

Community Based **Early** Warning System for Climate Change Induced Natural Risk Reduction in Himalaya

Prakash Tiwari

Professor of Geography

Kumaun University, Nainital, Uttarakhand, India

Email: pctiwari@gmail.com



Bhagwati Joshi

Assistant Professor of Geography

Government Post Graduate College, Rudrapur, Uttarakhand, India

Email: 2bhagwatijoshi@gmail.com



Himalaya: Highly Vulnerable Climate Change Induced Natural Disasters

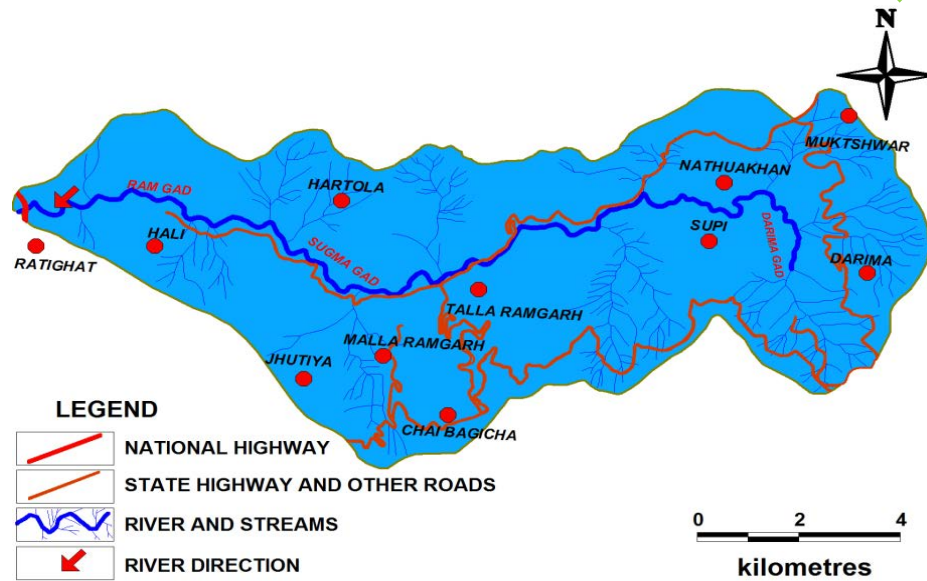
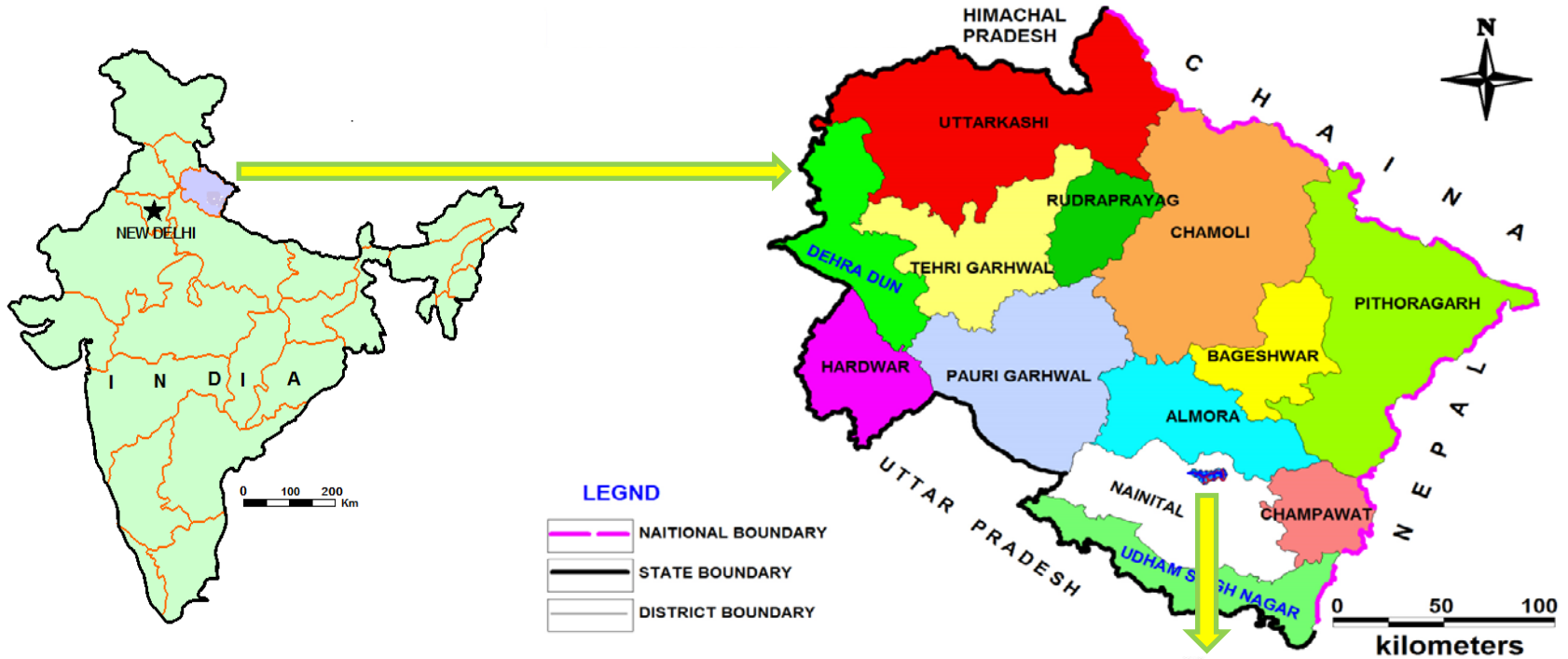
Natural Vulnerability

- Young Mountains
- High Altitude
- Geo-tectonically Alive
- Steep Slopes
- High Vulnerability to Natural Risks

Anthropogenic Vulnerability

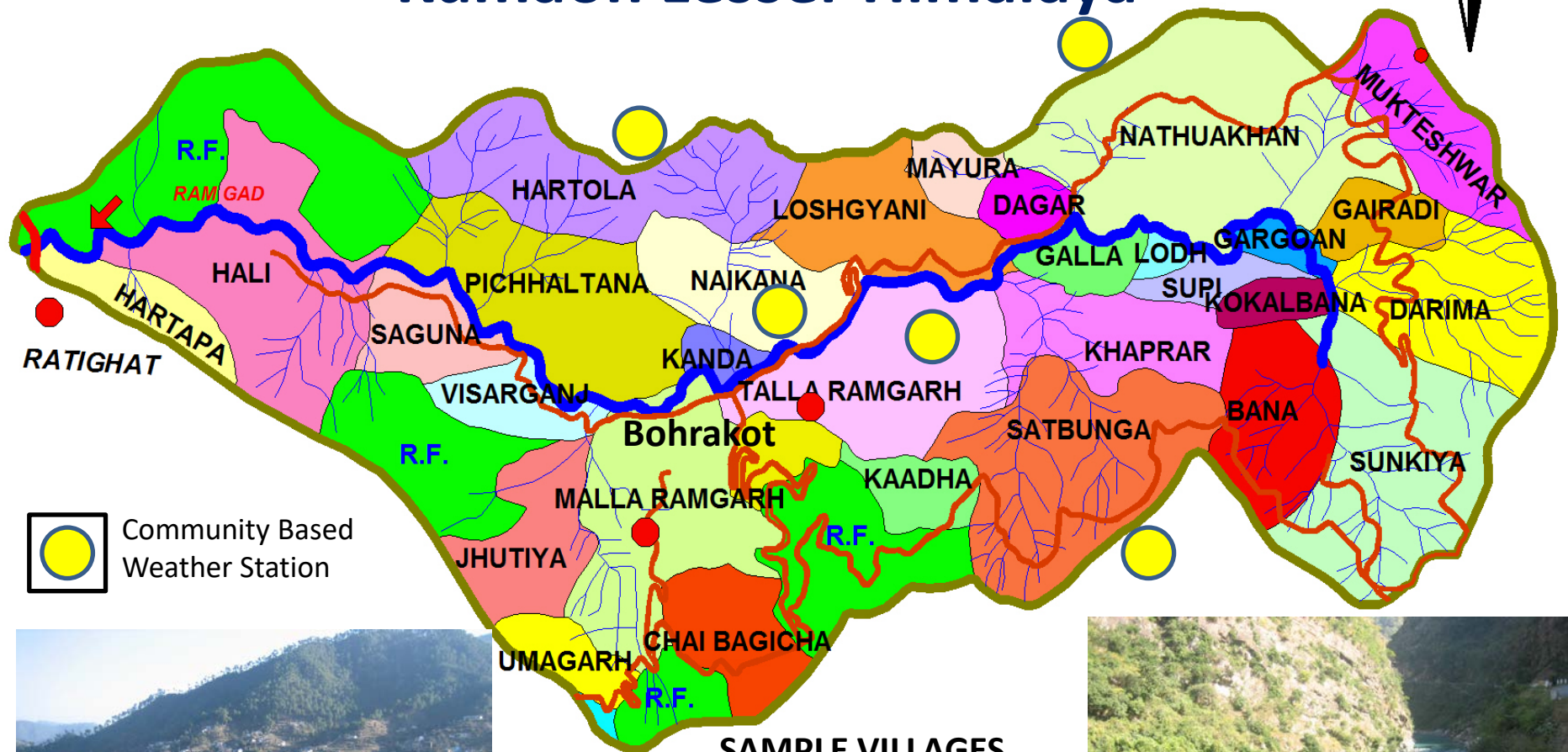
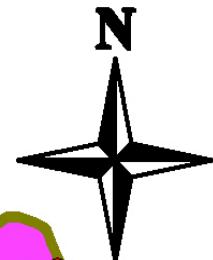
- Densely Populated
- Livelihood Constraints
- Subsistence Economy
- Poverty and Food Insecurity
- Rapid Urban Growth


Location Map







Ramgad Watershed

Kumaon Lesser Himalaya














 Community Based Weather Station

SAMPLE VILLAGES

-  Nathuakhan
-  Bohrakot
-  Nikana
-  Satbunga

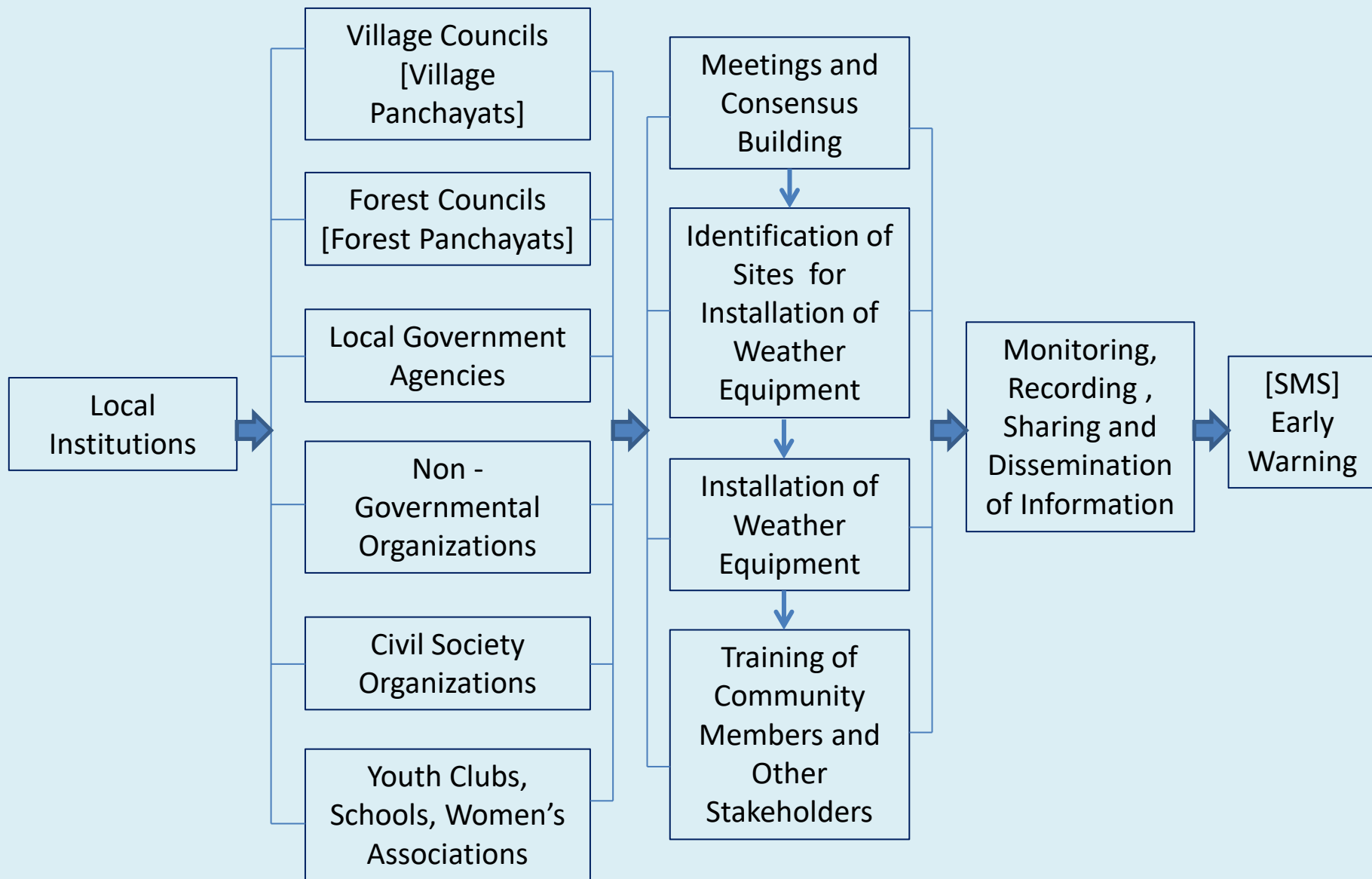


Projected Climate Trends A1B Scenario (2041-2060) Compared to the Baseline Period (1981-2000)

Climate Parameters	Ramgad Watershed , Nainital, Uttarakhand	
	Summer (June-August)	Winter (Nov-March)
Temperature 	Decrease in Max Temp by 1°C  Decrease in Min Temp by 0.39°C 	Increase in Max Temp by 1.5 °C  Increase in Min Temp by 2.3 °C 
Precipitation 	Overall increase in mean rainfall by 11% or 55 mm, or total of 559 mm over wet season 	Overall decrease in mean rainfall by 15% or 34 mm, or total of 194 mm over dry season 
Extreme Events 	The wet season will become Wetter. Increase incidence of High intensity rainfall, flooding , GLOFs, flash floods and landslides 	The dry season will become drier Higher temperatures will lead to more severe droughts 

Source: Kumaun University in Association with Urban Climate Change Research Network (UCCRN); Chinese Academy of Sciences (CAS); Australian National University (ANU); and Newcastle University, UK

Community Based Early Warning System: Identification of Local Institutional Mechanism







Impacts of Community Based Early Warning System

- Equipped rural communities with the critical information and time for preparation that helped in keeping a threat from turning into a disaster nearly 50 times in the watershed over the last decade
- Provided 1155 families, particularly poor and marginalized sections of society time to protect their families and valuable assets
- Helping District Disaster Management Authorities [DDMA] responding quickly to natural disasters
- The system saved 955 human lives and 5795 livestock from disasters during the last 10 years
- Building capacity of rural communities and strengthening their traditional coping and response mechanism to climate change induced hydrological risks and disasters

Conclusions and Way Forward

- Early warning systems promoted development and application of people-centric scientific knowledge in in disaster risk reduction in underdeveloped and marginalized mountain region
- May make significance difference between survival and disaster if implemented jointly by local disaster management authorities and local community institutions across the Himalayan mountains
- Realising the outcomes and significance of CBFEWS Disaster Management Authorities in some Himalayan States are now coming forward to go ahead with community based early warning system in densely populated watersheds
- However, capacity building of communities on early warning systems needs to be continuously strengthened

Thanks for Your Kind Attention!

