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Department of Science & Technology  
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Government of India

**NMSHE** NATIONAL MISSION FOR  
SUSTAINING THE HIMALAYAN  
ECOSYSTEM

## POLICY BRIEF

# DISASTER RISK REDUCTION/ DISASTER RISK RESILIENCE IN INDIAN HIMALAYAN REGION

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**IHCAP** Indian Himalayas  
Climate Adaptation  
Programme



# Introduction

The Indian Himalayan Region (IHR) comprises of 12 Indian states covering an area of about 5.2 lakh kilometre square, inhabiting nearly 40 million people. The region extends over 2500 kilometres in length from Indus to Brahmaputra. The IHR includes hill states of Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Uttarakhand, and partial hill states of Assam and West Bengal. Being the youngest mountain ranges, the region is fragile and unstable and therefore have witnessed a range of natural disasters in the past like earthquakes, landslides, floods, avalanches etc. Climate variability adds to the existing threats making the region even more vulnerable. Increasing frequency and intensity of the disasters affect the local Himalayan communities leading to the destruction of life, property, and natural resources.

The remoteness of the region, complex terrain, dependence of communities on rain-fed agriculture and tourism, lack of infrastructures like roads, markets, and communication, and poor economy and per-capita income contribute towards the low adaptive capacities of the inhabitants. The IHR states communities face shortage of safe drinking water, poor health services, and education system, decreasing land productivity amidst increasing population, thus constraining the region's sustainability (INCCA, 2010).

## Vulnerabilities

The disaster risk index and the disaster resilience index scores prepared by the Ministry of Home Affairs with support from the United Nations Development Programme indicate that some of the states with high hazard index have low-risk index owing to their level of vulnerabilities like Himachal Pradesh, Uttarakhand.

### • *Future Vulnerabilities*

#### **HIMALAYAN REGION**

- Annual precipitation is projected to increase from **5 percent to 13 percent** by 2030 with respect to 1970's
- Annual temperature is projected to increase, ranging from **1.7 degree Celsius to 2.2 degree Celsius** in 2030 with respect to 1970

#### **NORTHEASTERN REGION**

- Annual precipitation to increase by **0.3 percent to 3 percent** in the 2030s with respect to 1970's
- The intensity of rainfall is also projected to **increase by 1-2 mm per day**
- The temperature is projected to increase in the range from **1.8 to 2.1 degree Celsius**

*The states of Tripura, Mizoram, Manipur, parts of Meghalaya and Nagaland are projected to face increased magnitude of floods by about 25 percent. The number of drought weeks during monsoon also show an increasing trend of 25 percent in Arunachal Pradesh, parts of Assam, Meghalaya, Mizoram, Tripura, and Manipur*



States like, Assam, Tripura, Himachal Pradesh have higher index of capacity which have discounted the net risk of disasters in these States. The resilience index shows the disaster resilience of the states which is low for IHR states and particularly for the North-Eastern region. The national average score of disaster resilience is 32.17 and most of the NE states fall way below that largely owing to low-risk prevention and mitigation. The report released by the Department of Science and Technology, under the project Capacity Building on Climate Change Vulnerability Assessment in the States of Indian Himalayan Region presents the vulnerabilities of the IHR states to climate change. The vulnerabilities elucidated in the report comprises of analysis of four broad categories of indicators; socio-economic, demographic status and health, sensitivity of agricultural production, forest-dependent livelihoods, and access to information, services and infrastructure. The states have been ranked from highest to lowest vulnerability with Assam having the highest vulnerability index and Sikkim, the least (relatively). The most common drivers of the vulnerabilities of the IHR states, as identified in the report are low per capita income, lack of open forest area and less area of forest available per 1,000 households, lack of irrigation coverage, lack of availability of healthcare centres, high yield variability of food crops and higher proportion of marginal farmers.

States	Socio-economic, demographic status and health	Sensitivity of agriculture production	Forest-dependent livelihoods	Access to services information and infrastructure	Vulnerability index	Risk (High to low)
Assam	0.8	0.62	0.83	0.6	0.72	1
Mizoram	0.45	0.92	0.79	0.82	0.71	2
Jammu & Kashmir	0.69	0.41	0.72	0.69	0.62	3
Manipur	0.52	0.57	0.83	0.49	0.59	4
West Bengal	0.57	0.56	0.65	0.58	0.58	5
Meghalaya	0.89	0.07	0.88	0.45	0.58	6
Nagaland	0.38	0.55	0.77	0.74	0.57	7
Tripura	0.44	0.5	0.59	0.57	0.51	8
Himachal Pradesh	0.81	0.34	0.45	0.27	0.51	9
Arunachal Pradesh	0.32	0.61	0.03	0.99	0.47	10
Uttarakhand	0.58	0.3	0.48	0.39	0.45	11
Sikkim	0.35	0.46	0.38	0.54	0.42	12

## IHR and Disaster Risk Reduction

The IHR regions is vulnerable to different hazards impacting various sectors like agriculture, forest, water, and others



resulting in heavy monetary losses every year. In spite of the enormous expenditure incurred due to disaster, the region still lags behind in the mitigative efforts towards reducing the impacts of disasters. The existing governance structure and institutional framework like NDMA, SDMA, and DDMA has not been operationalized in many of the states in their full capacities. According to the DST score card, the states of Tripura, Assam and Himachal Pradesh fare quite well in these aspects. Even though Nagaland, Mizoram, and Meghalaya seem to have an institutional mechanism well placed, these states lack in plans and policies for disaster risk management thus placing them in lower ranks. There is limited cooperation and coordination in inter-departmental / organizational planning; sectoral planning; and between state and community-based organizations, and the community. Initiatives taken up by the community to build disaster resilience remain confined within the geographical boundaries of the region they have been implemented in. Community initiatives thus often go unrecognized despite facilitating a positive change at the individual and community level. Knowledge of a particular kind therefore gets recorded and recognized leaving out the remaining forms. Also, many stakeholders involved are faced with a challenge of sustained funding sources thereby hampering their activities towards DRR / DRM.

## Recommendation and way forward

To address the issues that weaken the disaster risk reduction in the Indian Himalayan Region, the following section presents short term and long term recommendations. Short term covers those which can be taken up immediately to expedite the process of DRR by building on the existing and available information/structure. These steps are achievable over a short duration and are not necessarily sustainable, unless incorporated in a policy / guideline. However, the long term requires an extended period of engagement and may not be achievable within short span of time and requires significant administrative and political thought, commitment and intervention.

### SHORT TERM :

- Collaborate with and encourage the existing research institute / centers / department including technical and non technical working on DRM / DRR and its related activities in IHR through institute profiling or mapping and encourage researchers in sharing their learnings and knowledge for contributing to policy formulation.

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*Disaster risk reduction (DRR) is “the systematic development and application of policies, strategies and practices to minimise vulnerabilities, hazards and the unfolding of disaster impacts throughout a society, in the broad context of sustainable development” - (UNISDR, 2004)*

- Promote community resilience by including capacity building via education and awareness generation and giving due recognition to the significance of community's involvement and initiatives in the decision-making process of existing DRR project / programmes. This can be done by identifying and training suitable community-based organization at state and district levels for curriculum development and translation of manuals in local languages, training, project/programme design, social audit, review and monitoring.
- Create a provision for a flexible funding scheme in the existing funding policies / frameworks that shifts from short-term and project-oriented financing to the support of forward-oriented strategies that ultimately lead to long-term sustainability as national programs are often under capitalized.

## LONG TERM :

- Instill commitment at the highest level by constantly engaging the concerned authority / department /ministries in the various platforms where different kinds of knowledge are shared and communicate adequately at every level. Changes comes along only when knowledge, skills and awareness are combined with political and administrative will and commitment.
- **Strengthen the institutional mechanism by making SDMAs and DDMA's operational by equipping them with experts who can assist the state and district administrations with the various dimensions of DRR and CCA mainstreaming.** Empower the experts with the SDMAs and DDMA's to review ongoing programmes for the implementation of its stated DRR actions, and also encourage the departments to establish linkages with other pertinent departments to promote coordination and coordination within the government framework. Create a common platform of all stakeholders for invoking a healthy discussion in and around the subject matter to encourage inter disciplinary, inter sectoral, inter departmental approach in planning to achieve a holistic understanding of DRR / DRM within larger developmental programmes and projects.
- Build an enabling environment for public-private partnerships to insure community assets like roads, bridges, community institutions, etc against catastrophic events.

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*Climate Change Adaptation (CCA) relates to "an adjustment in natural or human systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploits benefit opportunities" - (IPCC, 2007)*

- To ensure long term, sustainable benefit from community initiatives, mainstreaming them into development planning is essential. Streamlining the initiatives with the current programs and schemes help reducing the challenges and barriers that such grassroots initiatives often face.

Sl. No.	IHR State	Components of integrating DDR into CCA in State Disaster Management Plan (SDMPs)	Components of integrating CCA with Disaster Management in SAPCC
1	Arunachal Pradesh*	×	×
2	Assam	×	✓
3	Himachal Pradesh	✓	✓
4	Jammu & Kashmir	✓	✓
5	Manipur	×	×
6	Meghalaya	×	×
7	Mizoram	×	×
8	Nagaland	×	×
9	Sikkim	×	×
10	Tripura	Traces of CCA in the plan but have not explicitly mentioned its integration with DRR	×
11	Uttarakhand	×	✓
12	West Bengal	×	×

\*The SDMP is not available



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