلی خخل کی کان فاسله:
د کلی موقعیت: د کلی تولید:
د کلی دول:
د منابع دملکی حقوق:
دا چنگلو سرمکی ملکیت روشانه کری
د خر خای ملکیت روشانه کری

دکورنی یه اساس دسروی کولو فورمه

کورنی خمکی
د کورنی د حقوق سرمکی

استخدام:
د کورنی د اشخاص توعد چی د مزرعي خخل بهر کار کوي:
تعداد
سری یه تعداد

ضخیع توعد:
دلت د ورخو تعداد

بختونه یا سکتورونه:

دولت د ورخو تعداد

مجله او بهری موسي د ورخو تعداد

کوم بخش

شخصی کار د ورخو تعداد

خصومی د ورخو تعداد

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کسانه دورخو تعداد میاشت کی عاید
د هیواد خه بهر د ورخو تعداد میاشت کی عاید

عمومی:
د تولنی تصمیم نیول : شوري، دولت، قوندانان، د قوندانان

منابع:

آیا بی تیرو بنخوکلونو کی یو د لاندي بیشو خه به ساحه تاثیر کری؟

وچکالی د کلونو تعداد : سیلاب د کلونو تعداد، حشرات او ناروغي

نور (مهمباني وکري مشخص ي كري)

کمک:

آیا د تیرو بنخو کلونو به دوران کي کليوالو تخنيكي او يا هم اقتصادي ستي (لکه تخمونه) لر تر لیه

که مو تر لاسه كري وي د لاندي کومو گروبنو خه مو تر لاسه كري؟

دولتی اورکانونه، غیر دولتی موسيسي نریوالی موسيسي نور (مشخص ي كري)

سکتور (لکه د تخمونه تجاران)
2.3 Resources

پلات نمبر : \( W \)

/ / د معلوماتو د راکولولو نیته :

/ / د معلوماتو د راکولولو نوم :

/ / مویقت یا نرودی کلی :

/ / د ولسوالی نوم :

/ / مرستیال (catchment) نوم :

/ / د چینی دوال موسمي تل تر تله (همیشگی)

بند رسته گیری میتوت هجم

/ / استعمال

/ / د خیلول د حیواناتو د استفاده اوبه خور

/ / اوین لاسته راکولو میتوت : د لاس یه د ریزه د اوین را ویستل

/ / پایینه

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د اندازه‌گیری میتواد چگونه د مایعاتو یه سر ولار اجسام حجمی

استعمال استفاده د خیلی د حیواناتو او اسکیلد سره کور

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معلومات پاڼو د ځمکی د پوښښ او دیوبه احیا (Regeneration) سروی نورستان ولایت افغانستان

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پلات نمبر : 

د معلوماتو د راتلونلو ټیته : 

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د معلوماتو د راتلونکي نوم : 

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موقعت یا نردي کلی : 

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د ورسالي نوم: 

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مسیر (شمال یا جنوب): 

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میلان (په فیصدي سره) : 

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د بحر د سطحي خمه لورالی: 

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د دویاره احیا وضع:

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دا خر خایيونو د منابعو سروی

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دل معلوماتو راتولو نیته:
دل معلوماتو راتولوکي نوم:
موقعت يا نردي کلی:
نام ولونلی نوم:
په خپلو یا جنبه:
ملان (په فیصدي سره):
د بحر د سطحي خكه لورالي:
په بیل شوي شمکه په یو متر مربع کي (په فیصدي):
واپن:

Forbs

Browse

صاره شمکه:
کلي (تبری):
د حيواناتو د غذا وزن:
واپن:

Forbs

Browse

د خر خایي وضع (نبانی کري)

متوسطه:
په:
د په:
دیر په:
دیره کمه تخريب شوي:
دیره زياته تخريب شوي:
دلیدو ور تخريب (په نښه کري):

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د خمکی شویدنه:

د خاوری تخمین:

د نباتی پویش کمولی:

غیر مطلوب انواع:

غیر مطلوب انواع (نمونه) 1 2 3
دنورستان دمنابوع د استعمالونکو سروی

دنولی (ړکو) دسطحي يا لیول د سروی فورمه

نمبر: __________________ دسروی نیته: __________________
همکار نوم: __________________ د ونسواپی نوم: __________________
د مشاور یاهمکار تواندبیتوب: ____________________
د اصل کلی نوم (په محلی زیب): ____________________
د فرعي کلی نوم (په محلی زیب): ____________________
د هخو سرو گروپونه چی د اوري په دوران کي یه گده
ميتر پي او روزگار کوي (پالاي، پالي)
عدد: __________________
دهغو چی د یه د مانابوع نومونه
د تولونی د ټلوی کورونو بوه خپالی نقشه ترسو کری
د دغه د ټلوی کورونو چی د اوري په دوران کي یه گده
د تولونی خه د خمکی فاصله متر یه تیزو دریو کلونو کي یه فاصله کي تغير
د تولونی خه د خنڅو ایو د مانابوع د فاصله
متر یه تیزو دریو کلونو کي یه فاصله کي تغير
دهغو خایونه نومونه چی د دستن پانو خنڅونه یکي وجود لري اودو تري د سوزولو خشکه لاسته راوي:
د تولونی خه د دستن پانو خنڅونه د مانابوع فاصله متر یه تیزو دریو کلونو کي یه فاصله کي تغير
دهغو خایونه نومونه چی د خیریو خنڅونه یکي وجود لري اودو تري د سوزولو خشکه لاسته راوي:
دهغو هغه خایونه نومونه چی دوی تري د سوزولو خشکه لاسته راوي:
د تولونی خه د مانابوع فاصله متر یه تیزو دریو کلونو کي یه فاصله کي تغير
د هغویاپنلو نومونه او دولو چی دوی نری د حیواناتو خوارکه لاسته راوی:

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<th>د منابع فاصله متر</th>
<th>فاصله کي تغيیر</th>
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د تویلي د سرول د سروي فورمه

نمیر : ____________ دسروی نیته: ____________ د سروي كونکي نوم : ____________ د مشاور يا همکار نوم : ____________

ایا د تویلي خلک د تجارتي منابعو یه استثمار کي شکل دي (چارتراش، کانونه، ورل را ول یا

ترانسپورتیشن)؟

خوئمه خلک په تجارتي چارتراشو کي شکل دي؟ تعداد. ____________ چیرته؟

خوئمه چارتراش په یال کي یه کيږي او پلور کيږي؟

چرته پلول کيږي؟ ____________ چیرته؟

خوئمه خلک په تجارتي کانونو کي شکل دي؟ تعداد. ____________ چیرته؟

خوئمه چارتراش په تجارتي ترانسپورتیشن کي شکل دي؟ تعداد. ____________ چیرته؟

خوئمه خلک د نورو منابعو یه استثمارکي شکل دي؟ تعداد. ____________ چیرته؟

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<th>دکترین و برترین ها</th>
<th>نظرات</th>
<th>توصیهات</th>
</tr>
</thead>
</table>

**د تولتین د وکرو د سروی فورمه**
در فرعی کلی دمشروخه باید پوستئه وشی
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