

Himalaya Niti Abhiyan (HNA)

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Fact-Finding Visit Report

Event: On July 31, 2024, a cloudburst over the Pir Panjal range in the high Himalayas triggered a devastating series of events for downstream habitations along the river valleys.

Date of Visit: August 2-4, 2024

Areas Visited: Sainj Market, Malana Khad, Parvati Valley, Samej Market, Bagipul (Kurpan Khad)

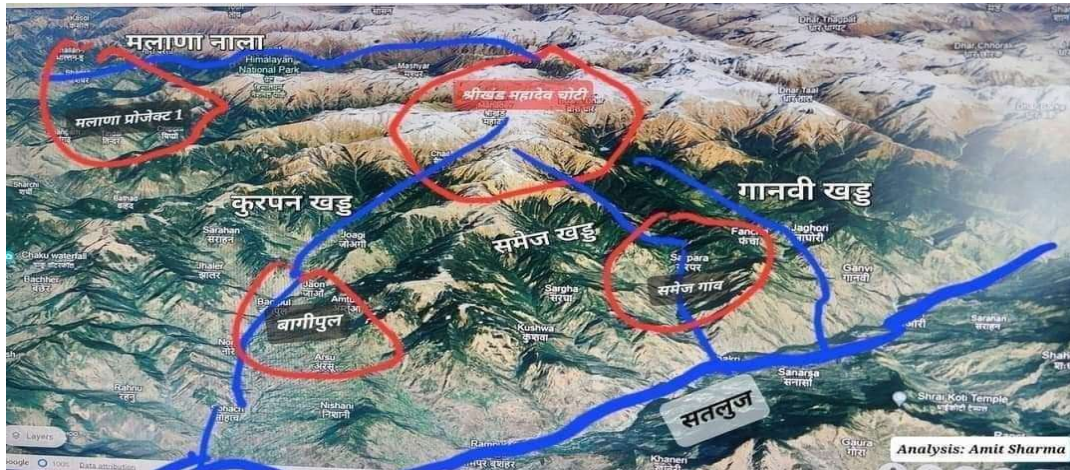
A. Background

At the outset the increasing hazards in the high Himalayas can be attributed primarily to five interrelated factors, Climate change, geological Vulnerability, unplanned and haphazard infrastructure development and two subsidiaries those inhibiting the resilience and adaptability process, Repetition of Past Mistakes by the State Government and Public, second, Unscientific and Unrealistic Standards of Forest Regime.

1. **Climate Change:** The region has experienced a significant increase in average temperatures, with a doubling of the warming rate compared to global averages. This results in higher occurrences of extreme weather events such as intense rainfall and cloudbursts, formation of moraine lakes in the Trans and Higher Himalayas. Furthermore, there is a discernible shift in the temporal patterns of the Indian South-West Monsoon and Western Disturbances, which exacerbates the occurrence and severity of hazardous weather conditions.
2. **Geological Vulnerability:** The accelerated retreat of glaciers in paraglacial valleys, coupled with the formation of glacial moraine lakes, has significantly increased the mobilization of loose sediments. These sediments become highly susceptible to erosion during episodes of intense and sudden precipitation. Such geological instability poses substantial risks to infrastructure, especially hydropower projects, which may be adversely impacted by excessive sediment discharge and subsequent sedimentation, potentially leading to operational challenges and structural damage.
3. **Unplanned and Haphazard Infrastructure Development:** Public amenities such as roads, bus stands, hospitals, and schools are frequently constructed in flood-prone riverbeds and zones. For instance, the Sainj road, which was washed away in last year's floods, has been reconstructed in the same vulnerable location, highlighting a clear negligence by the Public Works Department (PWD) engineers.
4. **Repetition of Past Mistakes by the State Government and Public:** Over the past decade, Himachal Pradesh has become increasingly susceptible to cloudbursts, flash floods, and mismanagement of hydropower dams. This has resulted in significant loss of life, livestock, and agricultural land. Despite these recurrent disasters, both the government and the public have shown a lack of learning from past events, leading to continued mismanagement of hydropower projects and unplanned infrastructure development. Government-built infrastructure on riverbeds sets a precedent for private developments in the same hazardous areas.
5. **Unscientific and Unrealistic Standards of Forest Regime:** Infrastructure development in the region often requires the use of forest land, which constitutes two-thirds of Himachal Pradesh's geographical area. However, restrictive policies under the Forest Conservation Act (FCA) and the Indian Forest Act (IFA) hinder the rehabilitation process. This shortsighted approach forces both the state government and the public to pursue development on private lands, which are frequently situated close to riverbanks, thereby increasing vulnerability to flooding and erosion.

B. Overview of the Recent Events

On July 31, 2024, a series of cloudbursts in the Pir Panjal range resulted in devastating flash floods along the three valleys: Samej, Kurpan, and Ganvi Khad. These floods can be traced back to cloudbursts originating from the Shrikhand Mahadev mountain peak. A subsequent cloudburst over Malana led to further flooding in the Malana Khad area and the downstream villages.



C. Observed Impacts

1. Sainj Market:

Dam Management Failures: On the night of July 31, 2024, disaster struck the Sainj River valley due to torrential rainfall. The heavy water discharge forced the HPPCL Niharni dam to open its gates, and simultaneously, the gates of the NHPC Parvati Phase III dam, located approximately 10 kilometers downstream, were also opened. This sudden and immense flow of water washed away the recently reconstructed road along the left bank of Sainj market, which had been rebuilt following the floods in July 2023. The floodwaters also entered the market area, causing further damage.

Negligence and causal behavior of Dam Safety Authorities: It is to be noted that the meteorological department issued an early warning two days in advance from the actual incident happened, and was duly circulated by district authorities at all levels. However, the dam authorities of HPPCL and NHPC, responsible, ignored these warnings, similar to their oversight in the previous year. During heavy rain, the dam authorities opened the dams in the middle of the night without prior warning, resulting in severe downstream damage.

Previous Incident and Unfulfilled Promises: Last year's floods, driven by the NHPC authorities' mismanagement, devastated the Sainj area, destroying roads, houses, agricultural land, and public amenities. Despite assurances from NHPC to construct check dams, retaining walls, and implement other safety measures, none of these tasks were completed within the promised timeframe. The failure to build check dams and other mitigation measures, combined with unregulated muck dumping, contributed to additional collateral damage.

Ongoing Issues with Muck Dumping: Additionally, muck from recent stream dredging activities by the Himachal government was washed back into the stream, exacerbating the situation. In the past, muck from the upstream NHPC power project had been dumped between the dam site and Sainj market, contributing to the heavy damage experienced during the floods on July 9, 2023. This unregulated muck disposal had been a significant factor in the destruction witnessed last year and continued to pose a threat to the region's stability and safety.

2. Malana Stream and Parvati Valley:

Dam Failures: Additionally, on the same night, another cloudburst occurred above the higher peak of Malana in the same mountain range. This resulted in a flash flood in Malana Khad, which feeds into the Parvati River. Due to the paraglacial zone's deep gorges, the Malana dam burst was similarly caused. While the upstream Phase 2 of Malana managed to open its gates in time, the failure to do so by the downstream Phase 1 project, located nearly 10 kilometres away, led to severe erosion of the soft sediment valley on its right end and a subsequent burst of water from the dam, though the main dam structure remained intact.

Infrastructure Damage:

- a) Near Bhunter, in Hathithan area many building collapsed during July 2023 floods. Once again damage is reported on this site.

- b) Shaat Subzi mandi building on river side was collapsed. It was constructed on or close to riverbed
- c) One school building, camping site, village temple and huge tract of agricultural and horticultural lands were washed away in Baladhi village and Chouhki village. Malana khad join Parvati River at this place and island was formed due to change in river course. Few families were stuck in the island overnight, though rescued on the next day
- d) Road is completely washed away about 1.5 km before Malana Phase 1 dam site
- e) Dam burst occurred due to washing away of soft sediments along right portion of dam structure, as the gates were stuck due to sediment and boulders. It seems no lesson is learnt from last year Malana Phase 2 dam gate failure to open

3. Further Luhri dam Phase 1

- a. Muck from dam/tunnel construction was dumped along Sutlej riverbank, and it was washed away during this flood event

4. Samej Village

Extent of Destruction: Flash flood on Samej Khad due to cloudburst in Shreekhand Mahadev, completely washed away about 26 residential houses and market area including Senior Secondary School and PHC. Few more houses are also washed away in the downstream region. Huge boulders were also seen in the area, that were carried by upstream flash flood.

People migrated to access the facilities: people migrated to this riverside settlement from villages in upper region of the mountain, post construction of road. This riverside tract of land was Dogri (for seasonal cropping) in the past and situated at the confluence of main Samej stream and Nalla.

Further it is to be noted that, As per local residents, a comparatively low intensity flash flood occurred in this Samej Khad, about 20 years ago, that washed away 4-5 buildings in the same settlement area.

Casualties and Missing Residents: The floods have resulted in significant loss of life, with at least 36 confirmed casualties and many residents still reported missing. The scale of the tragedy is ongoing as recovery efforts continue.

Impact on the Community: The devastation has left the remaining villagers in dire conditions. The destruction of essential facilities like the school and health center exacerbates the community's hardships. This disaster underscores the urgent need for immediate relief and reconstruction efforts to support the displaced residents and rebuild the infrastructure necessary for the community's recovery.

5. Bagipul (Kurpan Khad):

This area was cultivated paddy land ("ropa") in the past, and people shifted from above villages after road construction nearly 30 years back. Bagi village is about half a kilometer away, and this area is named after construction on a bridge, hence called "Bagipul". It is also situated at the confluence of a Nalla and main Kurpan stream.

Infra structure Damage: 8 building and 2 bridges were completely washed away. A few houses are also washed away or damaged in the downstream, and huge tract of agricultural land "ropa" are damaged/washed along the stream.

Casualties and Missing Residents: Around 8 people have either lost their life or missing at this moment.

D. Inadequate Relief Efforts Leave Affected Communities Behind

- ❖ The severe floods and landslides that struck Himachal Pradesh in July 2023, particularly impacting Mandi, Kullu, and Shimla districts, led to significant devastation. Despite our detailed submission on this matter .it is unfortunate that many affected families are still waiting for the full relief package.

- ❖ Those who lost residential and agricultural land have not yet been provided with alternative land for rebuilding homes or continuing agricultural activities. Legal provisions should be established to address this issue.
- ❖ Before recovery efforts from last year's disaster were fully underway, the region faced another catastrophe in 2024. A comprehensive, statewide, and interdepartmental disaster response is urgently needed, focusing on the most vulnerable areas. While immediate rescue and relief efforts are crucial, the more complex task of reconstruction and full rehabilitation remains unresolved. Given the state's limited resources, it is imperative that the central government fully reimburses the losses and damages incurred.

Previous report by HNA and civil society organization:

[Preliminary Analysis of 2023 Disaster Across HP.pdf \(environicsindia.in\)](#)

E. Recommendations to the Himachal Government

A. Infrastructural Development

1. **Strict Planning for Infrastructural development in Paraglacial Areas:** Implement guidelines that incorporate geographical and geological studies, focusing on risk categories in the Himalayan zones. Marking of “Awadi Deh” or the habitational land (either private or forest land whichever is suitable) and infrastructural land is the major concern.
2. **Slope Stability Analysis:** Ensure development plans include robust slope stability analysis and maintain safe distances between infrastructure and water bodies.
3. **Regulations on Road Building:** In the Western Himalayan region, restrict road construction to double-lane projects only, using region-specific technologies designed to minimize environmental impact. Prohibit four-lane projects to reduce disturbance in sensitive areas. Avoid blasting and drilling beyond safe limits to protect vulnerable terrains. Each project must include both a watershed engineer and an infrastructure engineer to ensure thorough understanding of watershed behavior and water channels, thereby enhancing safety and environmental sustainability.

B. Hydrology and River Management

4. **Scientific Studies on River Channels:** Conduct detailed hydraulic studies to assess river drainage capacities, incorporating extreme weather scenarios. Use advanced modelling, remote sensing, and GIS to analyse flow dynamics, sediment transport, and channel changes. This will provide insights for effective flood management and resilience planning.
5. **Restrict Development of Hydropower Projects:** Enforce a ban on any kind of hydropower project using dam technology in the Himalayan region. Dams not only produce methane, a greenhouse gas 400 times more potent than CO₂, but also disrupt local precipitation patterns, causing cloud bursts and flash floods. They alter river courses, leading to severe destruction when water is released uncontrolled during heavy rains. It was wrongly promoted that dams were intended for flood control, but in reality, they have often brought about greater destruction, as seen in recent events in Himachal Pradesh in last ten years.
6. **Safety Audits for Existing Dams:** Conduct comprehensive safety audits for all dams in the Himalayas to address risks related to climate change, and make the findings public. Notify the public about safety training for dam officers and officials, and ensure that all downstream panchayats receive detailed information. Involve at least two panchayat representatives in the evaluation of safety training, alongside safety audit teams, to enhance community engagement and oversight.
7. **No Construction in Flood Zone:** Clearly delineate flood zones and enforce a construction ban within these areas to address the expansion caused by riverbed reclamation. Develop effective rehabilitation solutions for displaced residents, including land exchanges. Facilitate the trade of high-risk private land for designated forest land with minimal tree cover, ensuring safer living conditions and promoting sustainable land management. This approach will prevent further development in flood-prone areas, enhance community resilience, and safeguard vulnerable populations.

C. Land Management and Environmental Protection

8. **Mapping Sediment Deposits:** Regular mapping of sediment deposits in glacially vacated valleys across the Western Himalayan region to evaluate risks associated with extreme weather events. This involves a comprehensive analysis of sediment distribution, composition, and accumulation patterns to understand how these factors influence flood risks, landslides, and erosion. Employ advanced geospatial technologies and field surveys to gather accurate data. This scientific approach will provide critical insights into sediment dynamics, helping to develop targeted risk mitigation strategies and enhance the resilience of communities and infrastructure in the region.
9. **Afforestation and Soil Remediation:** Implement large-scale afforestation and soil remediation projects to reduce landslide risks, using local, climate-resilient species. Actively involve Forest Rights Committees (FRCs) and Community Forest Resource Management Committees (CFRMCs) established under the Forest Rights Act 2006 in these efforts, integrating their forest conservation plans. Utilize funds allocated for afforestation under various schemes and projects to support these initiatives, ensuring robust community engagement and effective forest resource management.
10. **Exchange of Private Land with Forest Land:** Facilitate the exchange of privately held land in flood zones or disaster-prone areas with designated forest land, promoting safer living conditions and sustainable land management.

D. Early Warning and Disaster Preparedness

11. **Implement Advanced Early Warning Systems:** Invest in cutting-edge technology for localized, real-time weather alerts. Use of Doppler radars offer precise weather forecasting by providing high-resolution data on localized weather conditions, including rainfall intensity and storm movement. Their advanced dual-polarization technology enables accurate measurements and differentiation of various weather types, such as rain, snow, and heat waves. Capable of identifying up to 12 different weather conditions, including cyclones and extreme phenomena, Doppler radars enhance the accuracy and efficiency of weather predictions and targeted warnings.
12. **Modernizing Disaster Response Training and Infrastructure:** The current disaster response training is outdated and formal. A comprehensive, evidence-based training program should be introduced for local communities, lasting at least a week to ensure thorough preparedness. Early responders need specialized training in using disaster gear, and each village should have easily accessible emergency equipment. Implementing these updates will significantly enhance local disaster response and early-warning capabilities, improving community resilience to extreme weather events.

E. Legal and Regulatory Framework

13. **Legal Framework for Rehabilitation:** Establish legal frameworks for land allocation and rapid, fair compensation for families displaced by disasters.
 - a. **The potential solution:** Facilitate the exchange of high-risk or washed-away private land, such as land in flood zones or near riverbeds, for designated forest land. In return, provide displaced or high-risk families with forest land that has minimal tree cover, allowing for safer and more practical residential or agricultural use. By implementing these strategies, we can protect vulnerable communities, preserve our natural resources, and foster a more resilient environment.

F. Public Awareness and Engagement

14. **Public Awareness Campaigns:** Conduct comprehensive public awareness campaigns on disaster risks and preparedness strategies, partnering with civil society organizations, governmental bodies, and non-governmental institutions. Each block in Himachal Pradesh should designate specific public, private, or non-governmental institutions to lead efforts in educating residents about disaster management and early preparedness. This collaborative approach will enhance community resilience and ensure widespread understanding of risk mitigation and emergency response measures.

Conclusion

The floods and landslides of July 2023 and July August 2024, have highlighted severe deficiencies in Himachal Pradesh's disaster response and preparedness. The ongoing displacement of residents and delays in relief efforts reveal systemic failures in managing and mitigating the impacts of such disasters.

To address these challenges, a coordinated, interdepartmental approach is essential. This includes implementing advanced hydraulic studies, restricting high-risk infrastructure development, conducting comprehensive safety audits for dams, and prohibiting construction in flood zones. Modernizing early warning systems, enhancing disaster response training, and refining public awareness and legal frameworks for rehabilitation are also critical.

Learning from past mistakes and integrating these lessons into future practices are vital for improving resilience. By adopting a science-based, proactive strategy, we can better safeguard communities and prepare effectively for future disasters.

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Additional Resources

For further information, please refer to the following YouTube links showing the situation of the current flash flood and impact:

❖ [Video Link 1](#)

❖ [Video Link 2](#)

❖ [Video Link 3](#)

❖ [Video Link 4](#)

❖ [Video Link 5](#)

❖ [Video Link 6](#)

📌 <https://www.downtoearth.org.in/climate-change/climate-change-reason-for-heavy-rains-and-cloud-bursts-in-the-trans-and-high-himalayas-report>

📌 [NDTV Coverage](#)

Research papers: Explaining the vulnerability of the Himalayan region to various hydro-geo-climatological factors:

- <https://www.nature.com/articles/s41598-024-53535-w>
- <https://www.mdpi.com/2073-4441/14/10/1603>
- <https://hess.copernicus.org/articles/16/2193/2012/>
- <https://link.springer.com/article/10.1007/s11069-024-06520-5>
- <https://iwaponline.com/jwcc/article/12/1/127/72310/Analysis-of-precipitation-variability-over-Satluj>
- [Preliminary Analysis of 2023 Disaster Across HP.pdf \(environicsindia.in\)](#)

This comprehensive report aims to highlight the urgent need for improved risk management, awareness, and preparedness in the face of climate change and increasing natural disasters in the Himalayan region.