

## **PRELIMINARY ANALYSIS OF 2023 DISASTER ACROSS HIMACHAL PRADESH**

**SEPTEMBER 2023**

### **Brief Introduction**

Unprecedented rains during the current monsoon season in several pockets have wreaked havoc across the state. Extreme events such as flash floods and cloudbursts and associated landslides, subsidence and sinking of land and complete failure of populated hill slopes devastated lives across the State. Current estimates indicate 404 people lost their lives, 38 people are still missing, and 377 have been injured in the various events across the State. Besides this huge loss of human lives, 10,140 livestock perished, and 5,644 cowsheds too were destroyed. Damages to buildings have been significant with 2546 houses and 317 shops completely damaged and 10853 houses partially damaged leaving a large population to seek alternate places to live. Three extreme spells (8 to 11 July, 14 to 15 August, and 22 to 23 August) and 163 identified landslides and 72 flash floods have been responsible for most of the impact. Kullu, Mandi, Shimla, Sirmaur, Solan and Chamba districts were some of the worst affected.

Huge losses have occurred for agricultural and horticultural lands due to various hazardous landslides and flooding. Public property has been significantly damaged, especially rural, district and state roads; national highways, and in particular the four-lane roads. The Kiratpur-Manali four lane from Mandi to Manali and Kalka-Shimla four lane from Parwanoo to Solan were washed away at many places. Many irrigation and water supply schemes were also washed away. Critical buildings and public utility buildings like schools were also damaged. Many hydropower projects and transmission lines were damaged or rendered non-operational. Forest land and vegetation were also gravely affected by landslides. A total economic loss of more than Rs 12,000 Cr is being estimated by the State government at the moment.

### **Relief and Rehabilitation**

Relief to families severely affected is urgent and critical. Families which have lost their homes will need to find safe places before winter sets in. Since farming and horticulture are the mainstay of livelihoods and subsistence, and many of them have been damaged needs urgent attention to restore or where not possible to find alternate sites. Special provisions will be required to enable since almost 70% of land in Himachal is classified as forest land, which is reserved under the Forest Conservation Act, 1980. It is urgently needed that exemption be made for resettlement of displaced communities for habitation and agricultural (or horticultural) purposes. Procedures must be initiated by the state so that the necessary permissions can be obtained from the Central Government.

### **Land Use and Disaster Mitigation**

The losses in this disaster demonstrated that the location and site of the buildings, ignoring the geological vulnerability of the area exacerbated the damages leading to landslide and subsidence, sinking of roads and loss of agricultural and horticultural land across rural

habitations. Major mass subsidence and massive landslide incidents were observed in sub-Tehsil of Ramshahar in Nalagarh (Solan), Sarchi GP of sub-division Banjar (Kullu), Bhatwari GP of sub-division Bali Chowki (Mandi). Apart from this, similar incidents were observed at hundreds of sites across the state. An investigation is needed to be undertaken to identify landslide risk zones and safe building sites at the village level in accordance with land capability, geomorphology and tectonics. Intense geotechnical mapping in the region needs to be conducted and all land-use and change needs to be calibrated based on current geotechnical circumstances. The State land use agencies and their legal-policy framework are currently being subverted but they must be brought into action. It would need a massive campaign of mapping land at sub-district levels followed by new legislations around land use and change. These are essentially to be put in place for safe settlements, as is mandatory but ignored for large infrastructural projects. Rural areas, as indicated by numerous subsidence, landslides and building collapse incidents during this monsoon have already become extremely vulnerable. Rather than increasing risk and financial debt by construction of large scale, unscientific and unsustainable projects, the way forward should be focusing on public safety, carrying capacity and land capabilities. Otherwise, a disaster of even large magnitude is not far, as we see it.

### **Road Construction and Transport**

The current road widening work being done by NHAI appears to lack long term geological understanding, and crucial on-the-spot decisions are taken arbitrarily by contractors and other unskilled and non-technical workers. Recently, Thalaut to Shala Nal, Aut to Banala, Pandoh to Mandi, Chakki region of Parwanoo-Solan Four Lane faced massive land sliding, exacerbated by vertical cutting and widening, which has now become a permanent sliding zone. Such incidents are getting common in road widening activities across Himachal. Therefore, there is a need for proper and long-term geological investigations during the road construction planning phase. There is urgent need for seriously considering geological instability and risk to communities and mountains alongside these projects that involve blasting and vertical cutting to widen roads upto 24-45 m as per the layout plan of NHAI. A moratorium on four lane projects should be stopped immediately to avoid destruction similar to the one seen in and around the Kiratpur-Manali, Shimla-Kalka four lane projects which are making the existing roads also vulnerable.

The 2019 guidelines of the Indian Roads Congress for hilly areas should be reassessed keeping in focus the geotechnical limitations as highlighted during the 2023 disasters across Himachal and Uttarakhand. Two-lane roads with hill cuttings following the required angle-of-repose should be the norm in hilly regions so as to ensure safe travel and avoidance of roadblocks. Proper drainage along the roads and downstream channelisation should be ensured. Muck disposal during construction of roads and tunnels have to be taken seriously and not merely dumped into the adjoining slopes or nearby streams and rivulets. Strict adherence to the MoRTH, March 23, 2018, notification which considering ecological issues restricted width of hill roads to 5.5m is needed. Any road having more width in Himachal should be considered illegal, unscientific, and ecologically destructive and must be studied to understand the risks associated with such roads. Public transport needs to be encouraged across the state and in

urban areas and more public spaces need to be developed as no car zones, designed along the concept of short-distance access to resources, markets, and enriched people-nature interactions.

### **Hydro Power Projects**

There has been a phenomenal increase in hydropower projects, since the Central Government's policy of 2003 which enabled privatisation and acceleration of 50,000 MW power generation in the Himalayan Rivers. This has led to severe problems both in the upstream and downstream of the projects. The time has come for the state and central governments and their respective agencies to immediately reconsider the Hydropower Policy in the Himalayan region which includes Himachal Pradesh where all the major rivers are saturated with HEPs and most of the hydropower potential has already been achieved. The remaining potential at high-altitude cold-desert regions have unpredictable hydrology and are disaster prone zones. The amplified glacial melting brought on by accelerated climate change further aggravates disaster risks for these para-glacial regions. In consideration of community safety and environmental stability, a complete moratorium needs to be placed on hydropower development.

Existing projects need robust Disaster Risk Assessments and management plans for safety of communities downstream. Significant environmental impact and aggravation of flood impact due to river valley hydropower projects was found by the Ravi Chopra Committee for Alaknanda and Bhagirathi sub-basins, post the June 2013 disasters. The issue of mismanagement by dam authorities including floodgates malfunctioning was also observed by the said Committee.

During the floods of 2023, we witnessed the inability of various hydropower authorities across the Beas Basin to make sound judgments when the floodgates were not opened after the first heavy rain spell on 20-24 June 2023. If not operated properly such projects become a source of disaster, as seen in Kullu-Mandi and Kangra districts of Himachal and some parts of Punjab and Haryana. Penalising Dam authorities may be a deterrent, but it cannot make-up for the losses suffered by the communities. Accumulated water release by all upstream dams have played a significant role in the Beas valley floods of 2023 and there is an urgent need to recalibrate our approach to HEPs in the present context of their negative impact on floods in Himalayan valleys.

Engineering considerations in design must lay greater emphasis on sediment load and the toe cutting abilities of hilly rivers; in addition to conserving the flora and fauna of riverine areas. Furthermore, in this accelerated climate change era, most previously used HEP design related datasets are rendered useless, since hydrology has changed significantly. Since many projects have been constructed without sufficient hydrological data (at least 30-40 years) and/or without appropriate considerations for safety and climate change in design, they need immediate re-assessment. We need to urgently review and activate instruments like Disaster Management Plans, Early Warning Systems; and update SOPs and dam manual based on changing hydrology and other socio-environmental factors. Additionally, for the sake of transparency and accountability, all documents and datasets

related to hydropower functioning and safety norms be placed in the public domain. Cumulative Environmental Impact Assessment (CEIA) reports for some of these valleys are highly criticised as having many flaws, and these need further review and reassessment by an expert committee including independent multidisciplinary expert members. Carrying capacity of rivers, along with Disaster Impact Assessment must be the way forward. Sufficient that ecological flows, considering the nature of each river and at least one-sixth of the flow should be maintained throughout the year, monitored strictly, and their data be shared in public domain by respective authorities.

### **Closer look at Flooding**

Some experts consider that current floods along the Beas valley were not due to exceptional rainfall. One major factor behind such high flood impact could be the temporary blockage of load carried by floodwaters including muck dumped from road and tunnel construction, trees washed away from slides along the banks and mid-channel bars, and its subsequent bursting. The resulting scouring of banks and crumbling of embankments from this action led to the diversion of the river into town areas and the four-lane highway. This narrowing of the river has acted as force multipliers.

Ongoing encroachment in and around riverbeds are becoming prevalent across the Sutlej and Beas basins for commercial purposes by public as well as private agents. Therefore, to avoid further disasters, there is the need for a river-wise micro-scaled scientific study to strict demarcation of flood zones. No infrastructural development should be allowed in this demarcated region, with some necessary exceptions like bridges, etc.

Unscientific and illegal mining of riverbeds for sand and grit; mountain foothills for stones and limestone (particularly in Sirmaur, Nalagarh and regions adjacent to the state that border Punjab and Haryana), are leading to landslides, diversion of river course and thus aggravating loss and damage to bridges, road, groundwater and human habitation. Various hazards had occurred due to the aforementioned factors in Sirmaur, Nalagarh and state borders. Mining areas and zones need to be demarcated for minor minerals, and strict norms be enforced in respective districts.

### **Forest Management and Arresting Deforestation**

The Forest Rights Act has placed the onus of forest conservation and management upon the communities and its implementation must be undertaken on the basis of the language and spirit of the Act. Ever since commercial green felling by governments for revenue was banned in the eighty's, local roads, national highways, four lane highways, hydropower and other commercial project construction are the major activities that are causing deforestation. The extraction of wood for urban needs is another factor behind increasing deforestation rate. There is a need protect deforestation through large-scale infrastructure development projects which are not relevant to the needs of the local communities. There is also a need for regenerating mixed forestry which would fulfil the needs of host communities providing them with food, fuel, fodder, fibre, fertiliser, herbs and timber; along with acting as bioremediate measure for landslides, groundwater regeneration, safety and in the controlling forest fires.

## **Urbanisation and Construction**

A complete relook at urbanisation is necessary as any impact could lead to very massive and irreparable losses. Courts and governments at different levels have decided to form various committees, which is welcome and urgently needed. However, the causes of disaster need to be addressed on an immediate basis. There is constant threat of landslide, subsidence and building collapse in dense urban areas like Shimla, Dharamshala and Mandi. The 2041 Shimla Development Plan, which was struck down by the NGT in 2018, is still being contested by the Himachal state government in the Supreme Court. This disaster-inviting plan, opening 17 green belt areas of Shimla for construction with the objective of doubling Shimla's population by 2041, needs to be withdrawn by the state government. It appears apparent that it has been prepared under pressure from various commercial and political interests and lobbies.

There is an immediate need for a complete ban on any new construction in Shimla and other vulnerable urban centres. Compulsory drainage and sewerage infrastructure be ensured in all urban centres and no septic tanks should be allowed. No more buildings are to be allowed on steep slopes by hill-cutting and above natural drainage channels. The process of decongesting Shimla and other urban centres needs to be prioritised as its natural geomorphology, soil and infrastructure cannot cope with the increasing pressure. The decision for satellite towns like Jakhya Devi township is a welcoming step from the government, and more such townships should be planned. Likewise, incentive and disincentives be focused to allow for such shifts to satellite towns. Serious consideration needs to be given to shifting of public offices and agency headquarters outside of Shima. We also need to recognize and factor in that migration from rural areas to urban hubs is for the sake of high quality and dynamic educational and health facilities plus livelihood opportunities. These should be provided at village levels and greater thrust on traditional livelihood opportunities and decentralisation of tourism could provide the lead along with effective forest management.

## **Tourism**

Tourism industry contributes seven percent to the GDP and is often also the cause for economic vulnerability due to weather, breakdown of infrastructure and other externalities. Tourism needs to be reimagined with disincentives for mass tourism and support the wide spectrum of communities involved in tourism for their livelihoods and nurtured to grow with both purpose and sustainability. Measures to curb real estate speculation in the name of tourism needs to be addressed. Decentralised tourism along with restrictions on the number of rooms or size of construction need to be actively explored.

## **Awareness and Sensitization**

We need to learn from previous disasters and lessons from the current disaster should not be ignored. Massive awareness campaigns, disaster management related capacity building among government agencies as well as communities, and a change of perception needs to be developed by engaging experts, civil society, political and other stakeholders. It is also important to look at early warning systems (EWS) for various hazards. Community based EWS need to be explored and developed for disaster prevention. There is an urgent need for co-production of knowledge, both traditional and scientific, at village level for disaster resilience.

Preparedness and skills allowing disaster resilience should be inculcated at Gram Panchayat level using ongoing schemes and other programmes of government.

### **Concluding Observations**

1. Issues needing urgent redressal such as resettling those who have become homeless and whose livelihoods have been severely affected need to be prioritised and immediate action initiated by the governments – both State and Central.
2. The issue of proper site for each type of landuse must be made an important agenda of the State's future action plans.
3. Moratorium on the large infrastructure projects – dams and hydropower projects, roads, construction – must be strictly adhered to and their impacts studied.
4. Traditional Livelihoods Occupations and reimagined tourism programmes should be considered including active community management of forests.
5. Widespread awareness and sensitisation of the decision makers and communities must be undertaken on an ongoing basis.

Finally, and most crucially it is important to understand the mountain specificities and the nature of the Indian Himalayan Ecosystem to develop policies and implement development models which are in consonance with the environmental realities and peoples needs rather than racing towards an unsustainable economic model or competing with other countries whose geo-ecological conditions are widely different.

*This Preliminary Analysis of 2023 Monsoon Disasters across the state of Himachal Pradesh is compiled by the team of Himalaya Niti Abhiyan, various civil society organisations, environmental activists, retired public servants and the scientific community which came together in a WhatsApp discussion group called "Crisis". This analysis also incorporates arguments and observations from a two-day webinar series conducted on 28<sup>th</sup> and 29<sup>th</sup> August 2023. Multi-disciplinary experts including Dr Ravi Chopra (Founder Director PSI, Dehradun and Chairman Ravi Chopra Committee on 2013 floods in Uttarakhand), Dr Navin Juyal (Expert in Quaternary Geomorphology and Paleo-Climate, Formerly with National Physical Laboratory), Himanshu Thakkar (Coordinator, SANDRP), Dr Himanshu Kulkarni (Director, ACWADAM), Sreedhar Ramamurthi (Earth Scientist and Trustee Environics Trust), Shri Avay Shukla (Former Addl. Chief Secretary (GoHP) and Head of 2009 Shukla Committee constituted for hydropower sector assessment), Rajendra Ravi (coordinator, People Resource Centre) and Dr. O.P. Bhuraita (Geomorphologist and Treasurer BGVs).*