

Nuristân Natural Resource Assessment

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Nuristân Natural Resource Assessment

IFHope, Jalalabad, Afghanistan

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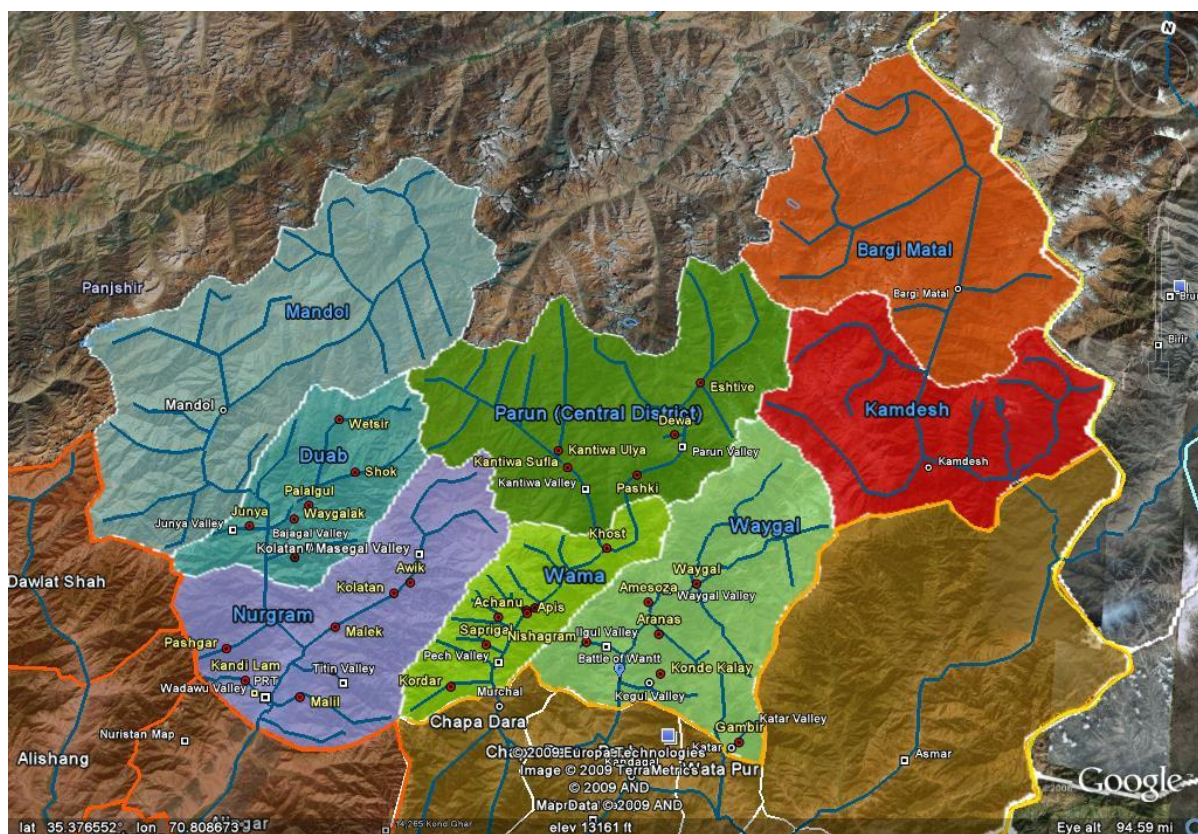
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Map 1. Nuristân Province: Political and Physical.

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 (Pârûn 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 Nuristâni 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*, *malavře*, or *irin* in the Nuristâni 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 Nuristân Natural Resource Assessment (NNRA), summarizes the results of a natural resource assessment of Nuristân Province, pursuant to USAID/DAI RFP No. RFP-JLB-NINF-001, Nuristân Natural Resource Assessment

2.1 Purpose and Scope of the Nuristân Natural Resource Assessment

This report addresses the knowledge gap in the Nuristân PRT's understanding of the resource situation in Nuristân, 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 Nuristân is an underserved province with little donor activity. The purpose of this assessment is to inform the development strategy of the Nuristân 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 Nuristân

Nuristân lies on the southern slopes of the Hindu-Kush mountains in northeastern Afghanistan, encompassing the watersheds of the upper Alingar (Laghman) River in western Nuristân, the upper Pech River in central Nuristân, and the Landai Sin and Kunar Rivers in eastern Nuristân. 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 Rahmân Khân, 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 Pashaî, Afghân, and Gujar peoples are included in Nuristân Province's western districts of Nurgrâm and Dôâb. These populations are ethnically and linguistically distinct from the "true" Nuristâni population.

Nuristân 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.

Nuristanis 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-Afghân 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" (*vahši*) in the view of Afghanistan's majority populations, with the result that Nuristân 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 K  ie and Reching  r (1954-1963). More recently, individual scholars have added to the knowledge of society and resources in Nurist  n, including Humlum (1959), Fischer (1970), A. Y. Nurist  ni (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 Nurist  n in certain details.

Transcription of native terms herein follows Strand (2007).

2.4 Historical Trends of Resource Management in Nurist  n

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

Under the traditional system Nurist  ni villagers annually elected a body of "resource-policemen" (called *ura*, *uri*, *iri:n*, or *malav  ne* in the various Nurist  ni 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 Nurist  ni institutions of resource management in the 100 years since the Afgh  ns conquered Nurist  n 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-police" have disappeared as communities have come under the control of commander- or cleric-dominated *shoras*.

Since the mid 1960's motorable roads have slowly penetrated Nurist  n 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 Nurist  ni communities have evolved institutional ways to regulate logging, as well as to distribute timber revenues. Local management of Nurist  n'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 Kâmviri dialect of Kâmkata-vari (see below; Table 16); terminology in other languages is less documented.

3.1 The Governmental Terrain

The government (*hukumat*) 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.

Current District Name	Former District Name	Watershed	Population (2005 CSO est.)	Center	Ethnic Groups
(Center)		Pech	11,700	PaShki	Vâsi, Kâ ta
Wâ mâ	Wâ mâ		9,600	Wâ mâ Woluswâli	Kâ ta, sa Nu, Kalasha, Pashaî
Wâ ygal	Wâ ygal		17,000	Wâ nt	Kalasha: Vai, Chima -Nishei; Tregâmi
Kâ mdes	Kâ mdes	LanDay Sin	21,900	Kâ mdes Woluswâli	Kom, Mumo, Kâ ta, KSh to, Binio, Jâmcho, Jâsha
Ba rgima tâl	Ba rgima tâl		13,400	Ba rgima tâl	Kâ ta
Nurgrâm	Nuristân	Alingar	28,100	Nurgrâm	ÂShkun-saNu, Pashaî, Pakhtun
Dôâb	Mandol		6,800	Dôâb	Kâ ta, ÂShkun-saNu, Pashaî
Mandol			17,200	Mandol	Kâ ta, Pashaî
			125,700		

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

Since the Nuristânis 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, Nuristânis 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 Kâmdesh, the anti-government insurgency precludes assistance projects. Until security returns to Nuristân, developmental intervention is minimized and impact is negligible.

District:	Dôâb	Nurgrâm	Central	Wâmâ	Wâygal	Average
Calamities in past 5 yrs (average no. of years per household):						
Drought n. years	4.3	3.9	3.9	2.0	2.4	3.3
Flood n. years	2.4	2.5	3.9	1.0	1.6	2.3
Pest/Disease n. years	3.4	0.0	4.0	1.4	1.6	2.1
Civil unrest n. years	0.0	0.0	5.0	0.0	21.1	5.2
Source of assistance received by family in last 5 years (% of households)						
GoA Governmental bodies	20%	10%	40%	50%	95%	43%
NGOs	10%	10%	0	10%	75%	26%
International organizations	15%	10%	0	10%	95%	33%

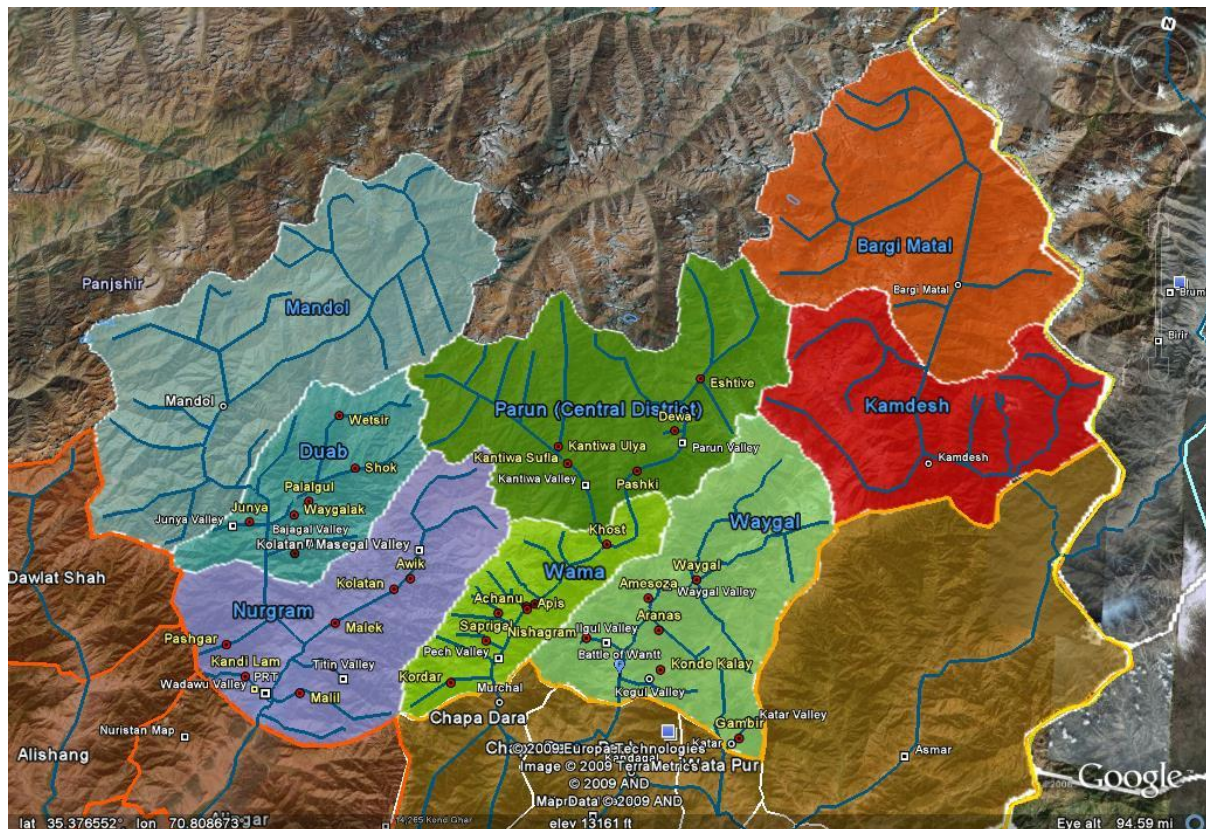
Table 2. Incidence of Calamities and Acts of Outside Assistance in Surveyed Households.

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

Nuristân 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 Kâbul River via the Laghmân and Kunar rivers. Nuristân straddles three south-flowing basin systems: the Alingar basin in western Nuristân, the Pech basin in central Nuristân, and the LanDay Sin basin in eastern Nuristân. The Alingar flows into the Laghman River; the Pech and LaNday Sin flow into the Kunar River. Watershed data are summarized in Favre and Kamal (2004:192-194).



Map 2. Watersheds of Nuristân.

(blue hues = Alingar; green hues = Pech; red hues = LanDay Sin)

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 Nuristâni communities. Water from most strongly flowing springs is of good quality.

Mountain ponds and lakes are important sources of water for livestock and herdsmen during their summer sojourns in the alpine pastures.

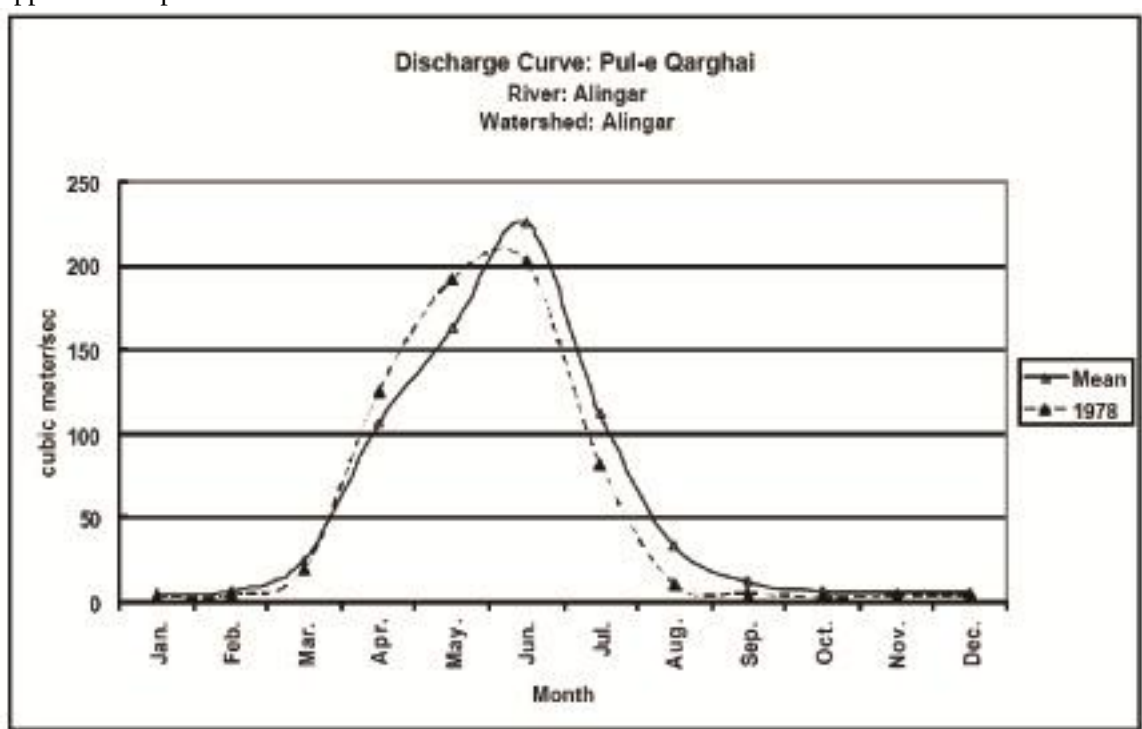
Because of Nuristân's steep terrain and decreasing forest cover, floods are increasingly common and destructive in all watersheds.

3.2.1.1 The Alingar Watershed

The Alingar watershed arises on the crest of the Hindu Kush range in western Nuristân and completely drains the districts of Mandol, Dôâb, and Nurgrâm. Roughly two-thirds of the watershed lies in Nuristân; the lower third lies in eastern Laghmân Province.

From its source and throughout Mandol District the uppermost Alingar Valley is known locally as *Řâmgal* (otherwise known as the Pushâl River), becoming the Alingar proper at its juncture with the Kulem Valley. *Řâmgal* and Kulem are inhabited by Kâta-vari-speaking Nuristânis. Further down on the left bank lie the Bajagal (*bâzâigal*), Kolatân (*mâse:gal*), and Titin valleys, inhabited by Ashkun-speaking Nuristânis. On the right bank shorter and drier tributary valleys join the Alingar; notable are the Junyâ, Shâmâ, Pashagar, and Nangarach Valleys, inhabited primarily by Pashaïs.

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



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

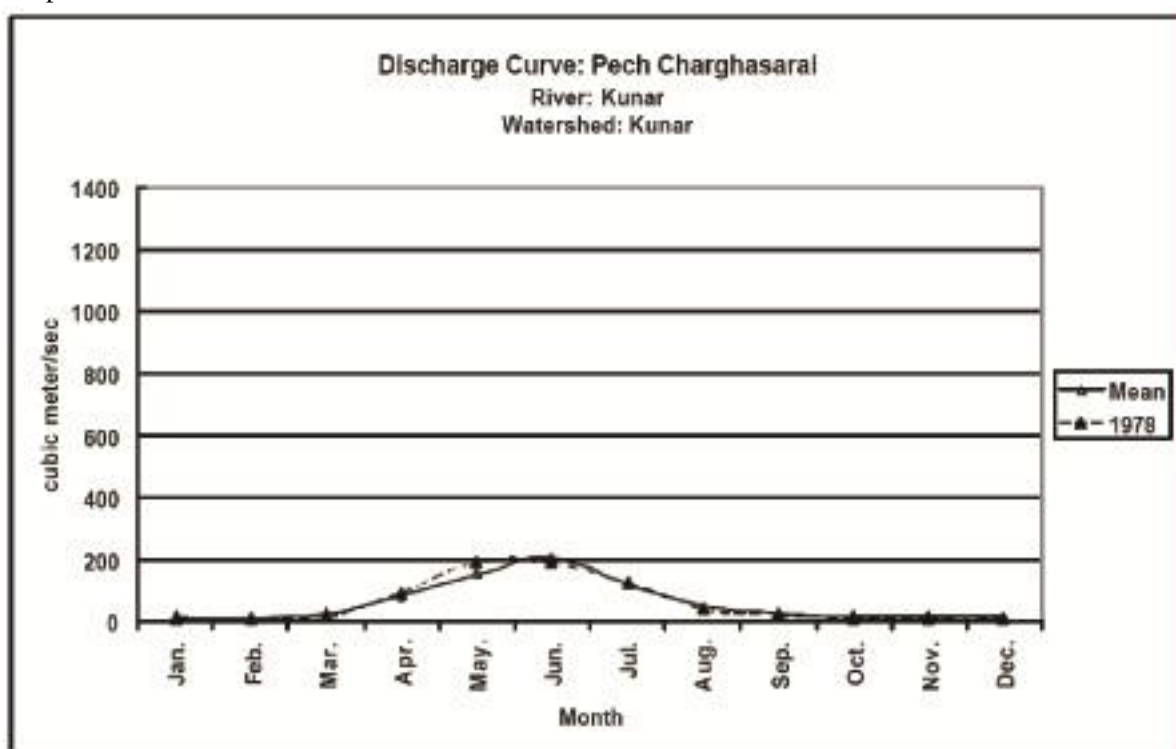
3.2.1.2 The Pech Watershed

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

Two valleys, the Kântiwâ (Ktivi) and the Pârûn, carry the watershed's uppermost outflow to their confluence, whence the Pech Valley proper commences. The Kântiwâ Valley is home to the Kâta Nuristânis; the Pârûn is home to the Vâsi Nuristânis. The Pech Valley down to Caprigal is inhabited by Ashkun-speaking Nuristâns, known as *saNu* in their central village, Wâmâ. At the Pech's bend to

the east the Kordar Valley enters from the west. Further east, in Kunar Province, the Pech receives the Wâygal and KaTâr Rivers, which drain Nuristân's Wâygal District, home to various KalaSha Nuristâni communities.

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



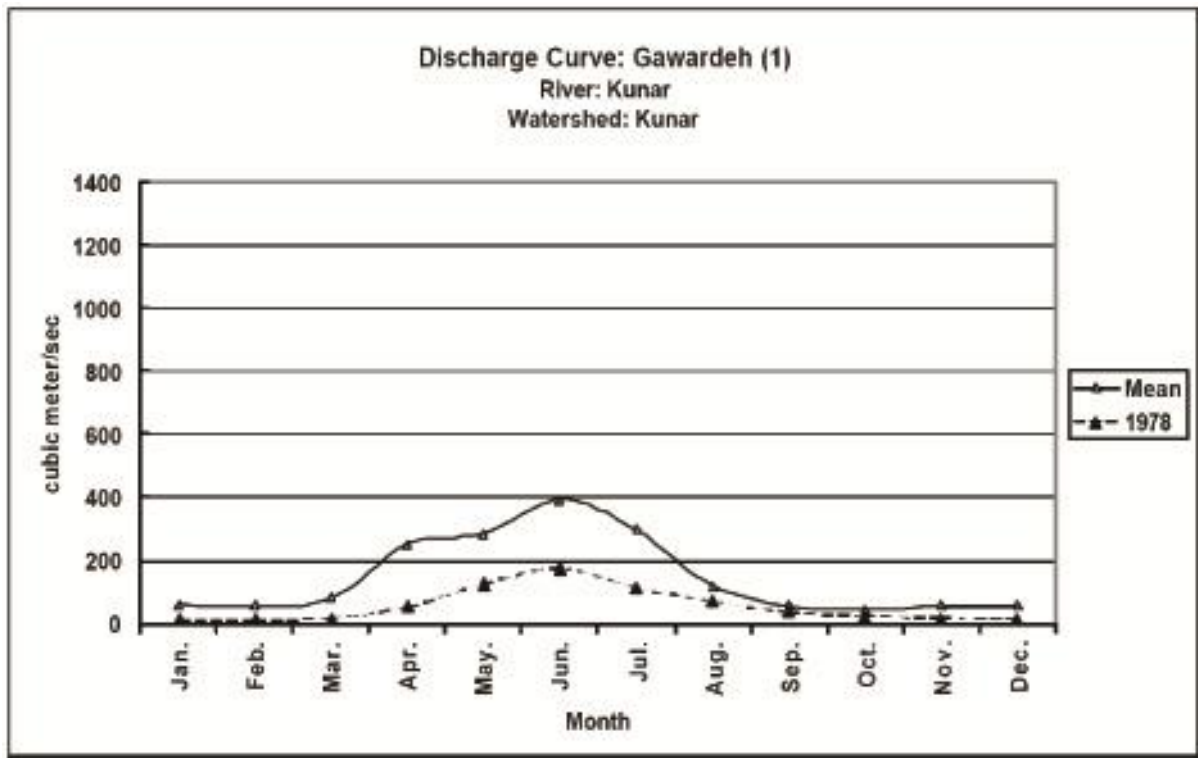
Graph 2. Discharge curves on the Pech River, 1978 (Favre and Kamal 2004: 194).

3.2.1.3 The LanDay Sin Watershed

The LanDay Sin watershed arises on the crest of the Hindu Kush range in eastern Nuristân and completely drains the districts of Bargimatâl and Kâmdesh.

In its highest reaches the LanDay Sin takes on the Shkurigul River on its right; further down the MaNalgâl and Popshigâl streams flow in from the east and the Alnu stream from the west; this portion of the watershed belongs to the Kâta people. Below them lies the territory of the smaller Mumo tribe. Above the confluence of the Nîchingâl 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 Meroŕm, Pitigâl, and Gawardesh Valleys on its left and the Kâmu Valley on its right.

Benchmark statistics for outflow of the LanDay Sin before it enters Kunar Province appear in Favre and Kamal (2004: 194).



Graph 3. Discharge curves on the LanDay Sin, 1978 (Favre and Kamal 2004: 194).

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 Dôâb 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 m³/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 m³/second.
- The flow from the Central district was measured at Pashki and Kântiwâ 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 m³/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 m³/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 m³/second.
- It is important to mention that the water flow of 7 m³/second arising from Dôâb is reduced to merely 2 m³/second at Nurgrâm. It means that most of the water is diverted for irrigation

purposes in Dôâb and Nurgrâm. 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.

District	Name of stream or nearest village	Draining into:	Stream discharge at main streams (m ³ /sec)	Total outflow from district (m ³ /sec)	Remarks
Dôâb	Kulem: Wacir	Alingar River	5.19	7.02	The total flow accumulated at Dahane Pyâr village
	Kulem:Shuk	Alingar River	0.54		
	Kulem:Wâygalak	Alingar River	1.30		
Nurgrâm	Mâ'in	Alingar River	0.34	1.96	The total flow accumulated at Kotalay village. The data for Nangaraj is a rough estimate.
	Chenjak	Alingar River	1.18		
	Nangaraj	Alingar River	0.4		
Central	Pashki	Pârun-Pech River	44.3	46.0	The total flow accumulated near Buni village
	Kântiwâ suflâ	Kântiwâ-Pech River	1.74		
Wâmâ	Kordar Nishâ	Pech River	10.36	10.36	
Wâygal	Ameshoz	Pech River	4.12	19.27	The total flow accumulated near Tâza Gul Kalay
	Arans	Pech River	15.16		

Table 3. Water discharge at main streams and total outflow from districts.

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

Table 4. Stream discharge measured at various villages in all 5 districts.

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 Eshtiwe 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.

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

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 in 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:

Landcover Types
Permanent Snow
Rock Outcrop / Bare Soil
Rangeland (grassland/forbs/low shrubs)
Natural Forest (closed cover)
Natural Forest (open cover)
Degenerate Forest/High Shrubs
Irrigated: Intensively Cultivated (1 Crop/Year)
Irrigated: Intensively Cultivated (2 Crops/year)
Irrigated: Intermittently Cultivated
Rain fed Crops (sloping areas)
Marshland Permanently inundated
Water Bodies

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 is 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)

Landcover Type	Area (Ha)	Area (Sq. km)	% Watershed
Rangeland (grassland/forbs/low shrubs)	158,771	1,587.7	25.45
Natural Forest (closed cover)	148,410	1,484.1	23.79
Rock Outcrop / Bare Soil	130,746	1,307.5	20.96
Permanent Snow	105,248	1,052.5	16.87
Natural Forest (open cover)	50,944	509.4	8.16
Irrigated: Intensively Cultivated (2 Crops/year)	10,335	103.4	1.66
Degenerate Forest/High Shrubs	10,154	101.5	1.63
Irrigated: Intensively Cultivated (1 Crop/Year)	5,806	58.1	0.93
Irrigated: Intermittently Cultivated	3,292	32.9	0.53
Water Bodies	143	1.4	0.02
Rain fed Crops (sloping areas)	87	0.9	0.01
Totals:	623,938	6,239.4	100

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 is 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)

Landcover Type	Area (Ha)	Area (Sq. km)	% Watershed
Natural Forest (closed cover)	443,677	4,436.8	38.04
Rangeland (grassland/forbs/low shrubs)	277,520	2,775.2	23.79
Permanent Snow	209,615	2,096.1	17.97
Rock Outcrop / Bare Soil	122,800	1,228.0	10.53
Natural Forest (open cover)	48,246	482.5	4.14
Irrigated: Intermittently Cultivated	19,708	197.1	1.69
Degenerate Forest/High Shrubs	16,183	161.8	1.39
Irrigated: Intensively Cultivated (1 Crop/Year)	11,863	118.6	1.02
Rain fed Crops (sloping areas)	5,902	59.0	0.51
Irrigated: Intensively Cultivated (2 Crops/year)	5,897	59.0	0.51
Marshland Permanently inundated	4,829	48.3	0.41
Water Bodies	122	1.2	0.01
Totals:	1,166,362	11,663.6	100.00

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 Nuristânis 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*, *gâv'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 Nuristânis 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 Afghâns degrade the forest environment, as can be seen in a comparison of denuded Afghân-owned uplands vs. Nuristâni forests. Most human-caused forest depletion in Nuristân is attributable to exploitation by Afghân timber traders from both sides of the Durand Line.

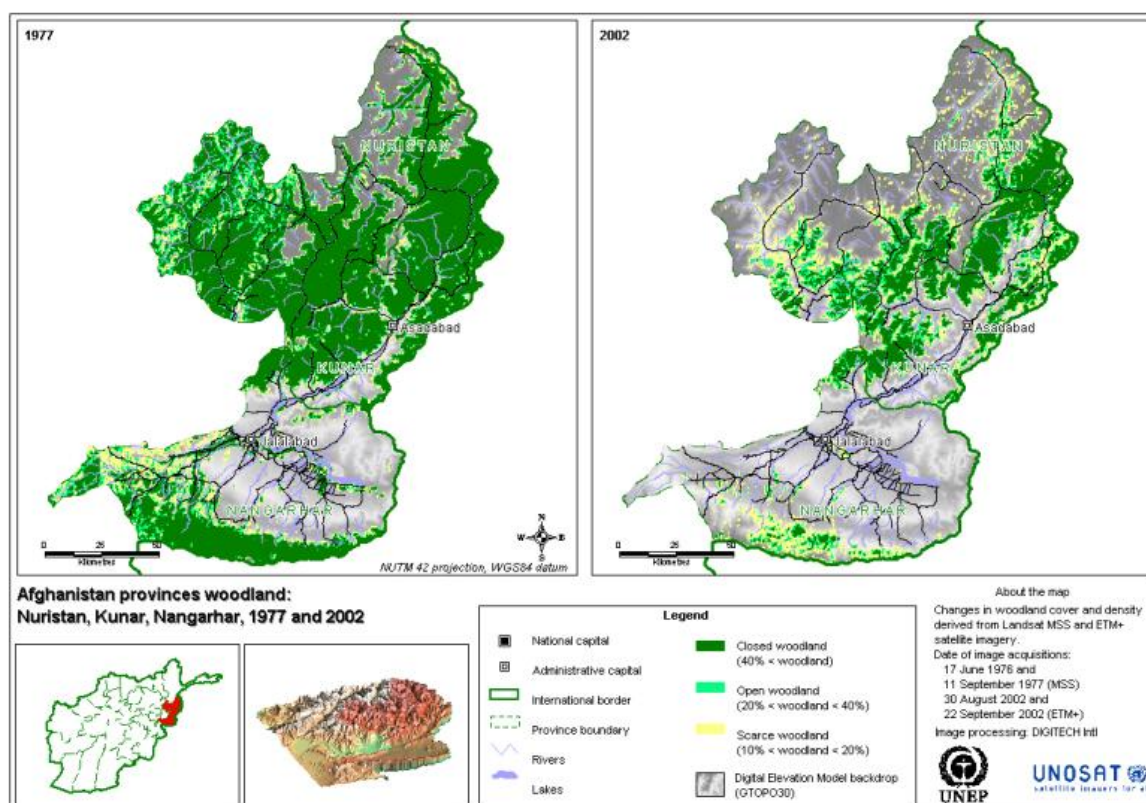


Figure 1. Forest Cover in Eastern Afghanistan, 1977 vs. 2002 (source: UNOSAT)

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 Wâygal 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 Wâygal 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 Wâygal 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 Wâygal (Table 14), the landcover categories of more than 60% shrubs and grasses was found highest in Wâygal (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 of forest area 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 Nuristân.
- 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 Nuristân 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 cft 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.

Species	Average No. of trees per ha per district					Average Nuristân Province
	Dôâb	Wâmâ	Parun	Nurgrâm	Wâygal	
<i>Cedrus deodara</i>	0	0	4.8		157.5	40.6
<i>Pinus wallichiana</i>	0	0	96.4	11.8	197.3	61.1
<i>Abies spectabilis</i>	0	0	0.0	0.0	35.9	7.2
<i>Picea smithiana</i>	0	0	0.0	0.0	26.8	5.4
<i>Pinus gerardiana</i>	12.5	0	3.5	0.0	3.8	4.0
<i>Pinus roxburghii</i>	10.6	0	0.0	0.0	0.0	2.1
<i>Quercus sp.</i>	75.4	116.6	24.7	103.4	185.8	101.2
<i>Olea ferrugineae</i>	0.0	0	0	28.3	0	5.7
<i>Salix sp.</i>	8.4	0	0	0	0	1.7
Total	107.0	116.6	129.5	143.4	607.2	228.8

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

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

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

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

Table 11. Volume of small wood per hectare (cubic feet) of forest area.

Species	Size of seedlings (feet)	No. of seedlings per ha of forest area					Average Nuristân Province
		Dôâb	Wâmâ	Parun	Nurgrâm	Wâygal	
Oak	Less than 1	181.8	218.8	0.0	326.9	3211.1	787.7
	1 to 3	193.2	250.0	0.0	480.8	1255.6	435.9
	3.1 to 5	272.7	229.2	0.0	432.7	1405.6	468.0
	Total	647.7	697.9	0.0	1240.4	5872.2	1691.7
Salix	Less than 1	93.75	0.0	0.0	0.0	0.0	18.8
	1 to 3	125	0.0	0.0	0.0	0.0	25.0
	3.1 to 5	125	0.0	0.0	0.0	0.0	25.0
	Total	343.75	0	0	0	0	68.75
Pinus gerardiana	Less than 1	125	0.0	0.0	0.0	0.0	25.0
	1 to 3	41.7	0.0	0.0	0.0	0.0	8.3
	3.1 to 5	125.0	0.0	0.0	0.0	0.0	25.0
	Total	291.7	0.0	0.0	0.0	0.0	58.3
Pinus wallichiana	Less than 1	0.0	0.0	0.0	125.0	1583.3	341.7
	1 to 3	0.0	0.0	500.0	437.5	333.3	254.2
	3.1 to 5	0.0	0.0	1187.5	250.0	291.7	345.8
	Total	0.0	0.0	1687.5	812.5	2208.3	941.7
Olive	Less than 1	0.0	0.0	0.0	35.7	0.0	7.1
	1 to 3	0.0	0.0	0.0	196.4	0.0	39.3
	3.1 to 5	0.0	0.0	0.0	232.1	0.0	46.4
	Total	0.0	0.0	0.0	464.3	0.0	92.9
Cedrus deodara	Less than 1	0.0	0.0	0.0	0.0	640.6	128.1
	1 to 3	0.0	0.0	0.0	0.0	328.1	65.6
	3.1 to 5	0.0	0.0	0.0	0.0	453.1	90.6
	Total	0.0	0.0	0.0	0.0	1421.9	284.4
Abies spectabilis	Less than 1	0.0	0.0	0.0	0.0	708.3	141.7
	1 to 3	0.0	0.0	0.0	0.0	250.0	50.0
	3.1 to 5	0.0	0.0	0.0	0.0	416.7	83.3
	Total	0.0	0.0	0.0	0.0	1375.0	275.0
Picea smithiana	Less than 1	0.0	0.0	0.0	0.0	125	25.0
	1 to 3	0.0	0.0	0.0	0.0	500	100.0
	3.1 to 5	0.0	0.0	0.0	0.0	250	50.0
	Total	0.0	0.0	0.0	0.0	875.0	175.0
Pinus gerardiana	Less than 1	0.0	0.0	0.0	0.0	0.0	0.0
	1 to 3	0.0	0.0	0.0	0.0	500	100.0
	3.1 to 5	0.0	0.0	0.0	0.0	375	75.0
	Total	0.0	0.0	0.0	0.0	875.0	175.0

Table 12. Status of regeneration in the forest area.

Species	Size of seedlings (feet)	Average No. of seedlings per hectare of forest area					Average Nuristân Province
		Dôâb	Wâmâ	Parun	Nurgrâm	Wâygal	
Oak	up to 3 feet	647.7	697.9	0.0	1240.4	5872.2	1691.7
Salix	up to 3 feet	343.8	0.0	0.0	0.0	0.0	68.8
Pinus gerardiana	up to 3 feet	291.7	0.0	0.0	0.0	0.0	58.3
Pinus wallichiana	up to 3 feet	0.0	0.0	1687.5	812.5	2208.3	941.7
Olive	up to 3 feet	0.0	0.0	0.0	464.3	0.0	92.9
Cedrus deodara	up to 3 feet	0.0	0.0	0.0	0.0	1421.9	284.4
Abies spectabilis	up to 3 feet	0.0	0.0	0.0	0.0	1375.0	275.0
Picea smithiana	up to 3 feet	0.0	0.0	0.0	0.0	875.0	175.0
Pinus gerardiana	up to 3 feet	0.0	0.0	0.0	0.0	875.0	175.0

Table 13. Average No. of seedlings per hectare of forest area.

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 30% density, while 22% of forest has the highest density of more than 60%. The density of forest resource was highest in Dôâb 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 Dôâb (92% of forest area having this density) and Wâygal (67% of forest area having this density).

Vegetation type	Districts data (% area)					Average Nuristân Province
	Dôâb	Wâmâ	Parun	Nurgrâm	Wâygal	
Grasses						
Cover < 30 %	8.3	58.3		69.2	25	40.2
Cover 30-60 %	91.7	41.7		23.1	66.7	55.8
Cover > 60 %	0.0	0.0		7.7	8.3	4.0
Shrubs						
Cover < 30 %	83.3	66.7	57.1	84.6	50	68.4
Cover 30-60 %	8.3	33.3	42.9	15.4	33.3	26.6
Cover > 60 %	8.3	0.0	0	0	16.7	5.0
Trees						
Cover < 30 %	8.3	66.7	16.7	23.1	66.7	36.3
Cover 30-60 %	0.0	33.3	66.7	76.9	33.3	42.0
Cover > 60 %	91.7	0	16.7	0	0.0	21.7

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

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 herders.

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 elevation 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 quadrat. 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*, *legmoni*, *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.

Attribute	District data average					Av. Nuristân Province
	Dôâb	Wâmâ	Central	Nurgrâm	Wâygal	
Slope (%) :	0	0	na	33.6	38	17.9
Elevation above sea level :	2133.8	2033.3	2700	1600	1900	2073.4
Land Cover (%) :						
Land Cover grass	63.8	59.2	23.8	37.9	55.6	48.1
Land Cover forbs	6.6	14.0	6.9	3.2	7.3	7.6
Land Cover shrubs	5.7	8.5	5	8.5	10.3	7.6
Land Cover Barren soil	14.1	10.8	4.2	22.5	13.7	13.1
Land Cover Rocks	9.9	7.5	3.1	20.4	7.5	9.7
Average total cover	76	81.7	35.8	49.6	73.2	63.2
Forage weight (t/ha):						
Forage weight Grasses	24.75	6.1	2.5	8.8	14.9	11.4
Forage weight forbs	4.8	1.9	0.8	0.9	0.8	1.9
Forage weight Browse	3.7	1.1	0.5	2.2	0.1	1.5
Total forage	33.3	9.1	3.8	11.8	15.8	14.7
Range Condition						
Average	41.7	83.3	50	75	25	55.0
Good:	50	0	0	25	33.3	21.7
Very good	8.3	0	0	0	41.7	10.0
Slightly degraded	33.3	58.3	41.7	25	58.3	43.3
Very degraded	0	25	8.3	8.3	0	8.3
Visible degradation						
Landslides:	41.6	41.7	33.3	0	0	23.3
Soil erosion:	66.6	58.3	33.3	33.3	58.3	50.0
Reduced cover:	75	91.7	33.3	66.6	41.6	61.6
Unwanted species (presence % villages)						
Dadem	41.7	25	41.6	0	0	21.7
Leghoni	33.3	58.3		0	0	22.9
Kharghwagey	25	75	8.3	0	0	21.7
Leraap	16.6	0	0	0	0	3.3
Soza kai	8.3	0	0	0	0	1.7
Mechee	0	16.6	0	0	0	3.3
Sagay	0	16.6	0	0	0	3.3
Zahar booti	0	66.6	66.6	0	0	26.6
Chakateek	0	0	8.3	0	0	1.7
Nemeer	0	0	25	0	0	5.0
Khatreez	0	0	0	0	16.6	3.3
Jao	0	0	0	0	8.3	1.7
Tantarak	0	0	0	0	8.3	1.7
Wartigey	0	0	0	0	8.3	1.7
Ghat tigey	0	0	0	0	8.3	1.7
None	50	0	66.6	100	66.6	56.6

Table 15. Assesment of Rangelands in Nuristân Province, Afghanistan.

3.2.3 Fauna

Nuristân'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 Nuristâni culture, are endangered, as are most other larger animals found in the region. A native inventory of fauna in eastern Nuristân appears in Table 78.

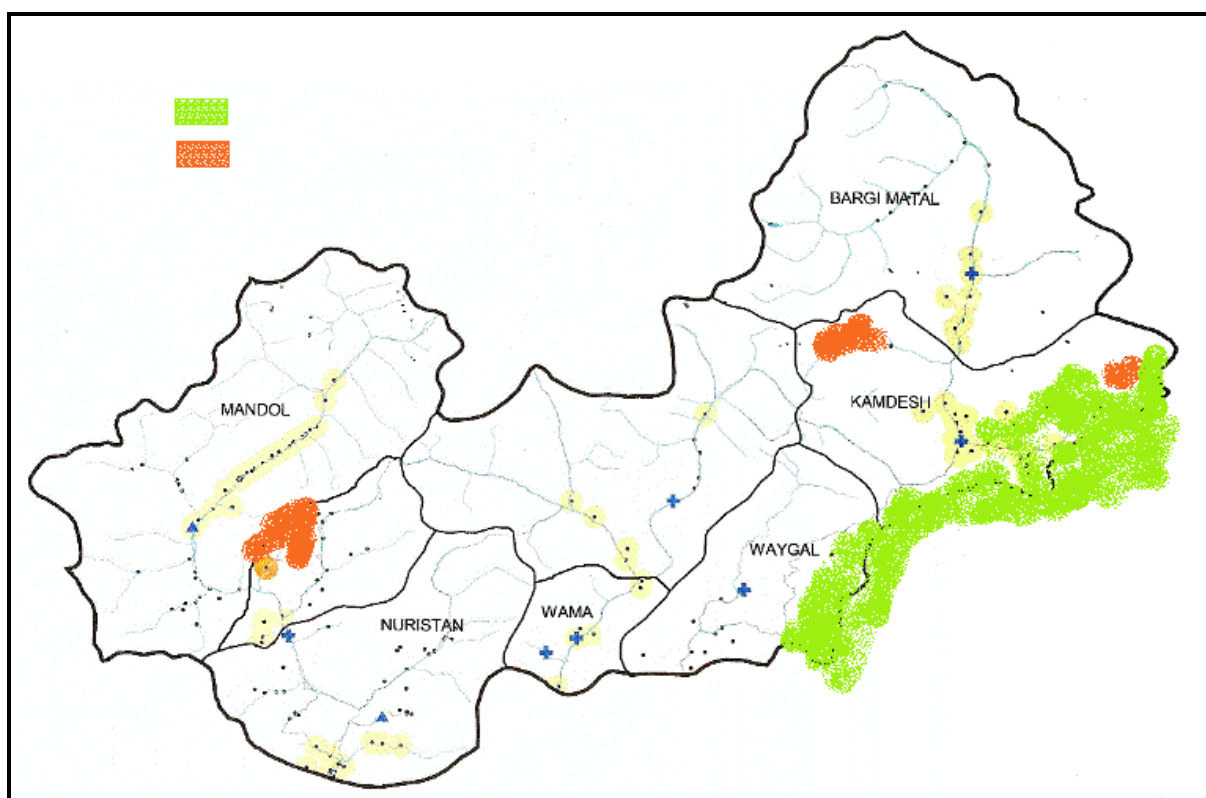
3.2.4 Gemstones and Minerals

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 Kâmdesh 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 *biruj* '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 Afghân conquest of the various Nuristâni tribes in 1895-96. Since their subsequent incorporation into the Afghân state, the Nuristâni 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-Nuristâni 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 Nuristânis 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 Nuristânis and the southern Nuristânis. The former are further divided linguistically into two culturally distinct groups, the Vâsi of Pârûn and the Kâmkata-speaking population of Kântivâ, Mandol, Dôâb, and the LanDay Sin watershed, who are divided into several tribes. The southern Nuristânis 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 Nuristâni society. Nuristânis 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 Nuristânis 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 Nuristâni household, seniority carries authority. The senior male in each household has total authority over household members; elder brothers have authority over younger ones.

Linguistic Family	Linguistic Subfamily	Linguistic Group	Linguistic Sub-Group	Linguistic Name	Pashto Name	Native Name	Ethnic Groups	Districts
Indo-European	Indo-Iranian	Nuristâni	Northern Nuristâni	Vâsi-vari	Pârûni	<i>vâsi vari</i>	Vâsi	(Central)
				Kâmkata-vari	Kântozi	<i>kâta-vari</i>	Kâta	(Central), Bargimatâl, Dôâb, Mandol
					Mandagali	<i>mumviri</i>	Mumo	Kâmdesh
					Kâmdeshi	<i>kâmviri, kShtaviri</i>	Kom. KShto	
			Southern Nuristâni (KalaSha)	ÂshkuNu	Wâmâi	<i>saNu viri</i>	saNu	Wâmâ
						<i>grâmsaNa viri</i>	Grâmsa Na	
						<i>âShkuNu viri</i>	ASHkun	Nurgrâm, Dôâb
				KalaSha-ala	Wâygali	<i>vai alâ</i>	Vâ	Wâygal
						<i>nishe' alâ</i>	Chima-nishei	
				Tregâmi	Tregâmi	<i>tregâmi</i>	Tregâmi	
		Iranian	Eastern	Pashto	Pakhto	<i>pakhto</i>	Pashtun	Nurgrâm
			Western	Persian	Dari	<i>fârsi or dari</i>	Kâta	Mandol
		Indo-Aryan	Pashaî (westernmost Indo-Aryan)	Pashaî	Pasha'i	<i>pashaî</i>	Pashaî	Nurgrâm, Dôâb, Wâmâ
			Central Indo-Aryan	Gujari	Gujari	<i>gujri</i>	Gujar	Nurgrâm, Dôâb

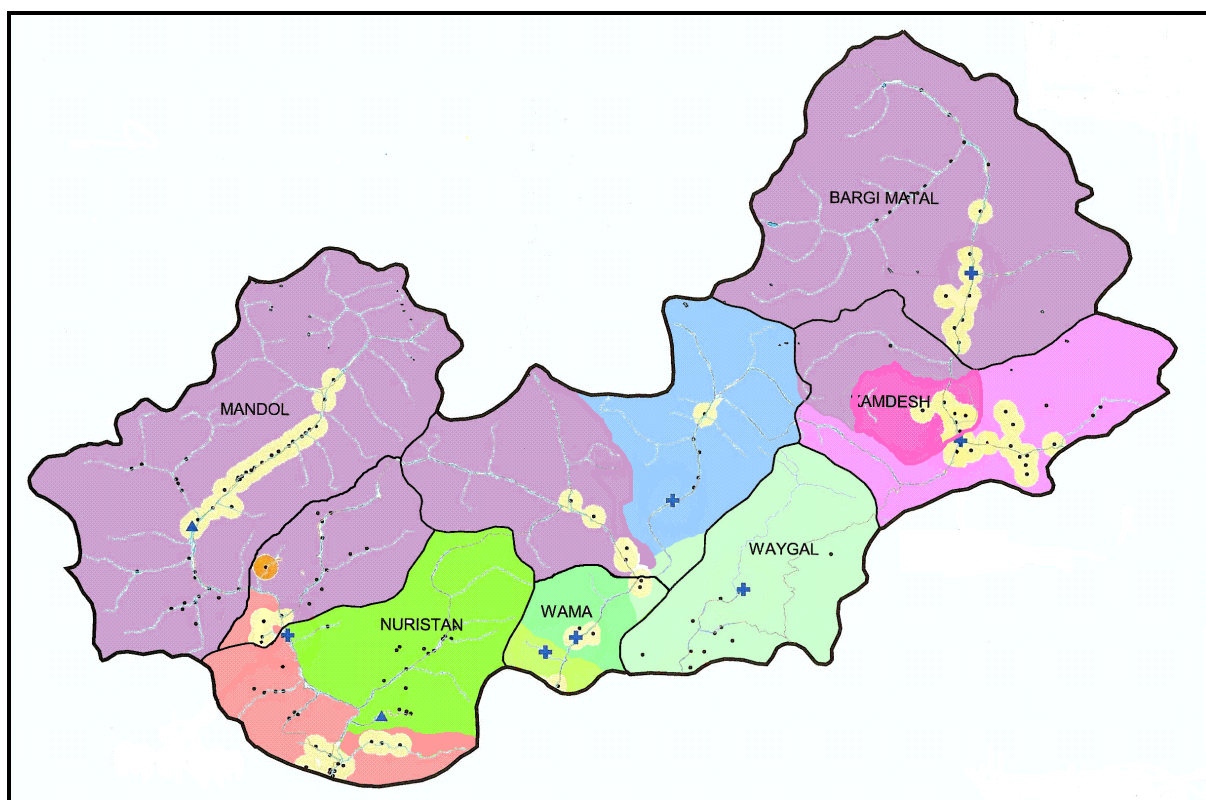
Table 16. Languages and Linguistic Groups in Nuristân Province (after Strand 1973, 1997, 2008).

District	Pashto Name	Local Name	Language
Mandol	Kantozi	<i>Kâta: Râmgâl</i>	Kata-vari
Dôâb	Par desi	<i>ASHkun: Bâdzâigal</i>	Ashkunu
	Kantozi	<i>Kâta: Kûlem</i>	Kata-vari
	Pasha'i	<i>Pashaî</i>	Pashai
	Gujar	<i>Gujar</i>	Gujari
Nurgrâm	Pasha'i	<i>Pashaî</i>	Pashai
	Pashtun	<i>Pakhtun</i>	Pashto
	Gujar	<i>Gujar</i>	Gujari
	Par desi	<i>ASHkun: Titin</i>	Ashkunu
	Par desi	<i>ASHkun: Mâse:gal</i>	Ashkunu
Central	Kantozi	<i>Kâta: Ktivi</i>	Kata-vari
	Paruni	<i>Vâsi</i>	Vasi-vari
Wâmâ	Wâmâi	<i>GrâmsaNa</i>	Ashkunu
		<i>SaNu</i>	Ashkunu
	Kordari	<i>Chugani</i>	Pashai
Wâygal	Tregami	<i>Tregâmi</i>	Tregami
	Wâygali	<i>KalaSha: Vai</i>	Kalasha-ala
	Wâygali	<i>KalaSha: Chima-Nishei</i>	Kalasha-ala
	Wâygali	<i>KalaSha: Vantâ</i>	Kalasha-ala
Bargimatâl	Kantozi	<i>Kâta: LanDai Sin</i>	Kata-vari
Kâmdesh	Kamozi	<i>Kom</i>	Kamviri
	Jashi	<i>Jâshi</i>	Kamviri
	Binozi	<i>Binio</i>	Kamviri
	Jamjozi	<i>Jâmcho</i>	Kamviri
	Kushtozi	<i>Kshto</i>	Kamviri
	Mandagali	<i>Mumo</i>	Mumviri

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" (*-dâra, -dâr, -dârê, -deri, t'âtâ*), and all his boys constitute a corporate agnatic group that controls its common patrimonial rangeland.



Map 4. Ethnic Groups of Nuristân (after Strand 1997, 2008).

(Color coding: Kâta, Kom, Mumo, Vâsi, KalaSha, SaNu, ĀShku~, Pashai)

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 (*gřom*, *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.

National Name	Local Name	Ethnic Group	District
Nangarach	nangaraj	Pashaî	Nurgrâm
Malil	malil	Pashaî	Nurgrâm
Titin	titin	Ashkun	Nurgrâm
Kolatân	kolatâ	Ashkun	Nurgrâm
Palagal	pâr'gal	Kata	Dôâb
Pyâr	piâr	Pashaî	Dôâb
Nilâw	p'egal	Kâta	Dôâb
Anish	ân'ish	Kâta	Mandol
Kiwisht	kiv'ishT	Kâta	Mandol
Mandol	mâni'ul	Kâta	Mandol
Linar	l'inâr	Kâta	Mandol
Gadwâl	gâDu	Kâta	Mandol
Pushâl	p'ushol	Kâta	Mandol

Table 18. Major Villages in the Alingar Watershed.

National Name	Local Name	Ethnic Group	District
Gambir	gamir	Tregâmi	Wâygal
Wânt	vânt	Vântâ	Wâygal
Nishe'i	nisheigrâm	Kalasha: Nishei	Wâygal
Arans	Zhônchigal	Kalasha: Vâi	Wâygal
Ameshos	âmeshdesh	Kalasha: Vâi	Wâygal
Wâygal	vâgal	Kalasha: Vâi	Wâygal
Wâmâ	sâma	SaNu (Wâmâi)	Wâmâ
AchaNu	grâmsaNâ grâm	GrâmsaNâ	Wâmâ
Kântiwâ Ulyâ	kt'ivi	Kâta	(Center)
Pashki	ush'ût	Vâsi	(Center)
Eshtiwe	Shup'u	Vâsi	(Center)

Table 19. Major Villages in the Pech Watershed

National Name	Local Name	Ethnic Group	District
Pitigal	p'itigal	Kom	Kâmdesh
Kâmu	kâm'u	Kom	Kâmdesh
Kâmdesh	k'ombrom	Kom	Kâmdesh
Mandagal Suflâ	mum'oim	Mumo	Kâmdesh
Paprok	p'eruk	Kâta	Kâmdesh
Badmuk	bad'amuk	Kâta	Bargimatâl
Bargimatâl	brag'amâTol	Kâta	Bargimatâl

Table 20. Major Villages in the LanDay-Sin Watershed

Village communities are the primary social units in Nuristân. 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 Nuristâni 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 Nuristân 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.

Survey results:

Doab							
Village Name	Shuk	Watsar	Palagal	Wâygalak	Bajagal	Junyâ	Total
Total No. of Males:	691	562	1,286	390	1,292	2,028	6,249
Total No. of Females:	690	511	1,221	370	1,005	2,040	5,838
No. of Male Children:	456	350	594	219	668	1,086	3,373
No. of Female Children:	437	291	683	219	520	1,249	3,399
Total	1,382	1,073	2,507	760	2,297	4,068	12,087
Houses	232	179	247	86	265	425	1,434
Neighborhoods	3	3	3	1	8	5	23
Avg. People/House	6.0	6.0	10.1	8.8	8.7	9.6	8.4
Male/Female Ratio	1.00	1.10	1.05	1.05	1.29	0.99	1.07
Nurgrâm							
Village Name	Awek	Kolatan	Malak	Kandi Lâm	Shod Lâm	Malil	Total
Total No. of Males:	59	1,124	510	1,214	699	592	4,198
Total No. of Females:	49	898	426	1,024	578	555	3,530
No. of Male Children:	41	819	362	865	548	369	3,004
No. of Female Children:	31	562	283	668	411	315	2,270
Total	108	2,022	936	2,238	1,277	1,147	7,728
Houses	18	304	138	342	153	220	1,175
Neighborhoods	1	6	3	4	7	4	25
Avg. People/House	6.0	6.7	6.8	6.5	8.3	5.2	6.6
Male/Female Ratio	1.20	1.25	1.20	1.19	1.21	1.07	1.19
Central District							
Village Name	Pashki	Eshtiwe	Dewa	Kântiwâ U.	Kântiwâ S.	Kusht	Total
Total No. of Males:	558	599	634	790	1,139	203	3,923
Total No. of Females:	542	565	563	625	916	188	3,399
No. of Male Children:	399	427	460	553	875	164	2,878
No. of Female Children:	384	380	383	389	631	147	2,314
Total	1,100	1,164	1,197	1,415	2,055	391	7,322
Houses	160	177	175	236	266	39	1,053
Neighborhoods	5	5	4	4	4	5	27
Avg. People/House	6.9	6.6	6.8	6.0	7.7	10.0	7.0
Male/Female Ratio	1.03	1.06	1.13	1.26	1.24	1.08	1.15
Wâmâ							
Village Name	Achanu	Wâmâ	Paso	Apiss	Kordar	Saprigal	Total
Total No. of Males:	578	1,002	793	380	809	229	3,791
Total No. of Females:	554	797	700	367	790	302	3,510
No. of Male Children:	428	794	564	277	573	159	2,795
No. of Female Children:	375	578	469	258	552	232	2,464
Total	1,132	1,799	1,493	747	1,599	531	7,301
Houses	146	209	230	108	233	71	997
Neighborhoods	6	2	4	3	4	4	23
Avg. People/House	7.8	8.6	6.5	6.9	6.9	7.5	7.3
Male/Female Ratio	1.04	1.26	1.13	1.04	1.02	0.76	1.08
Wâygal							
Village Name	Nisheigram	Ameshoz	Gambir	Arans	Wâygal	Kond	Total
Total No. of Males:	1,332	497	849	934	1,197	636	5,445

Total No. of Females:	1,401	710	878	1,569	1,253	649	6,460
No. of Male Children:	783	377	563	898	686	475	3,782
No. of Female Children:	826	374	522	800	607	460	3,589
Total	2,733	1,207	1,727	2,503	2,450	1,285	11,905
Houses	517	233	283	622	444	249	2,348
Neighborhoods	6	4	3	4	3	7	27
Avg. People/House	5.3	5.2	6.1	4.0	5.5	5.2	5.1
Male/Female Ratio	0.95	0.70	0.97	0.60	0.96	0.98	0.84

Table 21. Demographic Statistics from Surveyed Villages.

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” (*gřâmjeST*) is chosen from the elders at large to manage community affairs for the coming year.

3.3.3.4.2 Resource Police

Policemen (*ura*, *malavře*~, *irin*, *ur'i*) 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” (*kumeTâs*) 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 Nuristâni 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. Nuristâni 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 Pârûn 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

Nuristâni 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 Nuristâni 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, Juniâ vs. Piâr) have broken out over rights to drought-scarce water.

3.4.1.2 Human Water Consumption

Almost all Nuristâni communities have springs as their source of drinking water. Spring water in Nuristân 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 waterborn 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 Nuristân.

3.4.1.5 Survey Results on Water Usage

	Dôâb	Nurgrâm	Central	Wâmâ	Wâygal	Average
	(averages per household)					
Drinking water source:	spring, river	spring	spring, river	spring	spring, river	
Distance of source from house (m)	226	205	969	633	595	526
Amount used per day (liters):	118	106	77	90	86	95
Transport of water to household:	human	human	human	human	human	
Irrigation water source:	river, spring	river, spring	river, spring	river, spring	river, spring	
Distance of source from fields (m)	675	439	2,437	1,361	1,332	1,249
Average No. of Days Irrigated:	3.5	1.7	14.0	0.8	6.6	5.3
Average No. of Nights Irrigated:	1.0	80.4	19.1	15.2	5.1	24.2

Table 22. Water Usage.

3.4.2 Land Usage

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

3.4.2.1 Agriculture

Agriculture is carried out on arable land adjoining the community. Additionally, most Nuristânis 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

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 “busheIs” 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 “busheI” (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 “busheI” 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 Râmgal, Pârûn, 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:

	Dôâb	Nurgrâm	Central	Wâmâ	Wâygal	Average
	(average per household per district)					
This Year's Production in Kg of:						
Wheat	291	240	272	305	376	297
Maize:	486	175	1,045	400	861	594
Millet:	0	0	0	0	0	0
Barley:	50	0	0	0	82	26
Legumes	34	42	130	53	78	67
Income: (Afs)	4,300	15,159	14,986	13,798	28,228	15,294
Change in production over Last 3 Years:	0%	14%	0%	-12%	10%	2%
Own consumption %	100%	98%	99%	100%	93%	98%
Market%	0%	2%	1%	0%	7%	2%
Self sufficient	8%	2%	7%	12%	60%	18%
Size and tenure of agricultural lands:						
Size: jeribs	1.3	0.6	2.7	1.1	2.1	1.6
number of farms	16.8	8.2	2.8	11.0	6.2	9.0
owned : jeribs	1.3	0.6	3.3	1.0	1.8	1.6
leased: jeribs	0.0	0.0	0.0	1.2	0.0	0.2
Field Management						
Distance from home to field (m):	1,119	1,167	1,309	461	2,786	1,368
Seed Capacity: (size)	26.6	14.7	13.1	12.3	12.9	15.9
Crops Planted:	maize, bean	wheat, maize, bean	maize, bean	maize, wheat, bean	maize, bean, wheat	
Average No. of Days Irrigated:	3.5	1.7	14.0	0.8	6.6	5.3
Average No. of Nights Irrigated:	1.0	80.4	19.1	15.2	5.1	24.2
Amount of Fertilizer Used:	1,291	863	2,708	134	786	1,156
Kg Commercial Fertilizer:	0.0	19.4	47.6	13.5	28.1	21.7
Cultivation: plowing, harvesting and transport:						
Manually:	91%	94%	78%	95%	72%	86%
Animal:	9%	6%	22%	5%	28%	14%
No. Women in Each Summer Agricultural Coop:						
Number of groups	2	4	5	5	6	4
Women in each group	5	7	4	6	5	5

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 Nuristân's 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 Wâmâ Village and Pashki, there are large plantations of fruit trees. Commercially viable orchards are just now being introduced in Nuristân, with preliminary mixed results.

Survey results:

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

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. Dôâb planted by ACC, 20% alive
3. Nurgrâm planted by DAI, 70% alive
4. Wâygal 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:

	Dôâb	Nurgrâm	Central	Wâmâ	Wâygal	Average
Amount Grown (Alfalfa, etc.):	0	67	0	1	0	14
Amount from Harvest:	0	144	0	2,000	0	429
Amount from Grassland:	257	93	6,386	7,694	2,207	3,327
Income: (Afs)	2,749	4,892	67,249	3,884	18,687	19,492

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 Nuristânis 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 Nuristâni 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 Wâygal District, but looser in tribal areas where pastureland is abundant, such as Kâmdeh.

It is important 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 Nuristâni 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, Nuristâni 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.

Survey results on animal husbandry appear in Table 26. Statistics on fodder production appear in Table 25.

	Dôâb	Nurgrâm	Central	Wâmâ	Wâygal	Average
	(average per household per district)					
Distance to Summer Pastures (meters)		269	257	39,600	9,592	12,429
Fall		271	8,002	39,725	11,003	14,750
Distance to Winter Pastures (meters)		272	8,008	39,746	11,886	14,978
Spring		267	7,959	39,599	11,988	14,953
No. men who pool goats and labor during the summer:						
No. Men in Summer Dairy Coop with Householder:	3.3	3.1	3.7	4.6	6.2	4
No. of goats and sheep:	91	97	49	73	73	77
No. of Lactating Goats:	56	52	27	52	42	46
No. of Cattle:	92	58	55	81	22	61
No. of Lactating Cows:	4	3	5	6	4	5
This Year's Production of Cheese (Kg):	77	51	237	58	66	98
Ghee (Kg):	46	19	77	46	41	46
Curds (Kg):	96	43	106	835	185	253
% Change of Dairy Production over Last 3 Years:	4	6	10	14	3	7
Manure Production (Kg)	1,767	1,830	4,104	583	3,071	2,271
Animal Health:						
Animals treated per year	8	2	1	2	2	3
Total expense (Afs)	1,947	5,429	1,766	7,218	2,434	3,759
Main diseases	FMD, bacteria, anthrax, anthertokzima, sephacx, PPR, parasite, black leg, pneumonia, CCP, sheep pox, mange, paposa, rinderpest, diarrhea					
Animals vaccinated per year	2.2	1.7	0.0	0.0	1.1	1.0
Total expense (Afs)	75	3,210	2	30	167	697
Type vaccine	FMD, PPR, Anthrax, IT V, Sheep Pox, CCPP					

Table 26. Animal Husbandry.

3.4.2.3 Forests

Nuristânis 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:

	Dôâb	Nurgrâm	Central	Wâmâ	Wâygal	Average
	(average per responding household per district)					
Timber:						
No. Trees Cut for Building:	22	3	37	9	4	15
Firewood:						
Yearly Firewood Usage (Kg):						
Hollyoak:	4,277	4,534	14,891	10,886	6,806	8,279
Conifer Wood:	228	855	1	0	292	275
Quantity of wood used (Kg per day): in summer	10	10	21	24	11	15
in winter	21	18	52	56	137	57

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:

	Dôâb	Nurgrâm	Central	Wâmâ	Wâygal	Average
	(average per responding household per district)					
No. Trees Cut for Sale:	1	2	70	9	3	17
Household Income from Contract Timber Revenue:	5,000	0	10,500	0	10,143	5,129

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 Nuristân (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 Nuristân. Commercial arboriculture is greatest in Wâmâ and Wâygal Districts (Table 24), as well as in unsurveyed Kamdesh District. Edible apricot seeds are exported from Pârûn.

Recent attempts at commercial orchard establishment have begun to produce results in some areas of Pârûn, Wâmâ, 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 Nuristân. 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, Nuristânis require more sophisticated mining equipment and training.

As with the timber trade, most marketing of Nuristâni gemstones is done through Afghan middlemen, resulting in a minimal share of the overall profits of the trade going to the Nuristânis. 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.

	Dôâb	Nurgrâm	Central	Wâmâ	Wâygal	Average
	(average per respondent household per district)					
Householder Own or Work in a Gemstone Mine?	15%	No	2%	No	No	4%
Household Income from Mining:	15,688	0	8,000	0	0	11,844
location of mine	Mawe		Kust			
distance of mine from village (m)	14,875	0	6000	0	0	10,438
type of mine	emerald		tourmaline			

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 Nuristânis 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

Nuristânis 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:

	Dôâb	Nurgrâm	Central	Wâmâ	Wâygal	Average
	(average per responding household per district)					
Men of family working outside the farm:						
men n. days	2	2	1	1	19	5
hrs/month	148	22	278	9	199	131
Women n. days	0	0	0	0	0	0
Government n. days	111	41	181	29	214	115
income	2,443	6,295	7,746	4,680	5,586	5,350
which sector	police, education					
National-Int. Organization n. days	0	3	41	0	21	13
income	3,000	5,300	4,000	4,300	17,500	6,820
which sector	construction, labor					
self employee n. days	29	30	0	0	0	29
income	4,913	6,000	0	0	0	5,456
which sector	shepherd					
Private n. days	26	147	20	30	0	44
Income	3,063	0	100	5,000	0	1,633
sector	shepherd					
Mining n. days	25	0	0.0	0.0	0.0	0.1
Income	2,900	0	0	0	0	6
Abroad n. days	0	50	0.0	0.0	0.0	0.1
Income	0	10,000	0	0	0	15

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 Nuristâni field researcher, from mixed but non-hostile Nuristâni 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 *woluswâl* 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* (Pârûn),

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.

	Dôâb District: Villages					
National Name	Wetsir	Shuk	Palagal	Wâygalak	Bajagal	Junyâ
Native Name	vačř	šuk			bâzâigal	
	Nurgrâm District: Villages					
National Name	Awik	Kolatan	Malek	Sharuk	Malel	Wadawu
Native Name	âvi:k	kolâtâ~	mâlak	šodâlâm	malil	kandelâm
	Central District: Villages					
National Name	Kântiwâ Ulyâ	Kântiwâ Suflâ	Eshtiwi	Dewâ	Pashki	Khost
Native Name	ktivi	âspiT	Supu	ũcü	uSüt	küst
	Wâmâ District: Villages					
National Name	Islâmâbâd	Wâmâ	Bar Kâlay	Achanu	Chaprigal	Kordar
Native Name	wâw	sâma		grâmsaNâ grâm	sâbli gal	kitar
	Wâygal District: Villages					
National Name	Wâygal	Ameshoz	Arans	Nishe’i	Konde Kâlay	Gambir
Native Name	vâ gal	âmeš deš	Zôn ci gal	nišei grâm	akuN	gemir

Table 31. Villages Surveyed.

4.1.5 Total Surveys Completed by District

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

District Name	Survey numbers			
	Village	Neighborhood	Household	NRM
Dôâb	6	23	189	12
Nurgrâm	6	22	171	12
Central	6	24	162	12
Wâmâ	6	23	196	12
Wâygal	6	24	233	12
Total	30	116	951	60

Table 31a. Number of Surveys Completed



Map 5. Nuristân 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.

	Dôâb District: Villages					
National Name	Wetsir	Shuk	Palagal	Wâygalak	Bajagal	Junyâ
Native Name	vačîr	šuk			bâzâigal	
Water	sufficient	sufficient	sufficient	sufficient	sufficient	sufficient
Forests	diminished	diminished	diminished	diminished	diminished	diminished
Pastures	insufficient	insufficient	insufficient	insufficient	insufficient	insufficient
Cropland	insufficient	insufficient	insufficient	insufficient	insufficient	insufficient
Livestock	disease	disease	disease	disease	disease	disease
	Nurgrâm District: Villages					
National Name	Awik	Kolatan	Malek	Sharuk	Malel	Wadawu
Native Name	âvi:k	kolâtâ~	mâlak	šodâlâm	malil	kandelâm
Water	drought	distant	drought	drought	drought	drought
Forests	damaged	damaged	damaged	damaged	diminished	damaged
Pastures	damaged	damaged	insufficient	damaged	damaged	damaged
Cropland	insufficient	insufficient	insufficient	insufficient	insufficient	insufficient
Livestock					disease	
	Central District: Villages					
National Name	Kântiwâ Ulyâ	Kântiwâ Suflâ	Eshtiwi	Dewâ	Pashki	Khost
Native Name	kîvi	âspiT	Supu	ûcü	uSüt	küst
Water	sufficient	sufficient	sufficient	sufficient	sufficient	sufficient
Forests	damaged	damaged	[none]	diminished	damaged	damaged
Pastures	overgrazed	overgrazed	overgrazed	overgrazed	overgrazed	overgrazed
Cropland	adequate	adequate	adequate	adequate	adequate	adequate
Livestock	disease	disease	disease	disease	disease	disease
	Wâmâ District: Villages					
National Name	Islâmâbâd	Wâmâ	Bar Kālay	Achanu	Chaprigal	Kordar
Native Name	wâw	sâma	apis	grâmsaNa grâm	sâbligal	kitar
Water	sufficient	sufficient	sufficient	sufficient	sufficient	sufficient
Forests	diminished	diminished	diminished	diminished	diminished	diminished
Pastures	diminished	diminished	diminished	diminished	diminished	diminished
Cropland	flood damaged	flood damaged	flood damaged	flood damaged	flood damaged	insufficient
Livestock	disease	disease	disease	disease	disease	disease
	Wâygal District: Villages					
National Name	Wâygal	Ameshoz	Arans	Nisha'i	Kond Kālay	Gambir
Native Name	vâ gal	âmeš deš	Zônci gal	nišei grâm	akuN	gemir
Water	diminished	diminished	diminished	diminished	diminished	diminished
Forests	diminished	diminished	diminished	diminished	diminished	diminished
Pastures	damaged	damaged	damaged	damaged	damaged	damaged
Cropland	insufficient	insufficient	insufficient	insufficient	insufficient	insufficient
Livestock						

Table 32. Surveyors' Assessment of Current Resource and Subsistence Quality in Nuristân.

	Dôâb District: Villages					
National Name	Wetsir	Shuk	Palagal	Wâygalak	Bajagal	Junyâ
Native Name	vačîr	šuk			bâzâigal	
Irrigation Water & System	periodically destroyed by floods	no change	no change	destroyed by flood	70% destroyed by flood	broken
Needle Forest		no change	no change	drought and fire damage	fire damage	no change
Oak Forest	no change	no change	no change	no change	50% loss to cutting	no change
Summer Pastures	no change	no change	no change	no change	no change	no change
Winter Quarters	no change	no change	no change	no change	drought finished grassland	no change
Cropland	no change	no change	no change	periodically	drought-caused	no change

				destroyed by flood	dessication	
Nurgrâm District: Villages						
National Name	Awik	Kolatan	Malek	Sharuk	Malel	Wadawu
Native Name	âvi:k	kolâtâ~	mâl ak	šodâlâm	malil	kan delâm
Irrigation Water & System	decrease from drought	decrease from drought; flood damage	no change	decrease from drought	no change	excellent since NSP rehabilitation
Needle Forest	drought and cutting damage	cutting damage	drought damage	drought damage	cutting damage	cutting damage
Oak Forest	decrease from cutting	decrease from cutting	drought damage	damage from drought and branch-cutting for fodder	decrease from cutting	drought and cutting damage
Summer Pastures	drought damage	drought damage; flood erosion	drought damage	drought damage	more distant because of drought	drought damage
Winter Quarters	flood and snow damage	drought and flood damage	drought damage	drought damage	no change	drought damage
Cropland	drought damage	drought and flood damage	drought damage	drought damage	no change	drought damage
Central District: Villages						
National Name	Kântiwâ Ulyâ	Kântiwâ Suflâ	Eshtiwi	Dewâ	Pashki	Khost
Native Name	kîvi	âspiT	Supu	ûcü	uSüt	küšt
Irrigation Water & System	drought damage to springs	no change	snow damage	rain and flood damage	flood damage	decrease from drought
Needle Forest	snow damage	snow damage	[above forest]	[at treeline]	snow damage	decrease from cutting
Oak Forest	no change	no change	[above forest]	[above forest]	no change	no change
Summer Pastures	rain damage	no change	drought damage	drought damage	avalanche damage	avalanche damage
Winter Quarters	avalanche damage	no change	avalanche damage	no change	avalanche damage	avalanche damage
Cropland	rain and flood damage	rain and flood damage	avalanche damage	drought and insect damage	rain and flood damage	drought damage
Wâmâ District: Villages						
National Name	Islâmâbâd	Wâmâ	Bar Kâlay	Achanu	Chaprigal	Kordar
Native Name	wâw	sâma		grâmsaNâ grâm	sâbligal	kitar
Irrigation Water & System	decrease	drought damage to springs	system is not good	periodically destroyed by floods	decrease from drought	damaged
Needle Forest	drought damage	damage	bad condition	some drought damage	drought damage	slight changes
Oak Forest	damaged	damaged	bad condition	livestock damage	drought damage	some areas are damaged
Summer Pastures	damaged	becoming damaged	drought damage	drought and disease damage	drought and disease damage	No changes
Winter Quarters	damaged	bad condition	drought damage	livestock damage	snow-caused decrease	slight changes
Cropland	damaged	no change	bad condition	damage from lack of stream water and floods	drought, insect, and disease damage	some flood damage
Wâygal District: Villages						
National Name	Wâygal	Ameshoz	Arans	Nisha'i	Konde Kâlay	Gambir
Native Name	vâ gal	âmeš deš	Zôn ci gal	nišei grâm	akuN	gemir
Irrigation Water & System	potential decrease due to cutting of forest	decrease due to cutting of forest	decrease of springs and streams from cutting of forest	drought-induced water shortages have eased somewhat	drought-induced water shortages have eased somewhat	decrease due to cutting of forest
Needle Forest	decrease from cutting	decrease from cutting and soil erosion	decrease from cutting	decrease from cutting	snow damage, soil erosion	decrease from cutting
Oak Forest	decrease and damage from overuse	decrease and damage from overuse	decrease and damage from overuse	5% of oak trees are damaged, and 3 % of soil is eroded	5% of oak trees are destroyed, and 5 % of soil is eroded	decrease
Summer Pastures	damage and decrease from overgrazing, precipitation, and erosion	erosion from rain	damage and decrease from overgrazing, precipitation, and erosion	damage and 6% decrease from overgrazing, precipitation, and erosion	damage and 5% decrease from precipitation and erosion	erosion from rain
Winter Quarters	erosion from	decrease and	decrease and	30 % soil erosion	30 % soil erosion	decrease

	cutting and overuse	erosion from cutting and overuse	erosion from cutting and overuse	from snow melt	from snow melt and housing increase	
Cropland	insufficient due to population increase	insufficient due to drought and population increase	decreased irrigation water	insufficient due to population increase	insufficient due to drought and population increase	insufficient due to population increase

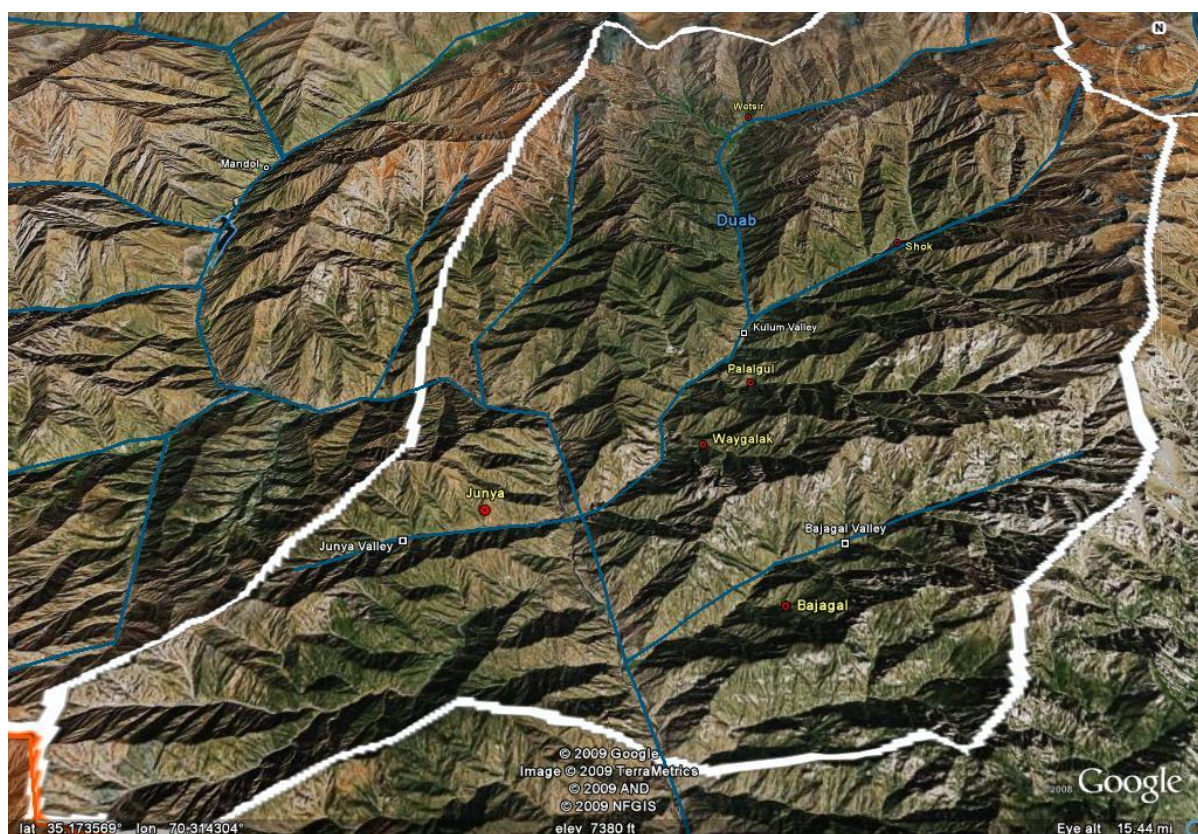
Table 33. Survey Respondents' Previous-Five-Year Assessments of Resources.

4.2.1 Alingar 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



Map 6. Dôâb District.

Overall District Summary:

	Dôâb District: Villages					
National Name	Wetsir	Shuk	Palagal	Wâygalak	Bajagal	Junyâ
Native Name	vačîr	šuk			bâžâigal	
Irrigation Water & System	periodically destroyed by floods	no change	no change	destroyed by flood	70% destroyed by flood	broken
Needle Forest		no change	no change	drought and fire damage	fire damage	no change
Oak Forest	no change	no change	no change	no change	50% loss to cutting	no change
Summer Pastures	no change	no change	no change	no change	no change	no change
Winter Quarters	no change	no change	no change	no change	drought finished grassland	no change
Cropland	no change	no change	no change	periodically destroyed by flood	drought-caused dessication	no change

Table 34. Survey Respondents' Previous-Five-Year Assessments of Resources, Dôâb.

	Dôâb District: Villages					
National Name	Wetsir	Shuk	Palagal	Wâygalak	Bajagal	Junyâ
Native Name	vačîr	šuk			bâžâigal	
Water	sufficient	sufficient	sufficient	sufficient	sufficient	sufficient
Forests	diminished	diminished	diminished	diminished	diminished	diminished
Pastures	insufficient	insufficient	insufficient	insufficient	insufficient	insufficient
Cropland	insufficient	insufficient	insufficient	insufficient	insufficient	insufficient
Livestock	disease	disease	disease	disease	disease	disease

Table 35. Surveyors' Assessment of Current Resource and Subsistence Quality, 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 trees, but the district governor and village elders added that they do not want trees the way DAI and ACC distributed them last year.

- **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

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

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

SubVillageNameLocal	Wasar
SubVillageSummerPastureNames	Mamgal, Terwat
SubVillageSummerPasture Distances Km	22.5
SubVillageSummerPasture5 Yr Evaluation	No changes
SubVillageWinterQuarterNames	Tanki Bala, Almaai
SubVillageWinterQuarterDistances Km	13.5
SubVillageWinterQuarters5 Yr Evaluation	No changes
SubVillageFieldLocationNames	Mahipar, Almaai, Shtowa, Pansashal, Kolni
SubVillageFieldLocationDistances Km	7.5
SubVillageFieldLands5 Yr Evaluation	No changes
SubVillageNeedleForestDistances	0
SubVillageNeedleForest5 Yr Evaluation	0
SubVillageOak ForestLocations	Badaria, Odal Wasar
SubVillageOak Forestdistances	2.5
SubVillageOak Forest5 Yr Evaluation	No changes
SubVillageIrrigationWaterSourceLocations	Atrosar
SubVillageIrrigationWaterSourceDistances	2
SubVillageIrrigationWaterSources5 Yr Evaluation	Destroyed by flood. Mud retaining walls were constructed but were subsequently destroyed. Need for more permanent flood protection.
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

SubVillageNameLocal	Paglam
SubVillageSummerPastureNames	Badad Sir, Bada Shalta
SubVillageSummerPasture Distances Km	7
SubVillageSummerPasture5 Yr Evaluation	No Changes
SubVillageWinterQuarterNames	Pasal Sira, Kam Kot
SubVillageWinterQuarterDistances Km	2.5
SubVillageWinterQuarters5 Yr Evaluation	No Changes
SubVillageFieldLocationNames	Pachin cha, Saknar, Ma woon Sha
SubVillageFieldLocationDistances Km	2.6
SubVillageFieldLands5 Yr Evaluation	No Changes
SubVillageNeedleForestLocation	Chol Gol nar
SubVillageNeedleForestDistances	10
SubVillageNeedleForest5 Yr Evaluation	No Changes
SubVillageOak ForestLocations	Pel, Pigal , Pit Kama
SubVillageOak Forestdistances	5
SubVillageOak Forest5 Yr Evaluation	No Changes
SubVillageIrrigationWaterSourceLocations	Jadrik. Pol nar
SubVillageIrrigationWaterSourceDistances	0.9
SubVillageIrrigationWaterSources5 Yr Evaluation	No Changes
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

SubVillageNameLocal	Waigalak
SubVillageSummerPastureNames	Motok, Gak Ato, Chal Malo, Masom Gala, Gono Gal
SubVillageSummerPasture Distances Km	9.5
SubVillageSummerPasture5 Yr Evaluation	No changes
SubVillageWinterQuarterNames	Jamkoni, Shamkolti, Nachak Kari, Mar Nagi, Saidamir Koti
SubVillageWinterQuarterDistances Km	1.5
SubVillageWinterQuarters5 Yr Evaluation	No changes
SubVillageFieldLocationNames	Gona Gal, Shamkolti, Chal Malo, Shalkolti
SubVillageFieldLocationDistances Km	0.6
SubVillageFieldLands5 Yr Evaluation	Land lost due to flood damage
SubVillageNeedleForestLocation	Motok, Gak Ato, Chal Malo, Masom Gal
SubVillageNeedleForestDistances	9.5
SubVillageNeedleForest5 Yr Evaluation	Burned and drought occurred
SubVillageOakForestLocations	Achom Koti, Kon Gal, Naik cho, Saida Mir Koti
SubVillageOakForestdistances	0.5
SubVillageOakForest5 Yr Evaluation	No changes
SubVillageIrrigationWaterSourceLocations	Gon Gal Khola, Shal Koti, Narang
SubVillageIrrigationWaterSourceDistances	0.8
SubVillageIrrigationWaterSources5 Yr Evaluation	Demolished by flood; needs rebuilding
Names of Clans in Sub-Village	Jadedi, Pashyan

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

SubVillageNameLocal	Shadis
SubVillageSummerPastureNames	Sormew (Aga Koni), Sotar gowa, Anel Satrak, Botri
SubVillageSummerPasture Distances Km	19
SubVillageSummerPasture5 Yr Evaluation	No Changes
SubVillageWinterQuarterNames	Adwan, Palarak, Damand, Jang
SubVillageWinterQuarterDistances Km	8
SubVillageWinterQuarters5 Yr Evaluation	there is no grass because of drought
SubVillageFieldLocationNames	Kil, Karti, Palarak, Adwan
SubVillageFieldLocationDistances Km	5
SubVillageFieldLands5 Yr Evaluation	Before Adwan village was cropland, but now it has dried out from drought
SubVillageNeedleForestLocation	Dast pato, Bonri, Anel Satrak
SubVillageNeedleForestDistances	10.5
SubVillageNeedleForest5 Yr Evaluation	Two years ago 2 Km ² of needle forest burned
SubVillageOakForestLocations	Bodol Sili, Soridarik, Saka dar Nechak
SubVillageOakForestdistances	0.6
SubVillageOakForest5 Yr Evaluation	Forest is cut and 50% percent is finished
SubVillageIrrigationWaterSourceLocations	Shader Amka, Domrak, Watang Darkon
SubVillageIrrigationWaterSourceDistances	0.9
SubVillageIrrigationWaterSources5 Yr Evaluation	Irrigation system is 70% damaged by flood
Names of Clans in Sub-Village	Dada dar, Ladri A mori, Shak dar, Esho (low-caste)

Table 40. Bajagal.

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

4.2.1.2.6 Junyâ

SubVillageSummerPastureNames	Bahadari, Chorak, Pand Gal, Shandlona
SubVillageSummerPasture Distances Km	13
SubVillageSummerPasture5 Yr Evaluation	No Changes
SubVillageWinterQuarterNames	Goz, Lar Gal, Gada, Selan, Gafa, Shal Kando
SubVillageWinterQuarterDistances Km	2.6
SubVillageWinterQuarters5 Yr Evaluation	No changes
SubVillageFieldLocationNames	Khar, Raga, Sawadi, Kandali
SubVillageFieldLocationDistances Km	0.8
SubVillageFieldLands5 Yr Evaluation	No changes
SubVillageNeedleForestLocation	Gafa, Mandol
SubVillageNeedleForestDistances	0.9
SubVillageNeedleForest5 Yr Evaluation	No changes
SubVillageOak ForestLocations	Bahadari, Nicho
SubVillageOak Forestdistances	6.5
SubVillageOak Forest5 Yr Evaluation	No changes
SubVillageIrrigationWaterSourceLocations	Wato dar, Tangi, Sar dar
SubVillageIrrigationWaterSourceDistances	2.5
SubVillageIrrigationWaterSources5 Yr Evaluation	Irrigation system is in poor shape and needs rebuilding
Names of Clans in Sub-Village	Shami dari, Sharga dari, Shab Khel, Jakha dari, Khan dari, Bai Kheli, Taryan

Table 41. Junyâ.

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:

	Nurgrâm District: Villages					
National Name	Awik	Kolatan	Malek	Sharuk	Malel	Wadawu
Native Name	âvi:k	kolâtâ~	mâlak	šodâlâm	malil	kan delâm
Irrigation Water & System	decrease from drought	decrease from drought; flood damage	no change	decrease from drought	no change	excellent since NSP rehabilitation
Needle Forest	drought and cutting damage	cutting damage	drought damage	drought damage	cutting damage	cutting damage
Oak Forest	decrease from cutting	decrease from cutting	drought damage	damage from drought and branch-cutting for fodder	decrease from cutting	drought and cutting damage
Summer Pastures	drought damage	drought damage; flood erosion	drought damage	drought damage	more distant because of drought	drought damage
Winter Quarters	flood and snow damage	drought and flood damage	drought damage	drought damage	no change	drought damage
Cropland	drought damage	drought and flood damage	drought damage	drought damage	no change	drought damage

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

	Nurgrâm District: Villages					
National Name	Awik	Kolatan	Malek	Sharuk	Malel	Wadawu
Native Name	âvi:k	kolâtâ~	mâlak	šodâlâm	malil	kan delâm
Water	drought	distant	drought	drought	drought	drought
Forests	damaged	damaged	damaged	damaged	diminished	damaged
Pastures	damaged	damaged	insufficient	damaged	damaged	damaged
Cropland	insufficient	insufficient	insufficient	insufficient	insufficient	insufficient
Livestock					disease	

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, Malil, Pashagar, 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.

- **Forests:**

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

SubVillageNameLocal	avik
SubVillageSummerPastureNames	Gizhgal
SubVillageSummerPasture Distances Km	3
SubVillageSummerPasture5 Yr Evaluation	The pasture condition is not good due to drought
SubVillageWinterQuarterNames	Gizhgal
SubVillageWinterQuarterDistances Km	3
SubVillageWinterQuarters5 Yr Evaluation	From flood and snow fall the condition is not good
SubVillageFieldLocationNames	Gizhgal
SubVillageFieldLocationDistances Km	3
SubVillageFieldLands5 Yr Evaluation	From the reason of drought the condition is not good
SubVillageNeedleForestLocation	Akoni
SubVillageNeedleForestDistances	3
SubVillageNeedleForest5 Yr Evaluation	Poor condition due to population pressure and drought
SubVillageOak ForestLocations	Akoni
SubVillageOak Forestdistances	3
SubVillageOak Forest5 Yr Evaluation	Population pressure causing overharvest of forest.
SubVillageIrrigationWaterSourceLocations	Panar
SubVillageIrrigationWaterSourceDistances	0.1
SubVillageIrrigationWaterSources5 Yr Evaluation	The condition is not good because of drought
Names of Clans in Sub-Village	Wâmâyi

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

SubVillageNameLocal	Kolatan
SubVillageSummerPastureNames	Manja Gal, Lotkari, Ochari Gal, Stan Gal, Potat, Kosho Gal
SubVillageSummerPasture Distances Km	6-9
SubVillageSummerPasture5 Yr Evaluation	erosion from floods, drought
SubVillageWinterQuarterNames	Chinjak, Yatoot, Maka Gal, Kosa Gal, Ajon, Potat, Ajon
SubVillageWinterQuarterDistances Km	6
SubVillageWinterQuarters5 Yr Evaluation	Damage by flood and drought
SubVillageFieldLocationNames	Yatun, Kaltan, Kosa Gal, Maka Gal Osasti, Kosho Gal, Potat
SubVillageFieldLocationDistances Km	1.5
SubVillageFieldLands5 Yr Evaluation	Some places are damaged by flood; some places are damaged by drought
SubVillageNeedleForestLocation	Pashoda, Pashkok, Kosho Gal, Makil
SubVillageNeedleForestDistances	8
SubVillageNeedleForest5 Yr Evaluation	Overharvested from population increase
SubVillageOak ForestLocations	Kaltan, Osasti, Makil, Shalna
SubVillageOak Forestdistances	2.5
SubVillageOak Forest5 Yr Evaluation	decrease from cutting and burning
SubVillageIrrigationWaterSourceLocations	river, spring
SubVillageIrrigationWaterSourceDistances	1.5
SubVillageIrrigationWaterSources5 Yr Evaluation	Decreased water flow from drought and flooding in heavy melt period
Names of Clans in Sub-Village	Wâmâi

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

SubVillageNameLocal	Malak
SubVillageSummerPastureNames	Gono, Mazdar
SubVillageSummerPasture Distances Km	10
SubVillageSummerPasture5 Yr Evaluation	Pasture condition is not good because of drought
SubVillageWinterQuarterNames	Noshir, Somekok
SubVillageWinterQuarterDistances Km	2.5
SubVillageWinterQuarters5 Yr Evaluation	condition is not good because of drought
SubVillageFieldLocationNames	Lazhdera, Gana, Noshir , Mamigo
SubVillageFieldLocationDistances Km	3.5
SubVillageFieldLands5 Yr Evaluation	field conditions are not good because of drought
SubVillageNeedleForestLocation	Gono, Mazdar, Zona
SubVillageNeedleForestDistances	15
SubVillageNeedleForest5 Yr Evaluation	The forest is weak from drought
SubVillageOak ForestLocations	Kotona, Kokona, Badadak, Pro manogi
SubVillageOak Forestdistances	11
SubVillageOak Forest5 Yr Evaluation	The forests are damaged by drought
SubVillageIrrigationWaterSourceLocations	Noshir, Sangorak, Lazhdera, Pazhiksal, gana
SubVillageIrrigationWaterSourceDistances	1
SubVillageIrrigationWaterSources5 Yr Evaluation	No changes
Names of Clans in Sub-Village	Dokik, Kamal Din Dar, Malik Kan Dar, Natun Dar

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

SubVillageNamePashto	Sharook
SubVillageNameLocal	Shodlam
SubVillageSummerPastureNames	Digal
SubVillageSummerPasture Distances Km	15
SubVillageSummerPasture5 Yr Evaluation	The pasture condition is not good because of drought
SubVillageWinterQuarterNames	Oskon
SubVillageWinterQuarterDistances Km	5
SubVillageWinterQuarters5 Yr Evaluation	The winter area condition is not good from drought
SubVillageFieldLocationNames	Balik, Pikak, Koshar, Pashkon
SubVillageFieldLocationDistances Km	5
SubVillageFieldLands5 Yr Evaluation	Agriculture land condition is not good because of drought
SubVillageNeedleForestLocation	Gidok, Koshna Wari, Wendrok
SubVillageNeedleForestDistances	7
SubVillageNeedleForest5 Yr Evaluation	The forest condition is not good because of drought
SubVillageOak ForestLocations	Patrobalik, Martokna
SubVillageOak Forestdistances	3.5
SubVillageOak Forest5 Yr Evaluation	Damage from drought and branch cutting for forage
SubVillageIrrigationWaterSourceLocations	Pona, Gawhar, Balik
SubVillageIrrigationWaterSourceDistances	0.2
SubVillageIrrigationWaterSources5 Yr Evaluation	Poor condition because of drought
Names of Clans in Sub-Village	Asa, Takina

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

SubVillageNameLocal	Malil
SubVillageSummerPastureNames	Chon Chatak, Ginchman, Andok, Wedchal, Shanri, Wana, Dawa, Lohan Gul, Sho Shoring, Shinglish
SubVillageSummerPasture Distances Km	10
SubVillageSummerPasture5 Yr Evaluation	distance is far because of drought
SubVillageWinterQuarterNames	Moe Nari, Sweet Goma, Babon, Shada Khodak, Doryalak, Yamander, Dado Dor, Kamer Goma, Sharik, Kikach, Andwali, Gash
SubVillageWinterQuarterDistances Km	1.5
SubVillageWinterQuarters5 Yr Evaluation	No changes
SubVillageFieldLocationNames	Godor, Moe Nari, Nacha Tal, Lashtolak, Kola Wanda, Shaman , armena, Matishwa, Dershayi, Soram Shotak, Khil, Andabagh, Lamatak, Mansho
SubVillageFieldLocationDistances Km	0.8
SubVillageFieldLands5 Yr Evaluation	No changes
SubVillageNeedleForestLocation	Tat
SubVillageNeedleForestLocation	Waram Jaltak
SubVillageNeedleForestDistances	4
SubVillageNeedleForest5 Yr Evaluation	the forest is decreased from cutting
SubVillageOak ForestLocations	Tat, Waram Jaltak, Chil, Yamander, Sharik, Kamargoma, Kikach
SubVillageOak Forestdistances	1.5
SubVillageOak Forest5 Yr Evaluation	the forest is diminished from over-cutting
SubVillageIrrigationWaterSourceLocations	Godor, Moe Nari, Shatolak, Kola Wanda, Matishwa, Dershayi, Soram Shotak, Andabagh, Lamatak, Manjsho
SubVillageIrrigationWaterSourceDistances	0.8
SubVillageIrrigationWaterSources5 Yr Evaluation	No changes
Names of Clans in Sub-Village	Raijdari

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

SubVillageNamePashto	Ziarat Kali
SubVillageNameLocal	Kandelam
SubVillageSummerPastureNames	Waden, Batizh, Kojli Waro, Samok
SubVillageSummerPasture Distances Km	12
SubVillageSummerPasture5 Yr Evaluation	The pasture areas are damaged by drought
SubVillageWinterQuarterNames	Songloon, Andra Kandlo, Jang, Achmon
SubVillageWinterQuarterDistances Km	4.5
SubVillageWinterQuarters5 Yr Evaluation	Winter quarters are damaged from drought
SubVillageFieldLocationNames	Doranli, Olshata, Daranawak
SubVillageFieldLocationDistances Km	3.5
SubVillageFieldLands5 Yr Evaluation	The agricultural land has low production because of drought
SubVillageNeedleForestLocation	Samok, Kojli Waro, Jangla
SubVillageNeedleForestDistances	11
SubVillageNeedleForest5 Yr Evaluation	People are cutting the forest for their home building
SubVillageOak ForestLocations	Mechi, Mim, Andra Kandlo, Kojarit
SubVillageOak Forestdistances	5
SubVillageOak Forest5 Yr Evaluation	The Oak Forest harmed from overharvest and drought
SubVillageIrrigationWaterSourceLocations	Jandadora, Olshata, Sadarakati
SubVillageIrrigationWaterSourceDistances	3.5
SubVillageIrrigationWaterSources5 Yr Evaluation	The stream condition is very very good because (N.S.P)Program Construction and rehabilitation efforts
Names of Clans in Sub-Village	Marma Dari, Kalash Dari, Soz Khan Dari

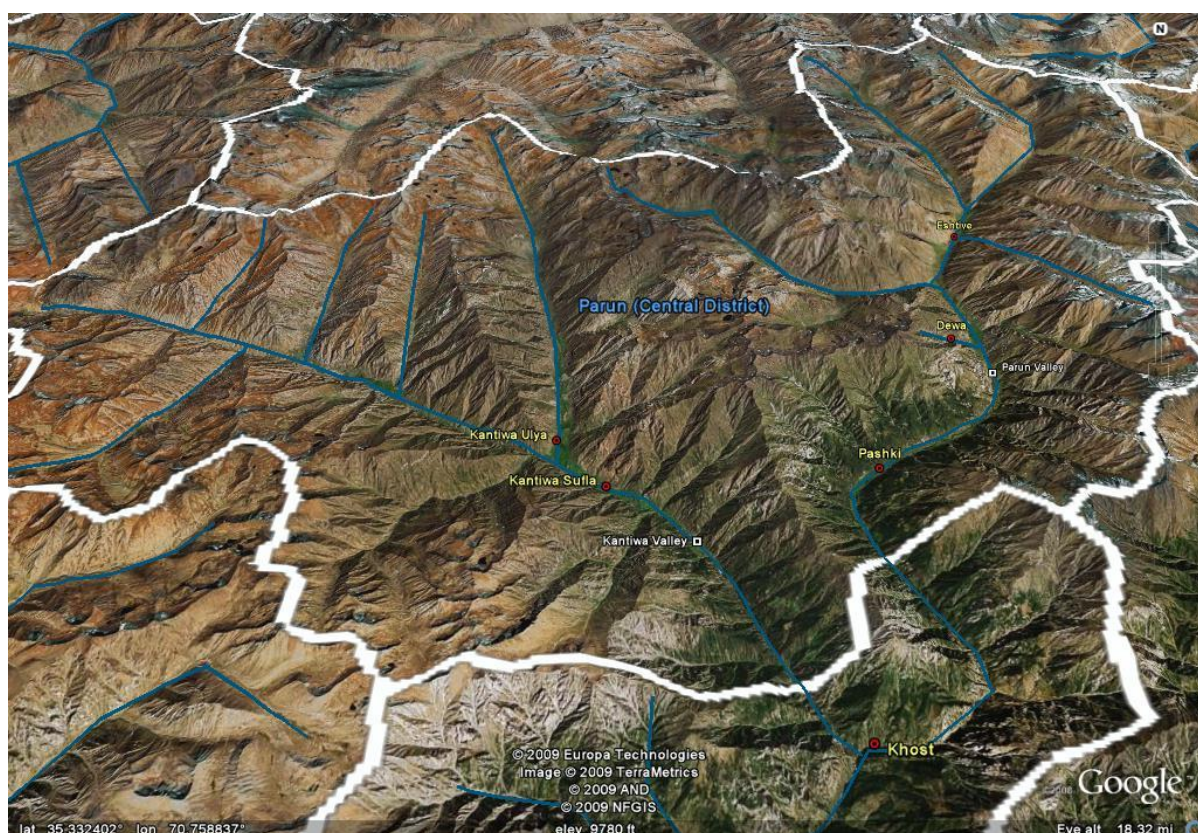
Table 49. Wadawu.

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 (Pârûn and Kântiwâ)



Map 8. Central District (Pârûn and Kântiwâ).

Overall District Summary:

	Central District: Villages					
National Name	Kântiwâ Ulyâ	Kântiwâ Sufilâ	Eshtiwi	Dewâ	Pashki	Khost
Native Name	ktivi	âspiT	Supu	û cû	uSût	kûšt
Irrigation Water & System	drought damage to springs	no change	snow damage	rain and flood damage	flood damage	decrease from drought
Needle Forest	snow damage	snow damage	[above forest]	[at treeline]	snow damage	decrease from cutting
Oak Forest	no change	no change	[above forest]	[above forest]	no change	no change
Summer Pastures	rain damage	no change	drought damage	drought damage	avalanche damage	avalanche damage
Winter Quarters	avalanche damage	no change	avalanche damage	no change	avalanche damage	avalanche damage
Cropland	rain and flood damage	rain and flood damage	avalanche damage	drought and insect damage	rain and flood damage	drought damage

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

	Central District: Villages					
National Name	Kântiwâ Ulyâ	Kântiwâ Sufilâ	Eshtiwi	Dewâ	Pashki	Khost
Native Name	ktivi	âspiT	Supu	û cû	uSût	kûšt
Water	sufficient	sufficient	sufficient	sufficient	sufficient	sufficient
Forests	damaged	damaged	[none]	diminished	damaged	damaged
Pastures	overgrazed	overgrazed	overgrazed	overgrazed	overgrazed	overgrazed
Cropland	adequate	adequate	adequate	adequate	adequate	adequate
Livestock	disease	disease	disease	disease	disease	disease

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.

4.2.2.1.1 Eshtiwe

SubVillageNamePashto	Shupu
SubVillageNameLocal	Shupu
SubVillageSummerPastureNames	Melik Gal, Tiwlis Gal, Tiz Bagal, Echem Gal, Shid kal Gal, Abzhi Gal
SubVillageSummerPasture Distances Km	20
SubVillageSummerPasture5 Yr Evaluation	affected by drought
SubVillageWinterQuarterNames	Tanangak, Engam, Man Nish, Tat Lakm Aw arik, Aw naryok
SubVillageWinterQuarterDistances Km	5
SubVillageWinterQuarters5 Yr Evaluation	damaged by snow slide
SubVillageFieldLocationNames	Naryok, zha rewk, Tansha , Toto Nak, Tochi, Bogom
SubVillageFieldLocationDistances Km	5
SubVillageFieldLands5 Yr Evaluation	damaged by snow slide
SubVillageNeedleForestDistances	[none]
SubVillageNeedleForest5 Yr Evaluation	[none]
SubVillageOak Forestdistances	[none]
SubVillageOak Forest5 Yr Evaluation	[none]
SubVillageIrrigationWaterSourceLocations	Chashma Awal (Spring one), Chashma Doyam (spring two)
SubVillageIrrigationWaterSourceDistances	0.7
SubVillageIrrigationWaterSources5 Yr Evaluation	Damage by the reason of snow slide
Names of Clans in Sub-Village	Paksha, Pozhod, Pabadka, Aniw Watig, Piyag, Pazgam

Table 52. Eshtiwe.

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

4.2.2.1.2 Dewa

SubVillageNamePashto	Padi,Pazgam,Pot Nomi
SubVillageNameLocal	Padi,Pazgam,Pot Nomi
SubVillageSummerPastureNames	Samgal, Ramgal, Tija, Shot To
SubVillageSummerPasture Distances Km	24
SubVillageSummerPasture5 Yr Evaluation	affected by drought
SubVillageWinterQuarterNames	Tip yash, , Sori, Erek, Tizha Rok
SubVillageWinterQuarterDistances Km	1
SubVillageWinterQuarters5 Yr Evaluation	No changes
SubVillageFieldLocationNames	Oskam, Chatka, Pazik, Tozhok
SubVillageFieldLocationDistances Km	0.8
SubVillageFieldLands5 Yr Evaluation	affected by insects and drought
SubVillageOak Forestdistances	[none]
SubVillageOak Forest5 Yr Evaluation	[none]
SubVillageIrrigationWaterSourceLocations	they use flood water
SubVillageIrrigationWaterSourceDistances	0.25
SubVillageIrrigationWaterSources5 Yr Evaluation	damaged by rain and flooding
Names of Clans in Sub-Village	Padi, Pazgam, Pot Nomi

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

SubVillageNamePashto	Pashki
SubVillageNameLocal	Pashki
SubVillageSummerPastureNames	Samoch Gol, Pech Gar Gol, Wang Give , Ai Bi Si, Ponda, Torok Gol, Askadok, Yo Gol, Zhata Ayo Gol, Ayo Trato, ocho, Watos
SubVillageSummerPasture Distances Km	7
SubVillageSummerPasture5 Yr Evaluation	damaged from snowslide
SubVillageWinterQuarterNames	Tawa yok, Abdali yok, Ogra yok, Tasta yok, Tazang Li, Tekrik, Toyo Chamo
SubVillageWinterQuarterDistances Km	1
SubVillageWinterQuarters5Yr Evaluation	damaged from snowslide
SubVillageFieldLocationNames	Tawa yok, Abdali yok, Temetik, Toka yok, Ogra yok, Mandi, Tasta yok, Amawal
SubVillageFieldLocationDistances Km	2
SubVillageFieldLands5 Yr Evaluation	damaged from rain and flood
SubVillageNeedleForestLocation	Satrok, Aba, Tekrik, Yoshlok, Akomati, Ayi Chi Sa, Echag
SubVillageNeedleForestDistances	3.5
SubVillageNeedleForest5Yr Evaluation	damaged from snowslide
SubVillageOak ForestLocations	Pashki
SubVillageOak Forestdistances	0.5
SubVillageOak Forest5Yr Evaluation	No changes
SubVillageIrrigationWaterSourceLocations	Pârun river, village spring
SubVillageIrrigationWaterSourceDistances	1
SubVillageIrrigationWaterSources5 Yr Evaluation	damaged from flood
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

SubVillageNamePashto	Kantiwa Ghat kali
SubVillageNameLocal	Ktivi Bragom
SubVillageSummerPastureNames	Dara Kosht, Bo yots, Chaman , Dara pasi gala, Sosom, Som, Dara Setik, Yakota, Bade Sa, Zhazhi, Yanisha, Karmak
SubVillageSummerPasture Distances Km	19
SubVillageSummerPasture5 Yr Evaluation	Pastures are damaged from rainfall
SubVillageWinterQuarterNames	Yatsi gala, Pashroka, Tots, Kota Shal, Shi sha, Jah, Yam , isha, Patwi, Bari
SubVillageWinterQuarterDistances Km	1.5
SubVillageWinterQuarters5 Yr Evaluation	Damaged by snowslide
SubVillageFieldLocationNames	Bago am, Ba atoli, Ata Ati, Pa yok, Madrasa, Shi sha, Chaman , Zha, Bali get, A w ak, Bada yos
SubVillageFieldLocationDistances Km	1.5
SubVillageFieldLand5 Yr Evaluation	damaged from rainfall and flood
SubVillageNeedleForestLocation	Cho at, , Mom, Yazh gal, Madrasa, Aza ti
SubVillageNeedleForestDistances	4
SubVillageNeedleForest5 Yr Evaluation	damaged by snowslide
SubVillageOak ForestLocations	Shi sha, Tos, Atosh, Ata ti, Cho at, Pazha, Mum, Aza
SubVillageOak Forestdistances	9
SubVillageOak Forest5 Yr Evaluation	No Changes
SubVillageIrrigationWaterSourceLocations	village springs, Kântiwâ river
SubVillageIrrigationWaterSourceDistances	2
SubVillageIrrigationWaterSources5 Yr Evaluation	a lot of spring are dry because of drought
Names of Clans in Sub-Village	Gan dara, Gaba dara, Labi dara, Garosh dara, Mashad dara, Kocha dara, Dami dara, Konz dara, Chakni dara

Table 55. Kântiwâ Ulyâ.

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

4.2.2.15 Kântiwâ Suflâ

SubVillageNamePashto	Islamabad
SubVillageNameLocal	Aspit
SubVillageSummerPastureNames	Marra sa, Shati, Asa, Mawaee, Palota dara, Tekar gar dara, Patil dara
SubVillageSummerPasture Distances Km	10
SubVillageSummerPasture5 Yr Evaluation	No Changes
SubVillageWinterQuarterNames	Anash, Wasi, Marra, Bin, Shata, Basolla, Kamshal, Pakorati, Madrasa
SubVillageWinterQuarterDistances Km	3
SubVillageWinterQuarters5 Yr Evaluation	No Changes
SubVillageFieldLocationNames	Tarmashi youts, Arga am, Patang na, Badrosta, Ashka, Patil
SubVillageFieldLocationDistances Km	1.5
SubVillageFieldLands5 Yr Evaluation	Damaged by a lot of rainfall and flood
SubVillageNeedleForestLocation	Bean, , Shata, Patatok Tol, You seya, Shodrom, Anash, Bo wati
SubVillageNeedleForestDistances	14
SubVillageNeedleForest5 Yr Evaluation	Damaged by snowslide
SubVillageOak ForestLocations	Patil pit, Mavi pit
SubVillageOak Forestdistances	1.5
SubVillageOak Forest5 Yr Evaluation	No Changes
SubVillageIrrigationWaterSourceLocations	Patil pa nar, Ashka wala, Mavi nar
SubVillageIrrigationWaterSourceDistances	2.5
SubVillageIrrigationWaterSources5 Yr Evaluation	No Changes
Names of Clans in Sub-Village	hemach dara, Zhema dara, Kol dara, Chakna dara, Lata dara, Newa dara, Walok dara, Wich dara, Pal dara, Gan dara, land rawi dara, Remach dara

Table 56. Kântiwâ Suflâ.

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

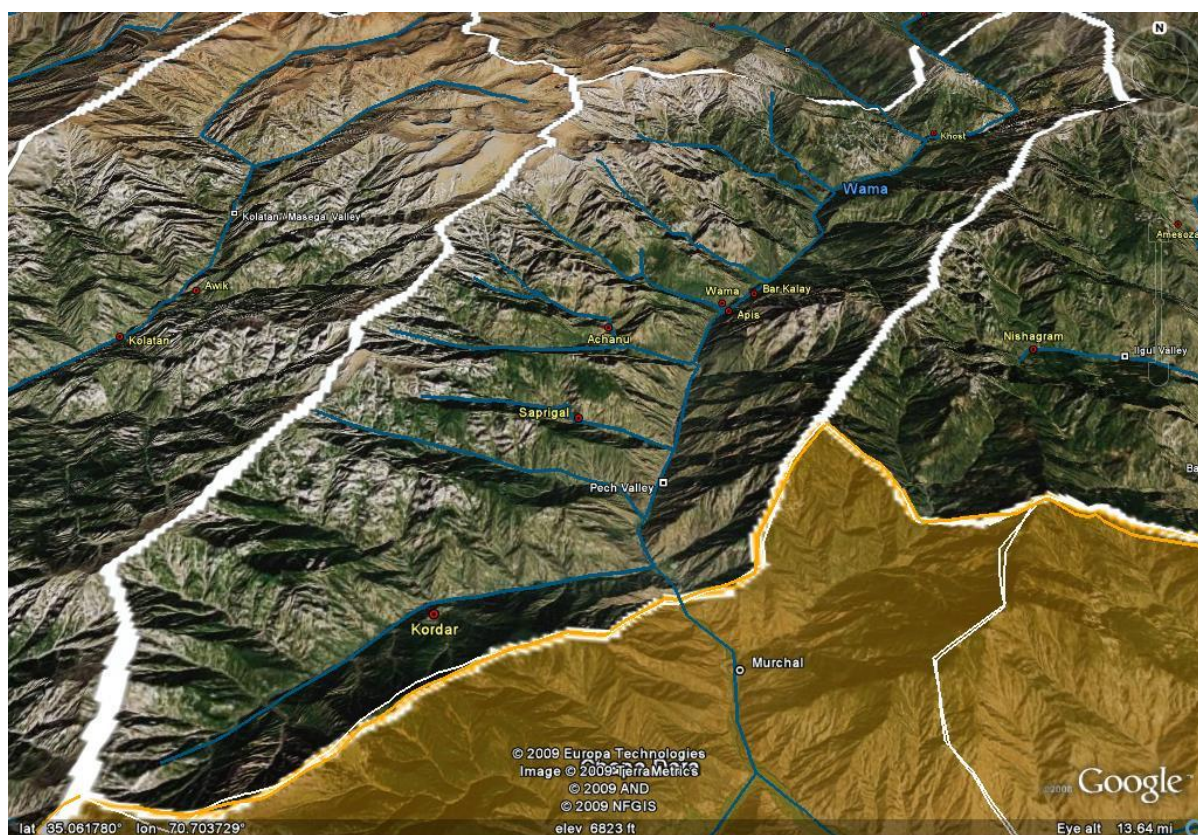
4.2.2.1.6 Kusht

SubVillageNamePashto	Manz Kali
SubVillageNameLocal	Mazh dish
SubVillageSummerPastureNames	Kar Nisha, Eram, Chatrin Dob, Omsa, Komari
SubVillageSummerPasture Distances Km	2
SubVillageSummerPasture5 Yr Evaluation	damaged by snowslide
SubVillageWinterQuarterNames	Wata awar, Azi, Kusht
SubVillageWinterQuarterDistances Km	0.5
SubVillageWinterQuarters5 Yr Evaluation	damaged by snowslide
SubVillageFieldLocationNames	Kosht sagam, Kosht antal, Agola, Komari, Karin
SubVillageFieldLocationDistances Km	2
SubVillageFieldLands5 Yr Evaluation	decrease from drought
SubVillageNeedleForestLocation	Karin, Asota, Azhok pari, Kosht sagam
SubVillageNeedleForestDistances	1
SubVillageNeedleForest5 Yr Evaluation	decrease from cutting for house building
SubVillageOak ForestLocations	Kosht sagam, Kosht antal, Waro Oda, Goda
SubVillageOak Forestdistances	0.1
SubVillageOak Forest5 Yr Evaluation	No Changes
SubVillageIrrigationWaterSourceLocations	Komari spring
SubVillageIrrigationWaterSourceDistances	1
SubVillageIrrigationWaterSources5 Yr Evaluation	decrease because of drought
Names of Clans in Sub-Village	Âmesh

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



Map 9. Wâmâ District.

Overall District Summary:

	Wâmâ District: Villages					
National Name	Islâmâbâd	Wâmâ	Bar Kâlay	Achanu	Chaprigal	Kordar
Native Name	wâw	sâma		grâmsaNâ grâm	sâbliḡal	kitar
Irrigation Water & System	decrease	drought damage to springs	system is not good	periodically destroyed by floods	decrease from drought	damaged
Needle Forest	drought damage	damage	bad condition	some drought damage	drought damage	slight changes
Oak Forest	damaged	damaged	bad condition	livestock damage	drought damage	some areas are damaged
Summer Pastures	damaged	becoming damaged	drought damage	drought and disease damage	drought and disease damage	No changes
Winter Quarters	damaged	bad condition	drought damage	livestock damage	snow-caused decrease	slight changes
Cropland	damaged	no change	bad condition	damage from lack of stream water and floods	drought, insect, and disease damage	some flood damage

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

	Wâmâ District: Villages					
National Name	Islâmâbâd	Wâmâ	Bar Kâlay	Achanu	Chaprigal	Kordar
Native Name	wâw	sâma		grâmsaNâ grâm	sâbliḡal	kitar
Water	sufficient	sufficient	sufficient	sufficient	sufficient	sufficient
Forests	diminished	diminished	diminished	diminished	diminished	diminished
Pastures	diminished	diminished	diminished	diminished	diminished	diminished
Cropland	flood damaged	flood damaged	flood damaged	flood damaged	flood damaged	insufficient
Livestock	disease	disease	disease	disease	disease	disease

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 Achanu, 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 Achanu.

Orchards are growing well. The main fruit of Wâmâ district are apricot, wild persimmon, walnut, pomegranate, and wild jujube. Achanu'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 Achanu roads are about 40% constructed.

4.2.2.2.1 Wâw

SubVillageNamePashto	Asar Abad
SubVillageNameLocal	Apis, Astat Pini
SubVillageSummerPastureNames	Manjigal, Talankon
SubVillageSummerPasture Distances Km	30
SubVillageSummerPasture5 Yr Evaluation	damaged
SubVillageWinterQuarterNames	Andro, Peni
SubVillageWinterQuarterDistances Km	0.7
SubVillageWinterQuarters5 Yr Evaluation	damaged
SubVillageFieldLocationNames	Peni, Toniak, Palonga, Dawaw
SubVillageFieldLocationDistances Km	1
SubVillageFieldLands5 Yr Evaluation	damaged
SubVillageNeedleForestLocation	Wâw
SubVillageNeedleForestDistances	5
SubVillageNeedleForest5 Yr Evaluation	the forest is damaged from drought
SubVillageOak ForestLocations	Around the village
SubVillageOak Forestdistances	0.1
SubVillageOak Forest5 Yr Evaluation	damaged
SubVillageIrrigationWaterSourceLocations	mountain spring
SubVillageIrrigationWaterSourceDistances	2
SubVillageIrrigationWaterSources5 Yr Evaluation	water decrease
Names of Clans in Sub-Village	Gawsi Dar, Dronic, Namto Dar, Say Dar, Kasab gar

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 Islâmâbâd, 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.

4.2.2.2.2 Wâmâ

SubVillageNamePashto	Landi Cham
SubVillageNameLocal	Wili Jamad
SubVillageSummerPastureNames	Shoti Gara, Fafish, Echigal, Pashok, Palosa
SubVillageSummerPasture Distances Km	30
SubVillageSummerPasture5 Yr Evaluation	The pastures are on the way to damage
SubVillageWinterQuarterNames	Buni, around the village
SubVillageWinterQuarterDistances Km	1
SubVillageWinterQuarters5 Yr Evaluation	The winter area condition is not good
SubVillageFieldLocationNames	Buni, Bagh
SubVillageFieldLocationDistances Km	7.5
SubVillageFieldLands5 Yr Evaluation	No changes
SubVillageNeedleForestLocation	Buni, Apnista
SubVillageNeedleForestDistances	25
SubVillageNeedleForest5 Yr Evaluation	Damage
SubVillageOak ForestLocations	Masho Ran, Posi, Esik, Posi Aranj, Posi Atash, Sik jat
SubVillageOak Forestdistances	15
SubVillageOak Forest5 Yr Evaluation	damaged
SubVillageIrrigationWaterSourceLocations	spring, river
SubVillageIrrigationWaterSourceDistances	1.7
SubVillageIrrigationWaterSources5 Yr Evaluation	decrease because of drought
Names of Clans in Sub-Village	Gos Dar, Kasab Gar

Table 61. 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.

4.2.2.2.3 Bar kali

SubVillageNamePashto	Nawabad
SubVillageNameLocal	Nawabad
SubVillageSummerPastureNames	Aktaban, Trina, Dasangal, Balkton
SubVillageSummerPasture Distances Km	32.5
SubVillageSummerPasture5 Yr Evaluation	Damage by the reason of drought
SubVillageWinterQuarterNames	Ashri, Ashrak, Astat, Trina, Akataban, Dasangal
SubVillageWinterQuarterDistances Km	12.5
SubVillageWinterQuarters5Yr Evaluation	Damage by the reason of drought
SubVillageFieldLocationNames	Wiba, Pampai, Astat Pina, Astat
SubVillageFieldLocationDistances Km	2.5
SubVillageFieldLands5 Yr Evaluation	The condition is bad
SubVillageNeedleForestLocation	Akataban, Trina, Dasangal
SubVillageNeedleForestDistances	32.5
SubVillageNeedleForest5Yr Evaluation	The condition is bad
SubVillageOak ForestLocations	Around the village
SubVillageOak Forestdistances	0.5
SubVillageOak Forest5Yr Evaluation	The condition is bad
SubVillageIrrigationWaterSourceLocations	Local Springs
SubVillageIrrigationWaterSourceDistances	1.5
SubVillageIrrigationWaterSources5 Yr Evaluation	The irrigation system is not good
Names of Clans in Sub-Village	Sopak Dar, Dawan Dar, Sharik Dar

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	AchaNu
SubVillageNameLocal	GrâmsaNâ grâm
SubVillageSummerPastureNames	Karik, Ond, Sas, Pint
SubVillageSummerPasture Distances Km	10
SubVillageSummerPasture5 Yr Evaluation	The condition is bad because of drought and disease
SubVillageWinterQuarterNames	Padi Rak, Waina, zhagozh Kos, Dako, Maran, paqala, Pakona, Pichakarak
SubVillageWinterQuarterDistances Km	4
SubVillageWinterQuarters5 Yr Evaluation	winter pasture is damaged from increase in livestock
SubVillageFieldLocationNames	Panasha, Mantana, Arak Dera, Arsho, Ponak, Promest, Pasangwa, Shashi Gal
SubVillageFieldLocationDistances Km	2
SubVillageFieldLands5 Yr Evaluation	decreased production from floods and lack of irrigation
SubVillageNeedleForestLocation	Shashi Gal, Shaz, Kok
SubVillageNeedleForestDistances	3.5
SubVillageNeedleForest5 Yr Evaluation	some trees are dead because of drought
SubVillageOak ForestLocations	around the village
SubVillageOak Forestdistances	4
SubVillageOak Forest5 Yr Evaluation	decrease from increase in livestock
SubVillageIrrigationWaterSourceLocations	Achanu Gully
SubVillageIrrigationWaterSourceDistances	1.5
SubVillageIrrigationWaterSources5 Yr Evaluation	every year streams are damage by flood
Names of Clans in Sub-Village	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

SubVillageNamePashto	Bargadish
SubVillageNameLocal	Bargadish
SubVillageSummerPastureNames	Si Nar, Gori Sal, Zamo
SubVillageSummerPasture Distances Km	20
SubVillageSummerPasture5 Yr Evaluation	The condition is bad because of drought and disease
SubVillageWinterQuarterNames	Samar Bagh
SubVillageWinterQuarterDistances Km	0.2
SubVillageWinterQuarters5 Yr Evaluation	food decrease because of snow
SubVillageFieldLocationNames	Bargadish
SubVillageFieldLocationDistances Km	0.15
SubVillageFieldLands5 Yr Evaluation	drought, insects, disease
SubVillageNeedleForestLocation	Mand galak
SubVillageNeedleForestDistances	25
SubVillageNeedleForest5 Yr Evaluation	damage from drought
SubVillageOak ForestLocations	Bargadesh
SubVillageOak Forestdistances	0.2
SubVillageOak Forest5 Yr Evaluation	damage from drought
SubVillageIrrigationWaterSourceLocations	Sapligal Gully
SubVillageIrrigationWaterSourceDistances	0.1
SubVillageIrrigationWaterSources5 Yr Evaluation	decrease of gully water because of drought
Names of Clans in Sub-Village	Gojer, shoriki

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

SubVillageNamePashto	Mala Abad
SubVillageNameLocal	Mala Abad
SubVillageSummerPastureNames	Gas Kandek, Zhoayi Hori, Aich Nari
SubVillageSummerPasture Distances Km	5
SubVillageSummerPasture5 Yr Evaluation	No changes
SubVillageWinterQuarterNames	Gawlishti, Ban Nori Gal, Er nar Nori
SubVillageWinterQuarterDistances Km	0.7
SubVillageWinterQuarters5 Yr Evaluation	a little change
SubVillageFieldLocationNames	Lilo, Shila Lam, chana watan, zhoyi Danag
SubVillageFieldLocationDistances Km	1
SubVillageFieldLands5 Yr Evaluation	some agricultural land damaged by flood
SubVillageNeedleForestLocation	Ban Nori Gal, Gawlishti, Aich Nari
SubVillageNeedleForestDistances	1.5
SubVillageNeedleForest5 Yr Evaluation	a little change
SubVillageOak ForestLocations	around the village
SubVillageOak Forestdistances	0.1
SubVillageOak Forest5 Yr Evaluation	some areaa are damaged
SubVillageIrrigationWaterSourceLocations	Kordar Gully
SubVillageIrrigationWaterSourceDistances	3.5
SubVillageIrrigationWaterSources5 Yr Evaluation	streams are damaged
Names of Clans in Sub-Village	Shami Dar, Gorka Dar, Samara Dar, Orak Dar

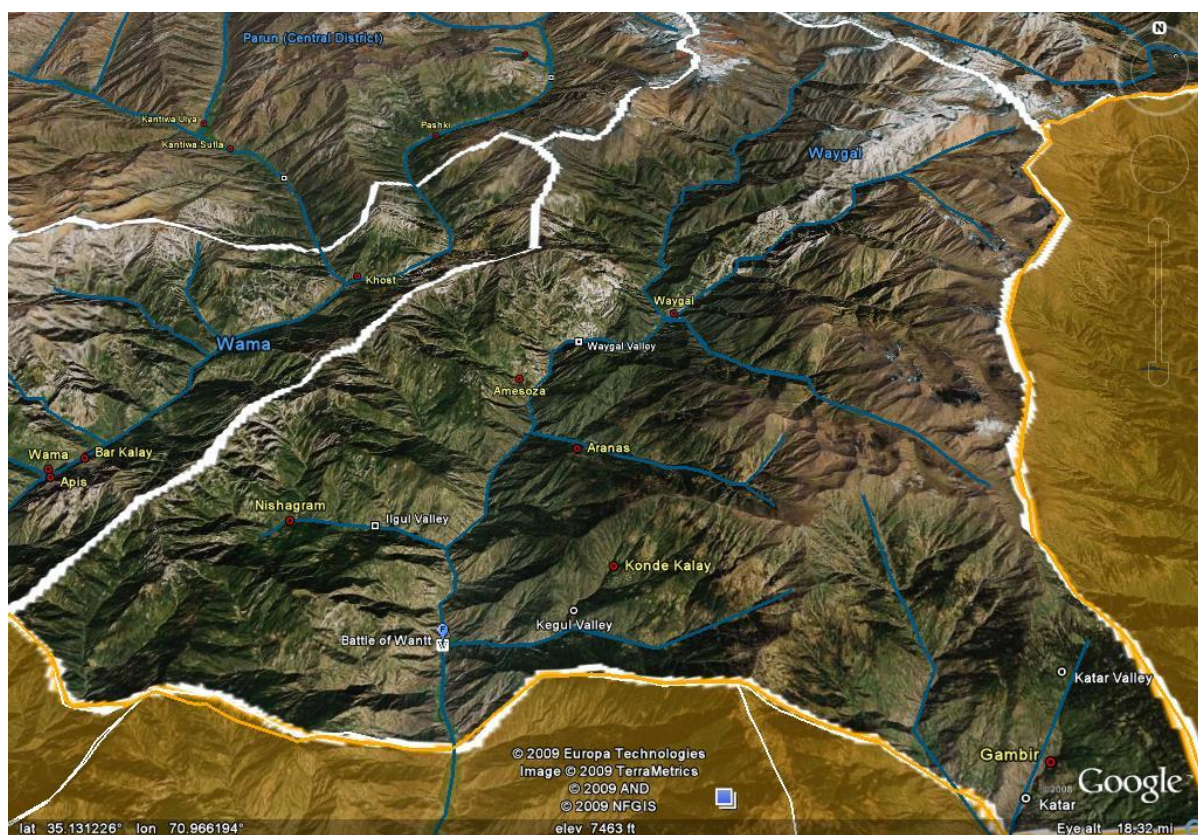
Table 65. Kordar.

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.

Overall District Summary:

	Wâigal District: Villages					
National Name	Wâigal	Ameshoz	Arans	Nisha'i	Konde Kālay	Gambir
Native Name	vā gal	âmeš deš	Zōn ci gal	niše'i grām	akuN	gemir
Irrigation Water & System	potential decrease due to cutting of forest	decrease due to cutting of forest	decrease of springs and streams from cutting of forest	drought-induced water shortages have eased somewhat	drought-induced water shortages have eased somewhat	decrease due to cutting of forest
Needle Forest	decrease from cutting	decrease from cutting and soil erosion	decrease from cutting	decrease from cutting	snow damage, soil erosion	decrease from cutting
Oak Forest	decrease and damage from overuse	decrease and damage from overuse	decrease and damage from overuse	5% of oak trees are damaged, and 3 % of soil is eroded	5% of oak trees are destroyed, and 5 % of soil is eroded	decrease
Summer Pastures	damage and decrease from overgrazing, precipitation, and erosion	erosion from rain	damage and decrease from overgrazing, precipitation, and erosion	damage and 6% decrease from overgrazing, precipitation, and erosion	damage and 5% decrease from precipitation and erosion	erosion from rain
Winter Quarters	erosion from cutting and overuse	decrease and erosion from cutting and overuse	decrease and erosion from cutting and overuse	30 % soil erosion from snow melt	30 % soil erosion from snow melt and housing increase	decrease
Cropland	insufficient due to population increase	insufficient due to drought and population increase	decreased irrigation water	insufficient due to population increase	insufficient due to drought and population increase	insufficient due to population increase

Table 66. Survey Respondents' Previous-Five-Year Assessments of Resources, Wâigal.

	Wâygal District: Villages					
National Name	Wâygal	Ameshoz	Arans	Nisha'i	Konde Kālay	Gambir
Native Name	vā gal	âmeš deš	Zōn ci gal	nišeī grām	aku N	gemir
Water	diminished	diminished	diminished	diminished	diminished	diminished
Forests	diminished	diminished	diminished	diminished	diminished	diminished
Pastures	damaged	damaged	damaged	damaged	damaged	damaged
Cropland	insufficient	insufficient	insufficient	insufficient	insufficient	insufficient
Livestock						

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 Wâygal Village

SubVillageNameLocal	Pokol Dari, Brak Dari, Shi Dari
SubVillageSummerPastureNames	Agoli, Amivli, Atangrai, Alwant, Ashidal, Agok, Pomsana
SubVillageSummerPasture Distances Km	20
SubVillageSummerPasture5 Yr Evaluation	Animal increase, a lot of rain and snowfall, soil erosion, and in some places landslides have decreased pastureland
SubVillageWinterQuarterNames	Shata Gal, Shir Ali cha, Poch Shawi, Povich, Eash, Adoli, Akchawari, Bashtawa, Azha, Shaker twik, Agchik, Awtala, Agshatenk, Chatarana, Nadro, Aloshti, Atmara, Shkatwik, Awzia, Ago Gal, Awiz Dok, Amoli, Aganisha, Wakar Chawo, Bodwi, Pisha Akar Nisha, Sam Sam Katra, Deda, Akomorik, Balansa, Satang Gri, Awch Ka, Beshta Gal, Peshta Mos, Abro Shalak, Achwi, Shacha Nisha
SubVillageWinterQuarterDistances Km	3
SubVillageWinterQuarters5Yr Evaluation	soil erosion from cutting of oak trees
SubVillageFieldLocationNames	Otrant, 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, Atmara, Awzia
SubVillageFieldLocationDistances Km	3
SubVillageFieldLands5 Yr Evaluation	agricultural production is not enough for people because of increase in population
SubVillageNeedleForestLocation	Shacha Gal, Satangari, Bita Gal, Ocha, Amoli, Gator, Jawoshwi, Garo Gacha, Asro rik, Degal, Mogoli, Ajo Nisha, Atamri, Ago Gal, Etok, , Aproshtal
SubVillageNeedleForestDistances	4
SubVillageNeedleForest5Yr Evaluation	forest loss from cutting for house construction; government should start a reforestation program
SubVillageOak ForestLocations	Shacha Gal, Shir Ali cha, Povich, Eash, Adoli, Akchori, Bashtawa, Chatarana, Nadrom, Aloshti, Atamri, Ago Gal, Awiz Dok, Amili, Achwi, Shacha Nisha, Satangari
SubVillageOak Forestdistances	3
SubVillageOak Forest5Yr Evaluation	Oak is being cut for fodder and firewood.
SubVillageIrrigationWaterSourceLocations	Degal Ganta, Akchori Ganta, Eash Ganta, Yankont , Wita, Awcha, Balansa, Achwi
SubVillageIrrigationWaterSourceDistances	1.5
SubVillageIrrigationWaterSources5 Yr Evaluation	"If we do not prevent the cutting of the forest, water shortage will increase"
Names of Clans in Sub-Village	Pakol Dari, Shepan Dari, Damra Dari, Dobshi Dari, Veli-Vai Dari

Table 68. Wâygal Village.

Wâygal 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

SubVillageNameLocal	Mural dari chim, Ota dari chim, sultan dari chim, dabok dari chim
SubVillageSummerPastureNames	Targat, Azho, Skan, Chorka, Bini Antal, Agoo, Apta Malak, Majook, Kasho Pass, Akaw, Kashtoon, Pata Gata, mashal, alenk, Adro, Ashangoo, Azhti, Aram gik, samkon, atori, jawda, gamati, Narkashal, Go meeta, eimtok, gagranty, atok gala, dentik, katra gana, Asorik gala, apa sak, bichiek, Tara lik, Sanashal gala, Achatra, bamook amash, Agosha, Chatras, Kosht, Erm, We m sa, Gamati
SubVillageSummerPasture Distances Km	33
SubVillageSummerPasture5 Yr Evaluation	winter and spring rains created soil erosion, which caused diminishing of pastures
SubVillageWinterQuarterNames	Gajinda, Kamik, Akos, Ouchah, Kantok Dos, Aprila, Tili kont, Aw gram, Shansh, Ashok, Azim, Doshto Gari, Amishak, Atoch, Awtken, Ada Gul, amar, Nori, akangari, Apent
SubVillageWinterQuarterDistances Km	12
SubVillageWinterQuarters5 Yr Evaluation	cutting of oak trees for firewood causes reduction of fodder for livestock
SubVillageFieldLocationNames	Awtok, Adamok, Barobir, Kashra galak, Koshatar, Oushalak, gasho, wata gorak, ashok, nilogari, pashtama, dilwa, gont kala, dor, kachok shal, apishat, min, amok, sheltie, ashli, achacho, Apis, ashik, wakosh, Aza, gawtaran, agorara, prish, ada gal, Amar, Atoch, amrik, ashok, torangal, shansh, Owgram, Gul, Jowensh, chatras, Agorak, Pilesa, kusht, Ko mari
SubVillageFieldLocationDistances Km	16
SubVillageFieldLands5 Yr Evaluation	production decrease from drought and population increase portend lack of food
SubVillageNeedleForestLocation	Awcha, Agzha, Azho, min, print
SubVillageNeedleForestDistances	6
SubVillageNeedleForest5 Yr Evaluation	over-cutting of trees for houses, soil erosion, climate change
SubVillageOak ForestLocations	Kontgala, Dewan, dilwa, gramda, Kamik, Awchah, outakan, Doshto gari, Awgram, shansh, amrik, pashikont, kajenda, kocho ma, Kantok Dosh, waranda, nori, Asho, Azim
SubVillageOak Forestdistances	12
SubVillageOak Forest5 Yr Evaluation	population increase of humans and livestock causes more cutting of oak trees for fodder and burning
SubVillageIrrigationWaterSourceLocations	Winsdo, Brober kanta, Ashor kanta, dilwi kanta, pashtama, kanta, mi kanta, Apess kanta, Azha kanta, amok kanta, agodara kanta, gramgal kanta, adad gul kanta, koshat kanta, ansha kanta, atoch kanta, amrik kanta, asho kanta, sharmaga kanta, shansh kanta, Awgram kanta, asodo kol kanta, Aprila kanta, jawish kanta
SubVillageIrrigationWaterSourceDistances	6
SubVillageIrrigationWaterSources5 Yr Evaluation	cutting of trees caused water reduction
Names of Clans in Sub-Village	Moral dari, Oto dari, Dabok dari, sultan dari

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

SubVillageNameLocal	Let dari chem
SubVillageSummerPastureNames	Amish Ban, Aso Soma, Shankri, Kondah, Shogi, Asrank, Azhok Brisa, Barsa, Aga Dak, Trimtia, Maisa, Lon Gal, Antlogal, Darom Sana
SubVillageSummerPasture Distances Km	40
SubVillageSummerPasture5 Yr Evaluation	increase of animals, soil erosion, landslides, much snowfall in winter, and much rain in summer all have negative impact on pastureland
SubVillageWinterQuarterNames	Adishi, Amish Ban, Shi Kaw, Acha Nisha, Bashti Garam, Ori Wa, Ataza, Abanla, Ensa, Ensa Patai, Amar Gana, Jamch Gal
SubVillageWinterQuarterDistances Km	25
SubVillageWinterQuarters5 Yr Evaluation	soil erosion, human food decreasing
SubVillageFieldLocationNames	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
SubVillageFieldLocationDistances Km	9
SubVillageFieldLands5 Yr Evaluation	irrigation water decreased from cutting of forest; need improved seeds and orchards
SubVillageNeedleForestLocation	Adishi, Shogi, Amish Ban, Shankri, Konda
SubVillageNeedleForestDistances	7
SubVillageNeedleForest5 Yr Evaluation	increased deforestation from cutting of trees for house construction
SubVillageOak ForestLocations	Acha Nisha, Ataza, Bishti Gram, Amar Gana, Deshda, Adeshe, Adrang, Tapi Kaw, Akshok, Azhda, Soor Gal
SubVillageOak Forestdistances	24.5
SubVillageOak Forest5 Yr Evaluation	population increase of people and livestock has brought negative effects to the oak forest
SubVillageIrrigationWaterSourceLocations	Desh Kanta, Bishti Gram, Konda, Abanla, Chokri, Ashari, Shink Kanta, Garmatal Kanta, Washam Kanta, Darop Kanta, Aso Kanta, Shoki Kanta, Ashikal Kanta, Amokia
SubVillageIrrigationWaterSourceDistances	6
SubVillageIrrigationWaterSources5 Yr Evaluation	cutting of forest decreased water and dried up springs
Names of Clans in Sub-Village	Jini Opiji, Kabod Way Opiji, Kawik Opiji, Eris Opiji, Nadi Shang Opij, Wai Deen Opiji, Kacha Malo Opiji, Alam Khan Opiji, Drapdari

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

SubVillageNameLocal	Atrö Chem, Brom Chem, Pem Chem, Mia Chem, Shüvala Chem
SubVillageSummerPastureNames	Oshag, Naskana, Wasa, Somani, Damgal, Sari Gal, Wani, Awot, Goshing, Adri, Sees, Abongera, Achalak, Ashtagal, Awsha, Boshgon
SubVillageSummerPasture Distances Km	9.5
SubVillageSummerPasture5 Yr Evaluation	soil erosion and snow load has damages pastures 6%
SubVillageWinterQuarterNames	Shpa Dark, Pashog, Abiti, Damagal, Golser, Doshigal, Watita, Abli Grog, Ashla, Magarma
SubVillageWinterQuarterDistances Km	5.4
SubVillageWinterQuarters5 Yr Evaluation	60% increase in population and much snowfall has caused erosion of 30 % of the soil
SubVillageFieldLocationNames	Awtrant, Pit, Matigal, Mori, Abiti, Pril, Awtgorwega, Domalish, Akongal, Fim, Kalog
SubVillageFieldLocationDistances Km	4
SubVillageFieldLands5 Yr Evaluation	increase of population caused lack of food
SubVillageNeedleForestLocation	Bartolag, Achlak, Adorigal, Bosh Kon, Magar, Ashalwi, Galag, Agola, Watadog, Gawmera, Kalmata
SubVillageNeedleForestDistances	7
SubVillageNeedleForest5 Yr Evaluation	forest is in danger from cutting of trees for construction
SubVillageOak ForestLocations	Arwi, Tiz, Ayon Gabar, Achalak, Ashtigar, Awshal, Boshi, Kon
SubVillageOak Forestdistances	5
SubVillageOak Forest5 Yr Evaluation	5% Oak trees are damages, and 3% soil erosion
SubVillageIrrigationWaterSourceLocations	Masti Gul, Mori, Tiz, Agola, Magar, Par Tong
SubVillageIrrigationWaterSourceDistances	6.5
SubVillageIrrigationWaterSources5 Yr Evaluation	three years ago there was severe drought and water shortage, nowadays water has increased a little bit
Names of Clans in Sub-Village	Astan dare~, PaTül dare~, Kosuk dare~, KaNmin dare~, Sanki dare~, Sunarat dare~, Nali dare~, DamDe dare~, BuRa dare~, Břam dare~, Shüvala

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

SubVillageNameLocal	Waram Chem, Baram Chem, Sholi Chem, Kantodok, Pakam Ten
SubVillageSummerPastureNames	Awin, Sorik, Agtakov, Paro list, Dewri, Nil Panti, Ashtara, Gala, Chal Barsik, Kev Maro, Marang ji Takra, Berim Dâ, Ganja Pori, Shamoral
SubVillageSummerPasture Distances Km	10.7
SubVillageSummerPasture5 Yr Evaluation	Soil erosion from winter snowfall damaged 5% of pasture
SubVillageWinterQuarterNames	Zardok, Paratol, Azhodak, gotla, Apla wart, Azhn doq, Kolo, Kana, Bali Kanda, Prichi Wat, Want Gata, Koshal, Badrist
SubVillageWinterQuarterDistances Km	4.5
SubVillageWinterQuarters5 Yr Evaluation	5% house increase and in winter much snowfall damaged 30% of rangeland, forest, and soil
SubVillageFieldLocationNames	Awtrant, Baratol, Azandok, Sovrik, Pakamten, Gotla, Aran, Amirik, Bali Kanda, Wânt Gata, Wânt
SubVillageFieldLocationDistances Km	6
SubVillageFieldLands5 Yr Evaluation	population increase and drought have caused lack of food
SubVillageNeedleForestLocation	Awchag, Agat Kaw, Sorik Ban, Dewri, Nil Panti, Komro, Ashtara Gala, Ameen Cho, Chal Barseek, Marangji Takra, Shamral, Ganja Pori
SubVillageNeedleForestDistances	11
SubVillageNeedleForest5 Yr Evaluation	much snowfall in winter has damaged needle forest through soil erosion
SubVillageOak ForestLocations	Agototok, Amrik, Okashri, Pakamten, Soram Shal, Andrish, Barata, Chiti Gal, Ganisha, Kolo Kana, Bali Kanda, Prichi Wat, Agol Shal, Badrinst, Want Gata, Kanto Doak, Kosha, Ashokora, Shtan
SubVillageOak Forestdistances	9.5
SubVillageOak Forest5 Yr Evaluation	5% of oak forest is finished and 5% soil erosion has occurred
SubVillageIrrigationWaterSourceLocations	Pakamten Gata, Mata Manik Gata, Oadok Gata, Atrom , otla Gata, Baram Gotla Gata, Deshi Gata, Zardok Gata, Awimcha Gata, Om Och Gata, Dama Grok Gata
SubVillageIrrigationWaterSourceDistances	2.6
SubVillageIrrigationWaterSources5 Yr Evaluation	three years ago water was less but now a days is ok
Names of Clans in Sub-Village	Mast Khan dare~, Dolok dare~, Magol Khan dare~, Chira dare~, Chanlo dare~, Tora dare~, Bröjan

Table 72. Kund Kalay.

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

4.2.2.3.6 Gambir

SubVillageNameLocal	Ghulamta, Lokil, Sokil
SubVillageSummerPastureNames	Karen, Ayi Kan, Wama Gal, Kachang, Trana Dok, Wata God, Shirok, Water Kas, Wrandok, Kiro Shakoda, Gamberchok, Gajawat
SubVillageSummerPasture Distances Km	5
SubVillageSummerPasture5 Yr Evaluation	pasture is damaged from rain and snow runoff
SubVillageWinterQuarterNames	Nello mar, Gentol, Watlok, Zhosham Galla, Agon
SubVillageWinterQuarterDistances Km	3
SubVillageWinterQuarters5 Yr Evaluation	oak forest in danger, and livestock lack food
SubVillageFieldLocationNames	Agora, Sokil, Adesh Da, Azrool, Wasti, Kansteli, Bashar, Gom
SubVillageFieldLocationDistances Km	2.5
SubVillageFieldLands5 Yr Evaluation	lack of food because of increasing of population
SubVillageNeedleForestLocation	Sarka Gora, Ghulamta, Nelok, Banshe Watla, Dola Shala, Karikot, Walta Goda
SubVillageNeedleForestDistances	3
SubVillageNeedleForest5 Yr Evaluation	Cutting for house construction has put the forest in jeopardy
SubVillageOak ForestLocations	Wata Goda, Benshi Watla, Sam Dobi Shala, Natli Goda, Mata Gir, Asrankal
SubVillageOak Forestdistances	3
SubVillageOak Forest5 Yr Evaluation	negative effects on oak forest are increasing
SubVillageIrrigationWaterSourceLocations	Adangal, Sarka Goda, Kama Chang, Azdol, Agoda
SubVillageIrrigationWaterSourceDistances	3
SubVillageIrrigationWaterSources5 Yr Evaluation	decrease of water from cutting of forest
Names of Clans in Sub-Village	Kok Dâri, Jis Kal, Loshag Dâri

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 Nuristâni 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 Nuristân'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 Nuristân: NRM management for Nuristân 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 Nuristâni'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 Nuristân 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 Nuristân, 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 so 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 Nuristân, the time-proven traditional resource management institution called the *ura*, *under*, *malavře*, or *irin*, 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 include 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 Nuristân'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 Nuristân can be attributed to exploitation by Afghân timber traders from both sides of the Durand Line. Keep the Afghâns and Gujars out of Nuristân, and let the Nuristânis maintain in 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 natural 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 Nuristán.

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 Nuristán:

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

- Edelberg, Lennart, and Schuyler Jones. *Nuristân*. Graz: Akademische Druck- u. Verlagsanstalt, 1979.
- Favre, Raphy, and Gulam Monowar Kamal. *Watershed Atlas of Afghanistan*. Swiss Agency for Development and Cooperation, FAO, AIMS, Kabul, 2004.
- Fischer, D. "Waldverbreitung, bäuerliche Waldwirtschaft und kommerzielle Walnutzung im östlichen Afghanistan." *Afghanische Studien* 2 (1970).
- Humlum, J. *La géographie de l'Afghanistan*. Copenhagen, 1959.
- Katz, David J. *Kafir to Afghan: Religious Conversion, Political Incorporation and Ethnicity in the Wâygäl Valley, Nuristân*. Los Angeles: UCLA Ph.D. Dissertation, 1981.
- Køie, M., and K. H. Rechinger. *Symbolae Afghanicae: Enumeration and description of the plants collected by L Edelberg and M. Køie on the Third Danish Expedition to Central Asia*. 5 vols. København: Det Kongelige Danske Videnskabernes Selskab, 1954-1963.
- Larsson, Katarina. *Provincial Survey of Nuristân*. Stockholm: Swedish Committee for Afghanistan, 2006.
- Nuristâni, Ahmad Yusuf. "The Palae of Nuristâni (A Type of Cooperative Dairy and Cattle Farming)." In *Vergleichende Kulturgeographie der Hochgebirge des südlichen Asien*, by Carl Rathjens, Carl Troll and Harald Uhlig, 177-181. Wiesbaden: Franz Steiner Verlag, 1973.
- Perez, Carlos, and Henry Tschinkel. *Improving Watershed Management in Developing Countries: A Framework for Prioritising Sites and Practices*. Network Paper No. 129, Agricultural Research & Extension Network, July 2003.
- Petocz, Ronald G., and John Y. Larsson. *Ecological reconnaissance of western Nuristân with recommendations for management*. Kâbul: United Nations Development Programme, Food and Agriculture Organization of the United Nations [and] Department of Forests and Range, Ministry of Agriculture, 1977.
- Robertson, George Scott. *The Kâfirs of the Hindu-Kush*. London: Lawrence & Bullen, Ltd., 1896.
- Scheibe, Arnold (ed). *Deutsche im Hindukusch: Bericht der Deutschen Hindukusch Ekspedition 1935 der Deutschen Forschungsgemeinschaft*. Berlin: Deutsches Forschungsgemeinschaft, 1937.
- Strand, Richard F. "Notes on the Nûristânî and Dardic Languages." *Journal of the American Oriental Society* 93, no. 3 (1973): 297-305.
- . "The Changing Herding Economy of the Kom Nuristâni." *Afghanistan Journal* 2, no. 4 (1975): 123-134.
- . *Richard Strand's Nuristân Site*. 1997[-present]. <http://users.sedona.net/~strand>.
- . "Lexicons of the Hindu-Kush: Kâmviri Lexicon." *Richard Strand's Nuristân Site*. 1999. <http://users.sedona.net/~strand/lngFrameL.html>.
- . "Transcription and Pronunciation of the Nuristâni Languages." *Richard Strand's Nuristân Site*. 2007. <http://users.sedona.net/~strand/Nuristâni/phon.html>.
- . *Nuristân Provincial Handbook: A Guide to the People and the Province*. Arlington, VA: IDS International, 2008.
- UNEP [United Nations Environment Programme]. *Afghanistan Post-Conflict Environmental Assessment*. Geneva, Switzerland: UNEP, 2003.
- Vavilov, N. I., and D. D. Bukinich. *Agricultural Afghanistan*. Leningrad, 1929.
- Zamân Xân and Strand, Richard F. "Topics in Vâsi Ethnography: 9. Animal Husbandry." *Richard Strand's Nuristân Site*. 1998. <http://users.sedona.net/~strand/Nuristâni/Vasi/VasiCulture/Zaman9.html>.

Appendix 1 – Native Inventories of Resources

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

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

English	Kâmviri
deodar cedar (<i>Cedrus deodara</i>)	<i>ř'u kâno</i>
pine (<i>Pinus excelsa</i>)	<i>p'üaci kâno</i>
spruce (<i>Picea smitheana</i>)	<i>câSk'u kâno</i>
fir (<i>Abies spectabilis</i>)	<i>pT'ü kâno</i>
juniper	<i>sâř'eć kâno</i>
small, spread-out juniper-like tree	<i>višt'a kâno</i>
juniper-like bush	<i>řâm'ik dâa</i>

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

English	Kâmviri
tree with small purple berries	<i>š'ü</i>
tree with apple-like fruit	<i>s'o~ pâřa</i>
small tree with red berries	<i>gum'ok</i>
tree with cherry-like fruit	<i>št'eŋ</i>
tree with small dark berries	<i>t'üřuk</i>
tree with red berries	<i>s'urik</i>
tree with small black berries	<i>bř'eć</i>
tree with small, sweet black berries	<i>gâr'u</i>
tree with grape-like berries ("crow grape")	<i>k'ur#dros</i>
kind of nut-bearing tree	<i>vâns'ük</i>
kind of walnut tree (small, hard nuts)	<i>vâT'uñi</i>
wild almond	<i>kât'o, kâtk'ano</i>
wild olive	<i>k'u kâno</i>
tree with shiny leaves (poplar?)	<i>ž'um kâno</i>
kind of tree	<i>c'â~trak kâno</i>
plane tree	<i>'uštam kâno</i>

willow	řâm'o
= řâm'o	řâmk'ano
cottonwood	p'okořa_kâno
kind of tree	âž'ü_kâno
birch	'oC kâno
kind of tree	sâ~t'ul kâno
kind of tree	sârv'o_kâno
kind of tree	čâñ'a_kâno
kind of tree	sp'e~_kâno
kind of tree	gâls'ařec
kind of live oak with spiny leaves (Quercus balut)	vâns'i_kâno
kind of live oak with smooth leaf margins	žañ'o_kâno
kind of live oak with smooth leaf margins	t'eć kâno
parasitic tree (grows on holly-oak)	g'âS dâro~
parasitic tree (grows on «zañ'o_kâno»)	č'oŋ
kind of tree	c'e~_kâno
a tree found in «pRâs'ü~#gal», the wood of which is used for ghee pots	k'eć kâno
small, round-leaved red-berried tree found in shady mountain areas	kunS'o_kâno

Table 76. Native Inventory of Broadleaf Forest Trees (Strand 1999).

English	Kâmviri
meadow grass and small plants used for fodder	nin'ila=üs
alfalfa	mü-k'üs
clover	tr'e pTik üs
kind of grass used for fodder	ř'oć
kind of plant	üv'o
kind of plant	mus'a üs
kind of plant	tâj'üñâ=üs
hemp	bâŋ'oa üs
plantain (<i>Plantago major</i>)	j'a vâa por
kind of plant	g'o dić
long grass found above the timber line	bâl'i
plant used for brooms	dr'üm
medicinal plant used to make tea to calm malarial fever	s'o~ drüm
fragrant plant	š'aš
fragrant root	sâmk'ařü
bush growing on mountain top	sâk'u
kind of bush	câN'âa üs
kind of bush	câN'âa tâñi
kind of plant	'ic âmâř
kind of plant ("crow barley")	k'ur#řic
name of a plant	Suy'uř čoa
kind of plant	tâñ'i_kâřü
plant with milky sap	ž'u vâa üs
mountain plant eaten by goats	trâk'a mâćia
spring plant with small seeds found in cultivated fields, eaten as stomach medicine [Psht. jin'îR]	câTk'oš

mountain plant with onion-like bulb, dried and mixed with antimony as an eye medicine	<i>pâř'as por_vâa üs</i>
mountain plant, the root of which is dried, ground, and cooked with ghee as a purgative	<i>s'o~ câvo</i>
mountain plant eaten by goats	<i>žân'o</i>
wheat-like mountain plant growing in marshes, eaten by cows	<i>un'o</i>
broad-leaved plant found in shade by streams	<i>'ic dâšpâř</i>
plant with black berries used as black dye	<i>ř'e~ kâřü</i>
mountain plant eaten by goats, used to make thorny fence around cheese to protect it from mice	<i>must'añi</i>
mountain plant eaten by goats, causing high milk production	<i>mřâŋč'uñik</i>
a mountain plant	<i>'oača üs</i>
red-berried mountain plant eaten by goats, the skin of which is used as tinder	<i>d'e~ Dun_kâno</i>
kind of grass	<i>lâk'ařik</i>
kind of grass	<i>š'añik</i>
kind of poisonous plant	<i>âs'am</i>
kind of poisonous plant	<i>DâT'am</i>

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

English	Kâmvirî
WILD HOOVED ANIMALS	
male markhor (full-grown)	<i>šâr'u</i>
female markhor (full-grown)	<i>mř'oŋ</i>
markhor kid	<i>tâm'ü</i>
markhor kid (1 year)	<i>mřâŋč'amuk</i>
young markhor	<i>šârk'oT</i>
young markhor	<i>k'eč dâlla</i>
kind of animal	<i>mřâŋč'üm</i>
kind of animal	<i>mřâŋ'ansi</i>
mountain sheep	<i>âr'añ muSala</i>
mountain sheep (female)	<i>âr'añ ve</i>
musk deer	<i>řâ-k'üs</i>
wild boar; pig	<i>k'iS go</i>
ibex	<i>mür'üS</i>
NON-HOOVED WILD MAMMALS	
leopard	<i>j'üt</i>
small leopard-like animal	<i>j'üt jâpši</i>
bear	<i>'ic</i>
porcupine	<i>sâp'âa</i>
fox	<i>vř'ika</i>
monkey	<i>mâk'ař</i>
wolf	<i>Si'ol</i>
jackal	<i>s'er Siol</i>
weasel	<i>št'ük</i>
marmot (large)	<i>uš'a~</i>
squirrel	<i>Sk'ulluk</i>
mouse	<i>mus'a</i>
rat	<i>Dill'ik</i>

large bat	<i>čâv'ol</i>
small bat	<i>řâtr'a mřâŋčuk</i>
otter	<i>'oa vâčûřuk</i>
BIRDS	
FOWL	
chicken; hen	<i>kâk'ok</i>
rooster	<i>bâŋg'i</i>
young hen	<i>kur'ařik</i>
young rooster	<i>kur'ařuk</i>
wildfowl	<i>bân-k'akok</i>
male monal (Impeyan) pheasant	<i>vâč'ia</i>
female monal (Impeyan) pheasant	<i>š'om</i>
kind of pheasant (tragopan?)	<i>âř'üs</i>
wild hen	<i>bâk'ara</i>
quail	<i>uř'a</i>
duck; aquatic bird	<i>jâl'âa</i>
BIRDS OF PREY, VULTURES	
lammergeyer vulture	<i>pâT'ol</i>
vulture	<i>lutr'a , lutr'a pâTol</i>
lammergeier	<i>âT'i iula pâTol</i>
kind of vulture	<i>s'er pâTol</i>
hawk	<i>mâr'e~</i>
kind of hawk	<i>Z'ia přočo mâre~</i>
kind of hawk	<i>mus'a iula mâre~</i>
falcon [?]	<i>šâmv'ačia mâla mâre~</i>
small, black bird of prey	<i>dâm'u pialuk</i>
large owl	<i>k'üřuk</i>
raven	<i>k'uara</i>
MISCELLANEOUS SMALL BIRDS	
small bird; songbird; bird (meat)	<i>mřâŋč'a</i>
small owl	<i>št'o_âce~vo</i>
parrot	<i>čâr'om</i>
large woodpecker	<i>kuST'i~</i>
small woodpecker	<i>št'amduřuk</i>
cuckoo	<i>kâk'ui~</i>
pigeon	<i>kâv'ek</i>
dove	<i>câTk'are~</i>
bird like a pigeon	<i>vâns'i_kor</i>
hoopoe	<i>pâr'o mâNuk</i>
kind of bird with call like a whippoorwill's	<i>kuml'ik pâkoalik</i>
sparrow	<i>lâT'uk</i>
kind of bird (quail ?)	<i>kâň'a mâroT</i>
kind of bird	<i>b'eruk</i>
kind of bird	<i>Z'ia beruk</i>
kind of bird	<i>j'aaki</i>
kind of sparrow-sized bird; male has black head and red body; female has grey back and head with yellow speckled belly	<i>p'uTik</i>
kind of bird with two-foot-long tail and a black crest with red behind it, that	<i>mâlk'i</i>

builds hanging nests in pomegranate trees	
kind of bird	<i>dić'ik</i>
kind of bird	<i>Z'ia dićik</i>
kind of bird	<i>t'ürülik</i>
kind of bird	<i>Sâŋ'âS</i>
kind of bird	<i>d'âa_kârük</i>
kind of bird	<i>kil'iňuk</i>
kind of bird	<i>př'u's puNâluk</i>
kind of bird	<i>ks'ař</i>
kind of bird	<i>'oa_Suřuk</i>
kind of bird	<i>nilp'aTâk</i>
kind of bird	<i>kânš'ařik</i>
kind of bird	<i>sâtr'i_kânšařik</i>
kind of bird (= <i>sâtr'i_kânšařik</i>)	<i>štr'aŋ'i_kânšařik</i>
kind of bird	<i>š'aňik</i>
REPTILES & AMPHIBIANS	
small lizard [about 10 cm. long]	<i>l'âanša</i>
lizard [about 25 cm. long]	<i>vâSk'am</i>
large lizard [about 60 cm. long]	<i>čâć'am</i>
snake	<i>bâb'ista</i>
kind of snake [Prs. <i>mangare</i> 'krait' ?]	<i>lâND'ei bâbista</i>
kind of snake [Prs. <i>\$otor mâr</i>]	<i>'oa bâbista</i>
kind of snake [Prs. <i>ablaq</i>]	<i>štr'aŋi bâbista</i>
kind of small snake	<i>p'eDluk</i>
frog	<i>'oa mâNuk</i>
tadpole	<i>pâns'uře ielik</i>
FISH	
fish	<i>'oa mâči</i>
BUGS & WORMS	
bug; worm	<i>g'u</i>
earthworm	<i>nâlg'u</i>
kind of worm	<i>pS'uk</i>
snail	<i>k'ür âpsoali gu</i>
fly	<i>t'üruk</i>
mass of fly eggs	<i>nilm'aća~</i>
mosquito	<i>nâSt'üruk</i>
scorpion	<i>up'a</i>
spider	<i>trim'uk</i>
kind of large spider	<i>s'ut âša vâa trimuk</i>
hornet	<i>bâŋ'o</i>
large black wasp	<i>š'üňi bâŋo</i>
kind of wasp	<i>d'is kârik</i>
small bee	<i>ušp'ik</i>
honey bee	<i>mâC'arik</i>
butterfly; moth	<i>prüšp'ulik</i>
ant	<i>řâm'ik</i>
cricket	<i>řâpk'aňik</i>
grasshopper	<i>g'u_šâruk</i>

cicada	<i>C'ia~kâruk</i>
praying mantis	<i>ž'o~telik</i>
praying mantis	<i>sâl'om_kulik</i>
locust	<i>šâl'ek</i>
dragonfly	<i>'oa ioalik</i>
any bug that eats food or clothing; moth larva; silverfish; etc.	<i>gâj'ala</i>
bug that eats wheat grains	<i>g'um gâjala</i>
wood-borer	<i>pk'ulik</i>
flea	<i>pk'i</i>
kind of flea (lives on goats)	<i>pc'ař#miya</i>
louse	<i>'ü</i>
small louse	<i>'ü cak</i>
nit	<i>řâc'ük</i>
crab louse	<i>c'üali</i>
bedbug	<i>guž'ara</i>
kind of tick	<i>k'u~</i>
kind of tick	<i>Civ'i</i>
worm that burrows into goats' skin	<i>pT'icuk</i>
glow-worm; firefly	<i>pils'ali gu</i>
glow-worm; firefly (= «pils'ali gu»)	<i>pils'añi gu</i>
caterpillar	<i>li'ok</i>
kind of caterpillar ('smooth caterpillar')	<i>salk'añi liok</i>
hairy caterpillar	<i>pâTl'i liok</i>
hairy caterpillar	<i>pâTl'i gu</i>
centipede	<i>vâTk'uñik</i>

Table 78. Native Inventory of Fauna in Eastern Nuristân (Strand 1999).

English	Kâmviri
CEREAL PLANTS	
grain	<i>kâT'i</i>
granule; measure for grain and grain-like objects	<i>p'ul</i>
crop planted in the spring	<i>vâst'a_kâTi</i>
crop planted after winter crop ripens	<i>šâr'ea_kâTi</i>
crop planted before winter (ripens in spring)	<i>ž'âñma</i>
unirrigated winter crop	<i>dumž'âñma</i>
wheat	<i>g'um</i>
barley	<i>ř'ic</i>
corn (maize)	<i>juv'or</i>
millet (generic)	<i>'añ_kâTi</i>
millet (<i>Panicum mileaceum</i>)	<i>ř'oa</i>
fox-tail millet (<i>Setaria italica</i>)	<i>kâc'o</i>
sorghum (classified as a kind of millet [<i>'añ_kâTi</i>]).	<i>tâj'üñ</i>
rice (unhusked) [not planted in Nuristân]	<i>šâl'i</i>
LEGUMES	
bean (red)	<i>é'âa~kSü</i>
string bean	<i>kâsi'o_câa~kSü</i>
kind of string bean	<i>m'oS</i>

soybean	<i>kS'ü</i>
mung bean	<i>c'ül mo</i>
kind of red lentil [Prs. «dâl-e nask»]	<i>čün'uk</i>
pea	<i>Z'üm</i>
VEGETABLES	
squash (pumpkin-shaped)	<i>âl'oa</i>
gourd	<i>'oa_âve~_âloa</i>
onion	<i>câk'uNuk</i>
potato	<i>âl'u</i>
pepper	<i>m'oc</i>
MISCELLANEOUS CULTIVATED PLANTS AND PLANT PRODUCTS	
cotton	<i>pâc'a vâruk</i>
tobacco	<i>tâmk'ü</i>
opium	<i>târi'ok</i>

Table 79. Native Inventory of Cultivated Plants (Strand 1999).

walnut	<i>iâmř''u</i>
mulberry	<i>kuml'ik</i>
black mulberry	<i>Z'ia_kumlik</i>
pink mulberry	<i>br'âmkuni</i>
white mulberry	<i>kâš'ari kumlik</i>
small white mulberry	<i>m'us kumlik</i>
variety of mulberry	<i>mišk'oni kumlik</i>
wild mulberry	<i>ž'ül kumlik</i>
fig	<i>kiv'it</i>
variety of large fig ("Kâbul fig")	<i>kobl'i kivit</i>
pomegranate	<i>âm'âř</i>
variety of pomegranate ("sour pomegranate")	<i>câN'âa âmâř</i>
variety of pomegranate	<i>âr'usâa âmâř</i>
variety of pomegranate	<i>câN'âa muri âmâř</i>
apricot	<i>car'i~</i>
variety of apricot with edible seed	<i>vič'â~ carĩ~</i>
apricot with bitter nut inside pit	<i>kâř'âa carĩ~</i>
apple	<i>pâř'a</i>
variety of apple ("sour apple")	<i>câN'âa pâřa</i>
variety of apple ("sweet apple")	<i>m'uri pâřa</i>
variety of apple ("sweet and sour apple")	<i>câN'âa muri pâřa</i>
variety of apple ("bitter apple")	<i>kâř'âa pâřa</i>
peach	<i>âr'u</i>
variety of peach	<i>buC'a vâa âru</i>
variety of peach	<i>CâC'a~_âru</i>
pear	<i>T'um</i>
wild pear	<i>T'âḡari</i>
jujube	<i>sunš'a</i>
species of jujube	<i>bât'ar</i>
species of jujube [Prs. <i>sonjet</i>]	<i>bil'a~_sunša</i>
grape	<i>dr'os</i>

bunch of grapes (measure)	<i>ř'oc</i>
red grape	<i>ât'eC dros</i>
kind of red grape	<i>mâC'ia~ dros</i>
large green grape	<i>kârT'uk dros</i>
variety of grape	<i>'oa mâřuk dros</i>
variety of grape ('cow-teat grape')	<i>g'o cuk dros</i>
variety of grape	<i>lâŋ'aNo dros</i>
variety of grape	<i>sk'anšol dros</i>
variety of grape ("black-crunchy grape")	<i>Z'ia pTaňi dros</i>
variety of grape ("round-raceme grape")	<i>puNr'a řoc dros</i>
variety of grape ("rat grape")	<i>Dill'ik dros</i>
variety of grape ("pumpkin-leaved grape")	<i>âl'oa por vâa dros</i>
variety of grape ("sling grape")	<i>mit'i-oNi dros</i>
persimmon	<i>gâlm'unuk</i>

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

FODDER	
fodder	<i>'üs tūs</i>
corn or millet stalk used for fodder	<i>kâT'e~</i>
fodder from crop planted after winter crop	<i>šâr'ea_kâTe~</i>
straw; chaff	<i>p'üř</i>
empty millet ear used for fodder	<i>t'üs</i>
large pieces of straw left after threshing	<i>gâNp'üř</i>
chaff	<i>trućp'üř</i>
haystack (measure)	<i>g'oT</i>
stack of grass or grain stalks	<i>'üs goT</i>
stack of straw	<i>p'üř goT</i>
pile of grass, stalks, etc.	<i>b'o</i>
FODDER PLANTS	
meadow grass and small plants used for fodder	<i>nin'ila=üs</i>
alfalfa	<i>mü-k'üs</i>
kind of grass used for fodder	<i>ř'oc</i>
clover	<i>tr'e pTik üs</i>

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

EDIBLE WILD GREEN PLANTS	
greens	<i>ć'o</i>
mint	<i>vř'i~uk</i>
lambs quarter	<i>trâtr'a</i>
coriander [?]	<i>kân'l'ik</i>
nettle	<i>dâć'ü~</i>
edible plant	<i>v'iS</i>
edible plant	<i>ž'uňik</i>
kind of edible plant	<i>dâň'alik</i>
edible plant that grows in cultivated fields	<i>g'um üs</i>
kind of edible plant found in winter-crop fields («lâm'aroT» dialect)	<i>gulgul'â-Ti</i>

kind of wild onion	<i>k'u pon</i>
kind of wild onion	<i>âr'uS</i>
leek (wild)	<i>p'on</i>
kind of wild turnip	<i>cân'l'ü_kuřuk</i>
wild rhubarb	<i>čâv'o</i>
rhubarb-like plant	<i>âr'os</i>
wild strawberry	<i>b'üm ânSuk</i>
cumin	<i>âi'o</i>
thyme [Prs. «zamec»]	<i>sâtrk'aň</i>
MUSHROOMS	
morel mushroom	<i>g'o kTluk</i>
white morel mushroom	<i>kâš'ara go kTluk</i>
black morel mushroom	<i>Z'ia go kTluk</i>
kind of edible mushroom (like morel)	<i>u'i vo go kTluk</i>
edible mushroom	<i>gřân-č'ok</i>

Table 82. Native Inventory of Gathered Edible Plants (Strand 1999).

English	Kâmvirî
milk	<i>ž'u</i>
milk products	<i>d'iamatîa~</i>
pre-Islamic ritual offering of dairy products	<i>l'oa</i>
raw milk	<i>âmž'u</i>
"skin" on milk; cream	<i>p'ic</i>
cream	<i>ž'u pic</i>
colostrum (unboiled)	<i>kâž'u</i>
boiled colostrum	<i>břâkž'a</i>
yoghurt	<i>tr'ûa žu</i>
butter	<i>nuř'i</i>
unclarified part of melted butter	<i>přâš'ol</i>
ghee	<i>ân'ua</i>
ghee made from goats' milk	<i>vâs'e_ânua</i>
buttermilk	<i>niv'o</i>
buttermilk solids	<i>sâc'uy</i>
dried buttermilk curds	<i>cân'o bâTa</i>
liquid part of buttermilk	<i>Ck'ala=oa</i>
starter for milk fermentation	<i>â·'ü</i>
curdled milk used to make cheese	<i>gř'âa žu</i>
lumps in <i>gřâa žu</i>	<i>gřut'uk</i>
whey (from <i>gřâa žu</i>)	<i>il'a</i>
curdled <i>il'a</i>	<i>čk'ara=küN</i>
solid part of <i>čk'arküN</i>	<i>čk'ara</i>
liquid part of <i>čk'arküN</i>	<i>čk'ara=Ckala=oa</i>
"pre-cheese" formed by squeezing together <i>gřut'uk</i>	<i>přâl'ia</i>
liquid squeezed out of <i>přâl'ia</i>	<i>št'ü</i>
<i>přâl'ia</i> ready for eating	<i>kilt'in</i>
cheese	<i>kil'âr</i>

small cheese	<i>kilpř'oc</i>
soft cheese made in midwinter	<i>ž'e~ kilpř'oc</i>
cheese made from milk after goats eat hollyoak leaf buds in early spring	<i>vâ~čpř'u~s kilâř</i>
cheese made from the curds that form from adding one part buttermilk to two parts boiling milk	<i>âm'iS</i>
food (normally a dairy product) eaten with bread	<i>miS'oa~</i>
cheese pickled in brine or vinegar	<i>câNst'a bâTa</i>

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

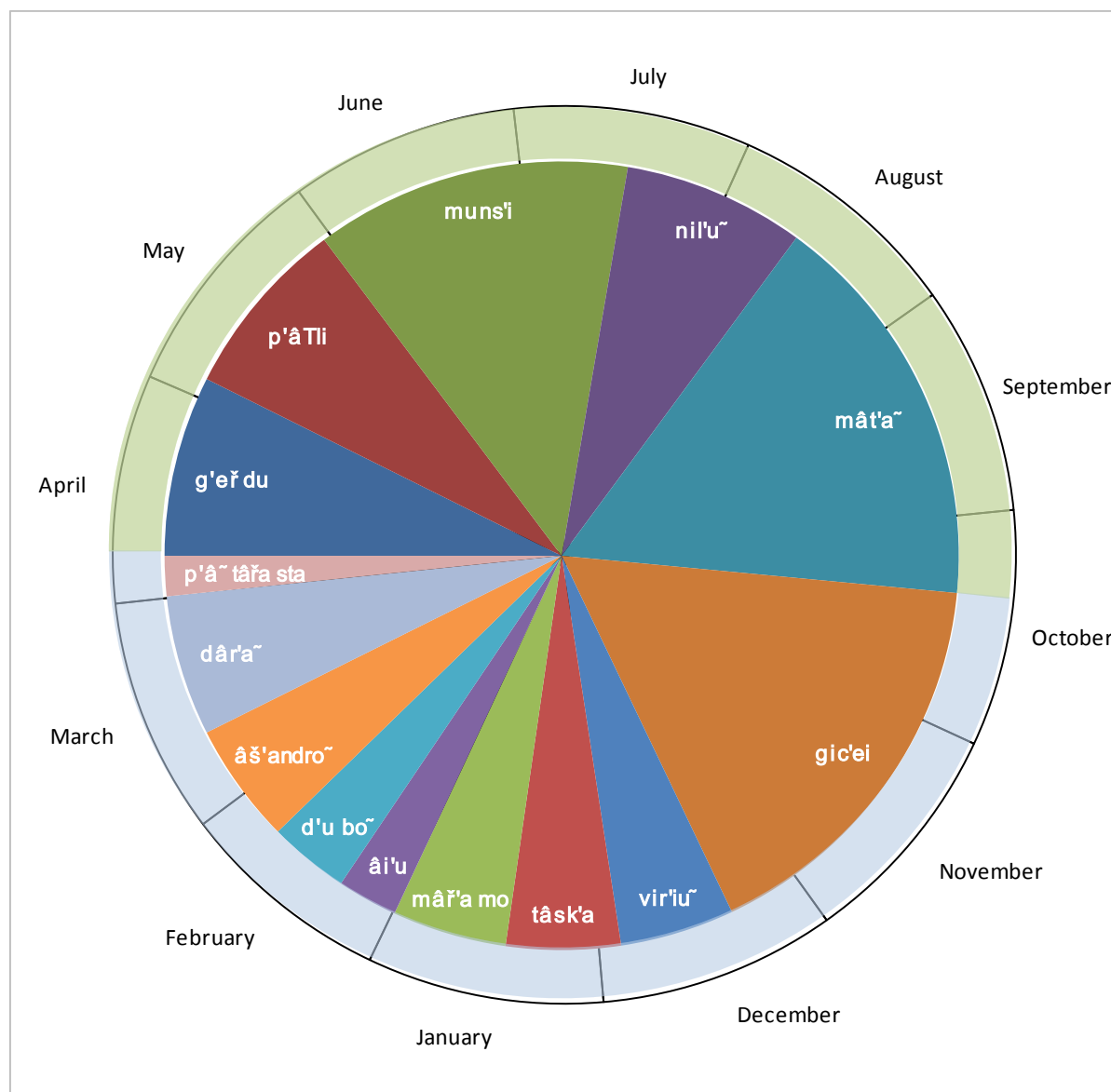


Figure 2. Kom Nuristâni Traditional Calendar, Showing Names of Months in White and Alignment with the Gregorian Calendar on 18 March 1969 (after Strand 1999).

Appendix 2 – Survey Forms

1 English

1.1 Village-Level

Nuristân 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: _____

Sub-Village Oak-Forest Locations and Distances:_____

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

Names of Clans in Sub-Village:

Oak Forest: 5-Yr Evaluation:

Irrigation Water: 5-Yr Evaluation:

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: _____

[form truncated]

1.3 Household-Level

Nuristân Resource-Users Survey Household-Level Survey Form

No: _____ Survey Date: _____ Surveyor's Name: _____ Neighborhood: _____
 District Name: _____

Main-Village Name (Pashto): _____ Main-Village Name (Local): _____
 Sub-Village Name (Pashto): _____ Sub-Village Name (Local): _____

House No. on Sketch Map: _____ Householder's Name: _____ Father's Name: _____ Gender: _____
 (M/F): _____

Householder's Maximal Clan: _____ Sub-Clan: _____ Mother's Clan: _____

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

Age and Relation of each Male to You:	Age and Relation of each Female to You:
Male 1: _____	Female 1: _____
Male 2: _____	Female 2: _____
Male 3: _____	Female 3: _____
Male 4: _____	Female 4: _____
Male 5: _____	Female 5: _____
Male 6: _____	Female 6: _____
Male 7: _____	Female 7: _____
Male 8: _____	Female 8: _____
Male 9: _____	Female 9: _____
Male 10: _____	Female 10: _____

Male 11: _____

Male 12: _____

Male 13: _____

Male 14: _____

Male 15: _____

Male 16: _____

Male 17: _____

Male 18: _____

Female 11:

Female 12:

Female 13:

Female 14:

Female 15:

Female 16:

Female 17:

Female 18:

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 Fertilizer:_____

Fertilizer:

Field 3 Location:_____

Distance:_____

Seed Capacity:_____

Crops Planted:

Field 3 No. of Days Irrigated:_____

No. of Nights Irrigated:_____

Amount of Fertilizer Used:_____

Kg Commercial

Fertilizer:

No:_____ Survey Date:_____

Surveyor's Name:_____

Neighborhood and House No.:

Field 4 Location:_____

Distance:_____

Seed Capacity:_____

Crops Planted:

Field 4 No. of Days Irrigated:_____

No. of Nights Irrigated:_____

Amount of Fertilizer Used:_____

Kg Commercial

Fertilizer:

Household-Level Survey Form

No:_____ Survey Date:_____

Surveyor's Name:_____

Neighborhood and House No.:

Field 5 Location:_____

Distance:_____

Seed Capacity:_____

Crops Planted:

Field 5 No. of Days Irrigated:_____

No. of Nights Irrigated:_____

Amount of Fertilizer Used:_____

Kg Commercial

Fertilizer:

Field 6 Location:_____

Distance:_____

Seed Capacity:_____

Crops Planted:

Field 6 No. of Days Irrigated:_____

No. of Nights Irrigated:_____

Amount of Fertilizer Used:_____

Kg Commercial

Fertilizer:

Field 7 Location:_____

Distance:_____

Seed Capacity:_____

Crops Planted:

Field 7 No. of Days Irrigated:_____

No. of Nights Irrigated:_____

Amount of Fertilizer Used:_____

Kg Commercial

Fertilizer:

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:

No. Trees Cut for Building: _____ No. Trees Cut for Sale: _____ Household Income from Contract Timber Revenue: _____

Firewood:

Yearly Firewood Usage: _____ No. Cords (*kshtru*) Hollyoak: _____ No. Cords (*kshtru*) Conifer Wood: _____

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

Household-Level Survey Form

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

5. Water Resource:

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

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:

Dia at breast height (inch)	Number of trees of different species								
	Species	Species	Species	Species	Species	Species	Species	Species	Species
8									
10									
12									
14									
16									
18									
20									
22									
24									
26									
28									
30									
32									
34									
36									

38									
40									
42									
44									
46									
48									
50									
52									
54									
56									
58									
60									
62									
64									
above									

Plot No.:

Species:

Diameter at breast height (inch)	Number of trees
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	
16.	
17.	
18.	
19.	
20.	
21.	
22.	

23.	
24.	
25.	
26.	
27.	
28.	
29.	
30.	
31.	
32.	
33.	
34.	
35.	
36.	
37.	
38.	
39.	
40.	
41.	
42.	
43.	
44.	
45.	
46.	
47.	
48.	
49.	
50.	

Data Sheet
Land Cover and Regeneration 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:

Cover type	Land cover in percent (%)			Major species
	Less than 30	30-60	Above 60	
Grasses				
Shrubs				
Trees				

Regeneration Status

Count number of seedlings in a circle of 5 meter radius.

Seedling size (feet)	Number of seedlings							Total
	Species	Species	Species	Species	Species	Species	Species	
Below 1								
1-3								
3-5								
Total								

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
Nuristân 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:

Section	Velocity			Area			Flow (m ³ /sec)	Flow (Cusec)
	Distance (m)	Time (Sec)	m/sec	Width (m)	Depth (m)	m ²		
1								
2								
3								
Total								

Data Sheet
Spring Survey
Nuristân 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:

S. No.	Time (Sec)	Volume (Liters)	Liters/sec	Cusec
1				
2				
3				
Average				

2 Pashto

2.1 Village-Level

د قريې د سروې
فېل ۱ مه

د نورستان د منابعو د استعمالونکو سروې
د کلي د سطحې يا لېول د سروې فورمه

د مشاور يا _____ د سروې کونکي نوم : _____ د سروې نېټه : _____ نمبر : _____
 د مشاور يا همکار گاونډيتوب: _____ همکار نوم : _____
 د ولسوالي نوم : _____
 د اصلي کلي نوم (په محلي ژبه) : _____ د اصلي کلي نوم (پښتو): _____
 د فرعي کلي عرض البلد : _____ د فرعي کلي نوم (پښتو): _____
 د فرعي کلي طول البلد : _____ د فرعي کلي نوم په محلي ژبه : _____
 د فرعي کلي د دوبي د څړ ځايونو نومونه او فاصلي : _____ د اندازې فاصلي او کيفيت د _____
 د فرعي کلي د دوبي د څړ ځايي: پنځه کلنه ارزيايي : _____
 د څړ ځايي: پنځه کلنه ارزيايي: _____
 د فرعي کلي د ژمي د سيمو نومونه او فاصلي : _____ د ژمي د سيمو: پنځه کلنه ارزيايي: _____
 د فرعي کلي د زراعتي ساحې د موقعيت نومونه او فاصلي : _____ د ځمکې پنځه کلنه ارزيايي : _____
 د فرعي کلي د ستن پانو ځنگلونو موقعيتونه او فاصلي : _____ د ستن پانو ځنگلونو پنځه کلنه ارزيايي: _____
 د فرعي کلي د څير يو د ځنگلونو موقعيتونه او فاصلي: _____ د څيري د ځنگلونو پنځه کلنه ارزيايي: _____

د اوبه خور د اوبو پنځه کلنه	د فرعي کلي د اوبه خور د منابعو موقعیتونه او فاصلي : ارزيابي:
	په فرعي کلي کې د قامونو نومونه :

انفرادي سروې
فهرمهد نورستان د منابعو د استعمال سروې
د کورنۍ په اساس د سروې کولو فورمه

نمبر _____ د سروې نېټه: _____ د سروې کونکي نوم _____
 ګاونډیتوب: _____
 دولسو والی نوم: _____
 د عمومي قريي نوم (پښتو): _____ د عمومي قريي نوم (محلې)
 ژبه: _____
 د کلي نوم (پښتو) _____ د کلي نوم (محلې)
 ژبه: _____
 د کورنۍ نومبر په نقشه کې: _____ د کورنۍ دغړي نوم: _____
 د پلار نوم: _____ جنس (نارینه، ښځینه) _____ د کورنۍ دغړي لوي مورني
 قوم: _____ فرعي قوم: _____
 قوم: _____
 د ټولونارینه و تعداد: _____ د ټولو ښځینه و تعداد: _____ د هلکانو تعداد: _____
 د ماشومانو جینکو تعداد: _____ د میندو تعداد: _____
 ستاسې د هر نارینه خپلوان عمر: _____ ستاسې د هر ښځینه خپلوان عمر: _____
 1. نارینه: _____
 ښځینه: _____
 2. نارینه: _____
 ښځینه: _____
 3. نارینه: _____
 ښځینه: _____
 4. نارینه: _____
 ښځینه: _____
 5. نارینه: _____
 ښځینه: _____

6. نارینه :
 ښځينه :
 7. نارینه :
 ښځينه :
 8. نارینه :
 ښځينه :
 9. نارینه :
 ښځينه :
 10. نارینه :
 ښځينه :
 11. نارینه :
 ښځينه :

دکورنی په اساس دسروي کولو فورمه

نمبر _____ سروي نيټه : _____ دسروي کونکي نوم _____
 گاونډيتوب : _____
 دمالدارۍ څخه حاصلات : _____
 په اوړي کې څړځايونو ته درمي دخوشي کولو نوبت : (دهر بنديز وخت او دبنديزدوخت ترمنځ مسافه وښيي

 په ژمي کې څړځايونو ته درمي دخوشي کولو نوبت : (دهر بنديز وخت او دبنديزدوخت ترمنځ مسافه وښيي _____ -

د نارینه و تعداد کوم چې په اوږي کې دنورو نارینه و سره یوځای کارکوي: _____ درمي تعداد په باندې کې (shâl,sâl, pshol): _____ داوړي درمي تعداد (machâl, moshol) _____

د بزو او پسونو تعداد: _____ د شیدو ورکونکو بزو تعداد: _____ درمي تعداد: _____ د شیدو ورکونکو غواگانو تعداد: _____ دنورو څارویو شمیر: _____

په دي کال کې د کوچ او پنیرو حاصل: _____ غوړي: _____ مستي: _____ په تیرو دري کلونو کې دورځني تولیدتوپیر: _____

د حیواني سري تولید او دهغي استعمال (د سري په ډول: _____ (کیلو گرام) د سوخت لپاره: _____ (کیلو گرام) حیواني تغذیه: _____

د علوفوي نباتاتو کرل شوي اندازه ((رشقه) _____ د تولید اندازه د علفچر څخه لاسته راغلي اندازه عاید _____ افغاني د څارویو روغتیا: _____

د څارویوود علاج تعداد په کال کې _____ مجموعي مصارف _____ اساسي ناروغي گاني _____

د څارویو واکسین کولو تعداد په کال کې _____ مجموعي مصارف _____ د واکسین ډول _____

د کورنۍ په اساس د سروی کولو فورمه

نمبر _____ سروی نیټه: _____ د سروی کونکي نوم _____

ګاونډیتوب: _____

زراعتي تولیدات: _____

د دي کال تولید (کیلوگرام): غنم _____ جوار _____ اوبشي _____ پلي افغاني _____

لرونکي فصلونه _____ عاید _____

په	تيرو	دري	کلونو	کې	په	حاصلاتو	کې	بدلون
د تولید شوي فصل استعمال: په خپله يې مصرف کوي _____ % مارکيټ کې يې پلوري _____ %								
ایادخپل ځان لپاره يې کفایت کوي؟ _____								
د جایداد یا زراعتي ځمکې اندازه: ټوله اندازه _____ جریبه د پټیو تعداد: _____ خپله ځمکه يې _____ جریبه اجاره ځمکه _____ جریبه								
کرڼه: قلبه کول، ریبډ او دهغي انتقالول: په لاس سره _____ په وسایلو (سامان آلات) _____ په حیواناتو _____								
دهغه کسانو تعداد کوم چې په اوړي کې ددوي مالونه په مزدوری یا حشر سره ټولوي: دگروپونو تعداد _____ دنارینه و تعداد په هرگروپ کې: _____								
په هره کورنۍ کې دهغه ښځینه و تعداد کوم چې په اوړي کې په گروپي شکل سره زراعتي کارونه کوي: دگروپونو تعداد _____ دښځینه و تعداد په هرگروپ کې _____								
دلومړۍ ساحي موقیعت: _____ فاصله (M) _____ دتخم اندازه (Kg) _____ کرل شوي نباتات _____								
دلومړۍ ساحي داوبه خور دورځو شمیر _____ داوبه خور دښو شمیر _____ دحیواني سري د استعمال اندازه (Kg) _____ د کیمیاوي سري د استعمال اندازه (Kg) _____								
ددوهمي ساحي موقیعت: _____ فاصله (M) _____ دتخم اندازه (Kg) _____ کرل شوي نباتات _____								
ددوهمي ساحي داوبه خور دورځو شمیر _____ داوبه خور دښو شمیر _____ دحیواني سري د استعمال اندازه (Kg) _____ د کیمیاوي سري د استعمال اندازه (Kg) _____								
ددريمي ساحي موقیعت: _____ فاصله (M) _____ دتخم اندازه (Kg) _____ کرل شوي نباتات _____ ددريمي ساحي داوبه خور دورځو شمیر _____ داوبه خور دښو شمیر _____ دحیواني سري د استعمال اندازه (Kg) _____ د کیمیاوي سري د استعمال اندازه (Kg) _____								
دڅلورمي ساحي موقیعت: _____ فاصله (M) _____ دتخم اندازه (Kg) _____ کرل شوي نباتات _____ دڅلورمي ساحي داوبه خور دورځو شمیر _____ داوبه خور دښو شمیر _____ دحیواني سري د استعمال اندازه (Kg) _____ د کیمیاوي سري د استعمال اندازه (Kg) _____								
دپنځمي ساحي موقیعت: _____ فاصله (M) _____ دتخم اندازه (Kg) _____ کرل								

شوي نباتات _____ دپنځمي ساحي داوبه خور دورځو شمير _____ داوبه
 خور دښو شمير _____ دحيواني سري داستعمال اندازه (Kg) _____ د کيمياوي سري د استعمال اندازه په
 (Kg) _____
 دښپرمي ساحي موقيعت : _____ فاصله (M) _____ دتخم اندازه (Kg) _____ کرل
 شوي نباتات _____ دښپرمي ساحي داوبه خور دورځو شمير _____ داوبه
 خور دښو شمير _____ دحيواني سري داستعمال اندازه (Kg) _____ د کيمياوي سري د استعمال اندازه په
 (Kg) _____

دکورني په اساس دسروي کولو فورمه

کرنيز محصولات:

د شخصي ونو تعداد: مجموعه _____ چارمغز: _____ زردالو: _____ توتان: _____
 انگور: _____ مڼي: _____ نور: _____
 د تير کال توليد (Kg) : چارمغز: _____ زردالو: _____ توتان: _____ انگور: _____ مڼي: _____
 نور: _____
 د ميوه دارو ونو د کرلو مقاصد: مارکيت د ☐ خپل ځان ☐ د مصرف ☐ په خاطر ☐ شوقانه (باغ)
 تجارتي ☐ عايدپه ☐ خاطر ☐
دځنگل منابع:

چار تراش:

د کورونو د تعمير په خاطر د پري شوو ونو تعداد: _____ د خرڅ په خاطر د پري شوو ونو تعداد: _____
 دچارتراشوڅخه دکورني د غري عايد: _____
 د اور سوزني لرگي :

د اور سوزوني د لرگو کلني استعمال : نمبر . څيري: _____
 نمبر ، غوتي کوونکي وني (چارمغز) _____
 متبادل پوښتنه : د لرگيو د ورځني استعمال اندازه په کيلوگرام سره : په اوري کي
 په ژمي کي _____
د اوبو منابع :

د څښلو د ☐ اوبو منابع : ☐ سيند ☐ چينه ☐ نور
 د کور څخه د ☐ منابع فاصله ☐ متر
 د ورځني اوبو د استعمال اندازه ☐ ليتر

د اوبه خور ☐ د ☐ ابو منابع : سیند ، چینه ، نور ،
 معدني کاني:
 آبادکونري غري دغمودکانو په کان کي کار کوي ؟ د _____
 کان څخه د وگري لاسته راغلي عايد : _____
 د کان موقعيت : _____ د کلي څخه د کان فاصله :
 د کان ډول : _____ د کان کلي توليد : _____
 د منابعو د ملکيت حقوق:
 د ايمي ځنگلونه: ☐ د ځنگلونو ملکيت روښانه کړي
 ټولني د حقوقو سهم _____ د ټولني د حقوقو سهم ☐
 څر ځاي _____ د څر ځاي ملکيت روښانه کړي _____
 د ټولني د حقوقو سهم _____

دکورنۍ په اساس دسروي کولو فورمه

☐ کرنيزي ځمکي
 د کرنيزي ځمکي ملکيت روښانه کړي _____
 د ټولني د حقوقو سهم _____
 استخدام:
 د کورني د اشخاصو تعداد چي د مزرعي څخه بهر کار کوي : سري : تعداد _____ د ورځو
 تعداد _____ ساعته / ورځ
 ښځي : تعداد _____ د ورځو تعداد _____ ساعته / ورځ
 بخشونه يا سکتورونه :
 دولت د ورځو تعداد _____ مياشت کي عايد _____ عايد _____
 محلي او بهرني موسيسي د ورځو تعداد _____ عايد _____
 کوم بخش _____
 شخصي کار د ورځو تعداد _____ مياشت کي عايد _____ کوم بخش (لاسي صنايع ،
 معدن) _____
 خصوصي دورځو تعداد _____ مياشت کي عايد _____ کوم بخش _____

2.3 Resources

معلومات پايه
د چينو سروبي
نورستان ولايت ، افغانستن

پلاټ نمبر : W / /

د معلوماتو د راټولولو نيټه : _____
د معلوماتو د راټولونکي نوم : _____
موقعيت يا نږدې کلي : _____
د ولسوالي نوم : _____
مرستيال (catchment) نوم : _____

د چيني ډول _____ موسمي _____ تل تر تله (هميشني) _____

د اندازه گيري میتود _____ حجمي _____ د مايعاتو په سر ولاړ اجسام _____

استعمال _____ د خېلو _____ د حيواناتو د استفادي _____ اوبه خور _____

د اوبو لاسته راوړلو میتود : د لاس په ذريعه د اوبو را ويستل _____ پايپونه _____

په کلي کې د چينو تعداد :

مسلله شميره	وخت (Sec)	حجم (ليتر)	ليتر/sec	کيوسک (Cusec)
1				
2				
3				
او سط				

معلومات پانځه
د سیندونو / ویالو سروې
نورستان ولایت ، افغانستان

پلاټ نمبر : W /

د معلوماتو د راټولولو نیټه : _____

د معلوماتو د راټولونکي نوم : _____

موقعیت یا نږدې کلي : _____

د ولسوالي نوم : _____

د مرستیال (catchment) نوم : _____

د سیند ډول : _____ موسمي _____ تل تر تله (همیشني) _____

د اندازه کیري میتود _____ حجمي _____ د مایعاتو په سر ولاړ اجسام

استعمال _____ د خپلو _____ د حیواناتو د استفادي _____ اوبه خور _____

د اوبو د نموني نمبر :

بخش	سرعت		ساحه			بهیدنه M ³ /sec	بهیدنه
	فاصله (m)	وخت (Sec)	m/sec	پراخوالي (m)	ژوروالي (m)	M ²	
1							
2							
3							
مجموعه							

معلومات پاڼه

د ځمکي د پوښښ او دوباره احيا (Regeneration) سروبي
نورستان ولايت، افغانستان

پلاټ نمبر : F /

د معلوماتو د راټولولو نیټه : _____

د معلوماتو د راټولونکي نوم : _____

موقعیت یا نږدې کلي : _____

د ولسوالي نوم : _____

مسیر (شمال یا جنوب) _____

میلان (په فیصدي سره) _____

د بحر د سطحې څخه لوړوالي : _____

د پوشېښ ډول		په فیصدي سره د ځمکې پوشېښ (%)		ستري انواع
		د 30 څخه لږ	60 -- 30	د 60 څخه زیات
واښه				
بوټي				
وني				

د دوباره احیا وضع :

د پنځه مترو په دایره کې د نیالگیو شمیرل :

د نیالگیو دانواعوتعداد						د نیالگیو قد په فټ سره
نوع	نوع	نوع	نوع	نوع	نوع	
						د یو فټ نه کم

						1—3
						3—5
						مجموعه

معلومات پاڼه (Sheet)
د ځنگلونو د منابعو سروبي
نورستان ولايت ، افغانستان

پلاټ نمبر : F / /

د معلوماتو د راټولولو نېټه :

د معلوماتو د راټولونکي نوم :

موقعیت یا نږدې کلي :

د ولسوالي نوم :

مسیر (شمال یا جنوب)

میلان (په فیصدي سره)

د بحر د سطحې څخه لوړوالي :

د مختلفو انواعو د ونو تعداد									د سینې په لوړوالي قطر (اینچ)	
انواع	انواع	انواع	انواع	انواع	انواع	انواع	انواع	انواع	8	
									10	
									12	
									14	
									16	
									18	
									20	
									22	
									24	
									26	
									28	
									30	
									32	
									34	
									36	

										38
										40
										42
										44
										46
										48
										50
										52
										54
										56
										58

د مختلفو انواعو د ونو تعداد									د سيني په لوروالي قطر (اينچ)	
انواع	انواع	انواع	انواع	انواع	انواع	انواع	انواع	انواع		
										60
										62
										64
										66
										68
										70
										72
										74
										76
										78
										80
										82
										84
										86
										88
										09
										92
										94
										96
										98
										100
										102
										104
										106
										108
										110
										112

										114
										116
										118
										120
										122
										124
										126
										128
										لدي پورته

پلاټ نمبر :
انواع :

د ونو تعداد	د سینې په لوروالي قطر (اینچ)
	8
	10
	12
	14
	16
	18
	20
	22
	24
	26
	28
	30
	32
	34
	36
	38
	40
	42
	44
	46
	48
	50
	52
	54
	56

	58
	60
	62
	64
	66
	68
	70
	72
	74
	76
	78
	80
	82
	84
	86
	88

پلاټ نمبر :
انواع :

د ونو تعداد	د سيني په لوروالي قطر (اينچ)
	90
	92
	94
	96
	98
	100
	102
	104

	106
	108
	110
	112
	114
	116
	118
	120
	122
	124
	126
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	132
	134
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د څړ ځايونو د منابعو سروبي

پلاټ نمبر R / /

د معلوماتو د راټولولو نيټه :

د معلوماتو د راټولونکي نوم :

موقعيت يا نږدې کلي :

د ولسوالي نوم :

مسير (شمال يا جنوب)

ميلان (په فيصدي سره)

د بحر د سطحي څخه لوړوالي :

پوښل شوي ځمکه په يو متر مربع کي (په فيصدي) :

واښه :

Forbs :

Browse :

شاره ځمکه :

گټي (تيري)

د حيواناتو د غذا وزن :

واښه

Forbs

Browse

د څړ ځايي وضع (نښاني کړي)

متوسطه :

ښه :

ډير ښه :

ډيره کمه تخريب شوي :

ډيره زياته تخريب شوي :

د ليدو وړ تخريب (په ښه کړي)

د ځمکې ښویدنه : _____
د خاوري تخریب : _____
د نباتي پوښ کموالي : _____
غیر مطلوب انواع : _____
غیر مطلوب انواع (نومونه) 1 2 3

د ګاونډیتوب سروی
فهرمه

دنورستان دمنابعو د استعمالونکو سروی

دتولنی (وګړو) دسطحي یا لیول د سروی فورمه

نمبر: _____ د سروی نیټه: _____ د سروی کونکي نوم: _____ د مشاور یا
همکار نوم: _____
د ولسوالي نوم: _____ د مشاور یا همکار ګاونډیتوب: _____

د اصلي کلي نوم (پښتو): _____ د اصلي کلي نوم (په محلي ژبه): _____
د فرعي کلي نوم (پښتو): _____ د فرعي کلي نوم (په محلي ژبه): _____

د تولنی د ټولو کورونو یوه خیالی نقشه ترسیم کړی
د هغو سړو ګروپونه چې د اوړي په دوران کې په ګډه
تعداد: _____
نومونه: _____ ، _____ ، _____ ، _____

د هغو ښځو ګروپونه چې د اوړي په دوران کې په ګډه په مزرعه کې کار کوي (پلمالي) تعداد: _____
نومونه: _____ ، _____ ، _____
د هغه ځایونو نومونه چې زراعتي ځمکه موجوده وي:
د تولنی څخه د ځمکې فاصله متر _____ په تیرو دریو کلونو کې په فاصله کې تغیر _____
د څښلو د اوبو د منابعو نومونه _____

د تولنی څخه د څښلو د اوبو د منابعو د فاصله متر _____ په تیرو دریو کلونو کې په فاصله کې
تغیر _____
د هغو ځایونو نومونه چې د ستن پانو ځنګلونه پکې وجود لري اودوي تري د سوزولو خشاک لاسته راوړي: _____

د تولنی څخه د ستن پانې د ځنګلونو د منابعو فاصله متر _____ په تیرو دریو کلونو کې په فاصله کې
تغیر _____
د هغو ځایونو نومونه چې د څیریو ځنګلونه پکې وجود لري اودوي تري د سوزولو خشاک لاسته راوړي: _____

د هغو ځایونو نومونه چې دوي تري د سوزولو خشاک لاسته راوړي: _____
دنورو هغو ځایونو نومونه چې دوي تري د سوزولو خشاک لاسته راوړي: _____

د تولنی څخه د منابعو فاصله متر _____ په تیرو دریو کلونو کې په فاصله کې تغیر _____

د هغوځايونو نومونه او ډولونه چې دوي تري د حيواناتو خوراکه لاسته راوړي:

د ټولنې څخه د حيواناتو خوراکي د منابعو فاصله متر په تيرو دريو کلونو کې په فاصله کې تغير

دټولنې دسطحي يا ليوېل د سروې فورمه

نمبر: _____ د سروې نيټه: _____ د سروې کونکي نوم: _____ د مشاور يا همکار نوم: _____
 ايا د ټولنې خلک د تجارتي منابعو په استثمار کې ښکېل دي (چارتراش ، کانونه ، وړل را وړل يا ترانسپورتيشن) ؟
 څومره خلک په تجارتي چارتراشو کې ښکېل دي؟ تعداد. _____ چيرته؟ _____
 څومره چارتراش په کال کې پري کيږي او پلورل کيږي؟ _____ چيرته پلورل کيږي؟ _____
 څومره خلک په تجارتي کانونو کې ښکېل دي؟ تعداد. _____ چيرته؟ _____
 چيرته پلورل کيږي؟ _____
 څومره خلک په تجارتي ترانسپورتيشن کې ښکېل دي؟ تعداد. _____ چيرته؟ _____
 څومره خلک د نورو منابعو په استثمار کې ښکېل دي؟ تعداد. _____ چيرته؟ _____

د ټولنې د وگړو د سروې فورمه دفرعي کلي د مشرڅخه بايد پوښتنه وشي

دکور نمبرپه نقشه کې	نوم	لوي قام	فرعي قام	نارینه تعداد	ښځينه و تعداد	د نارينه ماشومانو تعداد	دښځينه ماشومانو تعداد	ددوبي درمي ځاي	دژمي درمي ځاي
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[illegible]

د ټولنې د وگړو د سروې فورمه
دفرعي کلي دمشرڅخه بايد پوښتنه وشي

[illegible]

[illegible]

د ټولنې د وگړو د سروې فورمه
دفرعي کلي دمشرخه بايد پوښتنه وشي

[illegible]

