



GLOF GUIDELINES

2025

National Disaster Management
Authority of Pakistan

1. **Situation Analysis.**

a. Pakistan faces a risk of glacial lake outburst floods (GLOFs) due to ongoing climate change and glacier melt with its impacts likely to be significant in 2025. The Himalayan, Karakoram and Hindukush (HKH) ranges, where many glaciers are situated, are home to numerous glacial lakes due to glacial melting. These lakes pose a significant threat as they are contained by unstable moraine dams, which can breach suddenly, unleashing massive volumes of water downstream.

b. Key contributing factors increasing the GLOF risk include erratic weather patterns, increased precipitation intensity, and rising temperatures, all of which contribute to glacier destabilization and lake expansion. Infrastructure development in vulnerable regions further enhance the risk by altering natural drainage patterns and intensify the consequences of such flooding events. Pakistan's northern areas including upper parts of Khyber Pakhtunkhwa and Gilgit-Baltistan are home to 7,000+ glaciers, 3,000+ potential GLOF sites, with 36 considered as vulnerable. Out of these, 4-5 are most vulnerable and at risk of bursting.

c. Making the situation worse is the socio-economic vulnerability of communities residing in downstream areas. Many villages are situated in flood-prone zones, lacking adequate early warning systems, evacuation routes, or infrastructure to withstand such disasters. The potential consequences of a GLOF include loss of life, destruction of infrastructure, disruption of livelihoods, and long-term environmental degradation.

d. Addressing the GLOF risk in Pakistan requires proactive monitoring and assessment of glacial lakes, improved disaster preparedness and response mechanisms, sustainable land-use planning to mitigate downstream impacts, and international cooperation to address the issue. It is important for policymakers, communities, and stakeholders to work together to mitigate the impact of GLOFs and build resilience in vulnerable regions.

2. **Methodology.**

a. **GLOF Investigation.** Glaciers and glacial lakes are generally located in remote areas mainly in the high mountains accessible mostly through tough and

difficult terrain. Creating inventories and monitoring of the glaciers, glacial lakes, and extent of GLOF impact downstream can be done quickly and correctly using satellite images and aerial photographs. Visual and digital image analysis techniques integrated with techniques of GIS are very useful for the study of glaciers, glacial lakes, and GLOFs. Satellite Remote Sensing data and Geographic Information System techniques offer strong advantages for rapid and qualitative hazard assessments of glacier lakes.

b. **Features of a Glacial Lake**. A glacial lake is a body of water that forms in or near glaciers as a result of glacial activity or the melting of glacial ice. A glacial lake has the following significant features:

(1) **Geographic Location**. Reference longitude and latitude are designated for the approximate centre of the glacial lake by creating a digital point map over the screen digitized glacial lakes.

(2) **Elevation**. The elevation of a glacial lake can vary significantly depending on its location and the topography of the surrounding area. GLOF lakes are typically found in high mountain regions where glaciers are present, so their elevations can range from relatively high altitudes to lower elevations, depending on factors such as glacier dynamics, climate, and geological conditions.

(3) **Slope**. The slope of a glacial lake typically varies based on factors such as the topography of the surrounding landscape and the characteristics of the glacier feeding the lake. It can range from 0o-90o.

(4) **Aspect**. The drainage direction of the glacial lake is specified as one of eight cardinal directions (N, NE, E, SE, S, SW, W, and NW). For a closed glacial lake, the orientation is specified according to the direction of its longer axis.

(5) **Area**. The area of the glacial lake is determined from the digital database through satellite imagery and topographic maps.

(6) **Depth**. The depth is measured along the axis of the cross section of the lake. On the basis of the depth along the cross section, the average depth and maximum depth are estimated using empirical formula (literature).

(7) **Volume**. The volume of the glacial lake is estimated based on an

empirical relationship using area and depth of the lake in m³.

(8) **Classification of Lakes**. The lakes are divided into the following types:-

- (a) Erosion lakes
- (b) Depositional lakes
- (c) Supraglacial lakes
- (d) Moraine dammed lakes
- (e) Blocking lakes
- (f) Ice-dammed lakes

Figure: Types of Glacial Lakes



(9) **Activity**. According to their stability, the glacial lakes are divided into three types: Stable, Potentially Dangerous, and Outburst (when there have been previous bursts).

(10) **Type of Water Drainage**. Glacial lakes are divided into drained lakes and closed lakes according to the drainage condition.

3. **Glacial Lakes Inventory**.

a. **Glacial Lakes in Upper Indus Basin**. Identification and assessment of glacial lakes is important not only as resource management point of view but also for monitoring of GLOF hazards in the downstream region. For the inventory of glacial lakes, the lakes associated with perennial snow and ice, originate from

glaciers, and in some cases the isolated lakes found in the mountains and valleys far away from the glaciers are considered. The remote sensing-based inventory of glacial lakes revealed total of 3,044 glacial lakes in the HKH region of Pakistan that cover cumulative lakes area of about 134.8 km².

Table: Summary of glacial lakes inventory in various basins of UIB.

Basin	Number		Area (km ²)		
	Total	%	Total	%	Largest
Swat	214	7.0	12.5	9.3	0.74
Chitral	116	3.8	5.8	4.3	1.61
Gilgit	660	21.7	37.8	28.1	2.71
Hunza	216	7.1	9.2	6.8	5.78
Shigar	110	3.6	2.3	1.7	0.21
Shyok	270	8.9	6.0	4.4	0.29
Indus	815	26.8	32.4	24.0	2.56
Shingo	247	8.1	11.8	8.7	1.40
Astore	196	6.4	5.8	4.3	0.49
Jhelum	200	6.6	11.2	8.3	0.98
Total	3,044	100.0	134.8	100	

4. **NEOC's Snow Cover Projections April-August 2025.** Below are the snow projections developed by NEOC's Tech EW team for the months of April to August 2025.

Figure: Snow Projection for April 2025

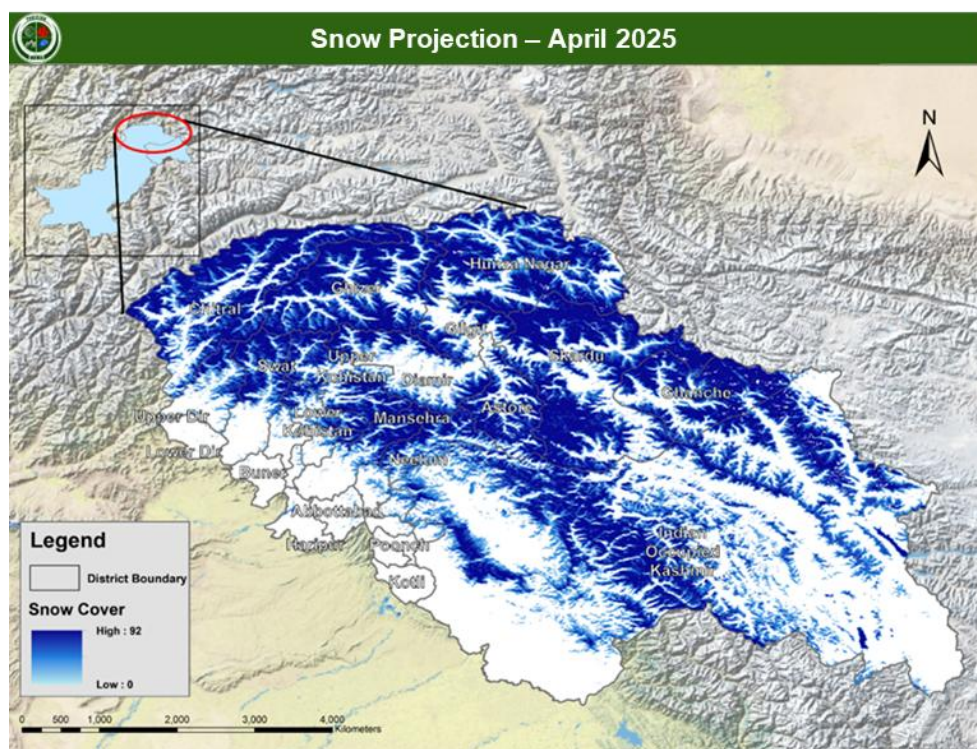


Figure: Snow Projection for May 2025

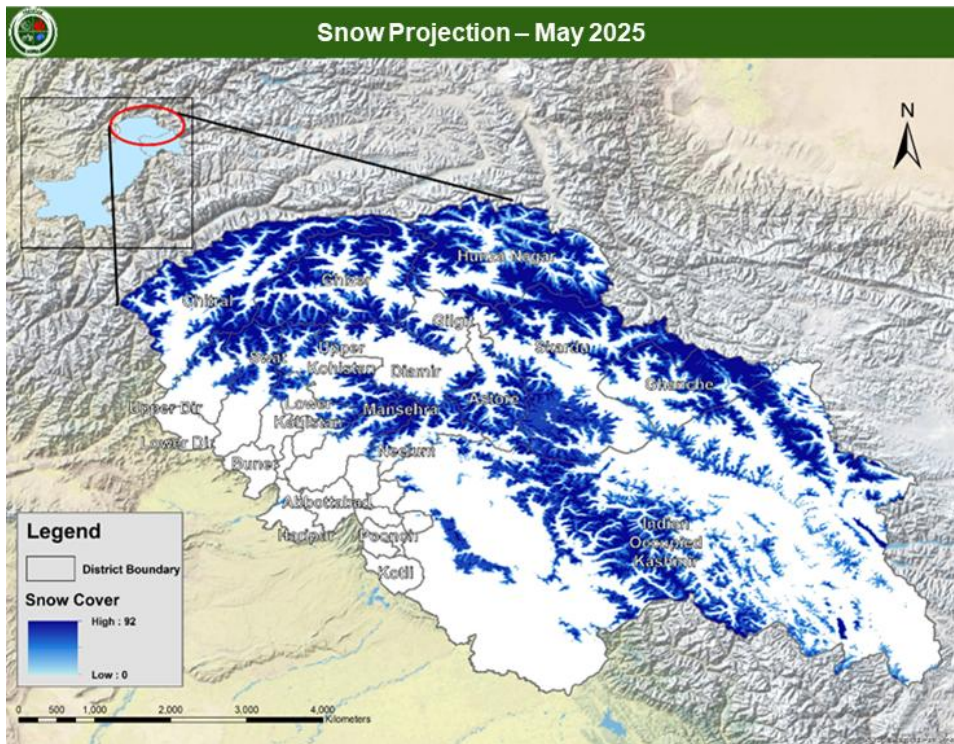


Figure: Snow Projection for June 2025

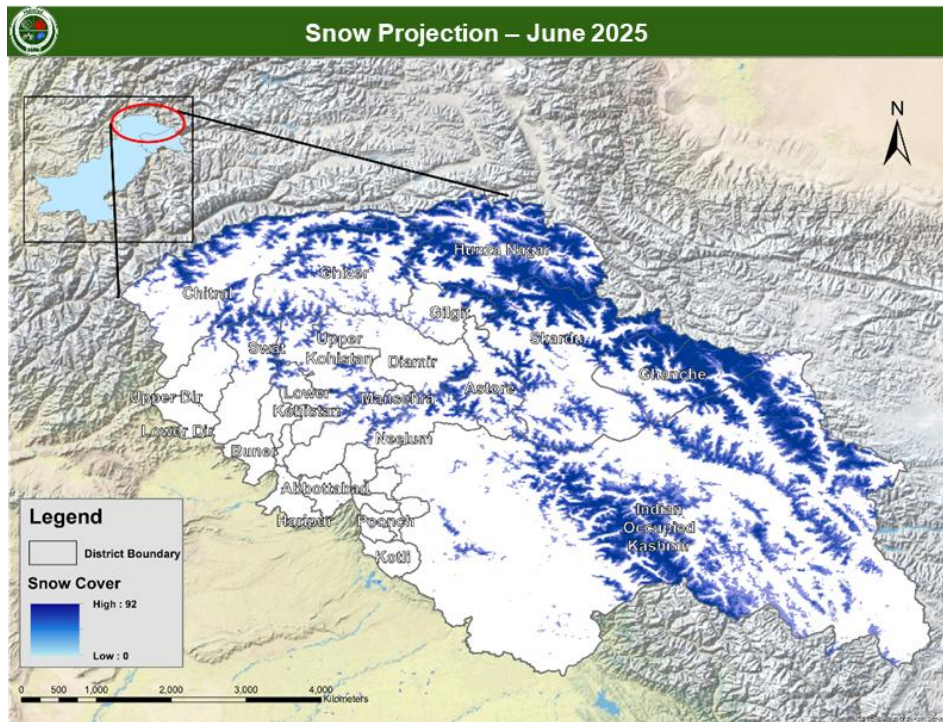


Figure: Snow Projection for July 2025

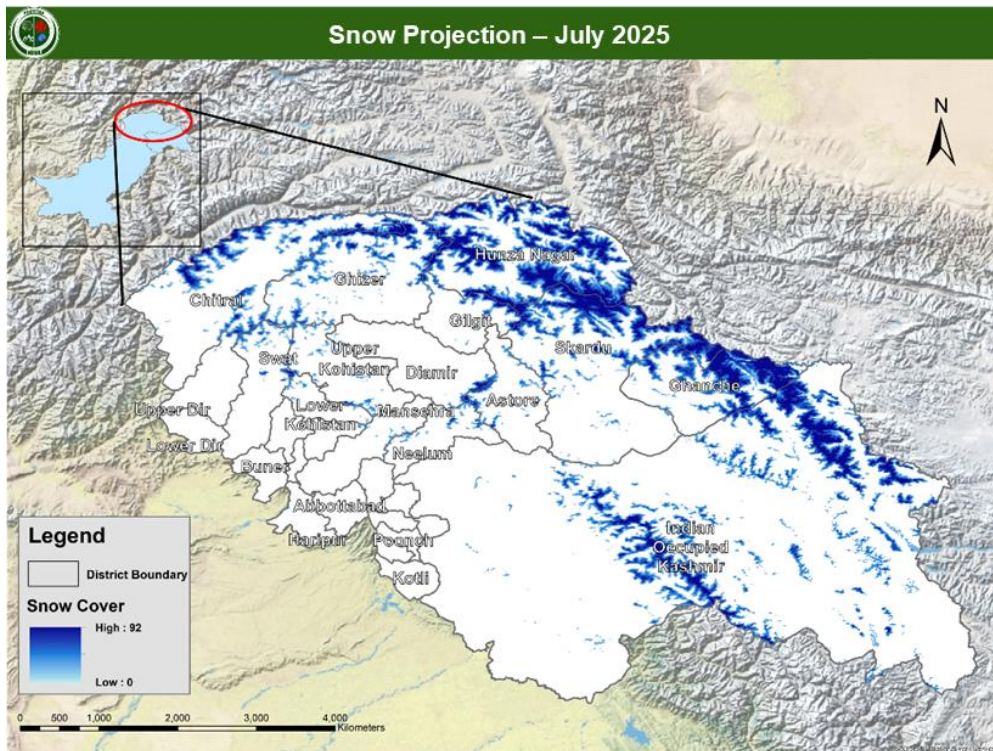
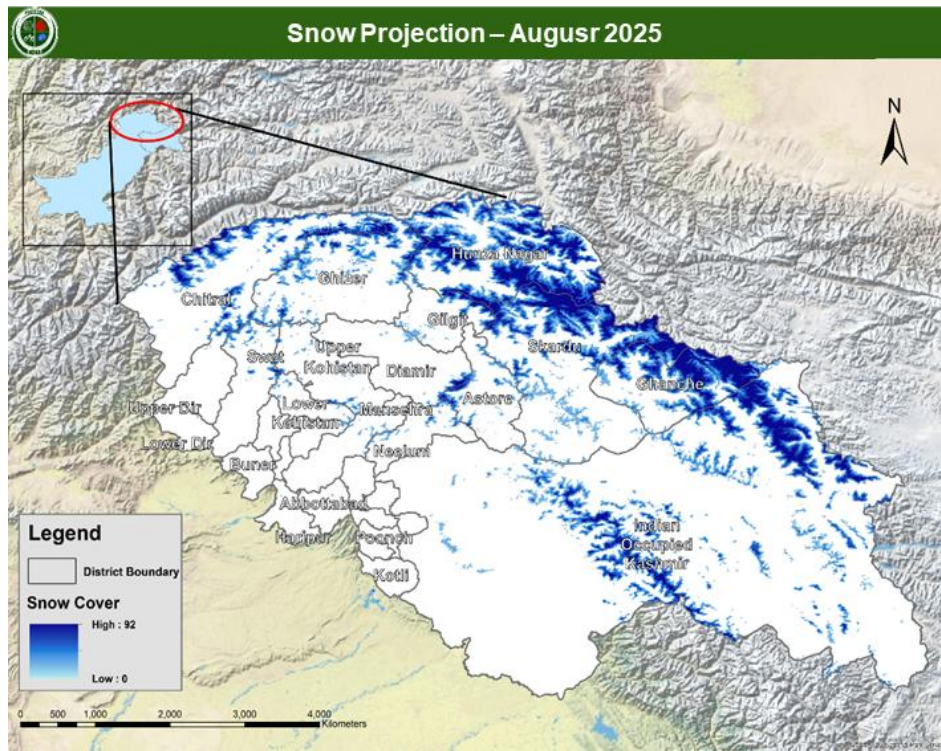


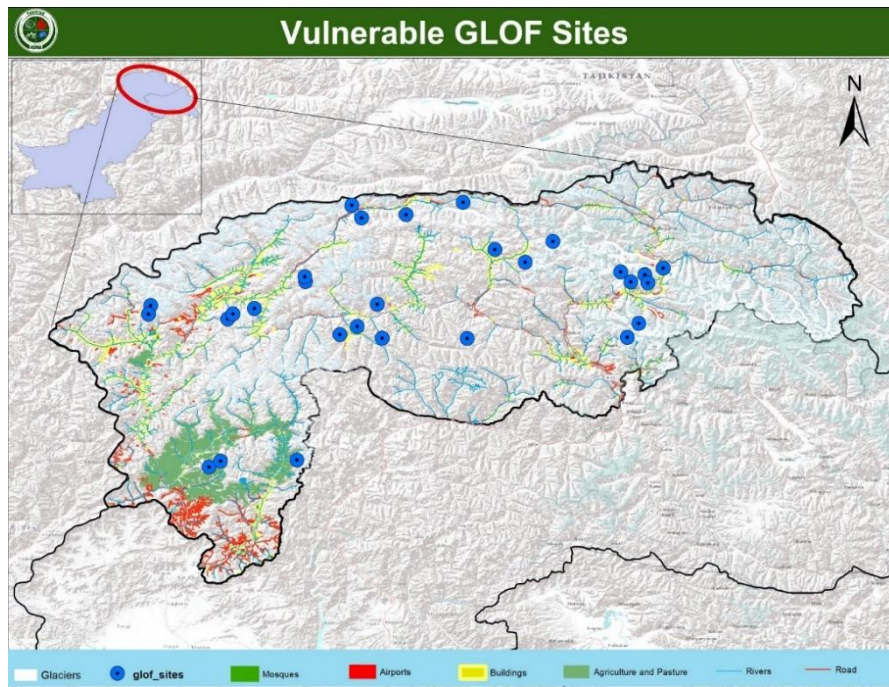
Figure: Snow Projection for August 2025



5. **Mapping Vulnerable GLOF Sites in Pakistan.** GLOFs occur when meltwater from a glacier forms a glacial lake, and the dam that holds it back becomes unstable.

This results in a sudden release of water, causing floods downstream. NDMA has mapped GLOF sites in Pakistan with constant monitoring through satellite imagery and data from relevant line departments. Some of the vulnerable Glacier lakes include: Khurdopin Glacier, Badswat Glacier, Shisper Glacier, Chilinji Glacier, Ghulkin Glacier, Darkut Glacier, Reshun Glacier, etc.

Figure: Spatial Distribution of GLOF Sites of Pakistan



- a. **Glacial Lakes by Various Types.** Most of the lakes in HKH region belong to erosion type (857) followed by End-moraine dammed type (791).

Table: Summary of glacial lakes by various types in UIB (PMD Inventory).

Type	Number		Area (km ²)		
	Total	%	Total	%	Largest
Blocked	111	3.6	9.6	7.1	5.78
Cirque	249	8.2	13.7	10.1	0.90
Erosion	857	28.2	25.9	19.2	0.49
Lateral moraine dammed	26	0.9	0.3	0.3	0.03
End moraine dammed	791	26.0	35.3	26.2	0.86
Supraglacial	438	14.4	4.5	3.3	0.26
Valley	572	18.8	45.4	33.7	2.71
Total	3,044	100.0	134.8	100.0	

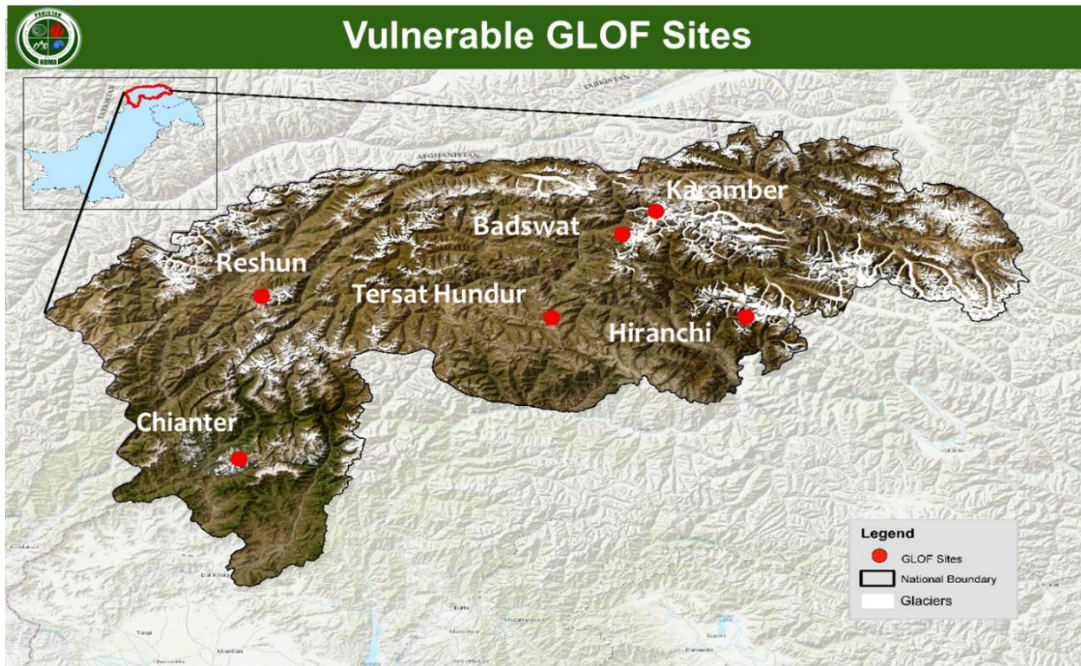
b. **GLOF Triggers**. A glacial lake is considered vulnerable to GLOF based on the following parameters listed in the table.

Table: GLOF Triggers with Criteria Values

Ser	Parameters	Selection Criteria	Source
1	Area of the Lake	>0.1 Km ²	Satellite Imagery
2	Volume of Lake	10×10 ⁶ - 100×10 ⁶ m ³ High	Empirical Formula
3	Type of Lake	Moraine dammed lake High Ice dammed lake Medium Bedrock dammed lake Low	Google Earth
4	Moraine width o height ratio	<1 High	Google Earth/SRTM
5	Elevation	> 4000 meters A.S.L.	SRTM
6	Aspect	NS, SE	SRTM
7	Drainage	Closed Open	Google Earth/ Satellite Imagery
8	Distance from Glacier	<80 m High 80-600 m Medium	RGI v.6/Satellite Imagery
9	Slope of Lake	>40°	SRTM
10	Spatio-Temporal Change	LULC	Satellite Imagery
11	Distance to the Impact Area	>10m	Satellite Imagery
12	Distance from Fault Line		
13	Lake Growth per Decade	>100% High 50-100% Medium	Satellite Imagery
14	Extreme Met. Events	Frequent: High Sporadic: Medium	AIRS/TRMM / CHIRPS

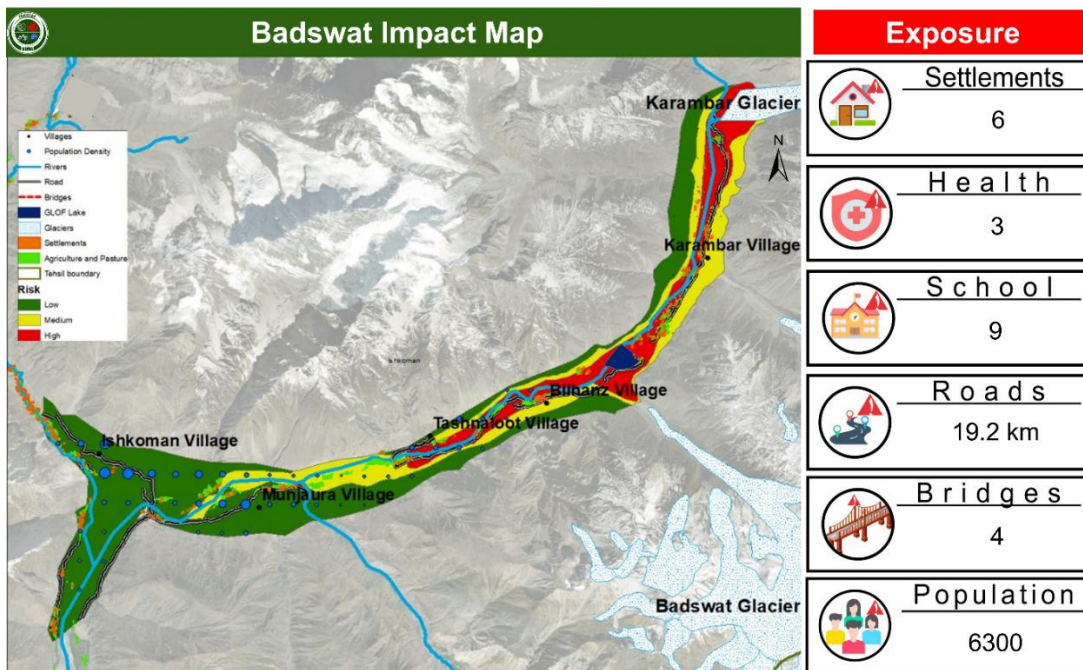
c. **Most Vulnerable GLOF Sites**. The most vulnerable GLOF sites of Pakistan are identified as shared in the figure below. Three sites in GB and two in KP, respectively, are considered the most vulnerable.

Figure: Five Most Vulnerable GLOF Sites



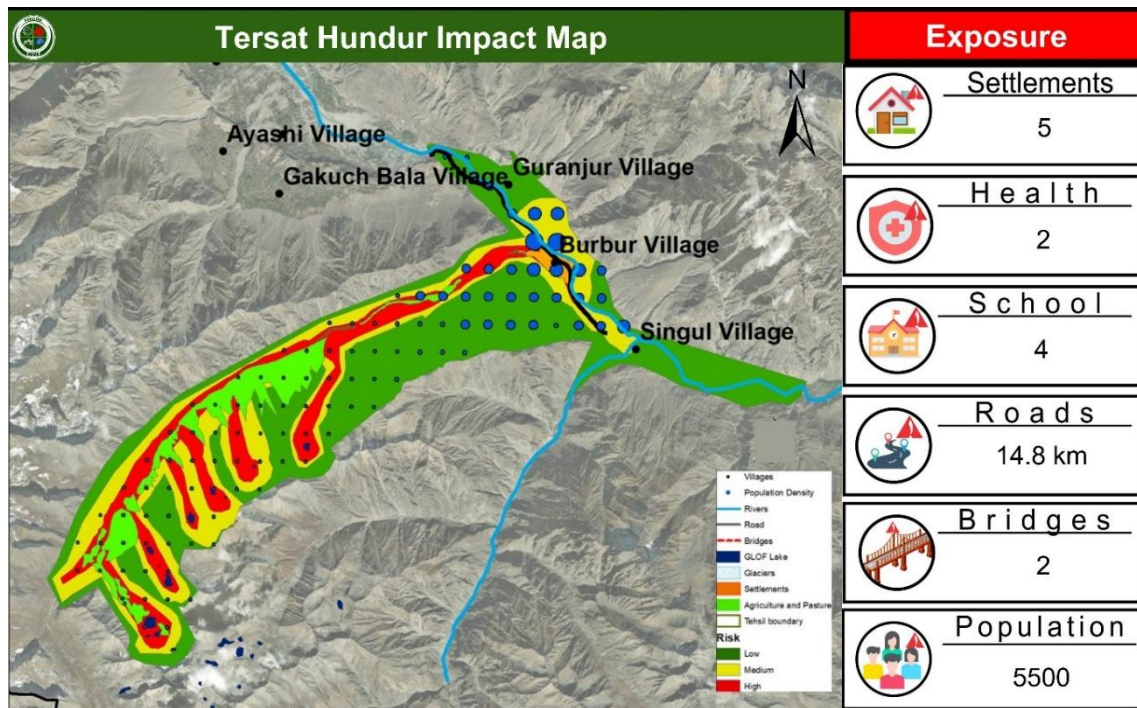
(1) **Badswat Glacial Lake.** Badswat glacial lake in Ghizer, GB is highly vulnerable to GLOF.

Figure: Badswat Glacial Lake Impact Map with Estimated Exposure



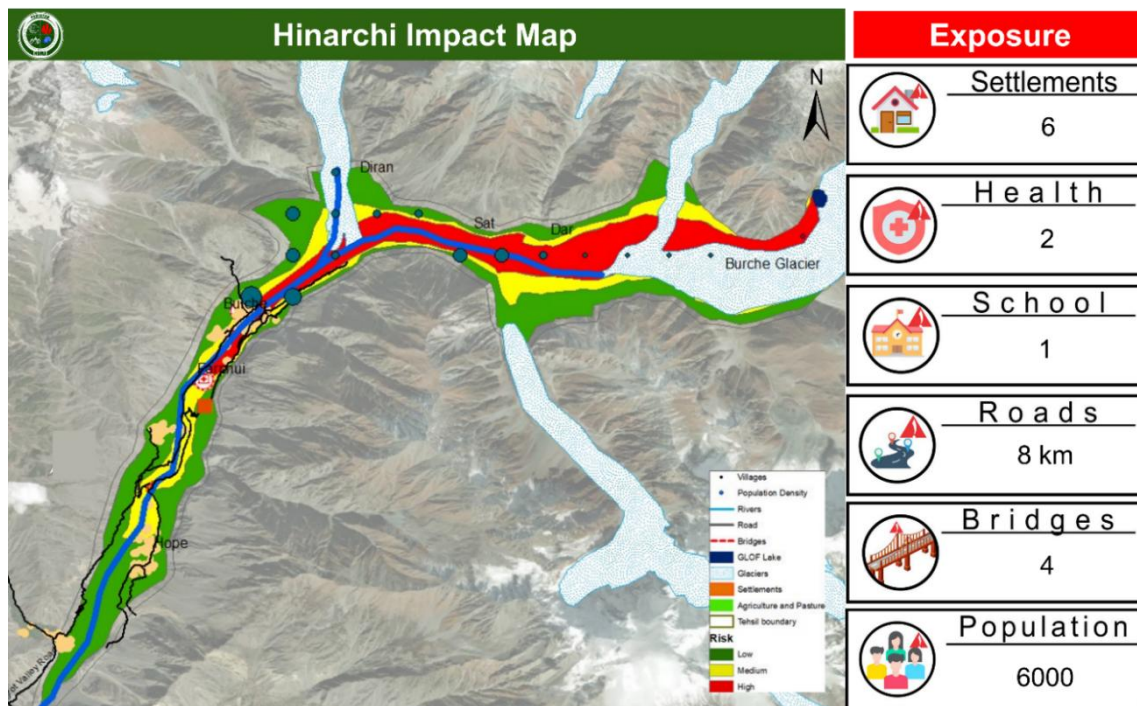
(2) **Tersat Hundur Glacial Lake.** Tersat Hundur glacial lake in Ghizer, GB is highly vulnerable to GLOF.

Figure: Tersat Hundur Glacial Lake Impact Map with Estimated Exposure



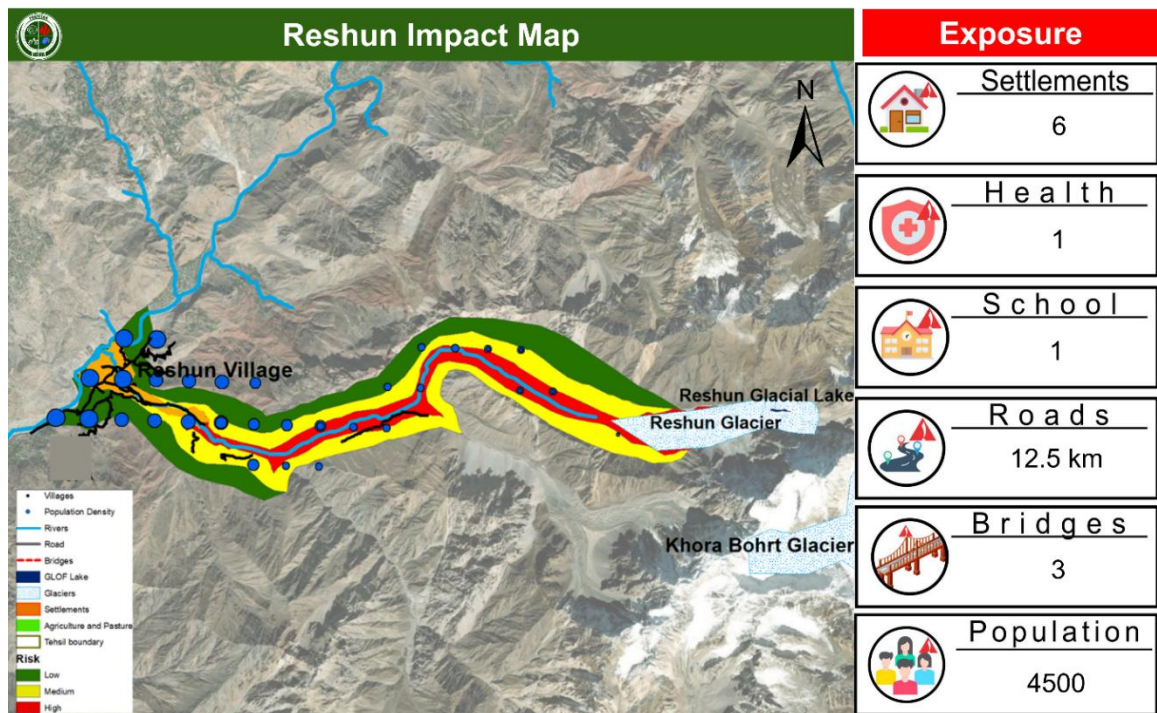
(3) Hinarchi Glacial Lake. Hinarchi glacial lake in Gilgit, GB is highly vulnerable to GLOF.

Figure: Hinarchi Glacial Lake Impact Map with Estimated Exposure



(4) Reshun Glacial Lake. Reshun glacial lake in Chitral is highly vulnerable to GLOF.

Figure: Reshun Glacial Lake Impact Map with Estimated Exposure



4. National & Global Best Practices.

a. Prevention Strategies.

(1) Small-scale engineering structures should be established to reduce the effects of GLOF events on livelihoods, such as tree plantation, controlled drainage and mini/check dams.

(2) Weather monitoring stations to collect meteorological data in catchment areas. This data will inform hydrological modelling and help develop village hazard watch groups.

(3) To improve food security and reduce flood risks due to deforestation and inefficient water use, women should be trained in home gardening and water-efficient farming technologies should be encouraged.

(4) Community Awareness & Education in the vulnerable communities.

b. Local and Global Best Practices.

(1) Educate communities on GLOF risks, signs of potential outburst floods, and emergency responses.

- (2) Conduct mock drills and early warning simulations.
- (3) Build controlled drainage systems and spillways to manage excess water from glacial lakes.
- (4) Use gated spillways to allow for gradual release during high-risk seasons
- (5) Promote nature/eco-based adaption for disaster risk reduction.
- (6) Construct dams downstream of lakes to slow and control floodwaters.
- (7) Use breaching and siphoning techniques to lower the level of water in glacial lake.
- (8) Create ecologically designed ponds to hold excessive glacial water and reduce velocity.
- (9) Build embankments with gabion structures to fortify riverbanks and minimize flooding into adjacent areas.
- (10) Enforce zoning laws to prevent construction in areas at risk of GLOFs.
- (11) Regulate tourism activities to limit environmental degradation in fragile regions (Ecotourism).
- (12) Establish a network for disseminating warnings via SMS, loudspeakers, and FM radios.
- (13) Restrict construction and cultivation close to glacial lakes or within flood-prone zones.
- (14) Promote agroforestry and terrace farming to reduce soil erosion.
- (15) Encourage sustainable practices to capture seasonal glacial meltwater for agriculture and water supply, minimizing dependence on unstable lakes (Snow and Avalanche harvesting).
- (16) Create living shorelines with grass, shrubs, and other plants along rivers prone to GLOF impacts, ensuring a natural barrier to floods.
- (17) Use native plant species for slope stabilization and sediment control along flood-prone areas.
- (18) Combine tree planting with crop cultivation to stabilize soils, reduce erosion, and improve local livelihoods.
- (19) Place sediment catchments upstream of glacial lakes to prevent overflowing caused by rapid runoff.

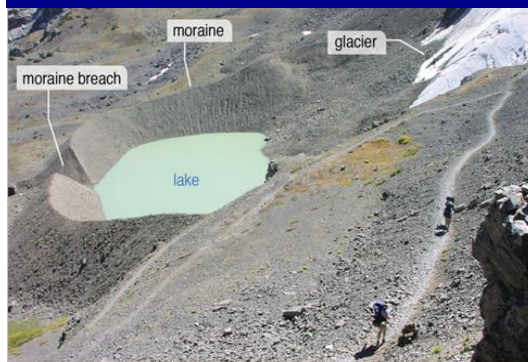
(20) Use local indigenous ecological practices, such as planting willow and poplar, which provide stability to flood-prone areas and resources for communities.



Siphoning



Early Warning Systems



Breaching



Retaining & Gabions Walls

c. **Survival Guidelines for Mountainous Communities.** Every year, nearly 200 million people are impacted by natural disasters, another 99,000 are killed, and over \$162 billion a year is spent on the emergency situations they create – a staggering impact that is just the beginning of the far reach of natural disasters. Serious injury, displacement, and loss of family are just a few of the traumatizing results that can be felt long after the disaster itself. This guide walks you through how to prepare for a natural disaster, how to act if one occurs, and what actions to take once it ends – because disasters happen quickly, which means you must be prepared to act quickly.

- (1) Stay updated with official information and develop a family emergency plan.
- (2) Pay attention to early warnings and adhere to evacuation plans.
- (3) Stay calm and check on neighbors, especially elderly or disabled.

- (4) Keep copies of all your important documents in a waterproof container.
- (5) Move to identified safe havens and establish a place to meet after an emergency.
- (6) Stock essential supplies at nearest safest zone.
- (7) Raise awareness about natural disasters and safety measures through different communication means for the next event.
- (8) Ensure media outlets prioritize accuracy and verified information, avoiding sensationalism.
- (9) Follow directions of local officials. carry your basic disaster supplies kit with you.
- (10) Unplug appliances; turn off electricity, gas, and main water valve (Safety note: do not attempt to re-light the gas pilot).
- (11) If time permits, elevate or move furniture to safer zones.
- (12) Make arrangements for Livestock. Livestock should be evacuated but be sure to have specific plans that do not include staying at an emergency shelter.
- (13) At a minimum, keep one gallon of water per person per day. If you can store more, do so. Make sure that the water is not contaminated. Anything with a bad odor or taste should be avoided, as it may cause diseases like dysentery, cholera, typhoid, or hepatitis.
- (14) Keep non-perishable goods such as canned vegetables, soups, and powdered milk provide your family with nutrients when the possibility of cooking or preparing food is minimal. Keeping a variety of foods in stock, including vegetables, fruits, grains, dairy, and meat will give you a balanced diet and keep everyone healthy and well-fed.
- (15) For your emergency disaster kit, include bandages and creams syringes, splints, and a suture kit to ensure you're prepared no matter what happens. Include a week's worth of any and all prescription medications you and other family members take.
- (16) If you have infants, young children, elderly parents, or disabled family members, keep their needs in mind as you pack and prepare your emergency disaster kit.

(17) Keep a list of things that should be done before you leave and how to do them after an emergency.

(18) Prepare an emergency contact list, including names, phone numbers, and addresses.

(19) Lock home and leave the place before it hits you.

c. Gap Analysis

(1) Need to adopt a standardized, multi-hazard risk assessment approach at each basin level. Awareness and knowledge about glacial mass, hazard and risk level events must be raised to mountain community.

(2) The countries of the HKH need to cooperate more extensively and effectively by sharing data, information, and scientific and indigenous knowledge, and by fostering transboundary disaster risk reduction practices.

(3) Enhancing resilience through the four pillars—information, infrastructure, institutions, and insurance.

(4) Develop glacial monitoring networks, innovative research techniques, build resilient infrastructure and install efficient early warning system.

(5) Promote avalanche harvesting and develop small artificial glaciers or ice stupas to meet the need for water scarcity.

(6) Supporting the livelihoods of communities dependent on glaciers through alternative income generation initiatives and social safety nets is crucial.

(7) Glaciers which are retreating and has a potential to affect the downstream communities should be monitored.

(8) Develop comprehensive centered baseline information system on the glaciers of the entire HKH region including major and sub-basins.

Departments/ Ministries	Recommendations
Academic Institutions	<ol style="list-style-type: none">1. Conduct scientific research to understand glacial dynamics, climate change impacts, and the formation and behavior of glacial lakes.2. Integrate meteorological data, glacial lake monitoring, and

	<p>risk assessments to enhance the accuracy and effectiveness of early warning systems.</p> <ol style="list-style-type: none"> 3. Collaborate with engineering and environmental science departments to develop sustainable infrastructure plans that consider the potential impacts of GLOFs. 4. Integrate climate-resilient designs and construction practices into infrastructure projects in GLOF-prone areas. 5. Facilitate collaboration with international research institutions, organizations, and experts to share knowledge, resources, and best practices in GLOF risk reduction. 6. Encouraging innovation in technologies and methodologies for GLOF risk reduction.
<p>INGOs/NGOS</p>	<ol style="list-style-type: none"> 1. Implement projects that focus on diversifying local livelihoods, reducing dependency on vulnerable sectors, and promoting economic activities that are less susceptible to GLOF-related hazards. 2. Advocate for policies at local, national, and international levels that address the root causes of GLOFs, such as climate change, and promote sustainable development in vulnerable regions. 3. Collaborate with governments stakeholders and local communities to ensure the inclusion of GLOF risk reduction measures in relevant policies and strategies. 4. Provide support in the aftermath of GLOF events, including emergency response, relief efforts, and long-term recovery programs.
<p>Local Social Organizations (LSOs)</p>	<ol style="list-style-type: none"> 1. Local community organizations can facilitate awareness campaigns and educational programs to inform residents about GLOF risks, early warning systems, and evacuation procedures. 2. Empower community leaders and volunteers with the knowledge and skills needed to actively participate in risk reduction initiatives.

	<ol style="list-style-type: none"> 3. Involve residents in the monitoring and maintenance of these systems to ensure their sustainability and effectiveness. 4. Engage in projects that promote sustainable natural resource management, including the conservation of forests, water sources, and other ecosystems. 5. Develop and communicate evacuation plans, ensuring that community members are well-informed about safe evacuation routes and emergency procedures.
Federal/ Provincial Ministries	<ol style="list-style-type: none"> 1. Engage in diplomatic efforts to foster international collaboration on GLOF mitigation, particularly with neighboring countries that share glacial regions. 2. Advocate for the allocation of government funds and resources to support GLOF risk reduction initiatives, including the development of early warning systems, infrastructure projects, and community resilience programs. 3. Ensure that budgets include provisions for research, monitoring, and emergency response related to glacial lake hazards. 4. Facilitate community engagement and participation in decision-making processes related to GLOF risk reduction.
Media	<ol style="list-style-type: none"> 1. Act as a communication channel for early warning systems by disseminating timely and accurate information about potential GLOF events. 2. Facilitate community engagement through media platforms, allowing residents to share their experiences, concerns, and insights related to GLOFs. 3. Cover stories related to international collaborations, agreements, and initiatives aimed at addressing climate change, and GLOF risk reduction. 4. Provide a platform for local voices to contribute to discussions on GLOF mitigation strategies. 5. Facilitate online forums, webinars, and Q&A sessions with

	experts to address public inquiries and concerns (Interactive platforms).
<p style="text-align: center;">Health Departments</p>	<ol style="list-style-type: none"> 1. Establish and strengthening emergency medical response systems to provide immediate care to those injured during a GLOF event. 2. Ensure the availability of trauma care facilities, medical personnel, and essential medical supplies in vulnerable areas 3. Ensure access to safe drinking water by implementing WASH initiatives that focus on water purification, sanitation facilities, and hygiene promotion. 4. Distribute insecticide-treated nets to prevent vector-borne diseases like malaria, particularly in communities facing increased risk due to displaced populations or disrupted living conditions. 5. Provide psychosocial support services to individuals and communities affected by GLOFs, as these events can cause significant mental health challenges. 6. Implement systems for epidemiological surveillance to monitor and respond to potential disease outbreaks in the aftermath of GLOFs.
<p style="text-align: center;">DDMAs/ EPA</p>	<ol style="list-style-type: none"> 1. Concerned authorities should conduct surveys to assess the environmental impact of glacial lakes and identify potential risks at each basin level. 2. Implement monitoring systems to track changes in glacial lakes, glacier dynamics, and other environmental factors that may contribute to GLOFs. 3. Collaborate with concerned authorities to ensure effective communication of early warning messages to at-risk populations. 4. Provide training to local communities, including community leaders and first responders, to enhance their capacity to respond to GLOF events.

	<ol style="list-style-type: none"> 5. Collaborate with relevant agencies to integrate GLOF risk considerations into land use planning, ensuring that infrastructure projects are resilient to potential GLOFs. 6. Integrate GLOF risk reduction measures into provincial and local disaster management plans. 7. Recommend educational institutions to integrate climate change modules into school curricula to instill awareness and preparedness at an early age. 8. Conduct post-event assessments to evaluate the effectiveness of response efforts and identify areas for improvement. 9. Implement adaptive management strategies based on lessons learned from previous GLOF events and ongoing monitoring activities. 10. Establish Community Based Disaster Risk Management Committees (CBDRMC), with formation of Hazard Watch Group (HWG) within communities to act as a first line of responder in the wake of disaster.
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5. **Anticipatory Actions/Roles & Responsibilities.**

Stakeholder	Anticipatory Actions
Federal Government	<ol style="list-style-type: none"> 1. Develop policies for climate adaptation and risk mitigation. 2. Support infrastructure resilience projects, including protective barriers. 3. Coordinate with international agencies for technical expertise.
NDMA	<ol style="list-style-type: none"> 1. Conduct risk assessments specific to glaciated zones. 2. Develop evacuation plans and designate safe zones. 3. Conduct awareness campaigns on GLOF risks and

	preparedness.
PDMA's	<ol style="list-style-type: none"> 1. Strengthen riverbanks and flood barriers. 2. Improve drainage systems to mitigate flood impact. 3. Develop community-based disaster preparedness programs.
Area Military Formations	<ol style="list-style-type: none"> 1. Conduct aerial reconnaissance of glaciated zones. 2. Provide logistical support for emergency evacuations. 3. Deploy engineering teams to construct protective infrastructure.
Local Governments & Municipal Authorities	<ol style="list-style-type: none"> 1. Ensure infrastructure resilience to withstand GLOFs. 2. Implement zoning regulations for safe land use. 3. Develop public awareness programs on GLOF preparedness.
Households and Individuals	<ol style="list-style-type: none"> 4. Monitor weather updates. 5. Prepare emergency evacuation plans. 6. Keep necessary supplies like food, water, and medicine. 7. Follow early warnings and relocate when advised.

6. **Impact After Interventions.** NDMA has developed a list of anticipatory actions that are to be taken to prepare for the anticipated GLOF events. The roles and responsibilities of all relevant line departments have also been assigned already. These interventions will result in reducing the impact of possible GLOF events. Below are the impact maps of the most vulnerable GLOF site after these interventions.

a. **Tech Early Warning.**

(1) NDMA's National Emergencies Operations Center has a dedicated syndicate working on GLOF monitoring. The team keeps a vigilant watch on 36 most vulnerable glacial lakes in the northern areas using satellite feeds as well as ground data from AKAH and WW.

(2) The team regularly seeks on-ground situation reports from the

concerned PDMA, not just in KP, but in GB and AJK (SDMA). Similarly, continuous discussions and regular meetings on the actual state on the ground are done between NDMA and local communities through NGOs. The technical team of the NDMA issues alerts based on defined thresholds for temperature, precipitation and other factors.

b. **Tech Early Warnings for Booni GLOF – August 2024.**

(1) In the case of Booni Chitral, NDMA issued multiple projections, advisories, and alerts. In May 2024, the technical team issued six-month projections with likely impacts on population, infrastructure and settlements, highlighting Chitral region with Reshun, Brep, Chianter, and Booni Glaciers among the most vulnerable to outburst flooding. Later, NDMA issued another advisory in July for the vulnerable GLOF sites in KP and GB.

(2) It was followed by a media interview of the GLOF team on 9th July, where multiple sites were highlighted.

(3) A weather impact alert was also issued on 31st July, in which Chitral was highlighted for flash floods and a possible GLOF event. NDMA's team continued to monitor the localized weather dynamics over the region and another confirmatory alert for GLOF event in Booni was issued before the onset of the event on 3rd August 2024 (Annex A).

(4) All these alerts, advisories and projections were shared with the PDMA and district administrations. Similarly, the alerts and advisories outlined the precautionary measures and actions for the likely event.

Figure: Badswat Glacial Lake Impact Map with Estimated Exposure after the Interventions

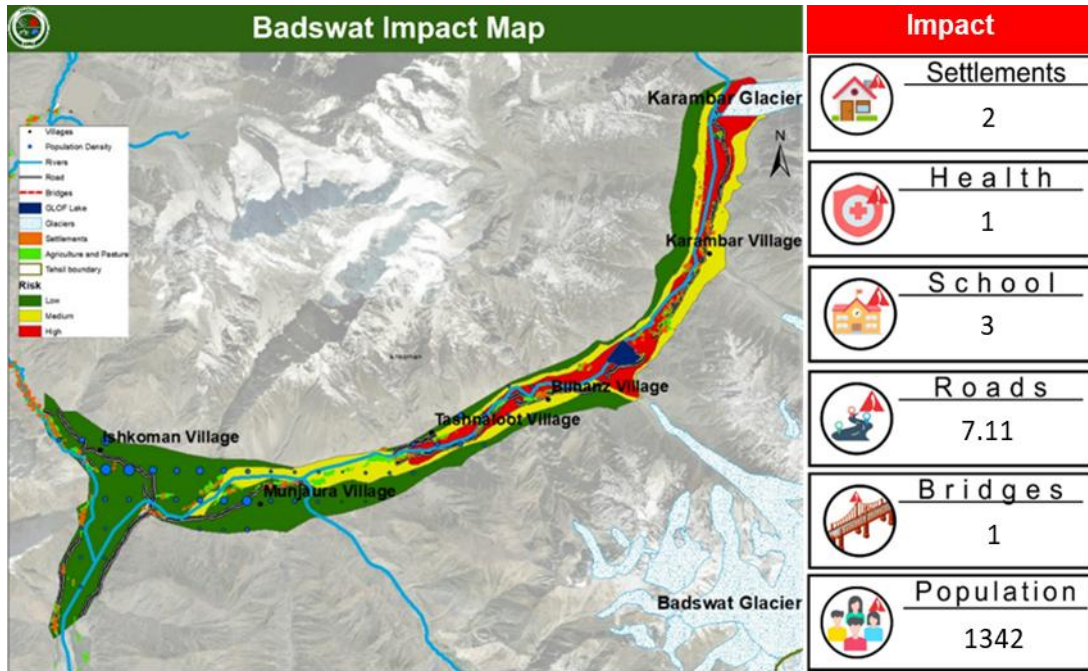


Figure: Tersat Hundur Glacial Lake Impact Map with Estimated Exposure after the Interventions

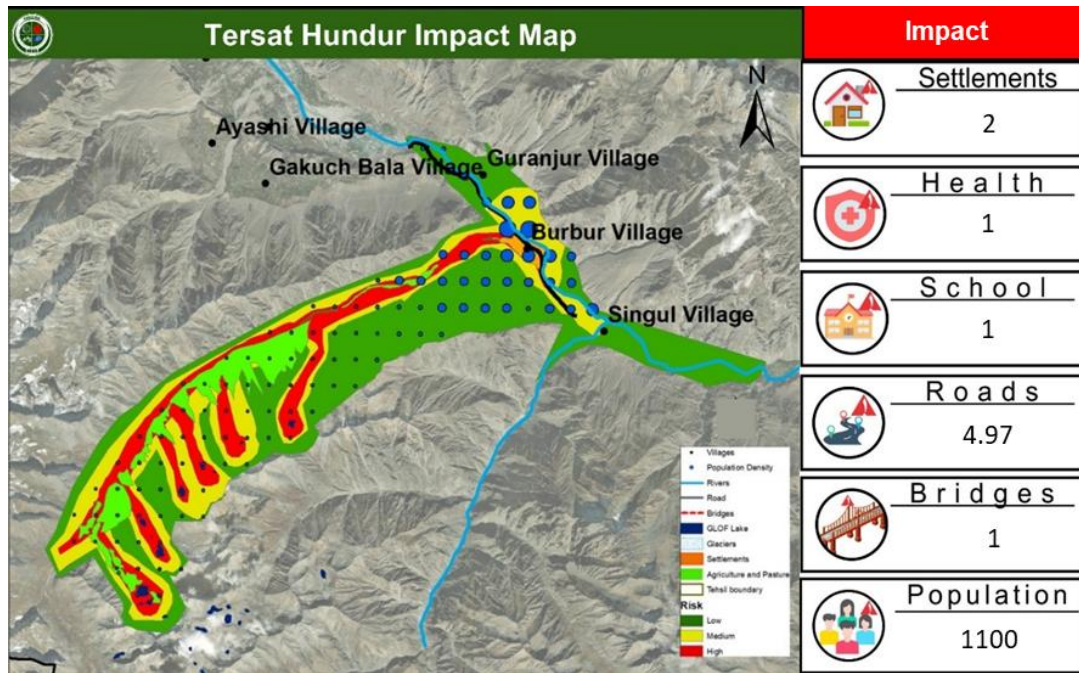


Figure: Hinarchi Glacial Lake Impact Map with Estimated Exposure after the Interventions

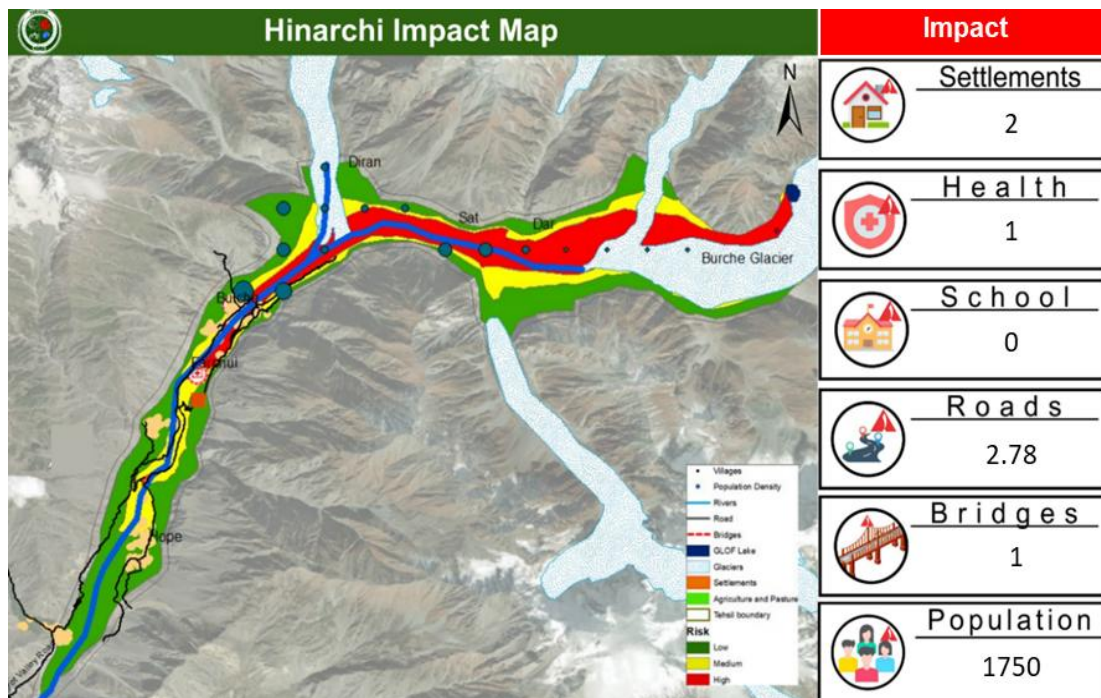
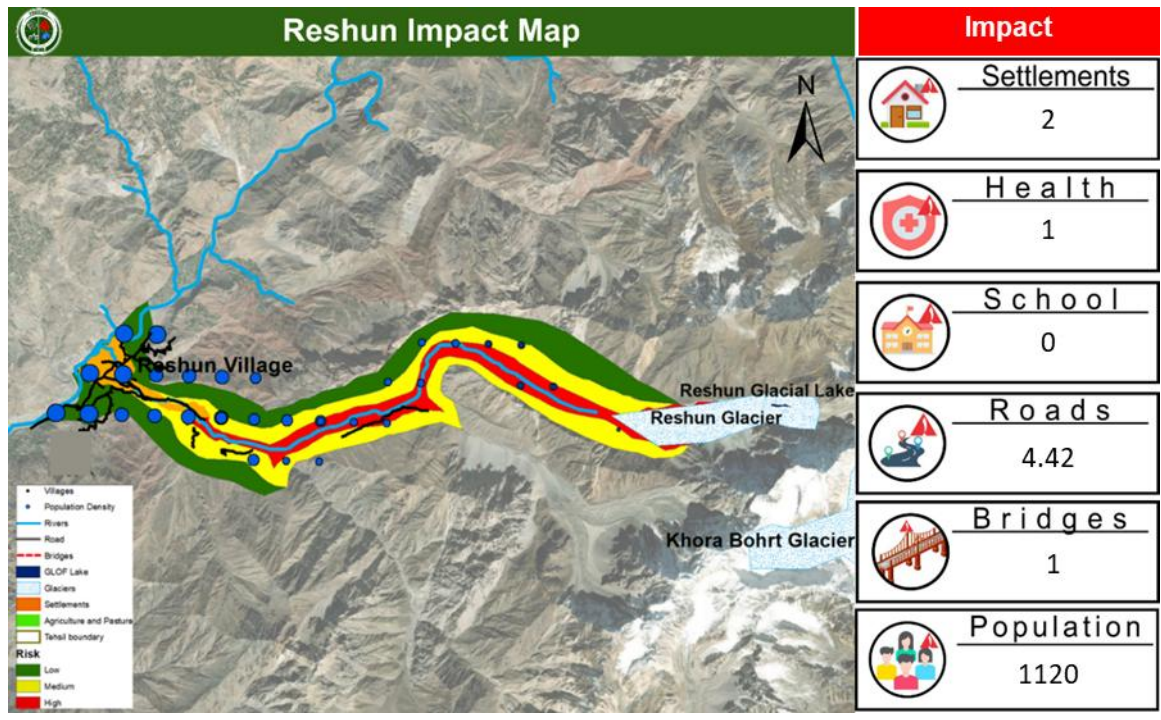
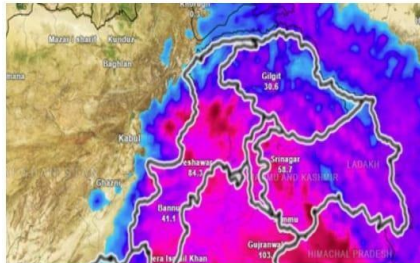


Figure: Reshun Glacial Lake Impact Map with Estimated Exposure after the Interventions



Rainfall Alert Northern Pakistan

Alert Level Medium
Reported 31-07-24
Updated 02-08-24



Category/ قسم
 Rain

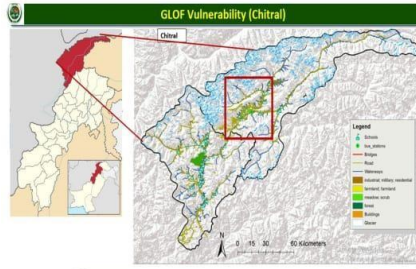
Description/ تفصیل
 Thunderstorms and isolated heavy falls are expected in GB, AJK and upper KP from 1st to 6th August 2024

Impact/ اثرات
 Chitral, Dir, Charbagh, Malakand, Hazara and Peshawar Valley are expected to receive heavy to very heavy rainfall intermittently from 1st to 6th August. Most parts of Kashmir and some parts of GB are expected to experience isolated very heavy falls during the period. Heavy rain is likely to trigger flash floods in hill torrents and local nullahs. It will also result in increased flows in major rivers and their tributaries.

Action/ عملی اقدامات
 Residents are advised to keep up to date with the latest weather alerts, advisories, and directions of local authorities. Tourists are advised not to travel to hilly areas during this monsoon spell. Local authorities are advised to stay on alert and be ready to deal with any untoward situation.

GLOF Alert KP/GB

Alert Level High
Reported 03-08-24
Updated 03-08-24



Category/ قسم
 Flash Flood

Description/ تفصیل
 From August 3-6, 2024, Khyber Pakhtunkhwa and Gilgit-Baltistan are at high risk for Glacial Lake Outburst Floods (GLOF), flash floods, and landslides. This is due to increasing glacier melts, persistent high temperatures, and a weather system bringing intermittent rains from August 3-6, 2024.

Impact/ اثرات
 Flash floods resulting from glacial lake outbursts and heavy rainfall together may destroy bridges and other infrastructure in their flow path.

Action/ عملی اقدامات
 (a) Residents of these areas are advised to remain vigilant and follow guidance from local authorities.
 (b) Stay informed by keeping track of weather updates and alerts.

GLOF Vunerability - District Chitral

