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Beyond the signal: community radio and disaster resilience in Indian Himalayan Region

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Beyond the signal: community radio and disaster resilience in Indian Himalayan Region

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Abstract
In the climate-vulnerable Indian Himalayan Region, disaster communication remains a pressing challenge. Erratic monsoons, glacial lake outburst floods, flash floods, landslides, and forest fires are growing in frequency and intensity. Existing disaster management frameworks often fail to reach remote, ecologically-fragile communities. In this context, community radio emerges as a hyperlocal, trusted, and participatory communication infrastructure that can bridge the last-mile gap. Drawing on field insights from stations in Uttarakhand such as Henvalvani, Mandakini ki Aawaz, and Kumaon Vani, this Issue Brief argues that community radio must be formally recognised within India's early warning and disaster preparedness systems. It demonstrates how community radio stations have functioned as vital communication nodes during crises, outlines operational constraints, and proposes a policy roadmap for institutionalising community radio within the frameworks of the National Disaster Management Authority, State Disaster Management Authorities, and Panchayati Raj institutions.

Keywords: Community Radio; Disaster Communication; Environmental Resilience; Indian Himalayan Region; Climate Change Adaptation; Participatory Media

The Indian Himalayan Region, stretching across 13 mountain states and Union Territories, hosts some of South Asia's most biodiverse ecosystems and complex socio-political geographies. This fragile ecological zone is also among the most disaster-prone, with a long record of events such as glacial lake outburst floods (GLOFs), flash floods, cloudbursts, landslides, forest fires, and extreme temperature swings (Bajracharya et al., 2020). According to the India Meteorological Department (2022), the Indian Himalayan Region has experienced a marked rise in the frequency and intensity of extreme rainfall events since the early 2000s, with states such as Assam, Meghalaya, Sikkim, and Uttarakhand recording some of their highest rainfall anomalies and disaster-linked precipitation events in recent decades.The Geological Survey of India (2025) classifies over 22 percent of Uttarakhand as landslide-prone, while (Bajracharya et al., 2020) in their ICIMOD report flag increasing risks from unstable glacial lakes.

Despite this growing vulnerability, the region's disaster communication infrastructure remains weak. A web of technological breakdowns, linguistic exclusions, lack of contextualised content, and hierarchical knowledge flows has rendered disaster alerts either delayed or disconnected from the realities of affected communities. Traditional and digital media often arrive late, distort ground-level realities, or fail entirely due to network collapse. As per Telecom Regulatory Authority of India (TRAI) (2023), internet and mobile penetration across large swathes of rural Uttarakhand, Himachal Pradesh, and Arunachal Pradesh lags well behind the national average.

Against this backdrop, community radio stands out not as an alternative, but as an essential, hyperlocal communication infrastructure. Defined as low-power, community-run, participatory broadcast media, community radio is tailored to Himalayan needs. It is low-cost, decentralised, multilingual, and anchored in deep local trust. What makes community radio distinct from both state-run public broadcasting and commercially driven FM is its embeddedness in the cultural and social life of communities. It is not just a transmitter, but a platform for participatory dialogue, knowledge exchange, and collective memory. Scholars such as Vinod Pavarala and Kanchan Malik (2007) argue that community radio enables 'communicative democracy' by embedding media in daily life and fostering dialogic, empathetic engagement.

Despite these strengths, community radio remains institutionally marginal in India's disaster governance architecture. It is absent from the Disaster Management Act (2005), not mentioned in the National Disaster Management Authority's (NDMA) standard operating procedures, and overlooked in funding schemes. This is a critical oversight, especially given the real-world evidence from Himalayan stations like Mandakini ki Aawaz, Henvalvani, and Kumaon Vani. During the Kedarnath floods in 2013 and the Chamoli GLOF in 2021, these stations became critical information hubs. Their broadcasts included evacuation updates, emergency contacts, localised hazard maps, and even emotional support, reaching audiences faster and more meaningfully than formal alerts.

From a theoretical standpoint, community radio disrupts the dominant vertical model of disaster governance, where information flows top-down from meteorological departments to administrative offices to mainstream media. Instead, community radio operates through what Foth and Hearn (2007) call 'communicative ecologies', networks of locally rooted actors such as schoolteachers, forest guards, panchayat members, and SHG workers. This layered ecosystem enables state warnings to be localised, vernacularised, and translated into culturally intelligible advice. Community radio's boundary-crossing capacity (Star and Griesemer, 1989) allows it to bridge disparate knowledge systems: scientific data and traditional ecological indicators, technical forecasts and lived experience.

Community radio also nurtures a politics of listening. Rather than casting communities as passive recipients, community radio empowers them to share observations, verify risks, report gaps, and challenge official missteps (Backhaus, 2021; Kanjilal, Malik, and Kapoor 2024). This participatory ethic resonates with the arguments made by Susan Bickford (1996) and Leah Bassel (2017), who assert that democratic engagement in crises must involve both voice and listening. Community radio stations offer this through formats like phone-ins, on-air grievance forums, and youth-led environmental bulletins.

In essence, community radio is a neglected pillar of climate resilience and epistemic justice. Its role in disaster communication is not theoretical, it is already unfolding on the ground. Yet, it remains outside institutional frameworks, unrecognised in budget lines, and unsupported in skill-building or technological backup. The sections that follow present case-based evidence from the Indian Himalayan Region and argue for a policy framework that centres community radio as a permanent, proactive actor in India's disaster preparedness and environmental communication strategies.

Community Radio in the Himalayas: An Under-Recognised Infrastructure

As of March 2025, there were 532 community radio stations sanctioned in India. By July 2025, this number had increased to 540, according to a Press Information Bureau (PIB) release. While this growth appears modest, it reflects the growing recognition of community radio stations as a vital public communication infrastructure. However, this national trend conceals regional disparities, particularly in the Indian Himalayan Region, which remains severely under-served. Out of 540 sanctioned stations, fewer than 25 operate in the 13 Himalayan states and union territories combined.

This underrepresentation is troubling given the region's vulnerability to disasters and limited access to mainstream media. Expanding community radio stations in such areas is not just about media equity but is essential for ecological justice and communication rights. The Indian Himalayan Region's terrain and socio-cultural diversity make it ideal for hyperlocal, multilingual, and participatory broadcasting. Conventional public broadcasters like Doordarshan and All India Radio often fail to meet the communication needs of isolated mountain communities. Commercial FM focuses on urban markets and lacks incentive to serve remote populations. Community radio, by contrast, allows flexibility, localisation, and grassroots participation.

Stations such as Henvalvani (Tehri Garhwal), Mandakini ki Aawaz (Rudraprayag), and Kumaon Vani (Nainital) demonstrate this model. They reach fragmented audiences in regions where both newspapers and internet access are unreliable. Broadcasting in Hindi and local dialects such as Garhwali and Kumaoni, these stations ensure cultural relevance and accessibility. Rooted within their communities, they are operated by local residents who address the specific socio-ecological realities of their surroundings. Radio's democratic function in the mountains is grounded in oral traditions. Community radio digitises these traditions, making climate risks more relatable. It translates forecasts into stories and songs about drying springs, changing crops, or forest fire threats.

What makes community radio indispensable is not just technical reliability but its position within the community. Henvalvani and Mandakini ki Aawaz, for instance, do more than relay warnings of the India Meteorological Department. They engage forest officers, host local discussions, document past disasters, and receive listener inputs on rain and glacial activity. This two-way feedback loop helps communities act in advance. Risk becomes tangible when alerts are linked to familiar locations and prior experiences.

In sum, the increase in community radio stations may suggest national progress, but the Indian Himalayan Region remains marginalised. The potential of community radio as a tool for climate resilience is far from realised. Licensing hurdles, unstable funding, and lack of formal recognition persist. For India to strengthen its adaptive capacities in the Himalayas, it must move beyond symbolic efforts and invest in long-term policy support for community radio.

Case Studies: Community Radio in Climate-Induced Disasters

Community radio's effectiveness in the Himalayan region is most evident during ecological crises when other modes of communication such as television, internet, and mobile networks become inaccessible or fail. The real impact of community radio can

be seen in the field-based experiences of three stations: Mandakini ki Aawaz in Rudraprayag, Henvalvani in Tehri Garhwal, and Kumaon Vani in Nainital. Each has served as a vital communication node during climate-induced disasters, helping to inform, coordinate, and reassure communities.

During the devastating Kedarnath floods in June 2013, Mandakini ki Aawaz was barely a year old. Yet, its role in those critical days was indispensable. With roads destroyed and telecom networks down, volunteers kept broadcasts running on backup batteries. Station coordinator Manvendra Singh shared, 'We didn't sleep for three days. Calls came pouring in, people looking for loved ones, asking about routes, helicopters, medicines. We didn't have all the answers, but we had the microphone, and that mattered.' The station became a hub for two-way messaging – families from afar phoned in with names of the missing, which were read out on air for locals who had found survivors. This filled a communication void left by formal emergency services.

In 2021, the Chamoli glacier burst triggered floods in the Rishi Ganga and Dhauliganga rivers, causing widespread panic. Henvalvani quickly adapted, sending reporters to villages like Raini and Lata to gather real-time updates. They debunked WhatsApp rumors about another glacier collapse, easing fear. 'Our job was to inform and prevent panic,' said Rajendra Diggal, a founding member. The station aired safety tips, appeals for missing persons, and guidance on livestock safety and public health.

Kumaon Vani, meanwhile, has responded to rising forest fires and erratic rainfall with a preventive approach. The station launched a year-round climate awareness campaign, including school programs, forest protection training, and interviews with forest officers. 'We began to treat climate like a slow disaster,' explained Mohan Singh, the station's programme head. Weekly discussions on topics like dry wells and declining apple yields encouraged listeners to call in with their own observations. During one fire season, a tip-off received on air about a smouldering fire helped forest officials act in time to prevent its spread.

These examples show that during disasters, community radio stations do not wait for external alerts. They actively gather information, translate it into local dialects, debunk misinformation, and foster a participatory communication loop. This transforms community radio into more than a broadcaster, it becomes a listening institution, a communal memory bank, and a space for public education.

A key factor in the effectiveness of community radio stations is trust – the voices on air are familiar, neighbours, classmates, and co-residents, rather than anonymous officials or news anchors. This trust allows for conversations on sensitive issues like aid distribution without sparking conflict. Longstanding relationships with local officials and NGOs enable these stations to act as intermediaries when formal communication fails.

These interventions reveal that community radio is not a passive responder but a dynamic institution that anticipates, mitigates, and archives disasters. Archival material, such as past flood records and oral histories, helps contextualise current events. Communities learn to view disasters as part of larger ecological patterns rather than isolated events, fostering resilience.

What is striking is that none of these efforts were state-directed. The stations acted out of necessity and community commitment, often with minimal resources, yet they

outperformed many official systems in reach, empathy, and relevance. Their contributions call into question conventional hierarchies in disaster communication and suggest that any future framework must include community radio stations as essential partners.

Comparing Mandakini ki Aawaz, Henvalvani, and Kumaon Vani shows that while disaster types varied, the core function of community radio remained consistent: informing, connecting, and mobilising. Community radio's strength lies in translating large-scale risks into locally-relevant action. Its power is in localising warnings, embodying trust, and adapting swiftly to fluid environments. The potential of community radio in disaster response is not hypothetical, it is already being realised across the Himalayas.

Table 1

Key Functions of Community Radio in Disaster Contexts

Function	Community Radio Role	Example
Early warning dissemination	Interprets district alerts into local idioms	Forest fire warnings in Pauri
Real-time reporting	Broadcasts from field volunteers	Mandakini during 2013 floods
Countering misinformation	Verifies social media rumours	Henvalvani during the 2021 GLOF
Post-disaster relief	Connects NGOs with villages	Kumaon Vani during COVID-19
Ecological memory	Archives flood, landslide history	Oral histories from elders

Policy Gaps and Operational Barriers

Despite the proven value of community radio in real-time risk communication and post-disaster resilience across the Indian Himalayan Region, a stark disconnect persists between the ground-level capabilities of these stations and their institutional recognition. Community radio in the region faces structural challenges. Licensing is a major barrier. The application process through the central government's Ministry of Information and Broadcasting is complex, cumbersome and slow. Community-based organisations must secure approvals from multiple agencies, including the Wireless Planning and Coordination Wing and the Ministry of Home Affairs, before obtaining spectrum allocation. Small grassroots groups in remote Himalayan districts lacking legal and technical expertise struggle with these requirements and the process – lasting two to four years – creates delays during critical ecological and social transitions.

Financial sustainability is another challenge. The lack of dedicated funding weakens the sector. Most stations rely on short-term NGO grants, CSR partnerships, or individual donors. With no stable institutional support, they struggle to cover operational costs, maintain transmitters, or remunerate staff. As Rajendra Diggal of Henvalvani remarked, 'When there's a forest fire or road blockade, we are expected to respond faster than anyone else. But what if our UPS fails or phones have no charge? We still go on air, but how long can passion alone sustain us?'

Though permitted to run twelve minutes of advertisements per hour, limited local markets make such revenue minimal. Most stations rely on NGO grants or donor funds, leading to financial instability. Many cannot afford full-time staff or maintain reliable infrastructure. During disasters, stations often operate with minimal resources. In Rudraprayag, volunteers have broadcast using battery-powered inverters or borrowed solar kits from local panchayats.

Equally concerning is the weak integration between community radio and disaster-governing institutions like the India Meteorological Department, Forest Departments, or District Disaster Management Authorities. Stations seldom receive timely alerts or verified data, depending instead on informal networks and local reports. This undermines the reliability of early warnings and forces community reporters to verify critical information under pressure.

The capacity-building ecosystem around community radio also remains fragile. Most reporters are young volunteers without formal training in journalism, digital security, or crisis communication. This leaves them vulnerable to misinformation, legal risks, and editorial errors during crises. A coordinator at Kumaon Vani explained, 'We often get graphic videos or panic messages about landslides. We can't air them unverified, but we also can't ignore them. We need training to make these decisions responsibly.'

The policy environment thus forces community radio stations to undertake vital communication labour during emergencies without commensurate state support or recognition. Their contributions remain invisible in official disaster assessments, as the NDMA and SDMAs rarely document community-led communication in recovery analyses.

The absence of state support reflects and reinforces the marginalisation of community radio in disaster governance. Community radio stations are not included, for example, in the Disaster Management Act or NDMA/ State Disaster Management Authority (SDMA) protocols.

This exclusion reflects a systemic undervaluing of localised, participatory media within India's disaster governance framework. The exclusion is not merely bureaucratic but also infrastructural and epistemological. It reflects a failure to recognise community radio as a participatory knowledge system that interprets, disseminates, and archives environmental risk in real time. While the National Disaster Management Plan emphasises communication infrastructure, it remains confined to top-down tools such as SMS alerts, television bulletins, and app-based systems that often fail in high-altitude, low-connectivity zones. In contrast, stations like Henvalvani and Mandakini ki Aawaz have continued broadcasting during power cuts and signal collapse by using inverter-powered studios or field-based production. Yet, these examples remain outside formal planning processes.

What is needed is not token inclusion but a paradigm shift that positions community radio as essential public infrastructure for environmental governance. The next section outlines a roadmap for such transformation.

Recommendations: A Policy Framework for Community Radio Integration

Transforming community radio from a peripheral support mechanism into a core pillar of disaster communication in the Indian Himalayan Region demands a comprehensive strategy grounded in institutional recognition, infrastructural investment, and community participation. As climate-induced disasters intensify, India's current communication systems remain inadequate and unevenly distributed. Community radio has already demonstrated its value; the need now is to formalise and scale its role.

The first step in this transformation is formal inclusion. The NDMA and SDMAs should revise existing guidelines to integrate community radio stations into their disaster management frameworks. Community radios must be designated as last-mile communication partners, with representation in District Disaster Management Authority (DDMA) meetings. These roles should extend beyond emergencies to include regular participation in preparedness planning and mitigation efforts. Community radio stations offer grounded perspectives and contextual knowledge that top-down systems often overlook.

Alongside institutional recognition, infrastructure and funding must be strengthened. Many community radio stations in the Indian Himalayan Region operate with outdated equipment that cannot withstand extreme weather. National and State Disaster Response Funds (NDRF/SDRF) should be tapped to provide necessary upgrades such as solar-powered backups, mobile field kits, and enhanced antennas. Crucially, this support should be integrated into annual disaster preparedness budgets, moving beyond sporadic project-based funding to long-term operational stability.

Capacity building for community radio personnel is equally important. Volunteers and reporters require structured training in areas such as climate science, meteorological interpretation, ethical reporting, and misinformation management. Collaborations with the National Institute of Disaster Management (NIDM), the Commonwealth Educational Media Centre for Asia (CEMCA), and local universities can help create regionally tailored, certified training modules. These should prioritise communication in local dialects and address region-specific risks, ensuring messages are both accessible and actionable.

Building collaborative ecosystems is essential. Community radio stations should partner with meteorological offices, Panchayati Raj institutions, forest departments, and disaster response agencies to co-create content and campaigns. Joint initiatives such as pre-monsoon awareness drives, hazard mapping, and community science programmes can help bridge the gap between scientific knowledge and local realities. Shared audio libraries and coordination networks across stations can also foster innovation and prevent duplication. A flood-preparedness program developed in Tehri, for instance, can be adapted with minor linguistic changes for use in Chamoli or Darjeeling.

Monitoring and impact evaluation must be embedded into these efforts. SDMAs should include community radio activities in their annual assessments. Metrics such as call log analyses, SMS feedback, listener surveys, and real-time response mapping can offer

tangible indicators of effectiveness. Capturing and analysing this data will build a case for sustained investment and highlight the crucial role of community radio in disaster communication.

Finally, it is critical to reframe community radio as a long-term resilience infrastructure rather than a short-term emergency tool. Community radio stations should be linked with the central government ministries of rural development, environment, tribal affairs, and information technology. Dedicated funding through climate adaptation, biodiversity conservation, and rural innovation schemes can connect community media with broader developmental goals. Such mainstreaming will help ensure that community radio stations contribute not only to emergency communication but to sustained ecological resilience and inclusive governance.

By embedding community radio into India's disaster and environmental governance systems, the country can enhance early warning capabilities while advancing the larger objective of communication justice. The current moment demands more than experimental models; it calls for structural commitment. Listening to the Himalayas must begin with empowering the voices rooted in their valleys, and community radio offers one of the most effective channels to do just that.

Conclusion: Why This Matters Now

As climate change accelerates across the Indian Himalayan Region, community radio must be understood as far more than a medium of communication. It constitutes a decentralised, resilient, and culturally rooted infrastructure that links state-issued forecasts with the everyday experiences of mountain communities. Recognising and resourcing these stations is not an act of benevolence but a strategic investment in ecological democracy and disaster justice.

If India is to pursue genuinely inclusive and climate-resilient development in the Himalayas, it must listen to and strengthen the voices that already inform, warn, and mobilise communities on the ground. Only by embedding community radio within the core of environmental and disaster governance can the nation ensure that its responses resonate with those living closest to risk.

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