PATRIP FOUNDATION

AKDN

AGA KHAN DEVELOPMENT NETWORK

Environmental and Social Assessment (ESA)

"All Weather Access Road in Chitral (PAK-AKDN-CHI-002)"

Developed by

Aga Khan Rural Support Program (AKRSP)

The Project Implementing Partner

1 PROJECT INFORMATION

Project Name:

All Weather Access Road in Chitral

Project Location:

Broghil Valley in Chitral District, KP, Pakistan

Implementing Partner:

Aga Khan Rural Support Program (AKRSP)

1.1 PROJECT DESCRIPTION

The objective of the project is to improve regional connectivity and access to the Broghil valley by linking Kishmanja to Lashkargaz through an all-weather access road, providing safer and less costly travel conditions and improved livelihood opportunities, benefiting directly about 6,400 people (800 Households) living in Broghil and Yarkhun.

Broghil has strategic importance in promoting future trade and linkages between Pakistan and Central Asian Countries through the Wakhan Corridor of Afghanistan. However, access to the valley and towards the border is only possible through a rough and risky jeepable track lacking reliable connectivity with the rest of the country for about half the year (winters) often and blocked during summers undermining true tourism potential, livelihood opportunities, and access to services.

The Aga Khan Rural Support Program (AKRSP) and the PATRIP Foundation launched the "All-Weather Access Road" project in Broghil Valley to build essential road infrastructure that would ensure year-round access to the valley. The project aimed to construct approximately 21 kilometers of main valley roads, linking Kishmanja to Lashkargaz, and also included the construction of three strategically positioned bridges designed to withstand snowfall. Despite the setbacks caused by the COVID-19 pandemic and subsequent floods, the project was extended until December 2023 to complete the original works and additional works proposed from the project savings. The additional works include the construction of four link roads spanning seven kilometers, flood protection works measuring 60 meters in vulnerable sites, the improvement of the existing road from Kishmanja to Garamchashma (Pechuch), the development of promotional materials (boards/pamphlets), manual development, training and awareness sessions on road safety, and the provision of tools kits and safety equipment for road maintenance.

With further financial support from PATRIP, AKRSP plans to undertake additional activities based on the above works, including strengthening existing connectivity, supporting the rehabilitation of flood-damaged infrastructure, and promoting climate change resilience in the border areas of Broghil and Upper Chitral by December 2025. The project interventions will be extended to adjacent villages around Broghil Valley that have been affected by floods, increasing the number of beneficiaries.

Under the cost extension of the project, different activities are planned including the construction of five link roads and rehabilitation of hydropower stations, pipe irrigation, irrigation channels and retaining walls culverts and breast wall at critical sites in the main valley roads.

1. Widening and rehabilitation of Kand Payeen link road (6 KM) in Broghil
2. Construction of link road from Broghil valley road to Lower Ishkarwaz Village (1.5 KM)
3. Construction of link road to Khankhun Village (1 KM)

4. Rehabilitation of a 100kW micro hydel power plant at Kand affected by the 2022 floods
5. Rehabilitation of 20 kW Chikar Hydropower station
6. Rehabilitation and improvement of Pipe Irrigation Dewseer Yarkhun affected by the 2022 floods
7. Improvement of 01 irrigation channels (Immit Meragram) in Yarkhun valley affected by the 2022 floods
8. Construction of retaining/breast walls and/or culverts at vulnerable/critical sites on the main Broghil valley road (300 running feet)

The additional activities are planned to be implemented over two years (2024 – 2025) with construction work possible only during summers i.e. from Mid-May to Mid-October. All physical work will have to be planned for execution during the summer season.

Project concept and idea evolved from continuous engagement of AKRSP with field level stakeholders such as local communities through their representative Village organizations, women organizations and LSO, the local District Administration, security agencies in the area and discussion with sister AKDN agencies already undertaking PATRIP funded and other development work in Broghil valley.

Project concept and idea evolved from continuous engagement of AKRSP (through the completed and ongoing PATRIP work under "All Weather Access Road in Chitral" project) with field level stakeholders including local communities through their representative Village organizations, women organizations and LSO, the local District Administration and Park Authorities (Wildlife Department KPK).

AKRSP social mobilization team will lead community mobilization, organization and agreements during the implementation period and establish criteria for community contribution, support, facilitation and participation in project through their representative VO/WO and cluster level organization. This will provide an enabling environment for initiation, implementation and maintenance of the infrastructures and conflict management as/if required. Per AKRSP's implementation approach skilled/unskilled labour and local materials for works will be facilitated by local communities.

The District Administration NOCs and MoU Wildlife Department were already secured therefore no additional approvals would be required for this phase.

1.2 ANALYSE OF ALTERNATIVES

The villages located in Broghil Valley and Upper Yarkhun are facing significant challenges in accessing civic facilities, transportation of goods, and community mobility due to their remote location and flood devastations in the year 2022 & 2023. This limits the movement of local communities and hinders economic activities in the area. For this reason, link roads falling around Broghil area need to be improved for better access to essential services and also facilitate the transportation of goods and people, enhancing connectivity and mobility for the local community. By providing easier access to markets, healthcare facilities, and educational institutions, the link roads will contribute to the overall development and well-being of the villages.

In addition, the floods caused severe damage to irrigation channels and hydropower stations in the area, posing significant challenges to local agriculture and electricity supply. Irrigation channels are the primary means of water supply for agricultural lands, and their damage jeopardizes the livelihoods of local farmers, putting agricultural production at risk. Moreover, the disruption of hydropower stations has rendered households, shopkeepers, students, and health facilities without electricity. Therefore, rehabilitation of these infrastructures are important to restore local livelihoods and electricity access to the community and adverse impacts can be mitigated.

2 LAND ISSUES

In the case of the link road construction, land acquisition from the local community will be a crucial initial step before the project implementation can proceed. This process involves negotiations with the communities to acquire the necessary land for road construction. It's essential to ensure to address any concerns or grievances raised by the local community during this process. Once the land acquisition is completed and agreements are in place, the project can move forward with implementation, including construction activities. On the other hand, no land acquisition is required for the rehabilitation and improvement of existing infrastructures.

3 E&S ASSESSMENT JUSTIFICATION

"All Weather Access Road" project is in the vicinity of Broghil National Park and thus has been classified as a "Category B" project. However, the boundaries of Broghil National Park have not been formally defined/demarcated yet nor has any zonation done so far.

The project doesn't involve any new construction but rather improvement of the existing road infrastructures and thus requires a site-specific ESM Plan to address potential Environmental and Social risk impacts, by adopting different mitigation measures throughout implementation. The ESA has taken into account issues related to the ecological, physical, and socio-economic environment with measures to mitigate negative and enhance positive impacts.

However, it is important to note that activities such as Kand Payeen link road, Khankhun link road Kand Hydropower Station, Dewseer Pipe Irrigation and Immit Meragram Irrigation channel do not fall within the National Park area. Therefore, park-related guidelines will not apply to these cases.

3.1 APPLICABLE STANDARDS

Another driving factor in conducting ESA and developing ESMP is to fulfil International, national, and local legal and institutional requirements for environmental safeguard issues. Moreover, this ESA aims to help the project achieve compliance with the E&S standards set in the E&S Policy of PATRIP Foundation. The other applicable Standards are;

- KfW Sustainability Guidelines requirements, which encompasses acceptable international standards such as the World Bank Group Sustainability Framework as well as relevant Environmental Health & Safety Guidelines for the project.
- Government has declared Broghil National Park vide Govt. of Khyber Pakhtunkhwa notification NO: S.O. (Tech) Envt/viii-10/2005/kc dated: 25-08-2010 under section 16 of the Wildlife (Protection, Preservation, Conservation, and Management) Act, 1975. A park Management plan has been drafted and will be a guiding document for the management of any development work or sustainable use of resources within the boundaries of the park in consultation and coordination with the Wildlife Department and communities living in Broghil Valley.

  The area of Broghil Valley has exquisite scenery and unique flora and fauna with high intrinsic and extrinsic values, which warrant the legal protection and preservation of the natural state. This implies that where any use of the park resources, whether consumptive or non-consumptive, impairs the object of establishment has to be withdrawn. Direct exploitation of wild animals and birds, which shall make less an issue for the community as they have no direct livelihood stake in the wild animals and birds. These can be well enforced with community participation and any deviation in this respect can be well addressed through administrative actions under the wildlife

laws. The active role of the community in comprehending and implementing these provisions within the sustainable use principles will be crucial to the management of the natural resources in the park. This is, therefore, in this context, that this National Park will be managed with the participation of Broghil Valley communities.

- Convention on Biological Diversity (CBD), entered into force in 1993. The Convention addresses biological diversity at the genetic and ecosystem level, and provides a framework for its conservation and sustainable use. The overall objectives of the Convention are the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from the utilisation of genetic resources. The Convention was developed in recognition of the environmental, social, cultural and economic value of biological diversity, both now and in the future, and its significant on-going reduction around the world. As a Party to the Convention, Pakistan is obliged to take general measures for the conservation and sustainable use of biological diversity and adopt measures for in-situ conservation, including a system of protected areas, the restoration and rehabilitation of degraded areas, and the development of legislation and other regulatory provisions for the protection of threatened species and their populations.
- Ramsar Convention, 1971, is also called the Convention on Wetlands of International Importance, especially for waterfowl. It is an inter-governmental treaty that embodies the commitment of its member countries to maintain the ecological character of their wetlands of international importance and to plan for their sustainable use. The Broghil Valley presents, besides about 750 km2 of snow and glacier area component of wetland ecosystem, a high-profile mosaic of lakes, oases, peatlands, and pastures, fed by glaciers at a considerably large area of more than 200 km2. This is a landscape dotted with more than 30 lakes and about the same number of blocks of peatlands, and also with the riverbed and the river tributaries from the interior valleys. These cover an area of more than 45 km2 and offer a large sum of diverse wetlands in a short span inter-woven with and dependent upon the high alpine grassland's ecosystem.
- The Convention on Migratory Species of Wild Animals (CMS) also known as the Bonn Convention is aimed at conserving migratory species of wild animals and birds throughout their range. It is an intergovernmental treaty and has been ratified by Pakistan. The valley is a staging ground for a large number of avifauna species while migrating from Central Asia and Russia to the Indus plains and beyond, crossing the international boundaries of Pakistan at Broghil. Similarly, the large animals and birds like Snow leopards, Brown bears, blue sheep, Marcopolo sheep, eagles, falcons, and others share the habitat of Broghil Valley cyclically and predictably with Wakhan and Tajikistan besides GB. Ibex and Urial are also not confined to Broghil Valley but have part of their life in the valleys of Wakhan (Afghanistan) and Tajikistan, besides in GB. Most of these species are threatened and endangered. It is evident that Broghil Valley meaningfully portrays for application of the Bonn Convention, and as a Member State, the Government has the obligation to protect these migratory species of international boundaries and their habitat requirements in the country.

4 BASELINE CONDITIONS

4.1 INTRODUCTION

4.1.1 Purpose

The main objective of this ESA is to identify the impacts and risks of proposed project activities, ensure compliance with the Government of Pakistan (GoP) environmental laws and regulations and the PATRIP safeguard requirements, and recommend appropriate measures that will mitigate the negative impacts of the project while enhancing the current condition of the immediate environment

in the project area. The ESA has been based on information gathered during the feasibility/design stage and review of secondary information (such as the Broghil Park Management plan) and the resultant ESMP will evolve during the laying out of the project. The ecological features of Broghil Valley are very fragile having very little or no resilience for recouping and rejuvenation when subjected to large-scale disturbance. For this reason, the ESA examined the potential adverse impacts of road improvement on important and rare species of high-altitude alpine wetlands and alpine pastures which are endemic to the area and are regarded as one of the important biodiversity hot spots with rare habitats and distinct fauna, flora, and ecology. More specifically, the ESA will establish whether the planned upgrading will impair or degrade the critical habitat function and if there is an effect on wildlife. Keeping in view the situation, the ESM plan has been developed to minimize any potential adverse impacts on unique biodiversity in the valley rather than protect it.

4.1.2 Sources of Information

Relevant information was obtained by reviewing secondary data available on the subject and consultations with Local Communities, District Administration, Wildlife Department, Snow Leopard Foundation (SLF), Local Bodies Representatives, Project technical staff, etc. The stepwise activities comprise:

- Primary Consultation was made with the District and Tehsil Administration about the project and its implementation mechanism.
- Consultations were also made with DFO Wildlife Chitral and Project Director National Parks regarding the scope of work and its implication on wildlife, and communities. A detailed MoU has already been signed with the Khyber Pakhtunkhwa Wildlife Department for the development work of AKRSP in Broghil, ensuring conservation in general.
- Consultations with local communities and village council representatives to solicit their feedback on project designs and identification of possible positive and negative impacts of the project and their role/involvement.
- Consultations with International NGOs (WWF, FAO) representatives having prior work experience in the project were made to get their technical assistance in drafting the project document.
- Review of PATRIP and GoP policy including legal requirements
- Review of relevant documents for secondary information and data collection
- Key documents reviewed for the development of this draft are
    - Project Technical and Detailed Proposals
    - Broghil National Park Detailed Proposal
    - Yarkhun Area Valley Profiles
    - Village Development Plans for Yarkhun UC and Broghil Valley
- Ongoing consultations, training, and feedback by Mr. Umer, the Environment lead at GFC, the technical consultants for PATRIP-funded work.

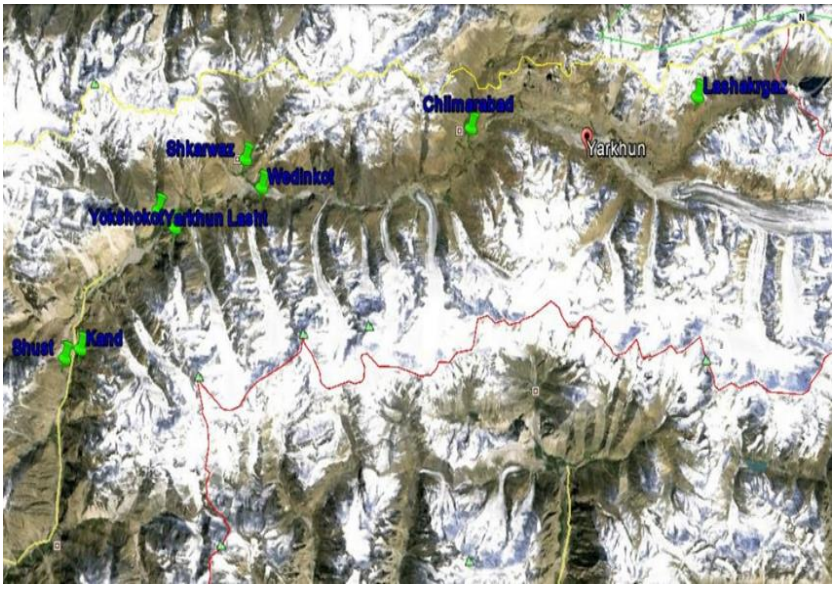
AKRSP had a presence in Broghil Valley and Upper Yarkhun for the past many years and in addition to physical work such as roads, bridges, and micro hydro power generation it has actively undertaken community organization into VOs, WOs, and LSO to work in an organized manner in the best interest of the communities. AKRSP has also undertaken the same role and other activities in an ongoing PATRIP-funded project in the area and has therefore in-depth knowledge and understanding of local norms, conditions, and environment (socio-economic and physical).

Regular data collection is currently taking place as part of the project's reporting and monitoring activities. For this purpose, some historical information was utilized. In the fourth quarter of 2023, the

project details were shared with the local communities and the District Administration. AKRSP's engineering team conducted technical surveys of the proposed sites. Additionally, social mobilization was initiated with VOs, WOs, and LSO for the implementation of PATRIP-funded projects.

5 PHYSICAL ENVIRONMENT

5.1.1 Location and Geography



Broghil valley and the target villages of Yarkhun valley are situated in the far north of Chitral, at a distance of 200-250 km. The project sites, both in Broghil and Yarkhun valley, fall in Yarkhun Union Council (UC). The altitude of the valley varies from 8,778-14,000 feet. The Immit village is the lowest point, with an elevation of about 8,778 feet, while Qurambara Lake is the highest point, having an elevation of 14,121 feet.

In the target villages, both in Broghil and Yarkhun, more than 80% of the area is covered by snow/glaciers and rock/boulders, which are non-productive in terms of crops, wood, and fodder. The valley runs narrowly from southwest to northeast along the Yarkhun River, with high mountains on both sides. The slopes on both sides of the river provide settlements and pastures.

The area is made up of high mountain peaks, wide plains, steep slopes, and deep gullies inhabited by Wakhi and Khow people. It is connected to the Wakhan Corridor of Afghanistan through Broghil Pass and Kand khun Pass. The Wakhan Corridor is a narrow strip of territory in northeastern Afghanistan that extends to China and separates Tajikistan from Pakistan. It is an important transit path of the ancient Silk Road route and is about 350 km long and 13-65 km wide.

The Broghil Pass remains open for informal movement of communities for the large part of the year, as the population of both sides have family and tribal relationships with each other. Another important pass, "Darwaza," connects Broghil with Afghanistan in the west. In the southeast, the valley is connected with Gilgit Baltistan through Darkot Pass.

5.1.2 Climate

Located at a height above 8,000 ft, the climatic condition of the area is characterized by semi-arid conditions. The climate in this tundra biome is cold and windy and rainfall is scant. The temperature remains below freezing point for the larger part of the year. The major portion of precipitation is received in the form of snow. The snow-spell starts in September and continues till late April. However, intermittent rains come in late July and early August. The average precipitation has been recorded at about 1,000mm. It remains pleasant from May to September, when the area enjoys a moderate climate, while the nights still get cold.

5.1.3 Rivers and streams (drainage system)

The Yarkhun River is the first main tributary of Chitral River, which originates from Chanter Glacier in the extreme northeast of the valley. Through the course of its flow from Chianter to Darband, it is called Broghil River. From Darband onward it is named as Yarkhun River. The Broghil River collects numerous tributaries from Chianter to Darband, locally called ***Xerao*** meaning stream. The stream flows vary between summer and winter.

5.1.4 Lakes and Hydrology

There are more than 30 natural lakes of various sizes in Broghil valley. In Broghil Valley, Surkheng is the largest lentic lake of 20 hectares and others are smaller. Another important lake is Qurambara, which is the largest lake with surface area of 270 hectares in the valley, however it is placed under the administrative control of Gigit Baltistan (GB) as it's out flow is toward Ishkoman valley in Gilgit. No fish or fauna has been observed in these lakes and amphibians like toad and frog have been sparsely found. The shallow portions of both these lakes have phytoplankton, zooplankton and micro invertebrates. The emergent vegetation like Polygonum and Juncus and submerged vegetation like Chara have been observed on the shores of these lakes.

5.1.5 Glaciers

Glaciers are included as component land form of wetlands, although biologically least active but make the reservoirs of water to feed the streams and rivers and other wetlands. The largest glacier in Broghil valley is Chiantar Glacier of 34km length. At the north-eastern end of this lays the Qurambara Lake at elevated position like a water plateau and all other lakes are also in the lap of this glacier. Other important large glaciers include Chati Boye, Chokzard, Zindikharam, Barbin, Darkot, Petchus and Koi, which also perpetuate the sub glacial streams and springs to feed the lakes and peatlands.

5.1.6 Peatlands

Peat is a special type of grass which grows in marshy areas. Peatlands in Broghil Valley and adjacent villages have critical ecological role for wetlands fauna and flora, grounds for birds and grazing lands for ungulates and other wildlife species. Peat is locally called "cheem" which is primary source of fuel for cooking and heating due to shortage of fuel wood. When dried it combust to produce heat and large amount of smoke. According to local communities that it was some 50-60 years back that the people of Broghil valley learnt the extraction and use of peat for fuel and this was then introduced by a migrant from Pamir. Since then peatlands have been capitalized on as fuel source. Today peatlands fulfill almost 80% local energy needs. During summer seasons (May-September) the daily consumption of peat per household is around 40-50 kg, while in winter this rate jumps to almost 80-100 kg per day per household. In summer season the in-house energy requirements are supplemented through other means as well e.g. fuelwood, animal dung, agriculture residues etc. But in winter due to heavy snow fall and drop of temperature the mobility of the local communities is greatly restricted and they remained confined to their houses. The use of peat also varies from hamlet to hamlet within Boroghil valley. In villages located at lower elevation e.g. Kismanjha, Jungle, Pechuch (Garamchasma), Koi and Vadinkhot the primary sources of energy are fuel wood, animal dung and agriculture residues. Peat is used as secondary source of fuel in these villages. This is due to the fact that some remains of birch, willow and juniper forests still exist in these villages or nearby areas.

5.1.7 Pasture and grazing lands

The lush green meadows and plains are utilized as pastures for grazing livestock and collecting fodder. These pastures and rangelands are the most important Common Property Resources (CPRs) that significantly contribute to the local economy. The major reliance on the natural resource base is for

grazing and collecting fodder. Foothill grazing usually continues throughout the year. Pastures, especially the alpine and sub-alpine ones, are used for dual purposes; grazing and fodder collection from early May to the end of September. The animals are taken to high pastures in patches. During the early spring season, April-May, the animals graze in the plains and foothills located in close proximity to residential areas and agricultural fields. However, with the cultivation of buckwheat and other agri-crops, they are taken to high pastures for grazing to avoid damage to agricultural crops and capitalize on the fresh forage that emerged. During this period, it is ensured that livestock do not enter the agricultural fields. To ensure controlled grazing, a traditional system called "Sot Siri" is used. Similarly, other traditional tools are used to ensure the sagacious use of natural resources, especially pastures.

5.1.8 Agricultural lands

The average landholding size in Broghil and the target villages in Yarkhun valley is comparatively higher than other parts of the district. In the target villages the average landholding size is calculated to be 4-5 Chekoram (local unit of land measurement equivalent to 2.14 Kanals, approximately 11,664 sq ft). Wheat, Wild Beans, Barley and on a small-scale Potato are grown in the area. Agriculture yield is low and is hardly sufficient to meet the in-house requirements.

5.2 BIOLOGICAL ENVIRONMENT

5.2.1 Flora

There are virtually no forests in Broghil valley and in the adjacent areas, however, scattered tree growth is found in the lower parts of the valley. The arid cold climate and high altitude prevent the tree growth and most of the park area is above the tree limit. The scattered trees are mostly birch, poplar, juniper, willow and sea-buckthorn. The mountains and pastures above Garamchashma village have no tree growth. Broghil valley is an alpine tundra, the treeless mountain tract, where vegetation is composed of dwarf shrubs, sedges and grasses, mosses and lichens. The area of pastures in Broghil an adjacent Valleys consists of grasslands, sparse grasses and trees, and peatlands which are pastures, self-generating and self-maintaining vegetation used for livestock and wildlife grazing. They provide the basic livelihood for human survival in the area. People depend on the forests and pastures for timber, fodder and fuel. The pastures in Broghil valley and adjacent areas are subjected to mismanagement for early arrival and late departure of livestock besides un-proportionate stocking to the carrying capacity to various portions of pastures. Overgrazing increases soil erosion and surface run off and adversely affect productivity and biodiversity. The appropriate level of grazing is usually effective in maintaining native grasses, herbs and shrubs diversity. Therefore, proper and controlled grazing system would sustain the plant species richness and give better livestock productivity.

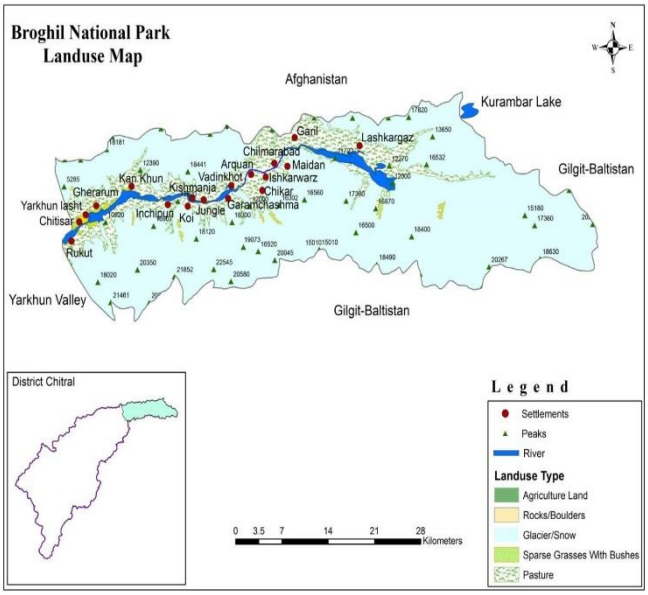
5.2.2 Wildlife and Biodiversity

Yarkhun valley in General and Broghil valley in specific by virtue of its altitude, harsh terrain and climate makes one last limit for large mammal species. Globally endangered and vulnerable according to IUCN red list of species and CITES appendices have also been reported in the area such as Urial, Snow leopard, Brown, Marco polo sheep and Blue sheep. Himalayan Ibex, Tibetan wolf and Golden marmot are commonly occurring, which are protected animals under KP Wildlife laws. However, these small populations are not isolated in Broghil valley and they mix with their relatives in adjacent valleys of Yarkhun, Ishkoman and Wakhan. These populations in Broghil Valley then provide a vital link between the populations of adjacent valleys to help keep up the genetic viability of these populations in the region.

Small mammals‟ fauna forms an indispensable component of any ecosystem. Royle's mountain vole is categorized as "near threatened (NT)" with decreasing population and the cape hare is also listed

"vulnerable (V)" in the 2005 red list. None of these species are represented in the southern parts of the country which gives additional conservation significance of these species with small populations of small mammals.

Conspicuous bird species reported in Broghil Valley are Ruddy shelduck, Himalayan snowcock, Chakor, Golden eagle, Griffin vulture, Alpine chough and Snow pigeon. The area is known for migratory route and one important corridor of Indus Flyway for many waterfowl, passerines and prey birds species of Pamir and Siberian summer breeding grounds. The wetlands and other habitats of Broghil valley are staging and juvenile rearing grounds of many migrant species. Ruddy Shelduck, regionally rare waterfowl species, is breeding in these wetlands, and also many other species, both latitudinal and altitudinal migrants in Pakistan.



Reptiles and amphibians are important vertebrate component of the biological systems as they will demonstrate different concepts of physiological and behavioral adaptations to different climates. Two species, one the Green toad and the other Caucasian rock agama have been observed.

5.3 HUMAN, SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

5.3.1 Human Socioeconomic and Cultural

5.3.2 Population Dynamics

Even though local populace migrated from different areas of Afghanistan, Central Asia, China and other parts of Chitral with diverse socio-cultural background, but with the passage of time they somehow managed to get assimilated into a single culture and communal setup. Today almost 100% population of the area shares same medium of communication i.e. language, same socio-cultural practices including livelihood means, same religious norms/believes and same housing patterns. The Broghil area is comprised of 143 households and 1489 souls. The valley is comprised of 12 big and small hamlets. Average household population is about 10 individuals.

S #	Village name	# of HH	Male	Female	Total
1	Lashkargaz	16	108	92	200
2	Garil	10	80	70	150
3	Chilmarabad	27	160	140	300
4	Ishkarwaz	18	100	90	190
5	Medan	3	15	15	30

6	Arquan	3	12	11	23
7	Chikar	20	120	100	210
8	Garumchasma	30	135	125	260
9	Vadinkhot	3	13	7	20
10	Kishmanja	3	17	15	32
11	Jungle	3	7	5	12
12	Koi	7	32	30	62
	Total	**143**	**799**	**700**	**1489**

In addition to the villages in Broghil, 5 villages with a total population of 1,496 will also be included. Below are the details of the target villages;

S #	Village name	# of HH	Male	Female	Total
1	Kand Khun	15	52	56	108
2	Kand Bala	11	64	54	118
3	Kand Payeen	26	104	95	199
4	Dewseer	74	370	296	666
5	Immit	45	212	193	405
	Total	**171**	**802**	**694**	**1496**

5.3.2.1 Occupation

The sources of income and occupations of the area present a mixed picture. Local people have limited livelihood opportunities due to remoteness and severe climatic conditions prevailed for most of the time. Livestock raring and other pastoral activities supplemented by limited agriculture are the chief sources of livelihoods. Additional income is generated through localized trade in handicraft, livestock, livestock byproducts i.e. animal skins, carpets and ropes made of animal wool etc. and tourism.

Farm Income: Wheat and barley are cultivated in the lower part of Broghil valley and the nearby villages. However, the production is not enough to fulfill even the in-house needs. The primary purpose of cultivating these crops is to supplement the fodder demand, especially during the winter season when the stall feeding of livestock becomes a crucial issue. Nevertheless, some ultra-poor families also include these crops in their daily diet. Although the average landholding size is quite high as compared to other parts of the district, crop production per acre is much lower. The entire area is in a single cropping zone. To supplement the nutritional needs and fodder production, the residents also grow potato, alfalfa, and wild beans. Wild beans are grown primarily for fodder production, but when fresh, they are also used as a food item.

Livestock nurturing and husbandry practices are the most important and potent sources of livelihood. The residents are traditionally livestock herders, and grazing land is an important asset to them. They use cattle to plow farms and as a means of transporting people and goods. Livestock is a significant source of proteins (milk and meat) and cash. The residents also use animal dung as fertilizer and as a source of household energy. Almost every household, rich or poor, is engaged in livestock rearing and basic husbandry practices in one way or another to survive in this climatically unfriendly area. Of the total income generated, about 90% comes from livestock rearing and animal husbandry practices. Livestock rearing is practiced for fulfilling in-house daily requirements as well as generating income through trade. Livestock also supports agriculture activities. Distribution of Livestock Population is shown below

Table-Livestock in Broghil valley

S#	Village name	Yaks	Horses	Donkeys	Sheep	Goats	Cows	Oxen
1	Lashkargaz	180	16	40	400	300	23	37
2	Garil	160	9	17	231	184	36	38
3	Chilmarabad	180	16	23	400+	350	20	60
4	Ishkarwaz	72	12	16	170	150	20	16
5	Arquan	24	04	04	60	50	09	07
6	Chikar	120	15	25	350	300	60	40
7	Garumchasma	110	17	25	400	800	67	64
8	Koi	15	06	05	50	50	15	10
9	Kishmanja	30	2	03	-	130	7	-
10	Jungle	-	01	2	15	40	5	3
11	Midan	30	4	4	60	50	10	6
12	Vadinkhot	6	2	3	-	50	9	6
	Total	**927**	**104**	**167**	**2136**	**2454**	**281**	**287**

Table-Livestock in the target village in Yarkhun valley

S#	Village name	Yaks	Horses	Donkeys	Sheep	Goats	Cows	Oxen
1	Kand Khun	8	1	5	88	143	20	10
2	Kand Bala	-	-	12	100	201	20	13
3	Kand Payeen	-	-	8	45	162	28	10
4	Dewseer	-	-	5	112	245	87	33

5	Immit	-	-	9	109	185	40	9
	Total	**8**	**1**	**39**	**454**	**936**	**195**	**75**

Off Farm Income: The Broghil Valley and adjacent villages of Yarkhun Valley have great potential to attract tourists from all over the world. However, the contribution of tourism to the local economy is very insignificant, only 1.5% of the total. Nevertheless, it has the potential to grow in the future. Supplemental income is generated through the trade in animal skins, handicrafts, and carpets made of wool. But due to the unavailability of nearby markets and lack of basic skills to produce quality goods, the contribution of this sector to the local economy is very small. The majority of the local products are exchanged during festivals and ceremonies, including weddings and religious ceremonies.

The second-largest sector contributing to the local economy in terms of cash and in-kind capital is labor outside the area. With the onset of winter, a major portion of the labor force, between the ages of 18-50, migrates to GB, Chitral, and down districts in search of work. The majority of these are unskilled laborers and are engaged in low-yielding professions. A small number of individuals are reported to have government or private jobs. The overall contribution of employment to the local economy is 5-10 % (EST).

During the lean months, the poor usually rely on informal credit from shopkeepers and other sources, including relatives and wealthy villagers. The debt is paid back without any interest. The time frame verbally agreed for the payment of debt varies from six months to one year.

Basic Civic Facilities

The physical infrastructure in the valley is lacking and needs improvement to support regional development and resource conservation. The valley is connected to the lower parts of district Chitral through an unmetalled link road, which is often subjected to landslides and water intrusion. Access to communication services such as telephone, mobile service, TV and newspapers is not available, and radio transmissions are the primary source of information and entertainment. However, some parts of the target village in Yarkhun have access to mobile services.

The health facilities in the area consist of three dispensaries established by Aga Khan Health Services and a poorly equipped government dispensary established at Shuist and Garamchasma villages. The available health facilities are poorly equipped with the necessary equipment and human resources to meet the local requirements. Villagers often have to travel on foot for two to four days to get medical help for their minor ailments.

The education facilities are also substandard. There are 7 government schools, 3 AKES and 4 primary schools in the area. Furthermore, 2 government, 2 AKES and 3 community-based middle schools are present in the area. Along with these, two colleges are also present in the area.

The sole police station is located in Yarkhun Lasht, and there are five placements of Chitral Scouts located at Pawor, Dubargar, Yarkhunlasht, Kismanjah and Ishkarwaz villages. In total, 106 personnel of Chitral Scouts are posted in these posts. The local communities of Broghil use the wireless systems of the Scouts to seek help and services in times of emergency.

The valley also lacks access to power. Through the technical and financial support of AKRSP Chitral, a micro hydel power station has been established in different locations in Broghil and adjacent villages.

To ensure a sustained supply of wheat to Broghil Valley, the government has established a wheat depot in Yarkhun lasht and Vadinkhot village. Other civic facilities including a sewerage system, portable water supply system, and emergency services are not available. There are also no formal credit facilities available within the village or in the nearby vicinities of the area, except for the local shopkeepers and wealthy villagers.

5.3.2.2 Social Mobilization and Institutional Base

Social mobilization activities were started in the valley as soon as AKRSP operations started in GBC. The institutional base in the valley is made of 9 Village Organizations (VOs) and 8 Women organizations WOs) and 10 Vos and 13 Vos in the target villages in Yarkhun valley that cover almost 100% of the households. VOs/WOs exist at the hamlet level having 15 to 80 member which are involved in saving mobilizations and implementation of program packages at the grassroots level. As an umbrella of V/WOs, one Cluster Organization at the valley level having representation of all VOs and WOs, has been established to address community-level conflicts, supervision, and post-project maintenance with other stakeholders. Details of V/WOs are appended below;

Tabel- Details of Village organisation and Women organisation in Broghil

S#	Name of VWOs	Type of Organization	Date of Formation	Covered HH	Members	Saving
1	VO Arquan	VO	1999	11	18	9,996
2	WO Chikar	WO	1988	25	49	77,369
3	VO Garamchashma	VO	2016	32	32	18,000
4	WO Garamchashma	WO	2002	28	30	46,486
5	VO Inchipun	VO	2013	8	26	22,210
6	WO Inchipun	WO	2016	8	20	7,000
7	VO Kishmanja	VO	2001	12	21	30,000
8	WO Koi	WO	2015	8	24	12,000
9	VO Garil	VO	2015	18	33	23,400
10	VO Lashkargaz	VO	2015	19	34	23,000
11	WO Garil	WO	2002	18	31	50,864
12	WO Lashkargass	WO	2015	19	29	12,000
13	VO Chilmirabad	VO	2016	28	69	212,250

14	VO Ishkarwaz	VO	2014	15	22	31,000
15	VO Maidan	VO	2013	8	22	24,546
16	WO Chilmarabad	WO	2017	28	47	6,120
17	WO Iskarwaz	WO	2002	15	22	10,075

Tabel- Details of Village organisation and Women organisation in the target villages in Yarkhun

S#	Name of VWOs	Type of Organization	Date of Formation	Covered HH	Members	Saving
1	VO Kand Payeen	VO	1998	42	42	127627
2	WO Kand Bala	WO	2016	14	14	28910
3	VO Kand Bala	VO	1987	42	42	231830
4	VO Kand Center	VO	1999	15	15	18580
5	WO Kand Payeen	WO	2000	42	42	92019
6	WO Kankhun	WO	2017	17	17	32930
7	VO Kankhun	VO	1999	17	17	105512
8	Dewseer	WO	1993	15	35	-
9	Dewseer Bala	WO	1993	32	32	-
10	Immit	WO	1995	38	62	-
11	Dewseer	VO	1993	55	74	-

6 IMPACT ASSESSMENT

The extension of the "All Weather Access Road" Project is expected to have both positive and negative impacts during its implementation, particularly during the construction, rehabilitation, and decommissioning of link roads, irrigation channels, and micro hydels. This report section presents the potential social, economic, and environmental impacts that have been identified for each stage of the project.

6.1.1 Ecological Impact

Impacts:

The construction of link roads can have significant ecological effects. It directly removes habitat for numerous species by clearing vegetation, potentially leading to local biodiversity loss. Construction activities also contribute to soil erosion and sedimentation in nearby water bodies, which can impact soil fertility and water quality. Moreover, increased vehicular traffic associated with roads introduces noise and air pollution, further disturbing wildlife and ecosystems.

Similarly, the rehabilitation of irrigation channels poses ecological challenges. Altering these channels can disrupt natural water flow patterns, affecting downstream habitats and dependent ecosystems. Modifications to irrigation systems may also impact wetland habitats, altering vegetation composition, and affecting aquatic species. Furthermore, poor management of irrigation channels can lead to water pollution from agricultural runoff and compromise water quality.

While micro-hydropower projects are touted as environmentally friendly alternatives, they still carry ecological implications. Construction often involves diverting watercourses, leading to habitat alteration and potential loss of aquatic ecosystems. Furthermore, during the construction of water channels and the forebay of the micro hydel, there is a chance of soil erosion and sedimentation of the nearby water body.

Mitigation:

All personnel working on the project site, including project staff and contractors, will adhere to the applicable guidelines, regulations, and acts related to national parks. To ensure compliance, the project staff will receive training and orientation from the district wildlife staff before starting the project. These regulations will be incorporated into the sub-contract agreement. In addition to this, the project-specific mitigation measures are below:

Link Road Construction:

- To minimize soil erosion and sedimentation, use erosion control measures such as retaining walls, vegetative buffers, and sediment traps.
- Before construction, conduct thorough environmental impact assessments to identify sensitive habitats and species.
- To restore habitat and mitigate the loss of biodiversity, replant native vegetation in cleared areas.
- To reduce wildlife-vehicle collisions, implement speed limits and wildlife warning signs.
- To minimize disturbance to wildlife, use noise barriers and schedule construction activities accordingly.

Rehabilitation of Irrigation Channels:

- To minimize impacts on downstream ecosystems, incorporate water management practices that mimic natural flow regimes.
- To reduce sedimentation and runoff, implement erosion control measures such as riparian vegetation buffers and soil stabilization techniques.
- To minimize pollution of irrigation water, implement best management practices in agriculture, and reduce the use of chemicals.
- To detect and address pollution issues promptly, conduct regular monitoring of water quality parameters.
- Encourage sustainable water use and engage local communities in water management practices.

Micro Hydropower:

- To support downstream ecosystems, implement flow release regimes that mimic natural flow patterns.
- Incorporate habitat restoration measures into project planning and conduct thorough environmental impact assessments.
- To minimize downstream sedimentation, implement sediment management strategies such as sediment traps and periodic dredging.
- Ensure project design reflects local ecological knowledge and needs by engaging with local communities and stakeholders to address concerns.

6.1.2 Impacts on the Physical Environment

6.1.2.1 Soil Erosion and Contamination

Impacts:

Soil will become susceptible to erosion due to cutting and filling and movement of heavy machinery which may in some instances lead to land sliding and water pollution if not addressed properly and timely. Clearing and excavation may cause accelerated or uncontrolled sedimentation in the water courses and roadside drains. Moreover, the further possibility of soil contamination may occur during the use/handling of construction materials such as stones, sand, gravels, fuel, lubricants, paints, and disposal of solid waste. All these have the potential to contaminate ground or surface running water.

Mitigation:

- Efforts will be made to avoid and minimize solid and liquid waste generation and if any is generated that should be stored at designated places before disposal. Furthermore, solid waste generated will be segregated into biodegradable and non-biodegradable wastes. The non-biodegradable and recyclable waste should be handled. Efforts will be made to compost biodegradable wastes in small-size compost pits.
- Soil erosion will be controlled by applying engineering as well as bioengineering techniques. Disposal of spoils and debris on the valley side will be strictly prohibited and only done at pre-identified places.

6.1.3 Construction Spoils/Waste

Impacts:

Activities like cutting of earth and rock mass for widening or lowering the slope gradient of the road and other infrastructure will generate waste/debris. Furthermore, waste materials such as food

remains, and packaging materials will also be generated from workers' activities. Waste from the rehabilitation of the road can potentially impact wildlife and livestock populations if on or closer to grazing areas. Waste of non-biodegradable nature if not disposed of properly will render the areas along / closer to the road useless for grazing activities. Inappropriate disposal of these wastes may obstruct water flow and may cause stagnancy of water and a filthy smell resulting in health problems for workers, residents, and fish or other aquatic life.

Mitigation:

- Construction waste and debris will be either reused if possible or disposed of at proper designated locations.
- Construction sites will be provided with proper waste management facilities such as dust bins and earthen pits.
- All waste fuel, oils, lubricants containers, etc. will be stored separately and provided for recycling.

6.1.3.1 Hydrology and Drainage

Impacts:

Potential impacts in hydrology and drainage are the risk of increasing sedimentation and siltation of waterways during the construction phase which may also lead to obstruction in flow.

Mitigation:

- Existing natural drainage systems, including irrigation channels, will not be disturbed. In addition, adequate cross-drainage structures will be provided to facilitate the natural flow of water across the road embankment.
- Causeways will be provided in each perennial and seasonal stream as well as rivulets.

6.1.3.2 Air Quality

Impacts:

During the construction phase of the project, air quality will be significantly impacted due to the extensive road improvement work and rehabilitation of irrigation channels. In construction activities, the transportation of materials and equipment generates a lot of dust and various other emissions which stimulate respiratory reactions in people and livestock closer to the site. Though the dust from quarrying and vehicular transport may be short-term to people in the areas, their impact can be long-term if results in respiratory diseases. The rehabilitation of the road will mean increased movement of vehicles which is also expected to increase the levels of noise coming from the vehicles and people passing through the road.

Mitigation:

- Road surface, excavation, and construction sites will be sprinkled with water to keep them moist for dust control.
- Trucks carrying earth, sand, or stone will be covered with tarpaulin sheets to avoid spilling.
- No firewood for cooking and heating bitumen and incineration of wastes will be allowed by the Contractor.

6.1.3.3 Noise Level

Impacts:

Noise emissions from construction machinery and quarrying operations can cause nuisance to residents and workers. In such a situation, human dwellings are particularly vulnerable to nuisance

from noise. During the construction phase, ambient noise will increase temporarily and intermittently in the close vicinity of active construction fronts.

Mitigation:

- Timing of construction activities only between 7 AM to 6 PM to avoid disturbance to nearby communities at night.

6.1.3.4 Borrow Pits and Quarry Sites

Impacts:

Construction materials, such as stones, gravels, sands will be collected and transported from river beds and other streams along the road. Soil erosion may arise if borrow bit are not stabilized/restored properly.

Mitigation:

- Only wastelands will be used for borrowing which should be located outside protected and forest areas, settlements, and water sources.
- Stone from rock cutting (for road) will be used to possible extent.
- Suitable size of borrow pits and quarry sites (outside protected areas) will be operated as per required volume of materials.

6.1.3.5 Siltation and Contamination of Rivers

Impacts:

Siltation from construction may occur particularly during bridge construction. Water bodies near construction sites will be at risk of contamination from construction waste and spills.

Mitigation:

- Prohibit disposal of excavated spoils and debris into river water by identifying proper waste disposal and/or storage sites.
- All chemicals and oil will be stored away from water and on a stable platform with catchment pits for spill collection.
- All waste arising from the construction sites will be disposed of in an environmentally accepted manner. Waste will be collected and/or stored (e.g. waste oil, lubricants, and paints) before disposal or transported to the approved disposal sites.
- No vehicle or equipment will be washed, parked, or refueled near river water.
- No sanitary wastewater will be discharged into the river water.

6.1.4 Socio-Economic Impacts

6.1.4.1 Occupational Health and Safety

Impacts:

Construction projects always have direct occupational health and safety risks to the employees and people around the project area. Risky operations will take place during construction such as rock cutting, and handling of hazardous waste and other inflammable materials. Moreover, both labor and local communities are exposed to various types of risks such as flying stones, moving vehicles, oil leakages, fumes, dust, noise strong smells, etc. If not well managed these can lead to injury or health issues.

Mitigation:

- The Contractor will be required to have an effective worker's health and safety Plan and also train his workers on first aid and other emergency response. Construction contracts may include standard workers health and safety measures and contractors will be bound to implement them fully. Contractors are required to take full precautions to protect the health and safety of workers while implementing the project.
- There is a need that contractors should provide and install adequate road signage showing construction work in visible places for the people to see. Maintain adequate hygiene/sanitation in and around the construction site to reduce or control the spread of diseases.
- The contractor will need to provide protective gear to all its employees and impose their use. These may include protective masks, reflective ware, dust protection masks, leather boots, and hard hats for workers in places of quarries and other similar nature of work.
- Close supervision of the workers to ensure that they are putting on protective clothing is necessary and proper warning system for workers during risky operations such as the operation of heavy machinery and blasting (if required).

6.1.4.2 Conflict

Impacts:

There might be movement of people into the project area for employment, especially in case of skilled labor and the contractors will have to recruit people both from within and outside the project area. This might lead to some conflict amongst local communities and those from outside based on cultural and income differences.

Mitigation:

- Local activists and members of community organizations should be taken on board and well-informed about the terms of engagement of non-local labor. The nonlocal labor should be given orientation to respect local values and customs and to avoid any interference in communal-level activities.
- The community members (through respective VOs, WOs, and LSO), in addition to project staff and contractors will be entrusted with conflict management at the local level.

6.1.4.3 Social and Culture

Impacts:

Local communities may be disrupted and inconvenienced by diversions, local road closures, dust, and noise, heavy equipment traffic on existing roads, and safety hazards. In the Presence of non-local people, local people especially women may feel obstructed in free movement, performance of daily chores and other local cultural practices. There is also a potential for an increase in criminal and unsocial activities as a result of non-locals working on the project.

Mitigation:

- All the non-local labor and staff will be given orientation on local cultural practices.
- The contractors will ensure their labor is not engaged in any uncultured activity.
- Avoid any unnecessary movement of non-local people in community centers.

6.1.4.4 Employment opportunities

Impacts:

All the infrastructure projects will provide employment opportunities to people and after completion, they may face unemployment and loss of income. This may result in nutritional loss, negative effects on children's education, and increased vulnerability to seasonal changes and shocks due to deprived cash base for availing these facilities/services.

Mitigation:

- The local communities will be engaged alongside skilled labor to get job training so that they can be able to use these skills for income generation elsewhere after the project.
- Provide orientation to locals about benefiting from resultant and emerging employment/income opportunities, especially from the increased flow of tourists.

6.1.4.5 Cross-Border Movement:

Impacts:

As a result of improvement in basic infrastructure cross border movement of people is expected to pick up and as a result, local-level trade will also be influenced providing locals on both sides with better economic opportunities and access to services. However, this could also lead to some negative impacts such as the smuggling of different goods, food items, and animals. These kinds of activities may cause monetary loss to the Government of Pakistan regarding public revenues (duties and taxes).

Mitigation

- Discussions with local government authorities for potential negative impact and their increased vigilance.
- Organize awareness campaigns to discourage illegal trade or other activities across the border and discussions with local LSO for local-level vigilance committees' formation to check and discourage smuggling and trade of contraband items.

6.1.4.6 Road accidents

Impact:

Road accidents will increase with improving road infrastructures and an increase in traffic flow.

Mitigation:

- Road safety signs and awareness about travel conditions provided and displayed at different points.

6.1.5 Positive Impacts

6.1.5.1 INCREASED ACCESS to Basic CIVIC Services

Impacts

The construction of a link road provides improved access to markets, healthcare facilities, educational institutions, and other essential services for villagers. This enhanced connectivity can lead to increased economic opportunities and improved quality of life. Furthermore, the community members can transport goods and agricultural produce more efficiently, reducing transportation costs and increasing market access.

The link road can also enable the villagers for faster access to emergency services such as ambulances and fire brigades, potentially saving lives during medical emergencies or natural disasters.

Enhancement Measures

- Local communities will be given awareness about basic human rights and information about the availability of basic civic facilities in other areas.
- Lobbying and advocacy with relevant departments to expand civic facilities to these hitherto inaccessible areas.

6.1.5.2 Increased Agricultural Productivity and Crop Diversification

Rehabilitating irrigation channels ensures a more reliable water supply for agriculture, allowing farmers to cultivate more crops in more irrigated land. This can lead to increased agricultural productivity, food security, and income generation for local farmers. Furthermore, with improved access to water, farmers can diversify their crops and adopt more resilient farming practices, reducing reliance on a single crop and mitigating risks associated with climate variability and market fluctuations.

Enhancement Measures

- Improved seeds and other agricultural inputs will be provided to the farmers for better agricultural practices to enhance their agricultural productivity and food security.
- Capacity-building activities for the local farmers on climate-smart agricultural practices can be initiated through training, exposure visits, and demonstration plots.

6.1.5.3 Access to Electricity

Rehabilitating micro-hydropower systems can provide rural communities with access to clean and reliable electricity. This reduces their reliance on traditional energy sources like firewood or kerosene lamps. In turn, this access to electricity facilitates the operation of schools, healthcare centers, and other essential services. As a result, it leads to improved educational outcomes and healthcare delivery in remote areas.

Micro-hydropower systems produce renewable energy with minimal environmental impact. This reduces reliance on fossil fuels and mitigates greenhouse gas emissions. It contributes to climate change mitigation efforts and promotes environmental sustainability.

Ownership and management of micro-hydropower systems by local communities empower them to control their energy resources. This fosters self-reliance and resilience. It encourages community participation in decision-making processes and promotes social cohesion and collective action.

Enhancement Measures

- Provide training programs to community members on the safe and efficient use of electricity, technical skills in renewable energy systems, and small-scale enterprise development to empower community members to take full advantage of electricity access.
- Strengthen healthcare and educational services by equipping them with electrical-related facilities and appliances.
- Foster community ownership and governance of electricity infrastructure through participatory decision-making processes, transparent management structures, and accountability mechanisms.

6.1.5.4 Tourism

Impacts:

These improvements and facilities will attract more tourists to the Broghil festival and to enjoy the scenic beauty of the area which create more employment opportunities for the local population.

Enhancement Measures:

- The local population should be given support and training on hosting tourists and tourism management to establish home-based guest bases/rest areas with basic facilities like lavatories and waste collection/disposal.
- Develop promotional materials on tourism to attract a greater number of local and non-local tourists.
- Local product awareness and showcasing/selling to tourists.
- Train locals in tourism-related livelihoods e.g. tour guides, food preparation/selling, car rentals, etc.

6.1.5.5 Cross Border movement and trade

Impacts

These activities will also create opportunities for cross-border trade after increasing accessibility and mobility of goods and Livelihood opportunities. These relationships will transform into the creation of durable peace and harmony between communities of both countries in the long run. Thus, these projects will be pivotal to accelerate development activities in border areas and for the entire people of the region.

Enhancement Measures

- Policy advocacy with relevant establishments to open up a formal transit route and remove security barriers for cross-border movement of the local communities.
- Extend relevant / acquired capacities and training to visiting Afghans.

6.1.5.6 Investment & Development Opportunities

Impacts:

This project will create a conducive environment for various organizations, including Government, non-government, and Private Sector Organizations, to invest in the area. The project will significantly reduce the cost of development and enhance competitiveness compared to other regions.

Enhancement Measures:

- Increase awareness about the area and its potential at relevant forums.
- Capacitate locals (VOs, WOs, LSO) and facilitate them to access potential investors and development partners for investing in the area.

6.1.5.7 Employment Opportunity

Impact:

The construction of the link road and the rehabilitation of irrigation channels and micro hydel are expected to provide job opportunities for local people, thereby generating income and improving their livelihoods. With better link roads and electricity facilities, more tourists are expected to visit the area, which will lead to an increase in job opportunities in the tourism industry.

Enhancement Measures

- Local communities are capacitated to benefit from the increasing tourism/business opportunities.
- Productive skills and training for locals to benefit from new employment opportunities in the post-project phase.

6.1.6 RESIDUAL IMPACTs

Impacts:

In a post-completion stage, there will be an increased influx of tourists and transport to Broghil valley, since the Government is also trying to promote tourism in this area. Increased noise and air pollution may be a problem in the long run and influx of tourists and increasing business activities may negatively affect wildlife population and movement in the area.

Mitigation:

- In the Broghil area, it is very difficult to establish plantations due to harsh weather and limited growing season, therefore to reduce the impacts of pollution, plantations should be established in lower areas.
- Secondly ongoing activities of conservation measures should be supported to reduce the impacts of increasing human activities on the wildlife population.
- Proper sensitization/awareness of tourists and locals to conserving the environment and wildlife habitat has to be a continuous process etched through an agreement between District Authorities /Wildlife Department and LSO / VOs / WOs with signage for the same purpose at critical/important locations.

7 KEY FINDINGS OF STAKEHOLDER ENGAGEMENT

AKRSP has closely engaged all important stakeholders such as the District Administration, Wildlife Department, local communities, and elected representatives.

Concern/Suggestion	Stakeholder	Responses by the Project	Limitations
a. No movement to Darwaza pass or Broghil Lake or very close to border areas. b. Will not visit or take pictures of any prohibited/boarder areas. c. Will not carry out any survey (Geological, Seismic) or collect data in the area for any other purpose. d. Will provide all information to Law Enforcement Agencies without any hesitation. e. Will not impart/spread any hate literature/material, which causes injury to the sentiments of any citizen/ethnic group. f. Will not create liabilities for the District Administration. g. Will engage local labor for the execution of the development works mentioned above.	District Administration	• based on government recommendations, AKRSP will incorporate these suggestions into organizational and project implementation SOPs. • Project-related information, fact sheets and other related will be shared with the administration	Broghil is a sensitive border area, and actions of the project/implementation approach have to be tailored to conditions set by authorities through NOC or at a later stage.

h. Will not engage any foreigner without prior permission from the Competent Authority i. Will share a quarterly progress report with DC Office Chitral. j. Will share list of employees engaged for the said works.			
• The applicable guidelines, regulations and acts related to national parks should be duly followed by all project staff, contractors and other associated people working in the project area. • The environmental integrity of the area should not be disturbed, and project(s) should be implemented in consultation with the wildlife department. • The flora and Fauna of the park should be fully protected and due care will be taken while implementing the project. • Any activity such as blasting, movement of heavy machineries creating environmental nuisance should be well informed to the designated officer of the National Park. • All project / organizational staff, contractors and labor should ensure cleanliness within the park and all kinds of waste materials should be properly disposed at designated points	Wildlife Department (KPK)	• Provide orientation and information of ongoing developmental activities in the project area. • Develop required Environmental and Social Management Plan (ESMP) in consultation and consensus of the local wildlife department. • Share designs of the infrastructure project with wildlife department when/if required. • Facilitate community mobilization during construction work. • Facilitate wildlife department staff in periodic visit(s) to project activities. • Coordinate project activities with concerned Wildlife Department officer.	The National Park has been not formally declared due to community conflicts regarding the demarcation of the park.

• Engagement of local labour in construction works in place of non-local labour • Involvement of community in project implementation • Project Sustainability	Community/Elected Representatives	• AKRSP will hold dialogues with communities to share each and every details of projects and create broader understanding about project. • Project committee having representation of community organizations will oversee the construction work • AKRSP will facilitate both Administration and Cluster organization to collectively work for sustainability of the project.	• Remote location. And thinly distributed population. • Lack of technical skills

7.1 MANAGEMENT & MONITORING

Topic	Mitigation Measure	Indicator	Means of Verification	Responsibility	Monitoring Procedure
Ecological Impact	• Training or orientation of staff on the applicable guidelines, regulations and acts related to national parks • Regulations or acts relating to national should be made part of the contract agreement. • Any activity such as blasting causing huge disturbance should be avoided and in-place machine excavation should be used. • All project / organizational staff, contractors and labor should ensure cleanliness within the park, and all kinds of waste materials should be properly disposed of at designated points. • Engage with local community institutions (village and women organizations and LSO) in conservation and awareness raising including watch and ward in the Broghil area. • Educational measures aimed at informing the traveling public about the reasons for not feeding	• Number of people trained on regulation of national park and ESM guidelines. • Number of awareness sessions organized	Site Observation Training Records	Contractor/ AKRSP / Wildlife Department and Communities	Site Inspections

	wildlife, removing plants, littering, etc., and to instill a general appreciation of the desirability of conservation. • Awareness of laws prohibiting hunting, transport of hazardous substances, and removal of plant materials from the park, and inspection of the contents of vehicles entering the park and vehicles leaving the park, for poached animals and plant materials. • Identification of rest areas with garbage cans and toilet facilities to discourage indiscriminate stopping along the roadside and littering.				
Soil Erosion and Contamination	• Efforts will be made to avoid and minimize solid and liquid wastes generation and if any is generated that should be stored at designated places before disposal. • Soil erosion will be controlled by applying engineering as well as bioengineering techniques.	• Number of Disposal Points • Total area stabilized	Observation	Contractor / AKRSP	Random Site Inspection and review of waste inventories

Construction Spoils/Waste	• Construction waste and debris will be either reused if possible or disposed of in proper designated locations. • Construction sites will be provided with proper waste management facilities such as dust bins and earthen pits. • All waste fuel, oils, lubricants, etc. will be stored separately and sold to or given for relevant recycling use.	Number of Waste Disposal points provided	Dedicated Storage areas in place.	Contractor	Rando Site Inspection and review of waste inventories
Hydrology and Drainage.	• Existing natural drainage systems, including irrigation channels will not be disturbed. In addition, adequate cross-drainage structures will be provided to facilitate the natural flow of water across the road embankment. • Causeways will be provided in each perennial and seasonal stream as well as rivulets. New bridge sites are selected based on geological stability and elevation to minimize the risk of	Number of water drainage and other support infrastructures constructed	Survey and Design documents	Contractor/ AKRSP	Random Site visits

	slope failure and bank-cutting problems.				

Air quality	• Road surfaces, excavation and construction sites will be sprayed to keep them moist for dust control. • Trucks carrying earth, sand or stone will be covered with tarpaulin sheets to avoid spilling. • No construction contractor's plants will be established near water bodies or important geographic points. • No firewood for cooking and heating bitumen and incineration of wastes will be allowed by the Contractor	• Dust control measures applications. • Project Reports	Observations	Contractors	Random site inspection and inspection of roads

Noise Level	• Establishing noise sources away from the communities and sensitive ecosystems • Timing of construction activities only between 7 AM to 6 PM to avoid disturbance to nearby communities at night	• Works schedules available	No work conducted during the night/ Grievance mechanism	Contractor	Random Site Visits, review of filed grievances, and review of time sheets of workers
Borrow Pits and Quarry Sites	• Only wastelands will be used for borrowing which should be located outside protected forest areas, settlements, and water sources. • Stone from rock cutting will be used for construction to the possible extent. • Suitable size of borrow pits and quarry sites (outside protected areas) will be operated as per the required volume of materials.	• Proper mechanism and place for gravel and sand collection available	Collection points	Contractors	Site inspection of Borrow Pits
Siltation and Contamination of Rivers	• Prohibit disposal of excavated spoils and debris into river water. • All chemicals and oil will be stored away from water and concreted platform with catchments pits for spills collection. • All wastes arising from the construction sites will be disposed in an environmentally	• Guidelines available for proper waste management on the sites. • Number of labour given orientation on waste	Observation	Contractor/ AKRPS	Site inspection

	accepted manner. Wastes will be collected, treated (e.g. sewage through septic tank) or stored (e.g. waste oil, lubricants, and paints) prior to disposal or transported to the approved disposal sites. • No vehicle or equipment will be washed, parked or refueled near river water • No untreated sanitary waste water will be discharged into the river water.	management measures.			
Occupational Health and Safety	• The Contractor will need to have an effective workers health and safety Plan and also trained his workers on first aid and other emergency response. • There is a need that contractors should provide and install adequate road signage showing construction work in visible places for the people to see. • Adequate sanitation and hygiene systems should be maintained in the construction site to reduce or control the spread of diseases.	• Health and safety plan available • Installation of road signage • Protective gears available on site	Observation, training attendance list and Grievance Mechanism	Contractor	Random site inspection

	• The contractor needs to provide protective materials to all its employees and impose their use. • Close supervision of the workers to ensure that they are putting on protective clothing is necessary and ensure that workers are standing away from dangerous places during such as activities as blasting. • Need for the development of comprehensive work place safety regulations by the contractors cannot be overemphasized.				
Conflict	• Local activists and members of community organizations should be taken on board and well informed about terms of engagement of non-local labour. • The non-local labour should be given orientation to respect local values and customs and to avoid any interference in communal level activities. • The community members and in addition to project staff and contractors will be entrusted for the conflict at local level.	• Formation of conflict resolution/Grievance redressal committee / mechanism	Conflict resolution committee, Grievance mechanism	Contractor/ AKRSP / Local Communities	Meeting with the committee and review of filed Grievance

Social and Culture	• All the non-local labour and staff should be given orientation on local cultural practices. • The contractors should ensure that their labour should not be engaged in any uncultured activities • Avoid any unnecessary movement of non-local people in community centers	• Workers code of conduct available	Grievance Mechanism	Contractor/ AKRSP	review of filed Grievance