

Exploring the Role of Community-Based Disaster Risk Reduction Management (CBDRM) Interventions in Disaster Preparedness, Response and Sustainable Development at Lower Chitral

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Abstract

Chitral is a mountains region and its inhabitants primarily depend on agriculture, livestock, forests, stream water, centuries old glaciers and other natural resources for their survival. The climate change and variabilities in weather results in frequent droughts, torrential rains and devastating floods, decrease agriculture productivity, damage livestock, erase local cultural heritage, economic infrastructure and disrupting the lives and livelihoods of local communities. This paper aims to explore the role of community-based disaster risk management (CBDRM) interventions of the Helping Hand for Relief and Development. The study used qualitative design, while the selection of sample was made conveniently using nonprobability sampling technique. Primary data was collected from a sample of 45 participants representing two different categories including members of the village disaster management committees (VDMCs) and general community, through in-depth interviews and FGDs. The collected data was passed through different phases and analyzed thematically to clarify the issue, uncover its different aspects and derive study findings. The study found that climate change has negative impacts on rural agriculture, culture heritage, economic infrastructure and lives of the local communities of Chitral. The CBDRM activities of the Helping Hand for Relief and Development have provided a solid framework for mainstreaming the local communities, enhance their capacity, strengthening resilience against the challenge in terms of adaptation, mitigation and response using a community based participatory model. The study suggests multidisciplinary research, awareness, community driven approach, development of synergies and promotion of climate governance to strengthen community resilience for effective response towards climate change related issues and promote sustainable development.

Keywords: Rural communities, Economic infrastructure, Lives, Sustainability, CBDRM

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Introduction

Climate change is a globally recognized concern and mostly affecting the developing and poor regions of the world. The industrial states extract the natural resources from developing and poor regions for earning profit and this thirst for wealth accumulation add hazardous and toxic components to the environment and increases global greenhouse gases to the environment (Wijaya, 2024). The free-market economy has resulted in unsustainable use of energy, excessive land use, changed lifestyles, patterns of consumption and production across countries, within countries, and even among individuals (Pirgmaier, 2022). The developing and poor regions are confronting the consequences of this crime committed by the developed and industrialized nations (Baer, 2012; Guldborg, 2009). The primary factor of this exploitation is poverty of the developing regions and economic hegemony of the developed countries and due to their poor economic position, they poor countries are unable to cope with the consequences of climate change in appropriate manner (Huq, Hugé, Boon, & Gain, 2015). Pakistan also faces the challenge of climate change in terms of unusual and torrential rains, flooding and rapid glacier melting (Sajjad, Bashir, & Haq, 2025), that affect the economic infrastructure, livelihood, agriculture, employment, forests, and livestock at large scale (Ng, 2021; Sajjad, Bashir & Haq, 2025). In fact, the contribution of Pakistan to the emission of global greenhouse gases is very small however; its damage is very high and poses serious challenges to the socio-economic development of the country (Atkinson, & Atkinson, 2023). The 2022, floods in Pakistan affected nearly 33 million people and the United Nations also accepted the fact that Pakistan is bearing the costs of environmental degradation caused by the developed nations (Sassi, Ali, & Ali, 2025).

The people of the northern areas of Pakistan are primarily dependent on natural resources for their survival. In past, there were sufficient rains and water available, however, in recent decades the northern regions experience low rainfall and short rainy seasons. The variabilities in weather/ precipitation patterns results in frequent droughts, torrential rains and devastating floods and decrease agriculture productivity, damage livestock, loss in local economic infrastructure, cultural heritage, and disrupting the lives and livelihoods of local communities.

Located in the north of Pakistan, Chitral is known for its beauty, distinct culture and attract tourists from within the country and across (Younghusband, 1895; Khan, 2009). Chitral has a rich and diverse culture and the people are closely related to their land and natural resources, with specific modes of and practices of production

and artifact primarily based on local knowledge, surrounding environment and the people usually recognize their lands and other local resources as collective representation, survival assets and identity factor. The preservation of their cultural heritage, languages, protecting their sacred and significant sites, objects, lands and territories is widely considered as sustainability. Due to increased dependency on their land and agriculture, they are vulnerable to several risks and any slight disruption results disruption of their whole community life (Xu, Ma, Tashi, Fu, Lu, & Melick, 2005). The constant change in climate and precipitation patterns is a serious problem for the local communities and disrupt the longstanding interaction that exists between local communities and their cultural systems (Masson-Delmotte, Zhai, Pirani, et al., 2021). In this context, climatic change is a potential threat to these communities and affect the frequency and intensity of disastrous events such as floods, droughts, corrosion of heritage sites, soil erosion, landslides, dangerous storms and winds (Sesana, Gagnon, Bertolin, Hughes, 2018; Daly, Purcell, Donnelly, Chan, MacDonagh, Cox, 2021).

The Community-Based Disaster Risk Management (CBDRM) approach is designed to adopt a bottom-up strategy for participation of local communities in risks identification, and creating joint strategies for prevention, mitigation, preparedness, response, and recovery. The CBDRM interventions is recording the experience of local community about the patterns of climate change, the impact of climate change on cultural heritage, agricultural productivity, lives and economic infrastructure. The village disaster management committees (VDMCs) are formed to mainstream local communities, utilize their unique knowledge and experiences, build their capacity through a range of activities, synthesize diverse sources of data, include stakeholder perspectives, revitalize indigenous practices, and devising interventions in accordance to the local context to promote climate governance in Chitral.

Community-based approaches are of great significance in disaster reduction and have been used since long time. Community-based disaster risk management (CBDRM) is a participative approach primarily aims to strengthen the capacity of local communities and reduce their vulnerability in wake of disasters. This study is exploring the role of Community-Based Disaster Risk Management (CBDRM) activities of the Helping Hand for Relief and Development (HHRD) in promotion of local sustainability, revitalization of local knowledge, awareness raising, environmental governance and facilitation of development of joint plans for disaster response and preparedness. Further, the study explores the process and extent local

community participation, their empowerment in decision making process, and resilience for long-term sustainability. In addition, this study also explores how CBDRM intervention about climate change preparedness and response are consistent with local community needs, cultural context and global agenda for sustainable development.

Methodology

The study utilized an exploratory research approach in which the issue under study was qualitatively analyzed, discussed, elaborated and interpreted in detail to uncover its different aspects (Merriam, 2009; Merriam, & Grenier, 2019). In this context, an initial survey of the target areas (union council) was carried out to identify the HHRD/CBDRM interventions, select sample and undertaking field data collection process. After identification of the target population, they were categorized on the basis of location i.e. union council/village council, gender and age. In phase 01, primary data was collected from the respondents (members of the village disaster management committees (VDMCs). In this regard, data was collected from a sample of 30 respondents including both male and female of the target VDMCs. In phase 02, primary data was collected from 15 respondents of the local population of age 40 and above in light of their lived experiences about climate change and HHRD interventions. In phase 03, two FGD were conducted with same participants i.e. one with VDMC members and one with -local community stakeholders, in the target areas/union council for cross verification and collection of comprehensive/detail information. The sample selection was made through quota sampling technique from the target VDMCs, while in-depth interview using interview guide and moderating guide containing relevant questions was used as instrument of data collection from the participants individually as well as during the FGDs. Further, relevant documents/reports were also evaluated to explore the process of VDMCs formation, its meetings procedure, inclusion criteria, and success stories. The data collected was analyzed thematically under different themes using Trint and NVIVO and presented under data analysis part of the research to drive study findings and conclusion (Terry, Hayfield, Clarke, & Braun, 2017).

Analysis and Discussion

The analyses of the primary data were undertaken under the thematic data analysis model to unpack the issue of climate change and its dimensions from local

perspective. The data analysis also uncovers the different interventions of the CBDRM at Chitral Lower for engaging, strengthening and building capacity of the local communities to prepare, respond and recover from climate induced disasters. The data was analysed and discussed under the following themes:

Theme 01:

- ❖ Climate Change Related Disasters: Threats to Cultural Heritage, Lives and Economic Infrastructure

Climate change refers to a long-term change in the average weather patterns of a particular region. Human life and environment are in close association and climate change has long-term implications on human lives. The horrific effects of climate change shatters the local economic infrastructure, create unemployment and increase poverty (Azadi, Barati, Nazari Nooghabi & Scheffran, 2022). The rural areas are highly vulnerable to the effects of climate change and due to their isolation from mainstream these areas are rarely the focus of interventions that address the challenges related to climate change. The climate change related disasters damage local livestock, water sources, forests, agriculture, destabilize their fragile economies, worsen disaster risk and create severe events in the rural communities (Woroniecki, Spiegelenberg, Chausson, Turner, Key, Irfanullah, Seddon, 2022; Celse, Kensen, 2022). It also affects their way of life, interaction patterns, and further expose them to exploitation and inequality (Celse, Kensen, 2022), impact their working hours, capacity, health, social networks, agriculture productivity, increase mortality rates and poverty within the local communities (Jha, Mishra, Sinha, Alatalo, Pandey, 2017; Nyahunda et al., 2021)). Similarly, it decreases rural livelihood opportunities, damage ecosystems, threaten social networks and cultural heritage and disturbing the balance that exist among the cultural heritage, natural resources, and social systems (Masson-Delmotte et al., 2021). The exposure of cultural heritage and historical sites to environmental changes influence local identity and integration that has been largely linked and associated to the internalized values and emotional attachment with heritage (Sesana, Gagnon, Bertolin, Hughes, 2018; Bednar-Friedl et al., 2021). Field data also found similar results and majority of the respondents were of the opinion that climate change has resulted in unprecedented threat to the local cultural, economic and social lives of the communities. An extract from interview:

“Since last two decades the weather is changing rapidly that cause huge damage to the local communities. The water channels are broken, number of mosques are eroded, and the roads are damaged in most parts of the district.”

Another community member also shared similar feeling:

“Climate change is a constant threat to our lives and centuries long cultural heritage that connect us. It decreases livelihood opportunities and disturb the lives and social networks that sustain our collective identity.”

Climate change is a destructive process and often inflicting damage on the cultural heritage and wellbeing of communities at global level. Cultural heritage (tangible and intangible) is important in the lives of people and play an important role in climate related emergencies including recovery, preparedness, prevention and local decision making and integration (Jigyasu, 2019). The intangible cultural heritage and local knowledge and practices strengthen community-based resilience to natural disasters. The living heritage transmit knowledge about the changing climate and their impact on the natural environment and shape relationship and connectivity to the natural environment in most of the rural communities (Aktürk, & Lerski, 2021). The local cultural values serve as a glue in integrating people and helps in developing a sustainable climate action, while the climate change directly and indirectly effect these values that sustain collective wisdom and resilience of the local communities. Field interviews also show similar results and almost all respondents were of the opinion that climate change impact local cultural heritage and social integration. An extract from interview:

“The floods not only damage our homes. It also destroys our temples, historical sites and the old burial grounds and the infrastructure. We lose not only the land and buildings, we also lose the old memories, stories and traditions of our ancestors that connect us. Climate change erase our entire past.”

Another respondent added:

“Our historic places stood for generations but during the previous decade half of it was destroyed which is difficult to restore. Climate change affect our traditional farming landscapes, and directly affect our seasonal festivals. Our folk tradition is mostly

connected to nature and change in natural environment will change our traditions, rituals and practices.”

In similar context, most of the respondents expressed that climate change is detrimental to the existence and survival of rural communities of Chitral. It causes huge floods and damaged the economic infrastructure and residential infrastructure of the area. The change in precipitation patterns have negative impacts on the agriculture production as well as water resources and rainfall. In Chitral, majority of the agriculture is dependent upon rain and any variability in rain cause huge damage to the agriculture. In this context, sometimes, excessive rainfall harms the crops, vegetable and fruit gardens, while at other times, there is a lack of water. Due to these variability in the weather conditions, the agriculture sector remain unpredictable and most of the fruit’s spoils premature. The following extracts from interviews confirms the claim that weather patterns have significantly changes overtime:

“Indeed, climate has shifted significantly over the past decade. There has been variation in weather and precipitation patterns. In past, rain was gentle and normal but now it arrives with great intensity and pose threats. At times, we experience extended dry periods without any rain, and then abruptly, a powerful downpour occurs that erode entire social and economic infrastructure”.

Chitral is also famous for its centuries old heritage sites that remains of source of local connectivity and integration, serve as a major factor for tourists’ attraction and contribute to local economy. Due to the incidence of torrential rains and floods several sites heritage sites are either damaged or exposed to destruction of climate change. The persistence of such environmental incidences also compels the local community on dislocation and threaten their cultural and social bonds. A participant narrated this as follows:

“Heritage sites are our social and economic assets. These sites are a source of attraction for national and international tourists and a major part of local economy. In recent years several heritage sites are partially or completely damaged. The loss of local heritage is the loss of local culture and identity and break the local social bonds with heritage. Current trends show that climate change will have a greater impact on the heritage sites in near future.”

Climate change has put the rural communities, their economy and natural resources at risk and becoming a broader socioeconomic issue. Agriculture is the primary source of the livelihoods of these poor people and a slight increase in local temperature results in reduced crop yields for the small farmers of rural areas and thus increase the risks of economic vulnerability and food safety. This study also shows similar findings and most of the respondents expressed that the rural communities of Chitral is dependent upon agriculture and climate change has caused severe damage to rural agriculture. The torrential rains, GLOF and flood results in erosion of fertile agriculture land and lead to the destruction of other sources of economic infrastructure and intensify rural poverty. In this context a respondent said:

“The climate change is disastrous for rural agriculture and livelihoods. It increases the economic vulnerabilities of rural people and undermine the community development efforts undertaken by different national and international NGOs and government departments. During the last decade, we see significant decrease in agriculture land due to erosion. The small farmers are in particular threat to the challenge.”

Theme 02:

❖ Climate Chang related Extreme Events: Community Vulnerabilities and CBDRM Interventions

In rural areas the changes in climate are highly felt and it has increased drought and question development and sustainability efforts. Community-based disaster risk management interventions have been applied to a range of issues and contexts including climate change preparedness and adaptation. The major focus of this approach is on empowerment, participation, inclusiveness, ownership and decision-making, while integrating local knowledge and practices into a more coherent process for resource mobilization and building community resilience (Maskrey, Jain, & Lavell, 2023). The local communities are actively engaged in disaster management related activities to reduce their exposure to vulnerabilities and enhance their resilience to prevent and withstand the damaging effects of hazards. The extreme disastrous events have increased the community-based bottom to up approach as an essential component of the disaster risk management at local levels. The community is recognized as the first to be affected as well as respond towards disaster. Although, in several instances the top-down approaches have been failed

to effectively address the local needs of vulnerable communities, ignore community's potential, available local resources and capacities. However, this approach primary focuses on the local communities as they understand local opportunities and constraints better than the outsiders. In this regard, the CBDRM brings the local communities and stakeholders together for disaster risk management at local levels. A participant from the VDMC asserted:

“The Helping Hand for Relief and Development have implemented several community-based disaster risk management initiatives to develop long term sustainability and reduce people’s vulnerability to a range of shocks and hazards. When the community plans for disaster response together, they take ownerships and feel responsible for themselves as well as for the community at large.”

Another participant from the same VDMC said:

“Disaster preparedness and response is effective when the local community is engaged in the process and not imposed upon them from outside.”

Most of the respondents argued that the interventions of Helping Hand for Relief and Development (HHRD) under the CBDRM component is appropriate in reviving local traditional knowledge and strengthen the community-based disaster response and preparation mechanism. The bottom to up approach is based upon community resilience and development. In this regard a respondent shared his experience:

“The CBDRM helped the local communities to organize and strengthen them through different capacity building activities under the VDMCs platforms. They enable the communities to recognize their resources, risks, strengths and prepare them for collective response towards disasters.”

The study participants were of the opinion that the frequency of climate change induced extreme events make it necessary to prepare the communities for effective response and adaptation. They recognized the CBDRM initiative of the Helping Hand for Relief and Development is an appropriate initiative that focusing on the capacity building of the local communities and prepare them for effective response towards natural hazards. The argued that anthropogenic climate change is a widely prevalent threat to human security, existence, and leads to numerous consequences including disintegration of cultural heritage, social relations, breakdown of peaceful

coexistence, and damage of economic infrastructure. Usually, the adverse climate conditions badly affect the agricultural economy and damage both individual as well as collective income opportunities and weaken administrative capacity of mitigation and response. In this regard, the CBDRM approach not only engage local communities for effective response towards climate action but also reduce the burden and cost of local administration in climate related hazards and disasters. A respondent from the local community said:

“We appreciate Helping Hand for their activities and engagement of local communities in disaster planning and response. They have engaged all segments including women and empowered them to make decisions. CBDRM activities has changed us and now instead of feeling helpless we do not wait someone for help for act immediately when disaster occurs.”

The CBDRM component is working on the integration of the indigenous knowledge and seek local solutions of the challenge. They recognize the value of incorporating indigenous knowledge and practices into DRR strategies at local levels. This approach utilizes the existing mechanisms for disaster management, address resource constraints through mobilization, capacity building, communication, public awareness. synergies and develop long-term sustainable DRR practices. Field data also reflect similar findings and most of the respondents shared that CBDRM is looking for local solution and the activities are focusing the utilization of local resources as well as strengthening of the communities through trainings and capacity building. An extract from FGDs discussion:

“The distinctive feature of CBDRM activities is engagement of local communities in disaster response activities, utilization of local knowledge and resources as well as working on extensive capacity building of the local communities. The VDMCs are formed on democratic manner and the community is treated as primary stakeholder in the challenge. The bottom-up approach helped the communities to take ownership, empower them and they recognize themselves as integral part of the process.”

Although climate change affects all areas around the world however; the vulnerable rural communities and poor people are at higher risks (Celse & Kensen, 2022). The rural communities mostly rely on agriculture and climate change damage agriculture, damage lands and food security, reduce economic opportunities and push the people into poverty (Ofoegbu, Chirwa, Francis, & Babalola, 2017), and

undermine global efforts for sustainable development (Bahta & Myeki, 2022). The CBDRM interventions focused largely on strengthening preparedness and response capacities through systemic assessments, and rigorous evaluation of the drivers of climate change and hazards (Baumann, 2021).

The responses of participants indicate that VDMCs are formed in a democratic manner in which all segments of the community are invited for participation and the executive body is elected through democratic process from the participants. The VDMCs provides a platform and offers an opportunity to the local communities to participate, discuss and decide the appropriate course of action for resilience building and response to the challenge of disasters. This approach recognizes the local community as an integral part of local development initiative and claim that community-based interventions are necessary for a sustainable solution of the issue. The respondents (members of VDMCs) shared their experiences as follows:

“Before the CBDRM interventions and formations of VDMCs, we are not part of the planning and decisions related to disaster preparedness and response. The participation in CBDRM activities and VDMCs helped us to understand that disaster risk reduction is not just the responsibility of government rather our collective responsibility.”

Theme 03:

❖ Climate Change Induced Disasters, Community-Based Interventions and Sustainable Development

The global agenda for sustainable development has established seventeen goals as targets for improving life on the earth. These goals are multi-faceted, integrated, and interconnected with each other. Several sustainable development goals are focusing on the global ecological balance and recognize preservation of the environment as a necessary element for life on the earth. The sustainable development goals perceive the rural communities as vulnerable and exposed to numerous threats and challenges including climate change and aims to engage, educate and empower them to mitigate climate change related challenges. Although, the local communities have managed disaster risks for centuries while using their strategies, activities, local knowledge and internalized practices, however; the indigenous and rural communities are recognized as most vulnerable

as well as far behind in the achievement of SDGs. The challenge of climate change has further intensified the vulnerabilities of the poor rural communities, damages their livelihood, cultural heritage, and natural resources with unprecedented pace (Sachs, 2022). This study found that frequent natural disasters impact the poor regions of the world and exacerbate their socio-economic vulnerabilities. It is important to mention that study participants also shared that climate change related natural hazards have increased local vulnerabilities and has been a significant obstacle in the uplift of rural communities and achievement of sustainable development. They also expressed that the integration of local people into disaster management activities is important in disaster preparedness and response. The following extract from interview specifically explains:

“The formation of VMDs have established partnerships and linkages between local authorities which is helpful during disasters. CBDRM activities has reduced our vulnerability and we feel more secure now with practical evacuation plans and emergency response volunteer groups. The local sustainability is ultimately the achievement of contribution towards the global SDGs.”

The occurrence of disasters reverses local development efforts and the achievement of the sustainable development goals (SDGs) at local levels. It is evident that a small disaster also has a profound social and economic impacts on the local communities, while regions with low levels of income and weaker governance are particularly vulnerable to the impacts of disaster (Vadivelu, 2021). In this context, disaster risk reduction interventions are critical to promote climate action, facilitate sustainable development, safeguard life on land and reduce poverty. The community-based disaster risk management interventions of HHRD adopts integrated steps to engage local communities, build their capacities to prepare and respond to the climate change induced challenges in Chitral region. The local knowledge and experiences are incorporated to the interventions, with particular focus on revitalizing and establishing local linkages, engaging and empowering local communities and enhance climate change adaptation actions at community levels (Bang, 2024). As consistently noted in the responses from VDMC members, general community as well as discussion in the FGDs, that CBDRM interventions promote local participation and climate action, which is in line with progressing towards SDGs. This also convey a clear message that achievement of the global agenda of development is not possible without realizing it at local levels. The following extract from interview also reflect that the interventions of CBDRM are vital in local

empowerment as well as revitalization of the indigenous knowledge regarding climate response and mitigation. An extract from interview:

“The CBDRM interventions empower local communities and build on their experiences and knowledge. The local people are actively engaged in hazard mapping, vulnerability assessment, seasonal calendar, and evacuation plan by using local knowledge and experiences. The VMDCs are an inclusive forum representing different strata of the community that enhance linkages, mutual support, coordination and joint action.”

The CBDRM approach is closely related to the global frameworks including the United Nations’ disaster risk reduction strategy, as well as the United Nation’s Sendai Framework for disaster risk reduction. The approach is carried out with local communities and encompasses a range of risk reduction activities which emphasize community participation resilience-building and prepare the communities for disaster management. While utilizing local knowledge and experiences related to disaster management, this approach promotes the achievement of SDGs at local levels (Miles & Gordon, 2019; Gaillard & Mercer, 2012; Van Niekerk, Nemaokonde, Kruger, & Forbes-Genade, 2017). The engagement and capacity building of local communities, the inclusive approach, and local awareness related to disaster results in reduction of diseases and different health risks after disaster, while the hazard mapping help the local people in evacuation and effective response during disasters. In this way, HHRD interventions under the CBDRM component are effective tools for reducing local poverty, protect livelihoods, safeguard resources, integrate and empower local communities and accelerates progress towards SDGs. In similar context a respondent said:

“CBDRM activities such as building resilience, reducing vulnerability, securing lives, and livelihoods. The committees are inclusive in nature and the activities play important role in preventing deaths, control diseases, reduce food insecurity, malnutrition, reduce inequalities and directly contributing to the sustainable development goals.”

Relevant research studies indicate that human activities provoke changes in global ecosystem, bring disastrous changes in weather patterns and create an ecological crisis. During the 21st century, several environmental problems i.e. global warming, deterioration of living conditions, depletion of the ozone layer, increase in solid waste, radioactive contamination, deforestation, the extinction of plants and animal

species have been alarmingly increased (Mert, 2009; Petrović, 2020). These challenges have made obstacles in the progress towards sustainable development which largely depends on and associated to ecological balance and protection of natural resources (Savić, Bogetić, Dobrota, & Petrović, 2016). Chitral is a disaster-prone region of Pakistan, where disasters have diverse characteristics, frequency, and intensity and leads to huge losses of the local social, economic and cultural infrastructure. The CBDRM activities adopts participatory community-based disaster management mechanism, primarily focusing on capacity building (Khan, & Jan, 2014), community mainstreaming, resilience and integrating disaster risk management into local governance and development initiatives (Willison, Cruz, & Luneta, 2022; Rosales, Kilag, & Depoyart, 2023). The CBDRM initiative provide social support services to the local community that facilitate recovery after disasters and promote climate governance at gross roots level through mainstreaming resilience building. In this context a respondent expressed:

“The formation of the community disaster committee has made coordination easier and brought us together. Although, we cannot stop the occurrence of disaster however, we do not feel helpless and know what to do during disasters. The CBDRM approach has made us informed, prepared, and integrated that helps us to respond to the disasters in effective manner.”

Conclusion

This study concludes that Community-Based Disaster Management (CBDM) interventions of the Helping Hand for Relief and Development have significantly enhanced climate response, capacity building and disaster preparedness in Lower Chitral. This bottom-up strategy for community participation, engage, empower, and work on local capacity building, risk identification and awareness, and institutional coordination. It has strengthened community resilience against climate-induced hazards such as floods, landslides, and extreme weather events and has taken actions to educate, empower, and engage local communities in climate response and protect them from the climate induced multifaceted threats. The CBDRM interventions also adopts area specific and proactive approach and focusing on building a culture of disaster prevention and preparedness, by undertaking a comprehensive hazard mapping exercise by synthesizing diverse sources of data, include stakeholder perspectives, revitalize indigenous practices, make systematic hazard assessments exercise and devising interventions in accordance to the local

context. Community-based disaster risk reduction mechanism is a cost-effective and effective means that has been developed to reduce vulnerabilities and strengthen people's capacities to cope with hazards. The research affirms that community-based disaster risk reduction models represent a practical and sustainable pathway for climate adaptation in rural mountainous regions, enhance resilience and reduce vulnerability in climate-sensitive districts like Lower Chitral. However, the study also highlights challenges, including financial resources, infrastructural constraints, and integration of CBDRM interventions with governmental disaster management frameworks, and recommends strengthening institutional partnerships, ensuring sustained funding, integrating indigenous knowledge systems, and enhancing policy alignment to support long-term climate adaptation and disaster preparedness at the grassroots level.

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