



# **Water Use Management Plan (WUMP)**

Plan for Sustainable Management and Utilisation of  
Water Resources in Shishikoh Valley, District Chitral



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Government of Khyber Pakhtunkhwa, Pakistan and Intercooperation (IC) Pakistan

WUMP: Water Use Management Plan (WUMP) is prepared by Water for Livelihoods Project, Intercooperation (W4L-IC) with support from Swiss Agency for Development and Cooperation



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### Contributors:

Ali Ahmed (SDO Irrigation Division, Chitral)  
Raja Javed (District Officer On-Farm Water Management)  
Mohammad Asif (Program Assistant OFWM)  
Asif Iqbal, Assistant to AC Drosh  
Water User Association/Group, Shishikoh, Chitral  
Syed Hussain Mustafa, Coordinator W4L  
Tawheed Gul, DTL-W4L  
Khan Muhammad, Senior Engineer W4L  
Mohammad Younis (Consultant Analyst)

### Peer Review:

District Coordination Committee, Dr. Arjumand Nizami, Munawar Khan Khattak

### Field survey and other inputs from:

CIDO organization, Chitral  
Water for Livelihoods North Region Team  
AKRSP, Shishikoh & Madaklasht Area Development Programme

### Editor:

Fatima Daud Kamal

### Photos:

Ghayas Ahmed Engineer AKRSP at Madaklasht,  
Mohammad Younis, Engineer SRSP Arundu & Shishikoh Chitral,  
Shujaat Ali, Manager M&E CIADP  
Muhammad Abbas Qazi, Intercooperation Pakistan

### Design:

Salman Beenish

### Printed by:

Pangraphics Islamabad (Private) Limited, Islamabad

### Available from:

On-Farm Water Management Chitral, Soil Conservation Department Chitral, Public Health Engineering Department Chitral, Irrigation Department Chitral, Deputy Commissioner Office Chitral, Intercooperation Regional office Chitral, Intercooperation Liaison office H.1950, Hasan street, Afzalabad, Old Bara Road, University Town, Peshawar  
Tel: +92 (91) 5480188, +92 (91) 5702450  
Web: [www.intercooperation.org.pk](http://www.intercooperation.org.pk)

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## Acronyms

ADP	Annual Development Plan
AKHSP	Aga Khan Health Services Programme
AKPBS	Aga Khan Planning & Building Services
AKRSP	Aga Khan Rural Support Programme
BHU	Basic Health Unit
CADP	Chitral Area Development Programme
CIDO	Chitral Innovative Development Organization
CIADP	Chitral Intergrated Area Development Programme
CBO	Community Based Organizations
DRR	Disaster Risk Reduction
DDC	District Development Committee
DWSS	Drinking Water Supply Scheme
FPW	Flood Protection Works
GLAs	Government Line Agencies
HHs	Households
ICIMOD	International Center of Integrated Mountainous Development
IDV	Integrated Development Vision
IWRM	Integrated Water Resource Management
JFMCs	Joint Forest Management Committees
KPK	Khyber Pakhtunkhwa
LP	Livelihood Programme
LPH	Livelihood Programme for Hindukush
MHP	Micro Hydro Power
NFE	Non Formal Education
NGOs	Non-Governmental Organizations
PHED	Public Health Engineering Department
PPAF	Pakistan Poverty Alleviation Fund
SDC	Swiss Agency for Development & Cooperation
SMADP	Shishikoh and Madaklasht Area Development Program
SRSP	Sarhad Rural Support Program
THQ	Tehsil Headquarters Hospital
UC	Union Council
VCs	Village Councils
VO	Village Organization
W4L	Water for Livelihoods Project
WO	Women Organization
WUMP	Water Use Management Plan
WUAs	Water User Associations
WUGs	Water Use Groups

# Foreword

The preparation of Water Use Management Plan (WUMP) at a local level around a single agenda, water, is an important instrument of good governance. This well thought-out plan was prepared in 2015 by Water for Livelihoods Project after a series of intense discussions on water resources, issues, potentials and priorities. On top of this, consultations were carried out with respective District Administration, Government Line Agencies working in Water Sector and communities as important stakeholders.

The Plan provides vision for addressing the water sector issues to ensure equitable access to water for drinking and production purposes apart from catering to water related disasters influencing the mentioned drinking and irrigation objectives. The main theme of WUMP remains to be the community managed initiatives, improving liaison with Government Line Agencies, cost sharing, sharing of responsibilities especially of operation and maintenance with Water User Groups and enhancing role of Water User Associations in dealing with water sector issues in Tehsil/Valley/UC and thenceforth bridging with GLAs.

The Swiss Agency for Development and Cooperation (SDC) is much appreciated for financing an initiative such as Water for Livelihoods Project implemented by Intercooperation. It has lead to a path of assisting the district government in preparing this plan that will ultimately help in improving delivery of clean drinking water and water for production through optimum use of technology and participation of locals. A high expectation is also placed in all the officers of the relevant government departments and other development actors to consider this plan while planning their financial targets and providing direly needed assistance in the district.

# Executive Summary

This Water Use Management Plan (WUMP) is for Shishikoh Valley of District Chitral. The overall purpose of WUMP is to take inventory of various sources of water available in a particular geographical/administrative area, identify community priority in order to achieve an effective, equitable and efficient use of water resources at local level. The preparation of this WUMP document has been technically and financially supported by Water for Livelihoods Project of Intercooperation Pakistan with financial assistance from Swiss Agency for Development and Cooperation (SDC) and prepared in collaboration with local institutions (Water User Associations/ Water User Groups), district authority (administration), concerned technical departments of the Government of Pakistan, water sector projects and partner NGOs.

This WUMP is founded on Integrated Water Resources Management (IWRM) approach. IWRM is a process, which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems (Global Water Partnership, 2000). The geographical scope of WUMP is in a Union Council in case of District Chitral.

The specific objectives of WUMP are:

- Assess and determine water resource availability, existing uses and requirements.
- Determine water access and equity issues and balance these rights through interactive dialogues.
- Participatory prioritisation and planning of water resource development and multiple uses, considering climate change and disaster risks.
- Promote coordinated water resources development by different stakeholders (communities, government and non-government organisations).
- Promote conservation of water resources in preservation of environment.
- Strengthen local institutional capacity in participation of economically and socially disadvantaged groups.

The WUMP for Shishikoh is fully aligned with Integrated Development Vision (IDS) laid out by the Government of Khyber Pakhtunkhwa to integrate priorities in one framework. The Local Government Act 2013 also provides a regulatory framework for delegating responsibility at local level which is aligned for WUMP implementation.

The WUMP preparation process followed 4 phases and 17-sub steps in close coordination with concerned village communities (WUG/WUA), concerned Government Line Agencies (GLAs) and District authorities to ensure commitment and ownership of WUMP.

The main highlights of Shishikoh WUMP are as following:

## The valley

UC Shishikoh is divided into 37 revenue villages and 4 Village Councils, recently delineated under the Khyber Pakhtunkhwa Local Government Act 2013. Administratively, Drosh is the headquarter where important services such as courts, educational institutes, hospitals are located. The Shishikoh UC comprises of 2588 households, with total population 17580 people (52.49% men & 47.51% women).

## The Main Problem

- Owing to inadequate conveyance and dilapidated condition of drinking water, the infrastructure is exposed to landslides, sediments during rains and untreated waste water. Therefore both water quantity and quality issues persist in reaching users.
- During floods in summer season, the water resources are often temporarily suspended due to disruption in flow. Similarly during winter season water supply pipes which are exposed to cold temperatures, burst in snowbound villages.
- A large portion of water is lost before reaching the fields due to lack of lining of irrigation channels. Civil irrigation channels are mostly unlined and exposed to sliding at critical locations.
- Lack of proper operation & maintenance mechanism including regular financial resources for water schemes (Drinking & Irrigation).
- Shishikoh Valley frequently faces disasters due to flash floods, floods in Shishi River and sometimes drought due to climate change/ variability in the last twenty years.
- Deforestation is causing concerns for active watershed management since Shishikoh is the major source of timber & firewood in Chitral District.
- Land sliding because of heavy rains and steep slopes frequently causes land erosion as well as damages to the existing infrastructure and other livelihoods assets.
- Limited access to potable water, lack of sanitation facilities and open defecation are major health hazards in hygiene promotion.

### The Strategy to address these issues in Shishikoh Valley/UC

- Improved access to potable water (drinking water supplies). This would be possible through tapping new spring sources having potable water quality, improving and rehabilitating existing water supply systems, addition of water storage facilities, extending pipeline networks to un-served population. Safe guarding water services delivery against natural disasters. Additional measures such as construction of washing pads and covering of collection points will also be taken to address women's concerns.
- Improved access to productive use of water (water channels and improvement in existing water course) through lining of water courses, protection of conveyance system against disasters, extension of channels to bring new land under command and introduction of improved on-farm water application techniques.
- In order to ensure the sustainability and participation of water sector services delivery, promote beneficiary involvement in identification & prioritisation of potentials, sharing of scheme costs and pay-for-services culture.
- Disaster risk reduction through DRM including establishment of Community Based Disaster Risk Management (CBDRM). Further structural and non-structural measures will be taken to address the respective water related emergencies in Shishikoh Valley.
- Strengthening water management systems through local institutions (WUA/WUG & JFMC) to ensure effective implementation of WUMP. The local institutions will lobby for their respective village priorities/schemes with local government and other organisations (projects) through building functional linkages.

### Recommendations

- Increase investment in drinking water and irrigation through rehabilitation and improvement of the existing and new arrangements. WUMP should be used as a guiding document for ADP preparation of the respective UC by the Local Government.
- Invest in Watershed Management with involvement from WUAs and Joint Forest Management Committees (JFMCs) as a joint working arrangement with Forest Division Chitral.
- Bridging of WUAs in Shishikoh Valley with registration under Social Welfare Department.
- Under the auspices of District Coordination Committee, prepare WUMP implementation arrangements for the prioritised schemes in Shishikoh UC through WUA, respective GLAs and other partner organisations in water sector to enhance coordination as well as avoid duplication.
- Promote multiple and efficient utilisation of water resources and reduce water related disputes.

### Total estimated investment as per WUMP Shishikoh

S. NO	Head	Estimated cost (Rs. Millions)
1	New Drinking water supply schemes	7.062
2	Improve existing DWSS	18.648
3	Improvement in Irrigation schemes	41.804
4	Construction of Check dams	23.203
5	Flood protection work	51.318
6	Drainage and sanitation	8.849
7	Watershed management	1.794
<b>Grand total</b>		<b>152.678</b>

### The key partners

The following key partners were engaged in Water Use Management plan preparation in Shishikoh UC of district Chitral:

1. District Administration (AC of concerned Tehsil) as a focal person
2. Public Health Engineering Department Chitral
3. Irrigation Department Chitral division
4. On-Farm Water Management Department Chitral
5. Soil Conservation Department Chitral
6. Forest Division, Chitral
7. Aga Khan Rural Support Programme Chitral
8. Sarhad Rural Support Programme in Chitral
9. FOCUS Humanitarian Organisation in Chitral
10. Chitral Innovative Development Organisation (CIDO)
11. Water User Association/ Water User Groups Shishikoh UC
12. Water for Livelihoods Project





# Chapter 1

## 1. Area Profile

### 1.1 Location, Elevation & Administration

The Shishikoh Union Council is a valley stretching along Shishi River. It is located about 40 km short of Chitral city. The valley is surrounded by Hindu Kush Mountain ranges and is connected to Drosh near Shishi Bridge in its western part. Moreover, Dir Kohistan areas are also bordered with the valley in the southern aspect. Due to different mountain passes, it is connected with Golain Chitral and Dogdara District Dir which was used for communication purposes in the past. The Shishikoh Valley lies between 36.00' 32.51" North and 71.36' 4.13' East.

The road length of the Shishikoh Valley is 45km, it is located on rugged and difficult terrain. Average elevation is 7600 feet that varies between 16960 ft at Andawir and 3500 ft at Shishi. The altitudinal variations have marked impacts on cropping pattern and as a result the valley is divided into three cropping zones i.e. double cropping zones are Pursad and Tar. Kalas falls in transitional zone and Madaklasht in the single cropping zone.

UC Shishikoh is divided into 37 revenue villages and four Village Councils; Pursad, Tar, Kalas. Shishikoh and Madaklasht. The Village Councils have recently been delineated under the Khyber Pakhtunkhwa Local Government Act 2013. Administratively, Drosh is the headquarter where important services like THQ, Courts, and colleges are also located. Local people use jeeps for travelling and transport of goods from Shishikoh Valley to Drosh town.

### 1.2 Climatic Conditions

The Climate of UC is hot in summer ranging from warm (at low land) to cool at higher

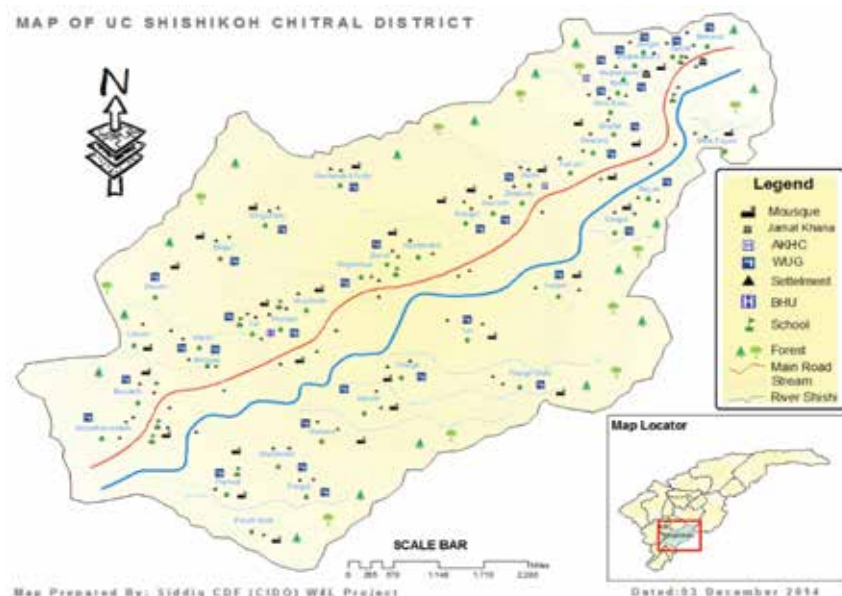


Figure 1: Map of Shishikoh Union Council

elevations. Spring weather is unpredictable with frequent rains and snow falls. Autumn offers mild and pleasant temperatures. During summer maximum temperature reaches up to 40°C and falls below freezing point in winter. The valley receives precipitation in the form of rain and snow where later is dominant in winter season. Moreover occasional rains also occur during summer because of monsoon influence coming in, from Swat. The climatic conditions have remarkable effects on water availability in the UC which is considered as a water resourceful area in Chitral district offering a fair share of vegetative cover.

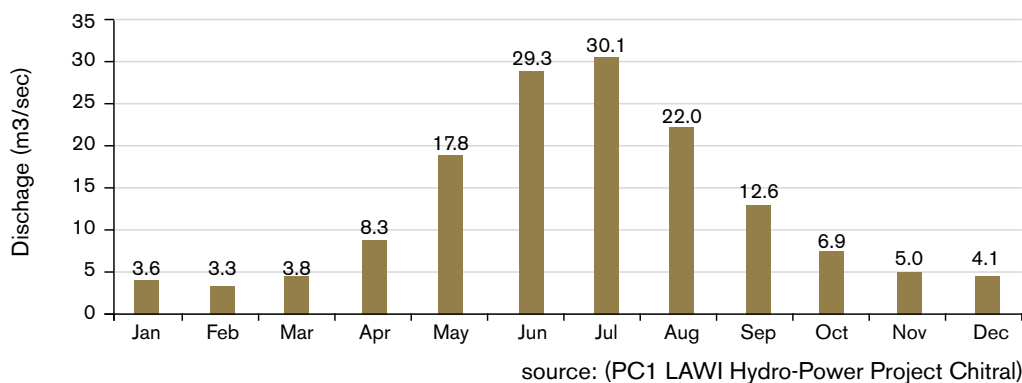
**Table 1: Annual Mean Temperatures at ShishiKoh Valley**

Mean Maximum Temperature (°C)	35
Mean Minimum Temperature (°C)	5

### 1.3 Hydrology

The drainage area of Shishi River is about 394 square km (PC-1 – Lawi Hydropower Project). Several streams drain into the Shishi River and contribute appreciable amount of water. These streams include Domul Gol, Aski Gol, Tangal Gol, Kalas Gol, Kawash Gol, Tingal Gol, Gawouch Gol and Gurin Gol etc. The Shishi River descends from Andawir. Average flow in Shishi River is estimated as 484 cusecs (12.6m<sup>3</sup>/second).

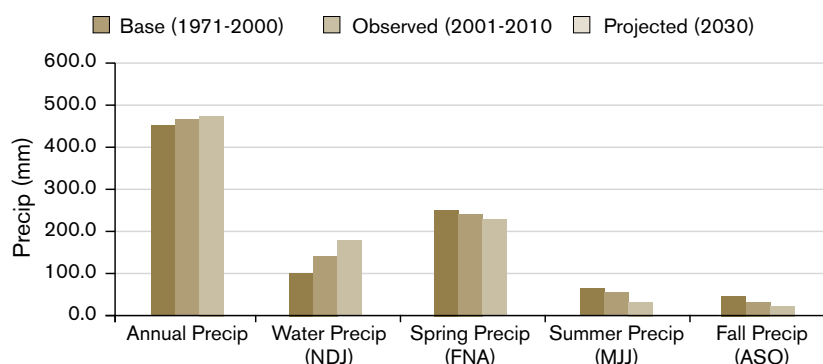
**Figure 2 : Mean Monthly Extended Flows in Shishikoh Valley**



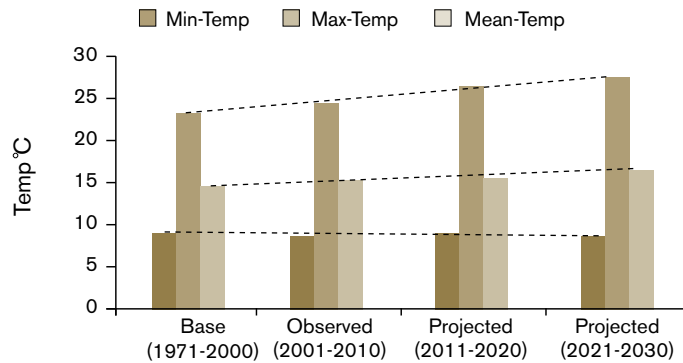
### 1.4 Climate Change Scenario

The climate change variations are more visible in marginal areas and events of climatic change have been observed more frequently. Decadal temperature scenarios for Chitral District revealed that the annual maximum temperatures are at an increasing trend and annual minimum temperatures are at a decreasing trend. On an average the increase in annual mean temperature is about 0.6°C per decade. Moreover annual rainfall in Chitral is showing an increasing trend because of increase in the winter season rainfall (IC, 2013). In Chitral, 80% of households have opted for labour migration due to water hazards induced by climate change (ICIMOD, 2011). In Shishikoh, events of climate change such as flash flood, heavy rains and flash flood variations have increased both in frequency and scale according to community perception confirmed through the WUMP exercise. Over the last 20 years, 11 flood disasters struck UC Shishikoh which was unprecedented in the recent hydrological history. Although, there is no available data on temperature differences in the specific UC but changing scenarios of temperatures, precipitation and cropping zones as observed by communities, are clearly indicating a pattern of change. These changes have negatively impacted local adaptive capacity for natural disasters.

**Figure 3: Chitral Precipitation Scenarios**



**Figure 4: Chitral Decadal Temp Scenarios (Annual)**



### 1.5 Institutional Arrangement and Capacity Building

#### VO/CBOs, Water Users Groups, Water Users Association

Local Institutional Development process was started by Aga Khan Rural Support Program (AKRSP) in the late eighties in District Chitral with the basic aim of forming organisations, promotion of saving and skill enhancement. Moreover, Sarhad Rural Support Program (SRSP) supported the community development process which has also helped in the formation of village based organisations in the whole Union Council. According to data there are 41 village/women (V/WOs) organisations in the UC. Under Water for livelihood (W4L) project, 3 Water User Associations are formed comprising representatives from 34 men and 35 women Water Users Groups (WUGs). These WUGs are representing 2192 households. WUGs/WUAs work around one common interest – water – and ensure that other development potentials open up with interventions on water. The WUMP field teams and WUGs/WUAs jointly contributed in carrying out assessments, prioritisation and preparation of WUMP.

#### District Coordination Committee (DCC)

Along with WUMP preparation in the field, an advisory committee i.e. DCC was formed and notified by the Deputy Commissioner (DC) Chitral. The purpose of the DCC is to steer the WUMP process as well as implementation at district level. The coordination committee is holding meetings bi-annually or when specifically required. The Project keeps close interaction with DCC to keep them updated about project interventions in the district and seeks support for timely provision of services by the concerned actors (PHED, Irrigation Division, OFWM, SCD and Forest Department). The DCC will also ensure ownership for the WUMP at District/Tehsil level.

#### Capacity Building of WUG/WUA and GLAs

In the beginning of Phase II, before initiating the process of WUMP preparation, training was conducted of all stake holders in the district along with partner organisations to conceptualise the IWRM concept and understanding the WUMP preparation in the field. This inspires easy flow of information and previous experiences.







## Chapter 2

### 2. Socio Economic Factors

#### 2.1 Demography

The Shishikoh UC comprises of 2588 households. The population of an area is one of the decisive factors in deciding the extent of facilities that are available and what other facilities are required to be planned for future. The total population of the area is 17580 souls having 9228 men (52.49%) and 8352 women (47.51%). Out of the total population, there are 4863 children and 224 people found above 80 years of age.

**Table 2: Population Distribution**

Village Council	Population	Men	Women	Children	Above 80
Kalas	5422	2934	2488	1468	54
Pursad	4474	2352	2122	1221	31
Tar	3317	1812	1505	855	40
Madaklasht	4367	2130	2237	1319	99
Total	17580	9228	8352	4863	224

Source: ShishiKoh WUMP Database 2014

As per the data base of the Union Council, total housing stock in the UC in the year 2014 is 2588. Out of total, 70% are katcha (non-cemented) while about 30% katcha-pucca (partially cemented) housing. Mud and stone are important materials used in construction of houses. The number and quality of housing conditions are given in the table 3;

**Table 3: Housing Quality**

Village Council	Katcha	Katcha/Pucca
Kalas	569	175
Pursad	579	122
Tar	343	252
Madaklasht	295	253
Total	1786	802

Source: Shishikoh WUMP Database 2014

Shishikoh has an immense ethnic diversity having Khow, Gujurs, Pathans and Persian as different ethnic groups. Khow is the largest ethnic group in the UC. Major spoken languages are Persian, Pashto, Khowar and Dangerik. Persians, having Central Asians origin live in Madaklasht and mostly belong to Ismaili Sect. Khow, Gujur and Pathan follow Sunni Sect of Islam. Distribution of population on the basis of ethnic diversity is shown in the table 4..

**Table 4: Ethnic Distribution HHs wise**

Village Council	Khow(HH)	Gujur(HH)	Pathans(HH)	Persian/ Others(HH)
Kalas	288	331	67	33
Pursad	410	283	8	0
Tar	291	283	46	0
Madaklasht	0	0	0	548
Total	989	897	121	581

Source: ShishiKoh WUMP Database 2014

## 2.2 Education Facilities

Education is an important determinant of development and there are 39 government schools, 1 private school, 13 madrassahs and 8 non formal educations (NFEs). Distribution of educational institutions is appended in table 5.

**Table 5: Number of Education Institutions**

Village Council	Primary		Middle		High		Madrassah		NFE	
	Girls	Boys	Girls	Boys	Girls	Boys	Boys	Girls	Boys	Girls
Kalas	1	4	0	1	0	1	3	2	2	0
Pursad	1	3	0	0	0	1	4	0	3	3
Tar	3	6	1	5	2	2	2	2	0	0
Madaklasht	3	3	0	1	1	1	0	0	0	0
Total	8	16	1	7	3	5	9	4	5	3

Source: ShishiKoh WUMP Database 2014

Total number of enrolled students in educational institutions is 3936 which accounts for 22% of the total population. Moreover 59% of total enrolled students are boys and 41% are girls. Overall distribution of students in different educational institutions is shown in table 6.

**Table 6: Number of Enrolled Students**

Village Council	Government		Private		Madrassah		NFE	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Kalas	403	280	0	0	301	226	22	17
Pursad	96	73	25	15	285	250	30	70
Tar	303	110	0	0	112	83	0	0
Madaklasht	533	227	238	237	0	0	0	0
Total	1335	690	263	252	698	559	52	87

Source: ShishikohWUMP Database 2014

Literacy rate in Shishikoh (40.5%) is comparatively lesser than the overall district (65%) and only 37% women 46% men are literate in the area. Distribution of educated men and women is tabulated in table 7.

**Table 7: Number of Educated Men and Women**

Village Council	Women				Men			
	Primary	Middle	Metric	Above Metric	Primary	Middle	Metric	Above Metric
Kalas	288	152	81	22	352	261	233	107
Pursad	350	149	84	20	370	273	213	97
Tar	306	150	70	29	414	270	200	84
Madaklasht	625	469	213	100	632	449	223	119
Total	1569	920	448	171	1768	1253	869	407

Source: Shishikoh WUMP Database 2014



## 2.3 Access to other infrastructures

The level of prosperity of any area can also be judged from the utility services available. Shishikoh is devoid of important services like banks, agricultural services and electricity. Available services are post offices in three VCs, veterinary service centers in 2 VCs and police station in one VC. Moreover basic dispensaries are providing health facilities in three VCs and Basic Health (BHUs) Unit in one VC. Access roads are available in most of the villages which are unpaved and in dilapidated condition including 15km main road passing through UC. This situation further casts its effects on communities wanting to access these services, a major limiting factor to improvement in living conditions in the UC.

**Table 8: Key Service Availability**

Village Council	Agricultural Service	Animal Service Centers	Telephone	Electricity office	Post office	Bank	Police Station	Health Facilities
Kalas								
Pursad								
Tar								
Madaklasht								

	For Non availability		For Availability
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Source: Shishikoh WUMP Database 2014

## 2.4 Off-Farm Income Sources

Local people are using multiple strategies, including both farm and off-farm sources, to generate household income. Moreover rural economy is mostly based on natural resources but communities are adopting more off-sources of income because of decreasing natural resource base. Major off-sources of income are services, skills, business, foreign remittances and labour. Highest number of people (47%) work as labour because of lacking marketable skills and low literacy rate. Total number of people engaged in off sources of income is shown in table 9.

**Table 9: Off-Farm Sources of Income**

Village Council	Services	Skills	Business	Remittances (Abroad)	Labour/ Others
Kalas	81	218	84	10	343
Pursad	61	213	62	3	372
Tar	54	163	40	14	214
Madaklasht	98	117	53	7	273
Total	294	711	239	34	1202

Source: Shishikoh WUMP Database 2014

UC Database shows that driving, carpentry, masonry and tailoring are major employable skills for men in the Shishikoh and total number of skillful men are shown in table 10.

**Table 10: Number of Skilful Men**

Village Council	Driver	Carpenter	Mason	Tailor	Others
Kalas	52	40	62	19	2
Pursad	49	41	70	17	3
Tar	27	34	48	14	8
Madaklasht	19	11	32	11	7
Total	147	126	212	61	20

Source: Shishikoh WUMP Database 2014

For women, tailoring and handicraft are major skills which are used for income generation and total number of skillful women is as shown in table 11.

**Table 11: Number of Skilful Women**

Village Council	Tailor	Handicraft	Others
Kalas	34	9	0
Pursad	29	4	0
Tar	19	13	0
Madaklasht	0	27	10
Total	82	53	10

Source: Shishikoh WUMP Database 2014

## 2.5 Land Use

Land use in Shishikoh is broadly classified into four major types i.e. range land and pastureland, forests, glaciers, agriculture and residential area. Out of the land area (129,486 acres), 69% is covered by range and pastureland, 21% by forests, 8.6% by glaciers and 1.7% by agricultural and residential areas. With the extension of irrigation channels, agricultural lands have been developed on alluvial fans and sloping land developed from forest clearings. Total land, under cultivation, in the UC is appended in table 12.

**Table 12: Irrigated Land Distribution**

Village Council	Irrigated Land	Rain fed	Barren Land	Total Land
Kalas	474	545	451	1470
Pursad	271	2	293	566
Tar	483	9	646	1138
Madaklasht	747	11	581	1339
Total	1975	567	1971	4513

Source: Land and Revenue Department

## 2.6 Agriculture & Livestock Status

### 2.6.1. Landholding Pattern

Rugged mountains and low temperatures limit agriculture practices in the Shishikoh area which is an impediment in the extension of arable land and limits one third of the land to the production of a single crop in a year. Out of total cultivable area, 747 acres of land is located in a single cropping zone of Madaklasht. Average landholding size in the Union Council is 0.66 acres and mean maximum land holding size is 1.08 acres while mean minimum is 0.44 acres. Out of the total population, 281 households do not hold any land for farming and 90% of households manage their own farm land. The ownership of land is transferred mainly to the male members of a family though in female headed houses, the ownership stays with women who also deal in farm cultivation. Land owner distribution in the UC is given in table 13.

**Table 13: Land Owner Distribution**

Village Council	No. of Big Owner (>2 acres)	No. of Small Owner (2-0.6) acres)	No. of Subsistence (<0.6 acres)	No. of Labour/Tenant
Kalas	17	389	229	109
Pursad	23	368	210	100
Tar	21	329	188	57
Madaklasht	14	508	11	15
Total	75	1594	638	281

Source: Shishikoh WUMP Database 2014

Database shows that 90% of the household are owners of their land who neither rent out nor rent land from others. Mostly landless people practice agriculture on sharing basis where owners provide land, whereas other party contributes labour and other farm inputs. The crop produce is equally distributed between the owner and landless farmer.

**Table 14: Land Owner Distribution**

Village Council	Own	Shared
Kalas	635	109
Pursad	601	100
Tar	538	57
Madaklasht	548	0
Total	2322	266

Source: Shishikoh WUMP Database 2014

### 2.6.2. Farming Practices

Most of the communities, in the UC, practice agro-pastoral agriculture which includes subsistence arable cropping, fruit production, and livestock production. Owing to small landholding size, local communities utilise their agricultural production for their own household consumption. Wheat, maize, pulses, potato and barely are food crops and alfalfa and other grasses are fodder grown in the UC. Major vegetables are potatoes, turnip, onion, tomatoes, okra; pumpkin etc. In addition fruits are also grown in the area which includes walnut, apple, grape, apricot and peach etc. Moreover local people collect different kinds of medicinal and aromatic plants such as mushrooms, coriander, mint, barberries (chowenj). Common crop diseases such as root rot, rust, leaf curl, pest attack, powdery mildew, dieback, scabs etc infect agricultural crops in the area.

The Madaklasht area (Upper Shishi) falls in single cropping zones where farming activities take place between April and September, and lower Shishikoh area falls in double cropping zone. Apart from it, Kalas is a transitional area where communities cultivate one major food crop and one minor crop for fodder. Seasonal agricultural activities for major food crops in the Shishikoh area are shown in table 15.

**Table 15: Seasonal calendar**

Crops	Sowing Months	Harvesting
Wheat	October – November	June- July
Maize	May – July	October
Bean	May – July	September – October
Potato	May	October
Barley	October – November	May- June

Source: Shishikoh WUMP Database 2014

Both men and women share workloads at farm land but women are mostly engaged in weeding and thinning whereas watering, harvesting and plowing are mostly done by men. Local farmers use both mechanised (tractor) and traditional methods of farming depending on the availability and road access.

### 2.6.3. Livestock Holding

In Shishikoh, livestock resources are an important component of rural economy and largely comprise of cattle, goat and sheep, and also some donkeys as pack animals. Domestic poultry is also kept for household consumption and utility. These animals are basically reared for meat, milk, wool, manure and transportation of wood. For many people, livestock is also used as a source of cash income at the time of urgent need. Local communities revealed that cattle and goat are the most favoured animals. It has also been observed that in single cropped areas (zone) people prefer to keep sheep and goats because of reduced availability of crop residues in winter as a fodder whereas in double cropping areas, people do keep cattle. The Gujar communities have pastoral economy with goats only. Overall distribution of livestock in the UC area is shown in table 16.

**Table 16: Number of Livestock**

Village Council	sheep	cows	goats	poultry	donkey
Kalas	93	1674	2976	2558	47
Pursad	0	1529	3632	2549	0
Tar	0	1105	1700	2040	99
Madaklasht	3288	1096	1644	1461	0
Total	3381	5404	9952	8608	146

Source: Shishikoh WUMP Database 2014

Diseases like black quarter, foot and mouth diseases, fowl pox etc. are common in the area and for the treatment; they rely both on veterinary and traditional methods. Women and children are responsible for livestock rearing with an exception amongst Gujurs where men are tasked for tending livestock animals. Streams and water channels are mostly used as drinking water source for animals.

## 2.7 Mapping of Stakeholders, Local NGOs & Government Line Departments

CIDO, SRSP, AKRSP, YSDO, CADP, AKPBS are the major Non-Governmental Organisations (NGOs) working in the UC. These organisations have implemented a range of development activities to improve living conditions of people and in total 83 projects are executed in areas of irrigation, Flood Protection Wall (FPW), drinking water, communication, irrigation and Micro hydro power (MHP). AKRSP and CADP are the pioneer organisations that initiated community based projects in the UC. CIDO and YSDO completed 25 small scale community infrastructure projects through the support of Intercooperation (IC) financed by Swiss Agency for Development and Cooperation. Currently SRSP is working on Livelihood Enhancement Project initiated through the support of Pakistan Poverty Alleviation Fund (PPAF). Among Government Line Agencies, Public Health Engineering Department (PHED), Irrigation Department and On Farm Water Management completed 4 DWSS, 2 irrigation channels and 20 water course improvement schemes implemented in the whole UC. Key Development Organisations in the UC are shown in table 17

**Table 17: Key Development Organisations**

Name of Organisation	Type of Organisation	Number of projects Implemented	Key Areas of Interventions
W4L/LPH-IC	INGO	25	Irrigation, FPW, DWSS and Pony Track
AKRSP	NGO	14	Irrigation, MHP, DWSS, Link road FPW
SRSP	NGO	32	Road, Bridges, FPW, DWSS MHP, and Irrigation
YSDO	NGO	3	DWSS and FPW
AKPBS	NGO	3	DWSS
CADP	NGO	1	DWSS
PHED	Government	4	DWSS
Irrigation Department	Government	2	Irrigation
On-Farm Water Management	Government	20	Improvement in Irrigation Schemes

Source: Shishikoh WUMP Database 2014

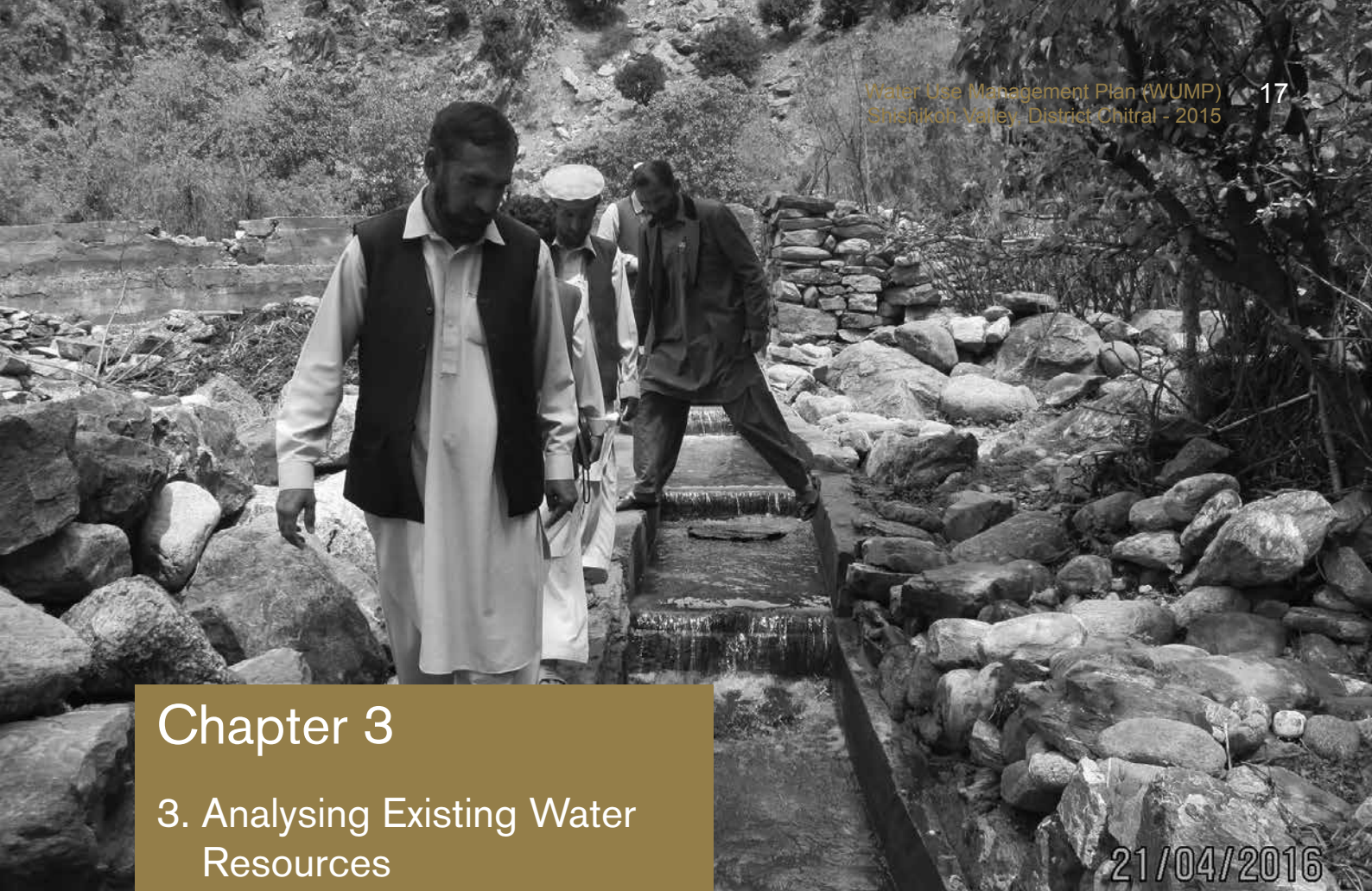
## 2.8 Water Sector Interventions

Most of the development interventions were made for improvement of water related infrastructures such as DWSS, Irrigation and FPW in the Union Council. In total 2 irrigation channels and 4 drinking water supply schemes were developed by Government agencies in Shishikoh whereas remaining were developed by NGOs and communities themselves. Drinking water held highest investment ratio in the UC which is followed by Flood Protection Wall, irrigation channel and others.

**Table 18: Water Sector Interventions**

Village Council	DWSS	FPW	Irrigation Channel	Others
Kalas	16	5	3	6
Madaklasht	6	9	5	1
Pursad	11	6	4	1
Tar	10	6	2	3
Total	43	26	14	11

Source: Shishikoh WUMP Database 2014



## Chapter 3

### 3. Analysing Existing Water Resources

#### 3.1 General Water Resources

Shishikoh is a mountainous area with its ice cap and glaciers, which are a permanent source of water. All the sources of water are perennial and comprise of springs and glaciers melt. The snow and glaciers also charge aquifers and water table. Moreover Shishikoh also receives occasional spells of rainfall from summer monsoon disturbances during the month of July and August which also results in increased flow of water, cause for floods and disruption of springs. It has also been noticed that glaciers melt varies throughout the year and significantly decreases during winter. Shishi River is the major tributary passing through the valley comprising 28 small and large streams. The highest flow of 1166 cusecs (PC-1 Lavi Hydro power) has been recorded, in the Shish River, in the month of July and August because of increased glacier melt and occasional rains. Both river and stream water is tapped for irrigation, drinking and Micro Hydro power generation purposes.

#### 3.2 Water Sources and Classification

The main source of water in the UC is surface bound i.e. streams, rivers, and watercourses from melting snow and glacier; whereas sub-surface resources are limited to natural springs. Moreover spring water is used for drinking purposes only while streams are for irrigation because former are believed to be better in quality than stream water. It has been observed that 33 drinking water supply schemes have spring water as source and 10 are from stream water. In addition, stream water is the major source for irrigation. In total 33 springs and 28 streams contribute to entire water resource base in Shishikoh. Distribution of springs and stream are as shown in table 19.

**Table 19: Number of Water Sources**

Village Council	Springs	Streams
Kalas	15	11
Pursad	5	7
Tar	7	4
Madaklasht	6	6
Total	33	28

Source: Shishikoh WUMP Database 2014



### 3.3 Local Water Management /Governance Systems

Water holds a central role in sustainable development and every area has its own certain local system which governs water management. Similar to most parts of Chitral, Shishikoh valley also practices certain water rights: a person living in his/her own home or at any other place, has a right on water for his/her home as well as agriculture land. The following indigenous practices regarding water rights and water management exist in the valley. The four types of local water governance systems in practice are Mir-xoye, Mone/Gram, Rongogh and Sorogh.

#### 1. Mir-Xoye System

Mir-Xoye system ensures the equitable (equal) distribution and access to water in and around water channel from head to tail, based on the land holding size. In this local water governance system, the community appoints a person by consensus called Mir-Xoye who ensures that all right holders get their agreed share of water for irrigating his/her land. The compensation for the services of Mir-Xoye, is either payment on monthly wages or on through crops. Therefore he is either paid in cash or in grain at each harvest.

##### Responsibilities of Mir-Xoye

- Channelize water from the head to the channel outlet
- Repair minor leakages and damages in the channel
- Ensure distribution of water from head to tail
- Call the community for rehabilitation on major damages
- Disconnect water supply at the head at the time of heavy rain or flood
- Clean up and remove minor debris (Ovsak) accumulation

##### Responsibilities of the community

- Timely payment of the wage/crop (as decided) to the Mir-Xoye
- Pay heed to Mir-xoye's call for major repair of the channel
- Exercise accountability and punish the violator of rules, as identified by the Mir-Xoye

#### 2. Mone or Gram System

In this system the community households who receive water from the irrigation channel appoint a person on a turn basis from each beneficiary house for a specific agreed time to ensure proper distribution of water from head to tail. This system is observed mostly on large irrigation channels. In this system the minor repair is carried out by the persons appointed, whereas the major repair is done by the community collectively. For repair/cleaning of the channel the following rules are observed.

- The landowner through whose land the channel passes, is responsible for its cleaning
- Wherever the channel passes through communal land, it becomes the collective responsibility of the beneficiaries to clean the irrigation channel and carry the minor and major repair work as well. If the channel is benefiting more than one village, then in such a case certain parts of the channel passing through a village becomes the responsibility of the respective village

#### 3. Sorogh

Sorogh System comes into practice in special conditions when there is an acute water scarcity in the channel. In this system predefined water user rights become the basis for distribution of water as per availability. During water shortages, the communities come together and decide to start Sorogh, which continues until the end of September. Therefore this system is only practiced in drought years.

The above systems work on communal/civil irrigation channels used primarily for irrigation purposes and at times for domestic consumption. There are also state managed water governance systems on irrigation channels and drinking water supply schemes. Key government departments involved in water sector are PHED, Irrigation department and OFWM. All these departments have separate Standard Operating Procedures (SOPs) for water governance.

In the recent past since 1980s, with the introduction of participatory approaches, village based organisations have been formed for the development of the area including water management and community infrastructures.

### 3.4 Irrigation Systems & Water Rights

The farmland in Shishikoh Valley would have little economic significance without the gravity flow irrigation channels. The terrain in Shishikoh Valley is steep and rolling due to which the irrigation channels are usually long and winding along steep hill slopes. In the

whole Union Council, there are 62 irrigation channels which discharge 157.636 cusecs water to 1975 acres of farmland (Land and Revenue Department). Out of the total irrigation infrastructures, 30 were constructed by communities on self-help initiatives, 10 by AKRSP and 32 by other organisations. On an average 2.54 cusecs irrigation water passes through each of the channel which provides irrigation water to 1975 acres of land and benefits 2157 households directly. The overall situation of irrigation channels benefiting different community (HHs) including land holding are as shown in table 20.

**Table 20: Number of Irrigation Channels and Total Discharge**

Village Council	No. of Channels	Total Discharge (Cusecs)	Land (acres)	No. of Beneficiaries HHs
Kalas	20	59.14	474	615
Pursad	17	37.24	271	417
Tar	14	20.78	483	592
Madaklasht	11	40.48	747	533
<b>Total</b>	<b>62</b>	<b>157.64</b>	<b>1975</b>	<b>2157</b>

Source: Shishikoh WUMP Database 2014

Generally local communities do not invest in leveling their agriculture lands and practice farming on land with irregular field levels which results in huge water wastage. Moreover over-flooding their field results in leaching of soil nutrients that affects crop production. To cope with this situation, land leveling needs to be integrated in the farming system which will result in increasing water use efficiency. There is a scope to bring additional 567 acres of rain-fed and 1971 acres of barren land under irrigation if new irrigation channels are constructed or existing channels are improved and extended. This initiative alone would significantly enhance livelihoods of small farmers.

There are two kinds of labour required to carry the maintenance of water channels. Firstly, in annual maintenance such as cleaning of channels or emergency maintenance required due to uncertain damages caused by floods etc., where the entire communities participate. For daily maintenance, local communities hire someone and payment is made either in cash or materials to carry out this function. With the introduction of participatory development approaches, communities have formed village level maintenance committees and some 50 irrigation channels have functional operation and maintenance committees.

Due to increase in inflation and harsh winter weather in the area there is an established trend that people migrate to other parts of the country for earning livelihoods during winter months. Changing economic situation has also affected local water management system because of lesser human resource availability. In such situations households who cannot provide active labour for the maintenance, opt to contribute through cash. However, an adverse development is the relative decline in the importance of crops in the livelihoods options because local communities prefer off-farm sources of income.

Overall in Shishikoh Valley, there are no disputes on water resources especially for irrigation. However small/ minor disputes do arise between individual farmers which are mostly resolved through negotiation (Jirga) by the village elders. Owing to lack of proper allocation and weakness in water management systems, small conflicts do arise between communities over water distribution. Apart from that, lack of participation in maintenance and repair works creates conflicts as well. Although there is no formal mechanism to resolve such conflicts, village elders do take initiatives to address conflicts regarding damage to environment and in serious cases, seek support from police and the judicial system.

**Table 21: Communal Disputes Inventory, Shishikoh Valley (Since The Last 50 Years)**

S. No	Name Of Villages	Nature Of Disputes	Year Of Initiation	Year Of Resolution	How It Was Resolved	Present Scenario
1	Huzurbekandeh	Ownership of water source	2009	2009	Through mediation and negotiation of CIDO	The source is now communal and providing water for the DWSS Huzurbekandeh and the community is benefitting
2	Kashindail/ patigal	land dispute among Kashindail, Patigal Jindosh and Pursad	1970	2008	Through mediation of chairman CIDO	All the villages benefit from the land equally
3	Tar	Issue of controlled grazing between two parties in Tar	2000	2005	Through the efforts of chairman CIDO	Use the pasture on mutually agreed basis
4	Birganisar	Land dispute	2000	2006	Through the mediation and arbitration of chairman CIDO	After the resolution of the dispute, now an irrigation channel is running through that piece of land
5	Ziarat (Birganisar)	Forest royalty issue between Ziarat and Lanjaar	2009	Till date	Not yet resolved	The issue is in Qazi court of swat
6	Bella and Pursad	Land dispute between Bella and Pursad residents	1970	Till date	Not yet resolved.	Issue is in Supreme Court of Pakistan
7	Gawuch	Land dispute between Gawuch and Mr. Dinar from Tar	2000	Till date	Not yet resolved	Issue in court
8	Kalas	Land and forest dispute between Kalas and Mr. Muhtaram shah Metarjao of Kesu	2009	Till date	Not yet resolved	Issue In court
9	Tar	Ownership of water source	2010	2013	Association Abshar resolved the dispute	Do
10	Tar and Sherati	Ownership of a forest and ownership of water source	2010	Ownership of water source resolved on 2014	Many Jirgas	The ownership dispute over a forest still exists while the ownership of a water source stands resolved.

Streams and springs are the main sources of drinking water in the Shishikoh Valley. Almost all water supply schemes are based on the gravity flow due to sloping topography. In most cases, source is located in upper mountains from where water is brought down by pipeline to lower areas. There are 43 water supply schemes which are by and large, based on spring water. Furthermore, there are 27 alternative sources of water in the villages which have only stream source, therefore susceptible to contamination. Source wise distribution of drinking water schemes are as shown in table 22.

**Table 22: Drinking Water Source**

Village Council	Spring	Stream
Kalas	15	1
Pursad	5	6
Tar	7	3
Madaklasht	6	0
Total	33	10

Source: Shishikoh WUMP Database 2014

These sources discharge 56 liter per second (LPS) in total and per capita water available per day in the Shishikoh is 358 liter per second/day (LPSD). Moreover there is a significant opportunity to add 13 LPS to existing situation if source water collection system is improved. Overall water discharge is shown in table 23.

**Table 23: Drinking Water Discharge**

Village Council	Source Yield (LPS)	If improved, Source (LPS)
Kalas	19	5
Pursad	16	3
Tar	15	4
Madaklasht	6	1
Total	56	13

Source: Shishikoh WUMP Database 2014

UC database shows that, there are only four water supply schemes constructed by Public Health Engineering Department (PHED) and the remaining by Non-Government Organisations in the Shishikoh. Out of the total population, 2227 Households are connected to tap water. Thus overall in the valley, 86% HHs have drinking water facility at their door step. Overall distribution is shown in the table 24.

**Table 24: Drinking Water Beneficiary HHs**

Village Council	Total HHs	Beneficiary HHs
Kalas	744	502
Pursad	701	525
Tar	595	648
Madaklasht	548	552
Total	2588	2227

Source: Shishikoh WUMP Database 2014

Out of total drinking water supply schemes (DWSS), the communities' perception about water quality is that they regard 38 sources of water as good for drinking and 5 sources as not of good quality. However these water sources have not been tested in any laboratory due to remoteness of the area and sources location. Spring sources are usually considered as good source of quality water for drinking purposes because there are limited chances of water contamination if the source is properly developed and protected.

**Table 25: Drinking Water Quality (based on community perception)**

Village Council	Good For Drinking	Not Good For Drinking
Kalas	16	0
Pursad	10	1
Tar	6	4
Madaklasht	6	0
Total	38	5

Source: Shishikoh WUMP Database 2014

Majority (86%) of houses are connected to tap water, however in case of floods or fault in the system, communities fetch water from the source directly on head loads. Mostly boys and girls are responsible for water fetching, on average 4 trips per day are made which takes 25 minutes on a single trip. Local communities have formed maintenance committees to ensure regular and sustainable supply of water. To ensure the proper functionality of the schemes, communities hire services of local technician for which payment is made either in cash or in kind on annual basis. Currently 38 schemes are fully functional, 4 are partially functional and 1 is completely closed down in Tar.

### 3.6 General Water Resources Analysis

Shishikoh has relatively abundant water resources than other areas in Chitral. Both spring and stream contribute to water resources. Water is available all around the year however during floods, the water resources are temporarily suspended because it affects water

source points which are mostly located in the stream.

On average 1 cusec water is available for 12.5 acres which is much higher than standard requirement, where 1 cusecs is designed for 80 acres of land. These irrigation channels have been designed and constructed by communities using local knowledge and also on the basis of available water. Owing to lack of proper lining, large proportion of water is lost as leakage before reaching fields. This is phenomenally due to the reason that maintaining water conveyance systems in difficult terrains is cumbersome and expensive; therefore there is the farmers tendency to draw in higher quantities of water which eventually yields them the needed discharge. Civil irrigation channels are mostly unlined and exposed to damage at critical locations where rainwater crossing or sliding disrupts the flow.

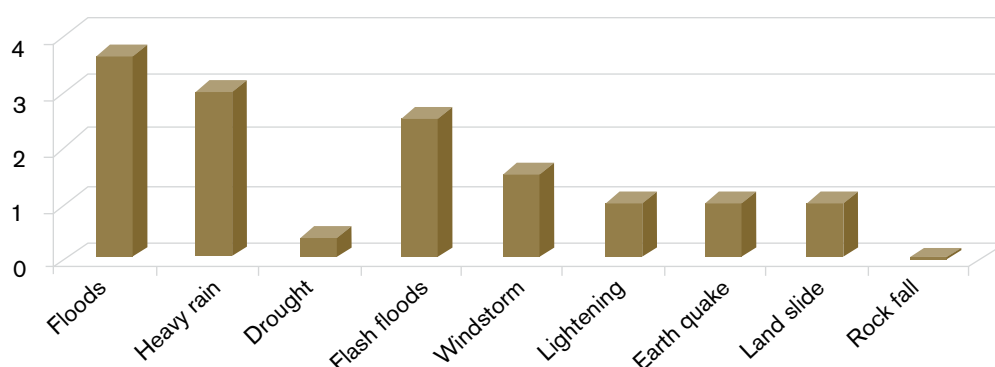
From water resource analysis, it has been observed that 72 gallons of drinking water is available per head which is much higher than standard requirement equivalent to 10 gallon per head per day. Owing to poor and dilapidated condition of water infrastructures, water quantity is considerably wasted before reaching users. However the situation is different in different villages due to source proximity, capacity of source and conveyance arrangement.

Some 50 water schemes have community owned management system for operation and maintenance of water infrastructures (DWSS and Irrigation). With the exception of Government implemented schemes, local people contribute 15-25% of total cost as their community share. After project completion, all kinds of repairs and maintenance works are done on self-help basis by the community themselves which may be either in cash or in kind. Generally there are two kinds of maintenance and repair works; for daily maintenance and repair work communities hire local technicians to carry the task and for annual maintenance and large scale works, all beneficiaries are expected to participate in cash or in kinds.

### 3.7 Disaster Risk Reduction

Shishikoh Valley reported highest number of disastrous events over the last twenty years in Chitral District. As a result, local communities face difficulties to access basics services in a sustainable manner. It has also been observed that key infrastructures have been rendered non-functional in case of floods. Owing to lack of proper preparedness, communities face difficulties to respond to disasters. The Shishikoh Valley is highly prone to various types of natural disasters such as floods; heavy rain, flash floods, windstorm, earthquake, landslide, lightening, drought and rock fall. These events occur on yearly basis however drought occurs after every 3-4 years. Out of these disasters, flood is ranked as highest probability. In order to enhance preparedness against these disasters organisations such as FOCUS Humanitarian and Intercooperation Pakistan carried out Risk Assessments as well as training sessions to build capacities and organise communities.

**Figure 5: Hazards Occurrence reported in WUMP by Shishikoh Community 2014**  
■ Hazards / Year



### 3.8 Sanitation

Sanitation practices comprise of pit latrines, flush latrines and open defecation. Rain water and surface drains are mostly unpaved or stone lined. The preference of households lies in setting up of flush latrines by and large with no concept of septic tank provision. Furthermore due to open defecation the sanitation situation is rather unsatisfactory. In the absence of proper drainage system, waste water finds its way into irrigation channels, streams and open fields. This situation is polluting the natural watercourses and channels. The social assessment conducted in the Valley shows that the personal, domestic and environmental sanitation status seems moderate primarily due to lack of knowledge embedded by cultural practices/taboo and poor housing conditions. The water sources being used for drinking purposes also pose risk of contamination because of the open defecation near to the water sources (in some cases). Furthermore the practice of keeping the domestic animals inside residential houses is common. Collection of animal



waste/dung has been practiced in an open pit near by the house (usually in the yard). This kind of practice is the root cause of spread of diseases from such waste and animal dung. This shows that there is an urgent need for improvement of sanitation situation in the valley through a program that should include both awareness raising and training as well as supporting in improving sanitation facilities.

There is no solid waste management system in the UC. The households throw their garbage either into open plots or in the streets. Moreover some of the households even dispose-off their solid waste in the nearby water channels. All these methods of disposal are the main causes of land and water pollution which threatens the local environment, the ecosystem and also causes grave unhygienic conditions. Local communities are not in a position to improve or introduce the existing level of solid waste collection and disposal without guidance. There is a need to create a greater awareness on environmental sanitation.

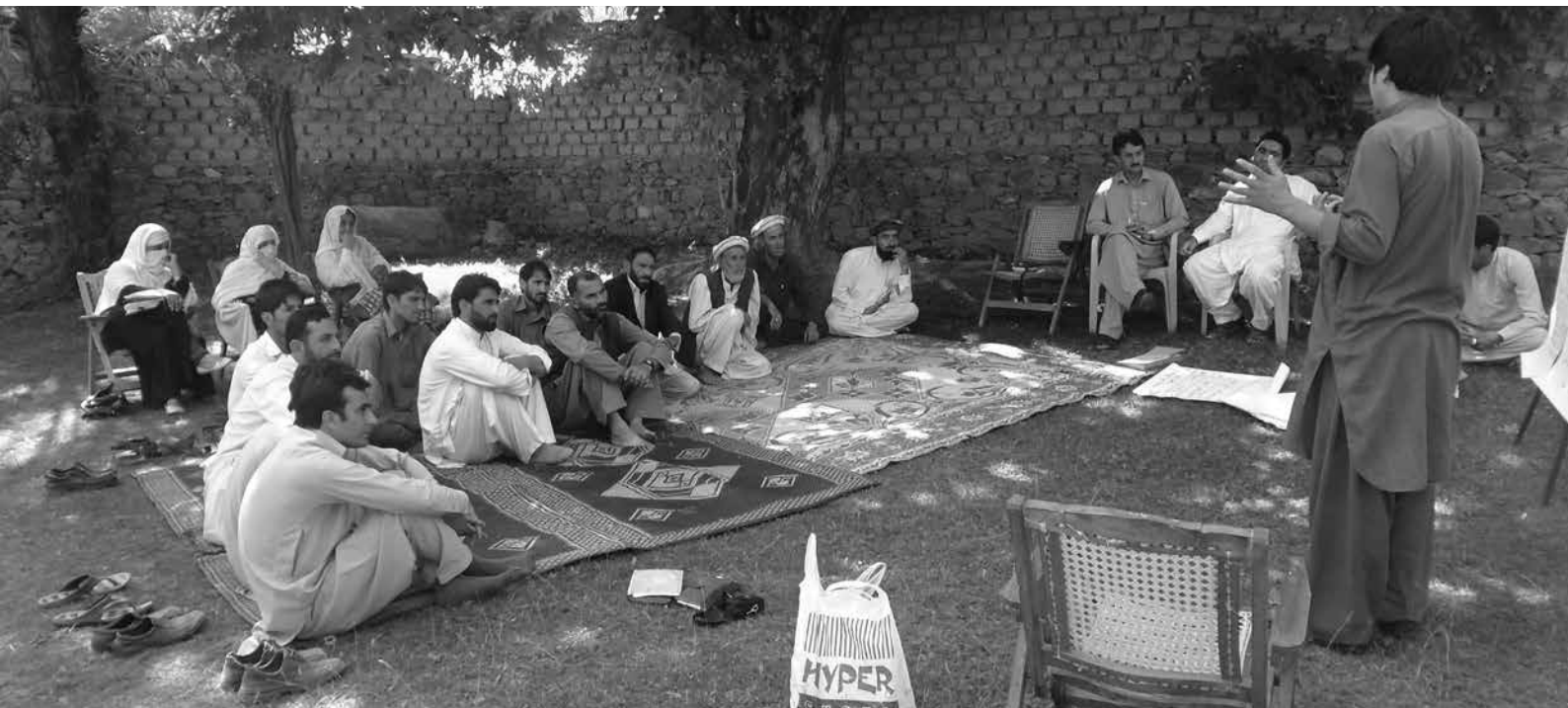
### 3.9 Health and Hygiene Practices

Health and hygiene are important indicators of community well-being. Health facilities are very limited in the Union Council. Common diseases reported in the area are flu, diarrhea, malaria, typhoid, kidney disorders, hepatitis, pneumonia, TB, cough, stomach disorders, hypertension and skin diseases. The number of diseases shows that water borne diseases are commonly experienced. For major ailments local communities visit Tehsil Headquarters Hospital (THQ) located in Drosh. Common causes of spread of these diseases are water contamination, lack of awareness about health and hygiene, malnutrition, open defecation and unavailability of proper sanitation facilities. In the Union Council, vaccination facility for new born and children is available in the Basic Health Unit Tar and AKHSP Health Center Madaklasht.

### 3.10 Other

The unique climatic conditions and extreme variation in altitude has resulted in diverse ecosystems and vegetation zones in Shishikoh Valley. The Valley has a green cover of oak, coniferous and alpine forests. According to altitudinal variations these different kinds of forest are managed under the regular forest Working Plan. Forestry related activities are undertaken as per Working Plan prescriptions. In total, these forests are divided into 19 compartments. The Forest Department has formed Joint Forest Management Committees (JFMC) to involve the local communities in the conservation of natural resources. These forests provide fuel wood and timber not only to UC but to the entire District Chitral. Moreover local communities also rely on these resources for grazing and fodder collection. Pastures especially the alpine and sub-alpine pastures are used for the dual purpose of grazing and fodder collection from early May to end of September.

Owing to continuous harvesting of forests, watersheds are deteriorating which in turn affects regular flow of water; as a result flood incidences have significantly increased. Owing to continuous conversion of forest land into farmland, marginal lands have become vulnerable to soil erosion which not only affects water quality but also increases land sliding. Therefore, it is important to initiate social forestry activities to reduce pressure on existing resources and improve forest cover. In all degraded watersheds, forest harvesting activities should be banned and plantations should be initiated for restoration of these catchments. Existing community institutions are to be mobilised in the management and conservation of natural resources.





## Chapter 4

### 4. Planning and Development Strategy

#### 4.1

This WUMP for Shishikoh has been developed keeping in view social, economic and environmental needs of the area and adopt multiple strategies to promote efficient and effective water resource utilisations. In Shishikoh, it is evident that changing climate situation is giving rise to complex challenges for management of water resources. In addition, demographic changes have increased demand for space and resources across mountainous areas. Another important factor is climate change. As a result of climate change the water availability is becoming uncertain and bringing about a vulnerable situation for increasing demand from local people.

During WUMP process it has come up that land holding size and proportion in Shishikoh Valley ranges from landless which are 11% to people/households having 2.0 or more landholding being about 3%. Nearly 86 % people/households have landholding from 0.6-2.0 acres. Shishikoh is a place where water resources are in abundance, however efforts are needed to utilise and channelize this resource in a manner that people make optimum use of this resource for their livelihoods. At the same time, water is a major cause of vulnerability for local people in the form of minor and major water related disasters such as flash floods and torrential rains. Due to the climate variability observed in Shishikoh valley, even the snowfall take place in late March that delays the spring sowing which adversely affects the livelihoods of local communities. Similarly, torrential rains cause heavy erosion in valley that damage productive assets like land, standing crops and road access.

Therefore the major highlights of the WUMP strategy in Shishikoh include (in the order of priority):

- Improved access to potable water (drinking water supplies) through new schemes as well as rehabilitation of the existing ones.
- Improved access to productive use of water (water channels, and improvement in existing water course) through lining and extension to new command area.
- Disaster risk reduction (protection, watershed management) through construction of check dams, flood protection structures and building community resilience.
- Strengthening water management systems through local institutions to ensure effective implementation of WUMP under the auspices of District Authority.
- Develop watershed management approach through mobilisation of JFMCs which have due stakes in natural forests.
- Sensitise local communities in Shishikoh regarding health and sanitation through raising awareness and demonstration.

This prioritisation was conducted with the representatives coming from all segments of village population (VO/WO) including males and females. During the process, in lower Shishikoh where joint sessions (male and female) were not possible, separate sessions were conducted with women groups to ensure their say in the prioritisation of initiatives. In the second round, representatives from several villages in a Village Council, came together to understand and prioritise the potential water sector issues based on jointly-

agreed selection criteria: being water hardship, extent of beneficiaries, investment level, benefit to optimum land, multi-use, capacity to contribute, operate and maintain etc.

With discussions at WUAs/WUGs level, the upstream and downstream connection on water related issues was better understood. The importance of watershed management in the long term sustainability also became visible in the prioritisation process as the valley is prone to land sliding and flash floods that take place more frequently now compared to the past.

During WUMP, the water sector GLAs (Public Health Engineering Dept., On-Farm Water Management, Irrigation Department, Soil Conservation, Forest Department etc) were involved in the Village Council level prioritisation process. Participants from SRSP and AKRSP also participated in a few prioritisation meetings. Due importance was given to already existing lateral experience from projects in water sector in Shishikoh Valley (AKRSP, SRSP and FOCUS Humanitarian). At UC/Tehsil level, the WUMP is further vetted and owned for long term assistance and commitment by the District Authority.

## 4.2 IWRM Approaches

The formulation of IWRM Plan follows a distinct four phase approach:

- Identify the range of water resources issues that occur across a Tehsil and assess their severity, mutual dependence and frequency of occurrence. A “user requirement issue” results from an inadequate matching of user requirements (demand) and water resources availability and quantity (supply) while an “impact issue” results from human activities (which negatively affects the quantity or quality of the water resource) or from natural causes in the case of floods and droughts. National and International issues should also be taken into account, for instance upstream-downstream issues.
- Identify measures and management interventions at all levels – national, basin/ valley, local—which are necessary to address the issues identified. From the interventions required, identify the management functions at each level. Management functions include such items as policy development, planning and coordination, water allocation, discharge regulation, monitoring, enforcement and information dissemination. Trans-boundary problems may require concerted international cooperation and joint efforts.
- Analyse the present institutional capacities at all levels—national, basin/ valley, local—and examine the potentials and constraints relating to the issues to be dealt with and functions to be undertaken. The capacities relate to factors such as the efficiency of institutional structures and the adequacy of human and financial resources as well as the adequacy of policies and legislation.
- Prepare strategies in consultation with different water related stakeholders for removal of any deficiency in the framework of national policies, legislation and regulations for IWRM, for the development of institutional roles that allow a coordinated implementation of IWRM with required management instruments and associated skills. International strategies have to be developed in collaboration with other riparian nations.

## 4.3 Conservation and Protection of Water Resources

Despite abundance of water, un-planned use of water resources at the community level has resulted in poor delivery of services in Shishikoh, in contamination and wastage in terms of drinking water. Whereas due to excessive intake of water in irrigation channels, it has compromised water conveyance systems, leaching of soil nutrients and reduced crop production due to higher occurrence of crop diseases. In Shishikoh this problem becomes even more severe at tail of the irrigation channel.

Due to the deforestation and degradation of range lands in the Valley, any investment on water resources and its utilisation are at a risk of landslides and flash floods. Therefore during WUMP, identified initiatives have been considered integrally with suitable environmental concerns such as initiating dialogues for watershed management with the support of Forest Department and Joint Forest Management Committees (JFMC) in Shishikoh Chitral.

Through WUAs and JFMCs it is intended that in a minimum of two locations, Village Land Use Plan (VLUP) will be prepared in support of the Forest Division Chitral. The VLUP are likely to include forestation, soil conservation through check dams, improve range management practices and watch & ward of forest resources. This forum is likely to open debate on promoting village saving system where forest royalty has a significant role and possibility to add awareness, communal effort and financial resources.

## 4.4 Multiple Uses of Water

In Shishikoh, multiple water uses include access to drinking water and improved sanitation, irrigation, watermill and power generation. We have come across few examples of multiple use of water to meet various objectives such as in village Tar, where same water channel is used for irrigation, power generation and watermill from one source of water. It is important to promote this further and explore options for multiple uses of water for multiplying livelihoods options. For this, efforts will be made to make alliances with other



organisations involved in water sector development of Shishikoh UC. Such interventions having multiple uses as identified in WUMP will be placed before interested organisations through the DCC forum.

#### 4.5 Productive Use of Water

The potentials in Shishikoh Valley for productive use of water are several. These includes options for extending irrigated farm land from 1975 acres to 4513 acres, improvement of existing water courses to improve conveyance and supply to 1203 acres, introduction of efficient irrigation techniques and ensure mainstreaming disaster prevention in irrigation infrastructure. In addition, in order to enhance productivity from land, access to proper agricultural extension services for better crop returns is equally important so that farmers make optimal use of water and enhance productivity of the crops. In this regard access to services from Agriculture Extension Department is to be enhanced.

#### 4.6 Efficient Use of Water

Domestic water supply and irrigation systems often face major water losses, with leakage ranging from 50-70 % (as reported by WUMP Technical Team 2014). These losses can be recovered through improving water conveyance systems and applying reuse and reuse options etc. Design, construction, operation and maintenance of systems also contribute to efficient use of water at various stages.

The understanding of water users in Shishikoh on economical and efficient use of water is also limited. Therefore it is considered one of the key elements in enhancing water efficiency through demand management which will allow water to reach the tail users especially in those schemes which are benefiting few communities together.

#### 4.7 Water Resources Use Disputes

Competing interests between communities over resource ownership, its utilisation and management are key reasons where disputes arise. Usually regarding land, water and forest resources in Shishikoh Valley, the interface of forest and water is also a reason for tension.

The level of dispute is also dependent on location within the watershed (upstream and downstream effects). There is a relation of dependency between communities living at the two locations for useful utilisation of forest resources as well as useful utilisation of agriculture produce for nutrition needs. One group of people living downstream, at the end of the catchment has dependency on farmlands, whereas the dwelling upstream in the catchment is close to forest and would have more dependency on forest for their livelihoods. These two interests are competing with each other. These competing interests have to be met with pragmatism through promoting dialogue for achievement of nutritional and livelihood needs and simultaneously addressing floods and disasters.

Another source of dispute is channel maintenance. Typically in water infrastructures extending over a village, communities living close to source do not participate in the maintenance works though they consume a major share of water, which creates dispute with users at the tail-end who actively contribute in maintenance works but do not get equivalent share of water.

Disputes are also emerging between communities over distribution of land after development of new irrigation channel which is one of the critical issues for laying new irrigation infrastructures in the Union Council. In Pursad Shishikoh for example, water is available in irrigation channel (Purgal, Lawidam Channel) of Irrigation Division but due to dispute over land a huge portion is laying barren below the channel. The land can be brought under irrigation merely through mediation.

Under this plan, existing local institutions namely Joint Forest Management Committees, local Jirga system and now also WUAs at Shishikoh Valley level and WUGs at Villages/ hamlet level were engaged and are likely to contribute to better provision of services and mitigation of disputes around water.

#### 4.8 Gender and Social Inclusion

In Shishikoh Valley, both women and men are involved in carrying out agricultural activities, firewood collections and fetching of drinking water. Management of irrigation channels is however carried out by the male population in the valley. Women have a major contribution in maintaining drinking water posts, maintaining water conveyance to farms, irrigating agriculture fields etc. However this contribution is often invisible and unrecorded. Based on this premise, it is important to ensure implementation of women specific priorities (e.g. drinking water), and building their skills in maintaining water schemes close to their houses and farms and also to keep records. Another strategy to mainstream women's priorities is multi-use of water e.g. constructing washing pads with a proper protection from rain and snow along water channels etc.

## Chapter 5

### 5. Water Use Management Plan (WUMP)

This chapter describes the prioritised water sector interventions in Shishikoh UC/ Valley, the process followed in conducting at communities' level and ranked on the basis of pre-selected criteria accordingly.

Following is the key explaining how ranking of priorities was conducted in the field.

#### 5.1 Village level WUMP

Village is defined as a Revenue Village, sometimes having hamlets which at places have grown into sizable population. During WUMP the team accessed all the revenue villages in Shishikoh Union Council and also collected data on associated hamlets. WUGs are formed on village/ hamlet level while WUAs were formed on the basis of common watershed and shared water resource base. Most of the water resources and water related infrastructures are clearly divided between villages and every village has its own rights and management system. Due to this factor, the identification exercise for water issues and potentials was administered in all the 43 villages/hamlets in the UC. This gave a holistic picture and direction for water sector growth.

In each of the village, problem analyses exercise was administered and key issues were discussed i.e. DWSS issues have emerged as a major concern identified by both male and female population in the UC;

**Table 26: Problem Analysis**

Issues	Ranking 1	Ranking 2	Ranking 3	Ranking 4	Ranking 5
Poor Condition of DWSS	12	7	2	4	1
Poor condition of Irrigation Channel	10	13	12	2	0
DRR- Flood Risks in Nalla	8	14	9	7	1
Absence of DWSS	8	0	0	0	0
Lack of Watershed Management practices (check dams, forestation, range land management etc)	2	6	15	14	2
Lack of Sanitation and Drainage.	0	0	2	3	7
Total	40	40	40	30	11

Based on the criteria, schemes are identified and prioritised in each of the village and overall ranking of the Shishikoh WUMP is as shown in table 27.



**Table 27: Schemes Prioritisation**

Schemes	Ranking 1	Ranking 2	Ranking 3	Ranking 4	Ranking 5
Improvement in DWSS	12	7	2	4	1
Improvement in Irrigation Schemes	10	13	12	2	0
Flood Project Wall	8	14	9	7	1
DWSS (New)	8	0	0	0	0
Watershed Management	0	1	1	0	0
Check dams	2	5	14	14	2
Sanitation	0	0	2	3	7
Total	40	40	40	30	11

### 5.2 Proposed Water Supply Schemes (New & Rehabilitation)

Local communities identified issues in drinking water supply in highest number in Shishikoh valley. Out of the total 2588 households, 487 (18 %) households distributed across 21 villages are not connected to drinking water in the UC therefore women and children collect water from springs and streams on head loads. This un-served population is likely to rise because of further growth in population. Most of drinking water supply schemes had been designed more than 15 years back; therefore due to growth in population their design life has been exceeded.

Often due to fewer funds from government for O&M, beneficiaries collect funds when maintenance needs arise. Communities have little understanding on water budgeting, water quality and minimising water losses in the network.

Out of the total schemes, 20 DWSS sources have not been protected against potential natural disasters and thus the water source is vulnerable to disasters of flood and landslides. Most of these spring sources are located on-stream banks; therefore mitigation structures are necessary to protect the sources from threat.

The drinking water inventory shows that amongst 40 villages there are only 16 water storage tanks, 29 main supply lines, 22 distribution lines and 35 schemes having stand posts system, which are in fully functional status. The incidence of leakage in the old distribution systems is also resulting in huge wastage of water. Local communities have identified 26 existing drinking water schemes for improvement and provision of 8 new DWSS in different villages/hamlets of Shishikoh. Following is a summary of proposed improvements.



### 5.3 Drinking Water Prioritisation

S.No	Type	Village Name	VC Name	Ranking	Beneficiary HHs	Estimated Cost in millions (PKR)
1	DWSS	Gauch	Pursad	1	50	0.53
2	DWSS	Sherati	Tar	1	120	1.2
3	DWSS	Gureen	Pursad	1	75	0.992
4	DWSS	Puraitgole	Pursad	1	70	1.4
5	DWSS	Kutik	Kalas	1	40	0.87
6	DWSS	Jungal	Madaklasht	1	35	0.86
7	DWSS	Achinisar	Kalas	1	31	0.16
8	DWSS	Istroom	Pursad	1	25	1.05
9	Improvement of DWSS	Madaklasht 2	Madaklasht	1	130	0.504
10	Improvement of DWSS	Madaklasht 1	Madaklasht	1	126	0.65
11	Improvement of DWSS	Huzur Begandeh	Pursad	1	96	1.007
12	Improvement of DWSS	Beband	Madaklasht	1	95	0.606
13	Improvement of DWSS	Tar	Tar	1	85	1.74
14	Improvement of DWSS	Birganisar	Tar	1	77	0.874
15	Improvement of DWSS	Balpanj	Kalas	1	66	1.06
16	Improvement of DWSS	Kawash	Kalas	1	60	0.27
17	Improvement of DWSS	Bela	Kalas	1	40	1.2
18	Improvement of DWSS	Lanjar	Kalas	1	35	0.28
19	Improvement of DWSS	Patigal	Kalas	1	35	0.32
20	Improvement of DWSS	Askari	Kalas	1	30	1.086
21	Improvement of DWSS	Shahi	Tar	1	20	1.36
22	Improvement of DWSS	Tingail	Tar	2	225	1.4
23	Improvement of DWSS	Matio	Madaklasht	2	102	0.53
24	Improvement of DWSS	Birga	Kalas	2	100	0.27
25	Improvement of DWSS	Gureen Gole	Pursad	2	70	0.32
26	Improvement of DWSS	Dasht Darbar Shahi	Madaklasht	2	60	0.4
27	Improvement of DWSS	Kashindel	Kalas	2	55	0.44
28	Improvement of DWSS	Kalas	Kalas	3	80	0.2
29	Improvement of DWSS	Bayak	Kalas	3	38	0.68
30	Improvement of DWSS	Tangal	Kalas	4	65	0.56
31	Improvement of DWSS	Purgal	Pursad	4	60	0.69
32	Improvement of DWSS	Shahi Noor	Pursad	4	45	0.781
33	Improvement of DWSS	Kashindel Gole	Kalas	4	27	0.5
34	Improvement of DWSS	Lao	Tar	5	52	0.92
	Total				2320	25.71

### 5.4 Proposed Irrigation Initiatives

Irrigation sub sector has emerged as second priority in the Shishikoh Valley, major portion of livelihoods is dependent on subsistence farming. In Lower Shishikoh there is potential to produce vegetables for local markets if agricultural activities are promoted on market demand. In the UC, 2538 acres of new land has been reported with potential to be brought under irrigation, land development and agriculture extension. Out of total irrigation channels, only 29 sources have been protected from natural disasters as reported during WUMP. The remaining 14 sources need immediate attention to fend off potential threats during floods and other natural disasters. During WUMP it has been reported that 1 off-take, 15 conveyance channels and 12 supporting structures are fully functional. Further, there are no proper outlet systems on irrigation channels in Shishikoh Valley. Overall WUMP has identified 37 improvement schemes for irrigation in the Shishikoh valley/ Union Council.

### Irrigation Schemes Prioritisation

S.No	Type	Village Name	VC Name	Ranking	Beneficiary HHs	Estimated Cost in millions (PKR)	Command Area/ Land (Acres)
1	Improvement of Irrigation Channel	Tingail	Tar	1	225	1.056	50
2	Improvement of Irrigation Channel	Kalas	Kalas	1	80	1.38	35
3	Improvement of Irrigation Channel	GureenGole	Pursad	1	62	1.3	34
4	Improvement of Irrigation Channel	Dasht Darbar Shahi	Madaklasht	1	60	1.8	25
5	Improvement of Irrigation Channel	Purgal	Pursad	1	60	0.63	28
6	Improvement of Irrigation Channel	Shahi Noor	Pursad	1	45	0.791	31
7	Improvement of Irrigation Channel	Pursad	Pursad	1	40	1.123	25
8	Improvement of Irrigation Channel	Muzhdeh	Pursad	1	30	0.92	8
9	Improvement of Irrigation Channel	Latore	Pursad	1	25	1	21
10	Improvement of Irrigation Channel	Jindosh	Kalas	1	15	1.15	10
11	Improvement of Irrigation Channel	Beband	Madaklasht	2	95	3.151	270
12	Improvement of Irrigation Channel	Balpanj	Kalas	2	66	1.77	30
13	Improvement of Irrigation Channel	Kawash	Kalas	2	60	0.86	12
14	Improvement of Irrigation Channel	Kutik	Kalas	2	40	0.5	3
15	Improvement of irrigation Channel	Bela	Kalas	2	40	0.6	30
16	Improvement of Irrigation Channel	Bayak	Kalas	2	38	1.15	30
17	Improvement of Irrigation channel	Lanjar	Kalas	2	35	1.38	10
18	Improvement of irrigation Channel	Patigal	Kalas	2	35	1.45	15
19	Improvement of Irrigation Channel	Jungal	Madaklasht	2	35	3.59	80
20	Improvement of Irrigation Channel	Gauch	Pursad	2	35	1.35	10
21	Improvement of Irrigation Channel	Thokail	Tar	2	35	1.16	30
22	Improvement of irrigation Channel	Achinisar	Kalas	2	31	1.62	25
23	Improvement of Irrigation Channel	Ziarat	Kalas	2	27	0.84	5
24	Improvement of Irrigation Channel	Lao	Tar	2	25	0.466	5
25	Improvement of Irrigation Channel	Madaklash 2	Madaklasht	3	130	0.85	120
26	Improvement of Irrigation Channel	Madaklash 1	Madaklasht	3	126	0.722	100
27	Improvement of Irrigation Channel	Birga	Kalas	3	100	0.6	53
28	Improvement of Irrigation Channel	Birganisar	Tar	3	77	0.538	10
29	Improvement of Irrigation Channel	Gureen	Pursad	3	75	1.25	8
30	Improvement of Irrigation Channel	Istroom	Pursad	3	70	0.699	30
31	Improvement of Irrigation Channel	Tangal	Kalas	3	65	0.6	9
32	Improvement of Irrigation Channel	Kashindel	Kalas	3	55	1.95	40
33	Improvement of Irrigation Channel	Tar	Tar	3	45	0.598	10
34	Improvement of Irrigation Channel	KashindelGole	Kalas	3	27	0.7	15
35	Improvement of Irrigation Channel	Shahi	Tar	3	20	0.662	10
36	Improvement of Irrigation Channel	Matio	Madaklasht	4	102	0.936	170
37	Improvement of Irrigation Channel	Pursad	Pursad	4	20	0.662	4
	Total				2151	41.804	1401

### 5.5 Sanitation and Solid Waste Management:

At present there is no proper sanitation or solid waste management system in the Shishikoh Union Council. In order to overcome

the existing unhealthy and depleting environmental conditions, a proper wastewater drainage system needs to be laid down to demonstrate and enhance awareness. The communities' participation should be ensured in such initiatives so that they take lead responsibility of maintenance afterwards. In total, 10 sanitation related schemes were prioritised by the communities as;

#### Sanitation Schemes Prioritisation

S.No	Type	Village Name	VC Name	Ranking	Beneficiary HHs	Estimated Cost in millions (PKR)
1	Drainage and Sanitation system	Sherati	Tar	4	120	0.802
2	Drainage and Sanitation system	Lao	Tar	4	52	0.619
3	Drainage and sanitation system	Thokail	Tar	4	35	0.602
4	Drainage and Sanitation system	Madaklash 2	Madaklasht	5	130	0.755
5	Drainage and Sanitation system	Madaklash 1	Madaklasht	5	130	0.755
6	Drainage and Sanitation system	Tar	Tar	5	130	0.631
7	Drainage and Sanitation system	Dasht Darbar Shahi	Madaklasht	5	60	0.755
8	Drainage and Sanitation system	Jungal	Madaklasht	5	35	0.755
9	Drainage and Sanitation system	Shahi	Tar	5	20	0.755
10	Drainage and Sanitation system	Beband	Madaklasht	5	30	0.755
11	Drainage and Sanitation system	Matio	Madaklasht	3	102	0.755
12	Drainage and Sanitation system	Muzhdeh	Pursad	3	30	1.01
	Total				774	8.849

#### 5.6 Proposed Multiple Use System Application

Shishikoh has plentiful un-utilized water resources in the shape of Shishikoh River, glaciers and streams and springs. The existing infrastructures should be developed for multiple uses so as to increase utilisation of water resources. There is repeated demand for reliable power generation in the upper part of Shishikoh Valley. In the Upper Shishikoh, at Madaklasht the irrigation channels have the potential to produce hydro power which can provide electricity and also save expensive forest resources from deforestation.

#### Multiple Use Application

S.No	Proposed Actions	Village	Number	Ranking
1	Hydropower Renewable Plant	Madaklasht	1	1
2	Hydropower Renewable Plant	Kalas	1	2
3	Hydropower Renewable Plant	Kashindail	1	2
4	Hydropower Renewable Plant	Tar	1	2
5	Hydropower Renewable Plant	Tingal	1	2

#### 5.7 Proposed Environment and Ecology

Shishikoh Valley has ample natural forest which is contributing to livelihoods. This is under extreme human pressure due to extensive harvesting for firewood and lumber in the Shishikoh Valley and outside. There is a huge potential to increase forest cover through forestation along river beds and other marginal lands. There is also significant dependency on livestock for which range land needs to be improved. As a part of the WUMP, Joint Forest Management Committees (JFMCs) would be strengthened with coordination of WUA and Forest Department to promote conservation and management of forest resources in the Shishikoh Valley. In coordination with Chitral Forest Division, a comprehensive survey of degraded watershed would be undertaken and rehabilitated through biological and physical measures to protect the water resource in the catchment under JFMC mandate in the Forest Act.

#### Environment and Ecology Activities

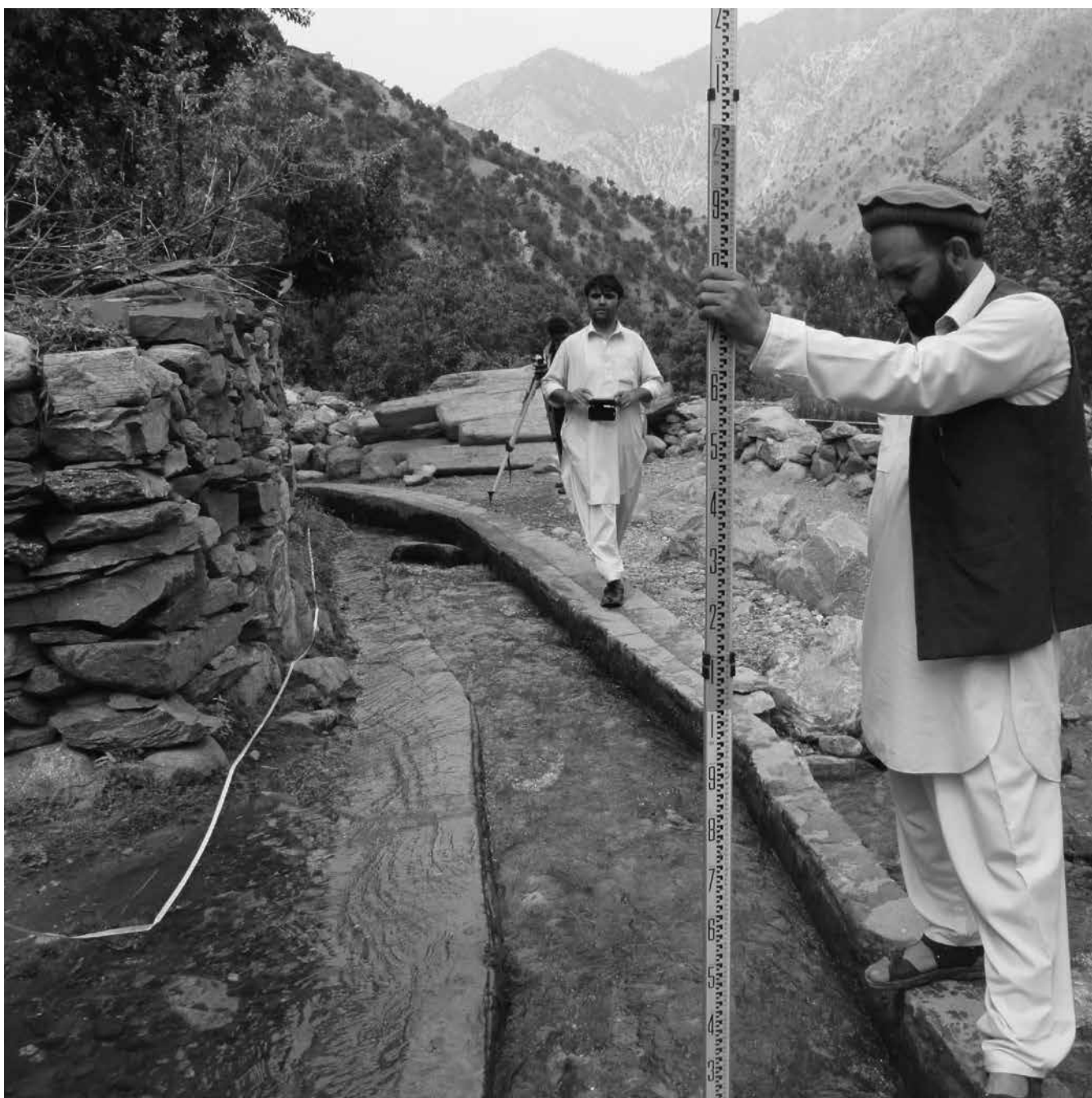
S.No	Projects	Number	Expected costs Rs (Million)
1.	Afforestation activities (Six Sites)	6	6
2	Capacity building of 18 JFMCs	6	1
3	Management and supervision	1	1.79
4	Water Shed Management	2	1.794



JFMCs: Patigal Kawash, Kashindail Gol, Gawouch, Lownisar, Bala Gatasin, Gorenn Gol, Aski Gol, Bayakpar Chinisar, Kalas, Achinnisar, Tangal Gol, Domokh Gol, Kashish, Tingil, Pured Gol, Latoor / Ustrum, Purgal

## 5.8 Proposed DRR Mitigation Management & Other

Shishikoh Valley reported the highest number of disaster events especially floods which either partially or completely affected community recently in 2010. Absence of mitigation measures had rendered key services like approach road to the valley non-functional in times of floods. During the problem census, communities have placed a greater emphasis on construction of flood mitigation structures around key services to ward off threat. In addition, small gullies and rivulets, formed over lower mountain tracts and right above communities dwellings have caused damages to the houses, farmlands and link roads. The watershed component coupled with DRR system would likely check the surge of flood water and protect households' and other assets. FOCUS Humanitarian Organisation has already expressed interest in expanding the emergency preparation to communities. On the hazard risk analysis carried out by FOCUS Humanitarian, the WUAs/WUGs should also be trained in early warning systems in case of flood in Shishikoh River. Whereas DRM training in forest fire prevention and mitigating landslides are further relevant areas for building community resilience. More than 37 locations require check dams and 39 flood protection walls were identified as appended below;





**5.9A DRR Activities (Check dams)**

S.No	Type	Village Name	VC Name	Ranking	Beneficiary HHs	Estimated Cost in millions (PKR)	Land Reclamation
1	Construction of Check dams	Tangal	Kalas	1	65	0.82	9
2	Construction of Check dams	Bayak	Kalas	1	38	0.321	30
3	Construction of Check dams	Madaklash 2	Madaklasht	2	130	0.855	120
4	Construction of Check dams	Madaklash 1	Madaklasht	2	126	0.75	100
5	Construction of Check dams	Purgal	Pursad	2	60	0.85	28
6	Construction of Check dams	Shahi Noor	Pursad	2	45	0.844	31
7	Construction of Check dams	Kashindel Gole	Kalas	2	27	0.6	15
8	Construction of Check dams	Sherati	Tar	3	120	0.509	33
9	Construction of Check dams	Gauch	Pursad	3	110	0.769	25
10	Construction of Check dams	Huzur Begandeh	Pursad	3	96	0.624	37
11	Construction of Check dams	Gureen Gole	Pursad	3	70	0.685	8
12	Construction of Check dams	Balpanj	Kalas	3	66	0.65	30
13	Construction of Check dams	Kawash	Kalas	3	60	0.58	12
14	Construction of Check dams	Lao	Tar	3	52	0.438	25
15	Construction of Check dams	Bela	Kalas	3	40	0.6	30
16	Construction of Check dams	Thokail	Tar	3	35	0.443	5
17	Construction of Check dams	Achinisar	Kalas	3	31	0.8	25
18	Construction of Check dams	Askari	Kalas	3	30	0.9	25
19	Construction of Check dams	Ziarat	Kalas	3	27	0.745	5
20	Construction of Check dams	Latore	Pursad	3	25	0.767	21
21	Construction of Check dams	Jindosh	Kalas	3	15	0.32	10
22	Construction of Check dams	Tingail	Tar	4	225	1.7	50
23	Construction of Check dams	Tar	Tar	4	130	0.269	28
24	Construction of Check dams	Birga	Kalas	4	100	0.27	53
25	Construction of Check dams	Beband	Madaklasht	4	95	0.219	
26	Construction of Check dams	Kalas	Kalas	4	80	0.73	35
27	Construction of Check dams	Gureen	Pursad	4	75	0.591	8
28	Construction of Check dams	Istroom	Pursad	4	70	0.957	30
29	Construction of Check dams	Dasht Darbar Shahi	Madaklasht	4	60	0.48	125
30	Construction of Check dams	Kashindel	Kalas	4	55	0.48	40
31	Construction of Check dams	Kutik	Kalas	4	40	0.6	3
32	Construction of Check dams	Lanjar	Kalas	4	35	0.84	10
33	Construction of Check dams	Patigal	Kalas	4	35	0.48	15
34	Construction of Check dams	Jungal	Madaklasht	4	35	0.39	80
35	Construction of Check dams	Shahi	Tar	4	20	0.583	10
36	Construction of Check dams	Matio	Madaklasht	5	102	0.399	170
37	Construction of Check dams	Birganisar	Tar	5	77	0.345	38
	Total				2502	23.203	1497

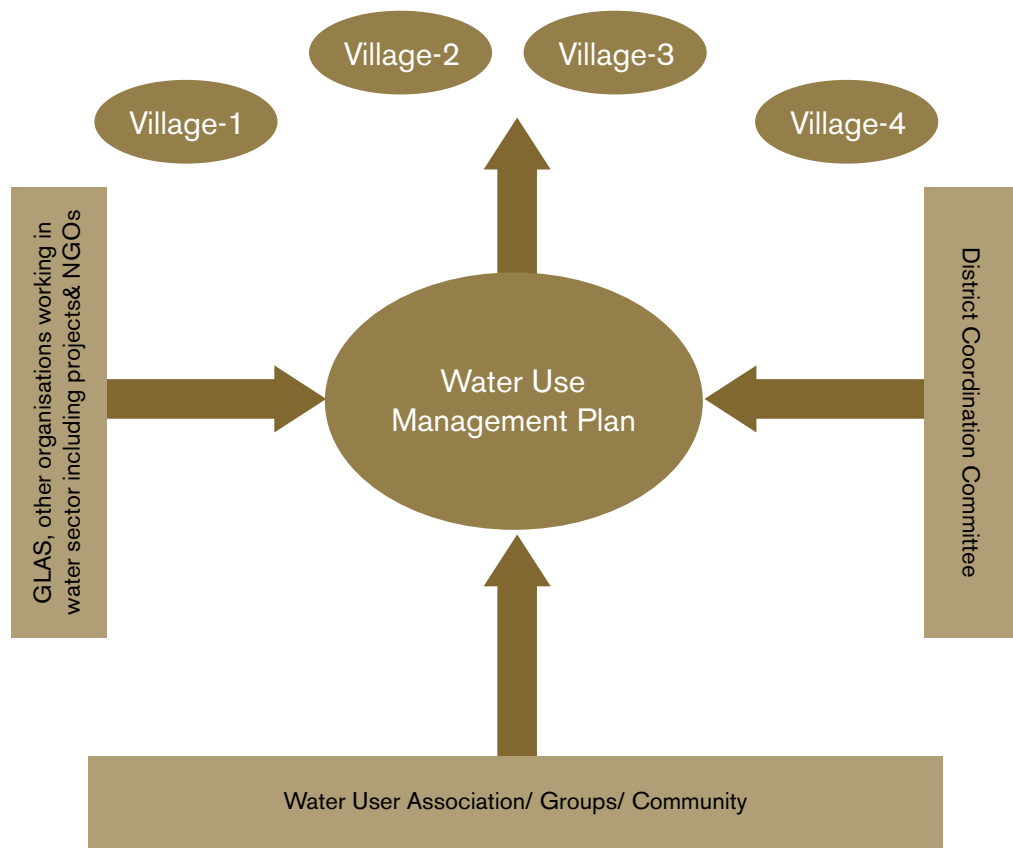
### 5.9B DRR Activities (Flood Protection Wall)

S.No	Type	Village Name	VC Name	Ranking	Beneficiary HHs	Estimated Cost in millions (PKR)	Land Reclamation
1	Flood Protection wall	Birga	Kalas	1	80	0.6	35
2	Flood Protection wall	Matio	Madaklasht	1	70	0.97	30
3	Flood Protection wall	Gauch	Pursad	1	70	1.523	20
4	Flood Protection wall	Lao	Tar	1	52	0.929	25
5	Flood Protection wall	Kashindel	Kalas	1	35	1.54	20
6	Flood Protection wall	KashindelGole	Kalas	1	25	2.06	8
7	Flood Protection wall	Ziarat	Kalas	1	20	0.3	5
8	Flood Protection wall	Thokail	Tar	1	10	1.406	3
9	Flood Protection Wall	Sherati	Tar	2	120	1.457	25
10	Flood Protection Wall	Tar	Tar	2	85	0.95	18
11	Flood Protection Wall	Huzur Begandeh	Pursad	2	60	2	15
12	Flood Protection Wall	Birganisar	Tar	2	60	1.049	10
13	Flood Protection Wall	Gureen	Pursad	2	50	1.7	6
14	Flood Protection Wall	Puraitgole	Pursad	2	50	1.3	20
15	Flood Protection Wall	Kalas	Kalas	2	45	1.72	25
16	Flood Protection Wall	Tangal	Kalas	2	45	0.91	5
17	Flood Protection Wall	Pursad	Pursad	2	40	1.4	20
18	Flood Protection Wall	Askari	Kalas	2	30	1.05	20
19	Flood Protection Wall	Istroom	Pursad	2	28	1.27	12
20	Flood Protection Wall	Latore	Pursad	2	25	1.465	21
21	Flood Protection Wall	Shahi	Tar	2	20	0.812	10
22	Flood Protection Wall	Jindosh	Kalas	2	10	2.14	5
23	Flood Protection Wall	Madaklasht 1	Madaklasht	4	100	2.06	55
24	Flood Protection Wall	Madaklasht 2	Madaklasht	4	80	1.48	33
25	Flood Protection Wall	GureenGole	Pursad	4	50	1.025	6
26	Flood Protection Wall	Balpanj	Kalas	4	45	1.46	10
27	Flood Protection Wall	Birganisar	Tar	4	30	1.2	18
28	Flood Protection Wall	Bela	Kalas	4	25	1.03	15
29	Flood Protection Wall	Bayak	Kalas	4	20	1.17	15
30	Flood Protection Wall	Tingail	Tar	5	225	1.2	50
31	Flood Protection Wall	Beband	Madaklasht	3	60	0.98	40
32	Flood Protection Wall	Dasht Darbar Shahi	Madaklasht	3	60	1.25	100
33	Flood Protection Wall	Purgal	Pursad	3	40	0.63	20
34	Flood Protection Wall	Jungal	Madaklasht	3	35	1.48	80
35	Flood Protection Wall	Shahi Noor	Pursad	3	35	1.772	25
36	Flood Protection Wall	Tingail	Tar	3	30	1.14	20
37	Flood Protection Wall	Kutik	Kalas	3	25	1.3	3
38	Flood Protection Wall	Lanjar	Kalas	3	20	2.35	8
39	Flood Protection Wall	Patigal	Kalas	3	20	1.24	10
	Total				1930	51.318	866

### 5.10 Proposed Supporting Activities

Existing beneficiary groups have been organised to form WUGs and WUAs at Shishikoh Valley. Currently in Shishikoh Valley, there are 3 Water User Associations formed, based upon mutual water interest and location. There are a total of 66 WUGs (30 male, 30 female and 6 mixed groups). In the WUMP implementation these WUGs would come in closer interaction with WUAs. Furthermore bridging with GLAs and related water sector projects is necessary for venturing (in taking up different activities) the broader range of water sector potentials identified in WUMP through capacity building events.

**Figure 6: Institutional framework diagram showing WUMP implementation mechanism at Shishikoh Valley/UC**



WUAs/WUGs would be supported in organisational management including record keeping, financial management, implementation of infrastructure schemes, O&M, training in conflict management and advocacy of water rights. Improvement in water governance is likely through strengthening dialogue between WUA and GLAs, yielding into GLA notifications and measures for promotion of services delivery. The WUMP lays a road map for WUAs on water sector in Shishikoh Valley. In order to materialise this road map the recommendations identified in WUMP have to be understood, owned and propagated through WUAs, access to GLAs and other water sector organisations/donors.

WUAs and WUGs gain strength through internal dialogue and communication, for which gender balance and inclusivity of deprived segments is included in the executive body as an important milestone. The awareness in WUGs and WUAs through the mentioned activities is likely to increase many folds which would be encouraged towards community savings for promoting self-sustainable systems.

In order to facilitate implementation of WUMP, SDC funded Water for Livelihoods Project (W4L) has committed to perform the following supporting activities in coming years.

### Supporting Activities

S.No	Description	Total Cost Rs (Million)
1.	Orientation workshop on WUMP to District Authorities, village council member and representatives of WUG, WUA based on learning from 2014	0.062
2.	Capacity Building of WUAs/WUGs in Organisational Management, Record keeping, Finance Management, Implementation, O&M and advocacy etc.	0.25
3.	Development of functional linkages for WUA with GLAs for WUMP implementation in the respective areas through workshop/face to face interactions	0.375
4.	Education on hygiene and safe handling of drinking water at domestic level	0.1
5.	TNA and Training plan of WUA/WUG in water related social (lobbying, conflict management etc) & technical skills in water resource management, efficiency etc	0.125
6.	WUAs linkages development with concerned authorities/ Departments for identification and implementation of community based infrastructure and inclusion in Annual Development Plan (ADP)	0.3
7.	Organise experience sharing events of WUA on six monthly basis (WUAs Assembly)	0.06
8.	Analyse customary water management in the districts – particularly on rights, inclusion and decision making.	0.162
9.	Training of Trainers (ToT) on WUMP following field/resource manual for District Authorities including GLAs, partner NGOs and other stakeholders	0.2
10.	Thematic Training on & sensitization of concerned government line departments on disaster management due to flash floods and monitoring system at district and provincial level	0.15
11.	Training of WUGs/WUAs on optimised use of water e.g. Improved Irrigation Techniques	
12.	Capacity/Skills on management system and O&M	
	Total	3.08

### 5.11 Village Council Level WUMP

Village Councils (VCs) were notified under the Khyber Pakhtunkhwa Local Government Act 2013 to devolve constitutional powers to grass root level. As a result, the Shishikoh UC has been divided into four VCs namely Pursad, Tar, Kalas and Madaklasht. Each VC is comprised of approximately 600 Households. This constitutional arrangement through Local Government Act 2013 will allocate 30% of funds at the discretion of Village Council. The VC will also be made responsible for monitoring of development activities. The WUMP is likely to feed into Village Council plans once the devolution of powers commences through local body election in mid 2015.

#### 5.12 Prioritisation of Proposed Water Sector Initiatives and Criteria

Under the prioritisation process for water sector initiatives, participatory criteria have been adopted based on water hardships. The jointly agreed selection criteria for the prioritisation of initiatives were prepared in consultation with WUGs representatives in Shishikoh Valley, Local NGOs and field staff of GLAs who also participated in this interactive exercise. The criteria includes extent of access to beneficiaries, economical investment, benefiting command area, capacity of beneficiaries to contribute, operate and maintain, access, multi use potential etc. Overall ranking of projects are follows;

**Prioritisation at VC level**

Village Council	Projects	Ranking				
		1	2	3	4	5 & Above
Kalas	Construction of Check dams	1	1			14
	DWSS (new)		1	1		0
	Flood Protection wall	1	1	2		10
	Improvement of DWSS	2	2	2	2	4
	Improvement of Irrigation Channel	1			3	11
Madaklasht	Construction of Check dams		2			4
	Drainage and Sanitation system			1		5
	DWSS		1			0
	Flood Protection wall	1			4	1
	Improvement of DWSS	3	1	1		0
	Improvement of Irrigation Channel	1	1	3	1	0
Pursad	Construction of Check dams			1	1	6
	Drainage and Sanitation system					1
	DWSS	2	1	1		0
	Flood Protection wall	1		1	3	5
	Improvement of DWSS	1		1		2
	Improvement of Irrigation Channel	1	4	1	1	3
Tar	Watershed Management					2
	Construction of Check dams			1	2	4
	Drainage and Sanitation system					5
	DWSS	1				0
	Flood Protection wall	1	3	2	1	2
	Improvement of DWSS	2	2			1
	Improvement of Irrigation Channel	1		2	2	1



**Investment Plan (Short –Medium – Long) Term**

S.No	Project Description	Short Term Investment PKR (Million)	Medium Term Investment PKR (Million)	Long Term Investment PKR (Million)
1	Water Drinking Water Supply			
1.1	DWSS (new)	4	3	0
1.2	Improvement of DWSS	7	6	4
2	Irrigation and Water Management			
2.1	Improvement of Irrigation Channel	6	33	3
2.2	Piloting Water Efficient Technologies	1	2	0
2.3	On farm Water Management training	0	0	
3	Disaster Risk Reduction			
3.1	Construction of Check dams	1	15	7
3.2	Flood Protection wall	4	38	10
3.3	Formation and Training of DRR committees	1		
3.4	Provision of Stock piles		2	
4	Ecology and Natural Resource Management			
4.1	Watershed Management	0	2	0
4.2	Forestation Activities	1	4	1
4.3	Training and Capacity of JFMCs	1		
5	Drainage and Sanitation system			
5.1	Drainage and Sanitation Schemes	0	0	4
5.1	Training on health and hygiene	1	2	
6	Productive Utilisation of Water Resources			
6.1	Promote Cultivation of Improved Varieties of Fruit and Cash Crops	1	2	
6.2	Capacity Building/training of farmers	0	1	
6.3	Introduce Productive Technologies for livelihood	1	2	
7	Supporting Activities			
7.1	Training and capacity Building WUGs/WUAs	1	2	
7.2	Four Awareness Sessions at VC level	1		
7.3	Stakeholders dialogues	0.21		
7.5	Policy Advocacy Events	0.20		
	<b>Grand Total</b>	<b>31.41</b>	<b>114.92</b>	<b>28.89</b>

**Detailed Action Plan (year wise) with beneficiaries**

S.NO	Project Description	No. of Projects	Expected Beneficiaries	Implementation Years		
				1	2 & 3	4 & 5
1	Drinking Water Supply					
1.1	DWSS (New)	8	1930	3	5	0
1.2	Improvement of DWSS	26	2151	8	12	6
2	Irrigation Systems					
2.1	Improvement of Irrigation Channel	37	70	4	31	2
2.2	Piloting Water Efficient Technologies	3	10	1	2	0
3	Disaster Risk Reduction					
3.1	Construction of Check dams	37	844	1	24	12
3.2	Flood Protection wall	39	1874	4	28	7
3.3	Formation and Training of DRR committees	4	60	4		
3.4	Provision of Stock piles	4			4	
4	Ecology and Natural Resource Management					
4.1	Watershed Management	2	9817	0	2	0
4.2	Forestation Activities	6	1200	1	4	1
4.3	Training and Capacity of JFMCs	1	80	1		
5	Drainage and Sanitation system					
5.1	Drainage and Sanitation Schemes	12	446	0	10	2
5.1	Training on health and hygiene	3	600	1	2	
6	Productive Utilisation of Water Resources					
6.1	Promote cultivation of improved varieties of Fruit and Cash crops	3	60	1	2	
6.2	Capacity Building/training of farmers	6	120	3	3	
6.3	Introduce efficient techniques for water saving in irrigation system	3	30	1	2	
7	Supporting Activities					
7.1	Training and capacity building of WUGs/WUAs	30	600	1		
7.2	Four awareness sessions at VC level	4	800	1		
7.3	Stakeholders dialogues	1	80	1		
7.4	Resource Mobilisation and Project writing training	1	10	1		
7.5	Policy Advocacy Events	4		4		
	<b>Total</b>	<b>246</b>	<b>20902</b>	<b>41</b>	<b>132</b>	<b>29</b>

The water use management plan is the directory of water sector issues and potentials in ShishiKoh Valley/UC identified and prioritised by WUAs/WUGs and other relevant stake holders together. The WUMP provides overall guidance to District Authorities for attention to water related issues. The WUAs will collaborate with different stake holders such as:

- Local Government Body (Village, VC/UC and Tehsil Council).
- Government line Department (PHED, OFWM, Irrigation Division, Forest Department).
- RSPs (AKRSP and SRSP) and FOCUS Humanitarian.
- Others community based organisations (VO/WOs, WUAs, JFMCs).

For monitoring purpose a separate committee will be formed having representatives from community organisations, partner organisations, local bodies' representatives and other line departments to assist District Coordination Committee (DCC).



## Chapter 6

### 6. WUMP Implementation, Mobilisation and Updating

#### 6.1 WUMP Implementation Agreement & Contents

WUMP will be implemented through engaging WUGs/WUAs with technical support from GLAs. Village Councils, Tehsil Councils and District Development Committee would be kept aware of the process and progress. Government line agencies will support the WUAs to develop and strengthen collaborative mechanisms with potential technical support for detailed design, preparation of cost estimates, economic viability, justification and supervision during implementation. Subsequently for operation and maintenance of community based schemes, to extend due technical knowledge and experience. Also for long-term realisation of water related projects District/Tehsil is also expected to connect with organisations having resources and interest to offer assistance in water related initiatives in WUMP.

#### 6.2 WUMP implementation advocacy

Key parties involved in mobilisation for WUMP are WUA, WUA, CBO, local NGOs and government line departments at district & tehsil level including local government bodies.

**Parties Involved for WUMP Mobilisation**

Organisation	Responsibility
WUA /WUG	<ul style="list-style-type: none"> <li>• Keep connected with the WUGs and keep them motivated for realisation of water sector improvement.</li> <li>• Ensure that village priorities and information are collected through WUGs.</li> <li>• To maintain regular contact with WUG forum, especially in post-WUMP.</li> <li>• During or in post-WUMP phases, any conflict mediation support required to WUG.</li> </ul>
Local NGO	<ul style="list-style-type: none"> <li>• Build capacity of WUG and WUA through organisational management.</li> <li>• Guide the process of priority identification and bring up real social dimensions and deserving beneficiaries up front.</li> <li>• Ensure that the WUAs are inclusive and gender concerns are duly represented in the WUGs.</li> <li>• Support WUAs in their advocacy effort to mobilise resources for WUMP.</li> <li>• Link technical departments and Water Users' Associations for their smooth functioning together.</li> <li>• Liaise for proper representation of WUA /WUG</li> </ul>
District Authorities	<ul style="list-style-type: none"> <li>• Provide legal and administrative acceptance and support to WUMP implementation</li> <li>• Allocate resources for the implementation of WUMP in the district development plan</li> <li>• Provide timely technical services to WUAs/WUGs in WUMP implementation</li> <li>• Remain involved in participatory monitoring and provide feedback to the district government for improvement in water sector services delivery.</li> <li>• Take issue for larger policy change/ improvement (if required) with higher authorities through initiating dialogue</li> </ul>
SDC funded W4L project and WUAs	<ul style="list-style-type: none"> <li>• Ensure timely coaching and guidance at all levels</li> <li>• Steer WUMP process in collaboration with the district government</li> <li>• Organise timely trainings as scheduled in WUMP.</li> <li>• Ensure support through timely flow of funds and assistance in water governance</li> </ul>

**6.3 WUMP Updating and Procedure for Changes**

WUMP will be implemented after vetting by DCC. On yearly basis, members of Water User Association will review priorities and necessary adjustments will be made according to emerging needs as well as removal of redundant activities. For any kind of amendment, 70% of WUG/WUA members will agree and vet necessary amendments in WUMP. These changes will be further verified at Village and Tehsil Councils before approval of District Development Committee.

**6.4 WUMP Reporting, Coordination and Ownership between Stakeholders**

Village level reporting will be the responsibility of WUGs/WUAs for which local NGO will be the focal organisation. This would be reviewed on an annual basis through WUAs/WUGs assembly.

## Annexure 1 Action Plan

S.No	Project		Location		Project Prioritisation		Beneficiary HHs	Project Cost		Land Reclamation/ Developed (Acres)	
	Type	New/ Repair	Sector	Village Name	VC Name	Village level		Village Council level	Estimated Cost in millions		Source
1	Construction of Check dams	New	DRR	Tangal	Kalas	1	12	65	0.82	External	9
2	Construction of Check dams	New	DRR	Bayak	Kalas	1	56	38	0.321	External	30
3	Construction of Check dams	New	DRR	Madaklash 2	Madaklasht	2	11	130	0.855	External	120
4	Construction of Check dams	New	DRR	Madaklash 1	Madaklasht	2	10	126	0.75	External	100
5	Construction of Check dams	New	DRR	Purgal	Pursad	2	17	60	0.85	External	28
6	Construction of Check dams	New	DRR	Shahi Noor	Pursad	2	18	45	0.844	External	31
7	Construction of Check dams	New	DRR	Kashindel Gole	Kalas	2	18	27	0.6	External	15
8	Construction of Check dams	New	DRR	Sherati	Tar	3	17	120	0.509	External	33
9	Construction of Check dams	New	DRR	Gauch	Pursad	3	27	110	0.769	External	25
10	Construction of Check dams	New	DRR	Huzur Begandeh	Pursad	3	32	96	0.624	External	37
11	Construction of Check dams	New	DRR	Gureen Gole	Pursad	3	31	70	0.685	External	8
12	Construction of Check dams	New	DRR	Balpanj	Kalas	3	44	66	0.65	External	30
13	Construction of Check dams	New	DRR	Kawash	Kalas	3	42	60	0.58	External	12
14	Construction of Check dams	New	DRR	Lao	Tar	3	18	52	0.438	External	25
15	Construction of Check dams	New	DRR	Bela	Kalas	3	38	40	0.6	External	30
16	Construction of Check dams	New	DRR	Thokail	Tar	3	20	35	0.443	External	5
17	Construction of Check dams	New	DRR	Achinisar	Kalas	3	45	31	0.8	External	25
18	Construction of Check dams	New	DRR	Askari	Kalas	3	4	30	0.9	External	25
19	Construction of Check dams	New	DRR	Ziarat	Kalas	3	37	27	0.745	External	5
20	Construction of Check dams	New	DRR	Latore	Pursad	3	30	25	0.767	External	21
21	Construction of Check dams	New	DRR	Jindosh	Kalas	3	49	15	0.32	External	10
22	Construction of Check dams	New	DRR	Tingail	Tar	4	23	225	1.7	External	50
23	Construction of Check dams	New	DRR	Tar	Tar	4	24	130	0.269	External	28
24	Construction of Check dams	New	DRR	Birga	Kalas	4	43	100	0.27	External	53
25	Construction of Check dams	New	DRR	Beband	Madaklasht	4	21	95	0.219	External	
26	Construction of Check dams	New	DRR	Kalas	Kalas	4	56	80	0.73	External	35
27	Construction of Check dams	New	DRR	Gureen	Pursad	4	33	75	0.591	External	8



S.No	Project		Location		Project Prioritisation		Beneficiary HHs	Project Cost		Land Reclamation/ Developed (Acres)	
	Type	New/ Repair	Sector	Village Name	VC Name	Village level		Village Council level	Estimated Cost in millions		Source
28	Construction of Check dams	New	DRR	Istroom	Pursad	4	37	70	0.957	External	30
29	Construction of Check dams	New	DRR	Dasht Darbar Shahi	Madaklasht	4	23	60	0.48	External	125
30	Construction of Check dams	New	DRR	Kashindel	Kalas	4	52	55	0.48	External	40
31	Construction of Check dams	New	DRR	Kutik	Kalas	4	54	40	0.6	External	3
32	Construction of Check dams	New	DRR	Lanjar	Kalas	4	57	35	0.84	External	10
33	Construction of Check dams	New	DRR	Patigal	Kalas	4	48	35	0.48	External	15
34	Construction of Check dams	New	DRR	Jungal	Madaklasht	4	20	35	0.39	External	80
35	Construction of Check dams	New	DRR	Shahi	Tar	4	25	20	0.583	External	10
36	Construction of Check dams	New	DRR	Matio	Madaklasht	5	18	102	0.399	External	170
37	Construction of Check dams	New	DRR	Birganisar	Tar	5	33	77	0.345	External	38
38	Drainage and Sanitation system	New	Drinking water and Sanitation	Matio	Madaklasht	3	25	102	0.755	External	
39	Drainage and Sanitation system	New	Drinking water and Sanitation	Muzhdeh	Pursad	3	23	30	1.01	External	
40	Drainage and Sanitation system	New	Drinking water and Sanitation	Sherati	Tar	4	26	120	0.802	External	
41	Drainage and Sanitation system	New	Drinking water and Sanitation	Lao	Tar	4	27	52	0.619	External	
42	Drainage and sanitation system	New	Drinking water and Sanitation	Thokail	Tar	4	28	35	0.602	External	
43	Drainage and Sanitation system	New	Drinking water and Sanitation	Madaklash 2	Madaklasht	5	26	130	0.755	External	
44	Drainage and Sanitation system	New	Drinking water and Sanitation	Madaklash 1	Madaklasht	5	27	130	0.755	External	

S.No	Project			Location		Project Prioritisation		Beneficiary HHs	Project Cost		Land Reclamation/ Developed (Acres)
	Type	New/ Repair	Sector	Village Name	VC Name	Village level	Village Council level		Estimated Cost in millions	Source	
45	Drainage and Sanitation system	New	Drinking water and Sanitation	Tar	Tar	5	29	130	0.631	External	
46	Drainage and Sanitation system	New	Drinking water and Sanitation	Dasht Darbar Shahi	Madaklasht	5	29	60	0.755	External	
47	Drainage and Sanitation system	New	Drinking water and Sanitation	Jungal	Madaklasht	5	30	35	0.755	External	
48	Drainage and Sanitation system	New	Drinking water and Sanitation	Shahi	Tar	5	34	20	0.755	External	
49	Drainage and Sanitation system	New	Drinking water and Sanitation	Beband	Madaklasht	5	28	30	0.755	External	
50	DWSS	New	Drinking water and Sanitation	Gauch	Pursad	1	35	50	0.53	External	
51	DWSS	New	Drinking water and Sanitation	Sherati	Tar	1	5	120	1.2	External	
52	DWSS	New	Drinking water and Sanitation	Gureen	Pursad	1	5	75	0.992	External	
53	DWSS	New	Drinking water and Sanitation	Puraigtale	Pursad	1	8	70	1.4	External	
54	DWSS	New	Drinking water and Sanitation	Kutik	Kalas	1	7	40	0.87	External	
55	DWSS	New	Drinking water and Sanitation	Jungal	Madaklasht	1	6	35	0.86	External	

S.No	Project		Location		Project Prioritisation		Beneficiary HHs	Project Cost		Land Reclamation/ Developed (Acres)
	Type	New/ Repair	Sector	Village Name	VC Name	Village level		Village Council level	Estimated Cost in millions	
56	DWSS	New	Drinking water and Sanitation	Achinisar	Kalas	1	3	0.16	External	
57	DWSS	New	Drinking water and Sanitation	Istroom	Pursad	1	3	1.05	External	
58	Flood Protection wall	New	DRR	Birga	Kalas	1	16	0.6	External	35
59	Flood Protection wall	New	DRR	Matio	Madaklasht	1	3	0.97	External	30
60	Flood Protection wall	New	DRR	Gauch	Pursad	1	4	1.523	External	20
61	Flood Protection wall	New	DRR	Lao	Tar	1	7	0.929	External	25
62	Flood Protection wall	New	DRR	Kashindel	Kalas	1	10	1.54	External	20
63	Flood Protection wall	New	DRR	Kashindel Gole	Kalas	1	2	2.06	External	8
64	Flood Protection wall	New	DRR	Ziarat	Kalas	1	5	0.3	External	5
65	Flood Protection wall	New	DRR	Thokail	Tar	1	6	1.406	External	3
66	Flood Protection Wall	New	DRR	Sherati	Tar	2	11	1.457	External	25
67	Flood Protection Wall	New	DRR	Tar	Tar	2	10	0.95	External	18
68	Flood Protection Wall	New	DRR	Huzur Begandeh	Pursad	2	20	2	External	15
69	Flood Protection Wall	New	DRR	Birganisar	Tar	2	8	1.049	External	10
70	Flood Protection Wall	New	DRR	Gureen	Pursad	2	39	1.7	External	6
71	Flood Protection Wall	New	DRR	Puraitgole	Pursad	2	19	1.3	External	20
72	Flood Protection Wall	New	DRR	Kalas	Kalas	2	23	1.72	External	25
73	Flood Protection Wall	New	DRR	Tangal	Kalas	2	24	0.91	External	5
74	Flood Protection Wall	New	DRR	Pursad	Pursad	2	16	1.4	External	20
75	Flood Protection Wall	New	DRR	Askari	Kalas	2	32	1.05	External	20
76	Flood Protection Wall	New	DRR	Istroom	Pursad	2	13	1.27	External	12
77	Flood Protection Wall	New	DRR	Latore	Pursad	2	21	1.465	External	21
78	Flood Protection Wall	New	DRR	Shahi	Tar	2	14	0.812	External	10
79	Flood Protection Wall	New	DRR	Jindosh	Kalas	2	17	2.14	External	5
80	Flood Protection Wall	New	DRR	Madaklash 1	Madaklasht	4	19	2.06	External	55

S.No	Project			Location		Project Prioritisation		Beneficiary HHs	Project Cost		Land Reclamation/ Developed (Acres)
	Type	New/ Repair	Sector	Village Name	VC Name	Village level	Village Council level		Estimated Cost in millions	Source	
81	Flood Protection Wall	New	DRR	Madaklash 2	Madaklasht	4	24	80	1.48	External	33
82	Flood Protection Wall	New	DRR	GureenGole	Pursad	4	14	50	1.025	External	6
83	Flood Protection Wall	New	DRR	Balpanj	Kalas	4	53	45	1.46	External	10
84	Flood Protection Wall	New	DRR	Birganisar	Tar	4	8	30	1.2	External	18
85	Flood Protection Wall	New	DRR	Bela	Kalas	4	47	25	1.03	External	15
86	Flood Protection Wall	New	DRR	Bayak	Kalas	4	55	20	1.17	External	15
87	Flood Protection Wall	New	DRR	Tingail	Tar	5	19	225	1.2	External	50
88	Flood Protection Wall	New	DRR	Beband	Madaklasht	3	14	60	0.98	External	40
89	Flood Protection Wall	New	DRR	Dasht Darbar Shahi	Madaklasht	3	15	60	1.25	External	100
90	Flood Protection Wall	New	DRR	Purgal	Pursad	3	24	40	0.63	External	20
91	Flood Protection Wall	New	DRR	Jungal	Madaklasht	3	13	35	1.48	External	80
92	Flood Protection Wall	New	DRR	Shahi Noor	Pursad	3	26	35	1.772	External	25
93	Flood Protection Wall	New	DRR	Tingail	Tar	3	19	30	1.14	External	20
94	Flood Protection Wall	New	DRR	Kutik	Kalas	3	41	25	1.3	External	3
95	Flood Protection Wall	New	DRR	Lanjar	Kalas	3	43	20	2.35	External	8
96	Flood Protection Wall	New	DRR	Patigal	Kalas	3	34	20	1.24	External	10
97	Improvement of DWSS	Repair	Drinking water and Sanitation	Madaklash 2	Madaklasht	1	1	130	0.504	External	
98	Improvement of DWSS	Repair	Drinking water and Sanitation	Madaklash 1	Madaklasht	1	2	126	0.65	External	
99	Improvement of DWSS	Repair	Drinking water and Sanitation	Huzur Begandeh	Pursad	1	2	96	1.007	External	
100	Improvement of DWSS	Repair	Drinking water and Sanitation	Beband	Madaklasht	1	5	95	0.606	External	

S.No	Project		Location		Project Prioritisation		Beneficiary HHs	Project Cost		Land Reclamation/ Developed (Acres)	
	Type	New/ Repair	Sector	Village Name	VC Name	Village level		Village Council level	Estimated Cost in millions		Source
101	Improvement of DWSS	Repair	Drinking water and Sanitation	Tar	Tar	1	2	85	1.74	External	
102	Improvement of DWSS	Repair	Drinking water and Sanitation	Birganisar	Tar	1	4	77	0.874	External	
103	Improvement of DWSS	Repair	Drinking water and Sanitation	Balpanj	Kalas	1	15	66	1.06	External	
104	Improvement of DWSS	Repair	Drinking water and Sanitation	Kawash	Kalas	1	6	60	0.27	External	
105	Improvement of DWSS	Repair	Drinking water and Sanitation	Bela	Kalas	1	1	40	1.2	External	
106	Improvement of DWSS	Repair	Drinking water and Sanitation	Lanjar	Kalas	1	4	35	0.28	External	
107	Improvement of DWSS	Repair	Drinking water and Sanitation	Patigal	Kalas	1	9	35	0.32	External	
108	Improvement of DWSS	Repair	Drinking water and Sanitation	Askari	Kalas	1	16	30	1.086	External	
109	Improvement of DWSS	Repair	Drinking water and Sanitation	Shahi	Tar	1	3	20	1.36	External	
110	Improvement of DWSS	Repair	Drinking water and Sanitation	Tingail	Tar	2	13	225	1.4	External	
111	Improvement of DWSS	Repair	Drinking water and Sanitation	Matio	Madaklasht	2	7	102	0.53	External	



S.No	Project		Location		Project Prioritisation		Beneficiary HHs	Project Cost		Land Reclamation/ Developed (Acres)	
	Type	New/ Repair	Sector	Village Name	VC Name	Village level		Village Council level	Estimated Cost in millions		Source
112	Improvement of DWSS	Repair	Drinking water and Sanitation	Bigra	Kalas	2	22	100	0.27	External	
113	Improvement of DWSS	Repair	Drinking water and Sanitation	GureenGole	Pursad	2	12	70	0.32	External	
114	Improvement of DWSS	Repair	Drinking water and Sanitation	Dasht Darbar Shahi	Madaklasht	2	12	60	0.4	External	
115	Improvement of DWSS	Repair	Drinking water and Sanitation	Kashindel	Kalas	2	29	55	0.44	External	
116	Improvement of DWSS	Repair	Drinking water and Sanitation	Kalas	Kalas	3	39	80	0.2	External	
117	Improvement of DWSS	Repair	Drinking water and Sanitation	Bayak	Kalas	3	36	38	0.68	External	
118	Improvement of DWSS	Repair	Drinking water and Sanitation	Tangal	Kalas	4	58	65	0.56	External	
119	Improvement of DWSS	Repair	Drinking water and Sanitation	Purgal	Pursad	4	34	60	0.69	External	
120	Improvement of DWSS	Repair	Drinking water and Sanitation	Shahi Noor	Pursad	4	38	45	0.781	External	
121	Improvement of DWSS	Repair	Drinking water and Sanitation	Kashindel Gole	Kalas	4	59	27	0.5	External	
122	Improvement of DWSS	Repair	Drinking water and Sanitation	Lao	Tar	5	32	52	0.92	External	

S.No	Project		Location		Project Prioritisation		Beneficiary HHs	Project Cost		Land Reclamation/ Developed (Acres)	
	Type	New/ Repair	Sector	Village Name	VC Name	Village level		Village Council level	Estimated Cost in millions		Source
123	Improvement of Irrigation Channel	Repair	Irrigation	Tingail	Tar	1	1	225	1.056	External	50
124	Improvement of Irrigation Channel	Repair	Irrigation	Kalas	Kalas	1	11	80	1.38	External	35
125	Improvement of Irrigation Channel	Repair	Irrigation	GureenGole	Pursad	1	11	62	1.3	External	34
126	Improvement of Irrigation Channel	Repair	Irrigation	Dasht Darbar Shahi	Madaklasht	1	4	60	1.8	External	25
127	Improvement of Irrigation Channel	Repair	Irrigation	Purgal	Pursad	1	6	60	0.63	External	28
128	Improvement of Irrigation Channel	Repair	Irrigation	Shahi Noor	Pursad	1	7	45	0.791	External	31
129	Improvement of Irrigation Channel	Repair	Irrigation	Pursad	Pursad	1	10	40	1.123	External	25
130	Improvement of Irrigation Channel	Repair	Irrigation	Muzhdeh	Pursad	1	1	30	0.92	External	8
131	Improvement of Irrigation Channel	Repair	Irrigation	Latore	Pursad	1	9	25	1	External	21
132	Improvement of Irrigation Channel	Repair	Irrigation	Jindosh	Kalas	1	8	15	1.15	External	10
133	Improvement of Irrigation Channel	Repair	Irrigation	Beband	Madaklasht	2	8	95	3.151	External	270
134	Improvement of Irrigation Channel	Repair	Irrigation	Balpanj	Kalas	2	31	66	1.77	External	30
135	Improvement of Irrigation Channel	Repair	Irrigation	Kawash	Kalas	2	25	60	0.86	External	12
136	Improvement of Irrigation Channel	Repair	Irrigation	Kutik	Kalas	2	28	40	0.5	External	3
137	Improvement of irrigation Channel	Repair	Irrigation	Bela	Kalas	2	20	40	0.6	External	30

S.No	Project			Location		Project Prioritisation		Beneficiary HHs	Project Cost		Land Reclamation/ Developed (Acres)
	Type	New/ Repair	Sector	Village Name	VC Name	Village level	Village Council level		Estimated Cost in millions	Source	
138	Improvement of Irrigation Channel	Repair	Irrigation	Bayak	Kalas	2	13	38	1.15	External	30
139	Improvement of Irrigation channel	Repair	Irrigation	Lanjar	Kalas	2	30	35	1.38	External	10
140	Improvement of irrigation Channel	Repair	Irrigation	Patigal	Kalas	2	21	35	1.45	External	15
141	Improvement of Irrigation Channel	Repair	Irrigation	Jungal	Madaklasht	2	9	35	3.59	External	80
142	Improvement of Irrigation Channel	Repair	Irrigation	Gauch	Pursad	2	15	35	1.35	External	10
143	Improvement of Irrigation Channel	Repair	Irrigation	Thokail	Tar	2	9	35	1.16	External	30
144	Improvement of irrigation Channel	Repair	Irrigation	Achinisar	Kalas	2	27	31	1.62	External	25
145	Improvement of Irrigation Channel	Repair	Irrigation	Ziarat	Kalas	2	51	27	0.84	External	5
146	Improvement of Irrigation Channel	Repair	Irrigation	Lao	Tar	2	12	25	0.466	External	5
147	Improvement of Irrigation Channel	Repair	Irrigation	Madaklash 2	Madaklasht	3	17	130	0.85	External	120
148	Improvement of Irrigation Channel	Repair	Irrigation	Madaklash 1	Madaklasht	3	16	126	0.722	External	100
149	Improvement of Irrigation Channel	Repair	Irrigation	Birga	Kalas	3	33	100	0.6	External	53
150	Improvement of Irrigation Channel	Repair	Irrigation	Birganisar	Tar	3	16	77	0.538	External	10
151	Improvement of Irrigation Channel	Repair	Irrigation	Gureen	Pursad	3	25	75	1.25	External	8
152	Improvement of Irrigation Channel	Repair	Irrigation	Istroom	Pursad	3	28	70	0.699	External	30

S.No	Project		Location		Project Prioritisation		Beneficiary HHs	Project Cost		Land Reclamation/ Developed (Acres)	
	Type	New/ Repair	Sector	Village Name	VC Name	Village level		Village Council level	Estimated Cost in millions		Source
153	Improvement of Irrigation Channel	Repair	Irrigation	Tangal	Kalas	3	46	65	0.6	External	9
154	Improvement of Irrigation Channel	Repair	Irrigation	Kashindel	Kalas	3	32	55	1.95	External	40
155	Improvement of Irrigation Channel	Repair	Irrigation	Tar	Tar	3	15	45	0.598	External	10
156	Improvement of Irrigation Channel	Repair	Irrigation	Kashindel Gole	Kalas	3	40	27	0.7	External	15
157	Improvement of Irrigation Channel	Repair	Irrigation	Shahi	Tar	3	21	20	0.662	External	10
158	Improvement of Irrigation Channel	Repair	Irrigation	Matio	Madaklasht	4	22	102	0.936	External	170
159	Improvement of Irrigation Channel	Repair	Irrigation	Pursad	Pursad	4	10	20	0.662	External	4
160	Watershed Management	New	Watershed Management	Muzhdeh	Pursad	2	22	30	0.654	External	8
161	Watershed Management	New	Watershed Management	Pursad	Pursad	3	29	40	1.14	External	29

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