Accelerating Change: Engaging Local Communities in Disaster Risk Reduction in the Indian Himalayan Region

Executive Summary

The Problem: Increasing Disaster Risk in Mountain Regions and a Gap in Local Community Engagement

Disaster statistics for mountain regions reveal a concerning trend of increasing event occurrence, injuries and fatalities and socio-economic impacts and costs. This reflects significant increases in population and infrastructure exposure and vulnerability as well as increasing hazard frequency and magnitude in many cases. A shift in emphasis that fosters community engagement and takes better account of local knowledge in disaster risk reduction (DRR) is called for.

The Time for Action is 'Now': Accelerating Implementation of Local DRR in India

The UNDRR 'Sendai Framework for Disaster Risk Reduction 2015-2030' (SFDRR) is driving global efforts to stem disaster losses, via a targeted approach. Most immediately, 'Target E' seeks *to 'substantially increase the number of countries with national and local disaster risk reduction strategies by 2020'*; in this regard India has established National, State and District disaster risk governance and planning approaches. Government disaster management authorities, in partnership with wider stakeholders, now need to work towards delivering the remaining SFDRR 2030 targets. India's National Disaster Management Plan (November 2019) provides further direction, and includes tentative timeframes and assigned responsibilities. The timeframes are categorised: recurring (day-to-day), short term (2022), medium term (2027) and long term (2030). A focus on local engagement, is captured by the 'capacity development' theme, which by 2022 seeks delivery of capabilities for improved participation, disaster risk understanding, and local disaster management plans (NDMA, 2019a, p323-325).These contexts provide urgency for timely and partnered approaches to enhance local governance (e.g. Village Disaster Management Committees [VDMCs]) for DRR in the Indian Himalaya.

Key Policy-Practice Recommendations

1. **Revise State and District Disaster Management Plans** to accelerate local 'capacity development'. The key is to widely establish and operate VDMCs (and urban equivalents), alongside existing village level institutions
2. Implement **Comprehensive Awareness Campaigns** involving all stakeholders
3. **Capture the Diversity of Local Knowledge** using a trial programme, with pathways for upscaling and mainstreaming including a greater emphasis on the use of technology.

BOX 1

Policy-Practice Recommendations

Key Findings

A review of DRR policy positions reveals a strong international and Indian drive for localism in DRR, bringing greater 'inclusion' and use of 'local knowledge'. We suggest that this transformation to more effective 'local partnerships' in DRR is the substantial opportunity and challenge facing policymakers and practitioners in India today, with target delivery dates starting from 2022.

Analyses of public/ stakeholder engagement findings, (from 2018) in the Kullu District, Indian Himalaya, highlight:

- An insufficiently utilised body of local knowledge about hazard events and society-environment adaptations (resilience) to disaster risk
- Endemic socio-cultural vulnerabilities, particularly surrounding inequalities at the intersection of gender/ ethnicity/ caste, and heavy expectations of government assistance rather than all stakeholders fully valuing the contributory role that local knowledge can bring to a partnered approach to DRR
- Local communities see DRR as part of a wider set of societal development and environmental management priorities. This is attuned to policy positions on addressing multiple global challenges (e.g. DRR, climate change and sustainable development) in an integrated way
- Knowledge and operation of VDMCs appear very limited. But there is substantial community willingness to engage in inclusive, partnered and participatory ways. There was particular enthusiasm for the application of film and mobile phone technologies.

Background

The Problem & Rationale: Increasing Disaster Risk in Mountain Regions and the Challenge of Enhancing Local Engagement

Why are Mountain Regions Important?

Mountains are global assets, and whilst their complexities, sensitivities and significance are well rehearsed in scientific dialogues, this knowledge has not always sufficiently informed decision-makers who are charged with steering policy directions. Recent assessments by Gardner (2015), Hock *et al.* (2019), and Sharma *et al.* (2019), provide synthesis, specifying that mountains:

- Comprise 22% global land surface area and 13% global human population
- Support c. 50% of the global population who directly depend on mountain goods and services (e.g. fresh water, food, energy, timber, and minerals)
- Are biodiverse locations
- Are sometimes remote, trans-boundary settings with cascading environmental systems
- Are rich in cultural heritage
- Experience higher levels of poverty and disaster risk in many cases
- Are subject to rapid change by multiple stressors, including: climate variability and change with particular impacts on the cryosphere, conflict, globalisation, infrastructure development, tourism, urbanisation and population change. These condition exposure, vulnerability and risk to hazard processes and thus disaster incidence
- Are subject to many disastrous events.

Hazards and Disasters in the Indian Himalayan Region

The Indian Himalayan Region (IHR) is part of the wider Hindu Kush Himalaya (HKH). India's National Disaster Management Plan (NDMP, 2019a, p42) characterises the IHR as a case *'that merit[s] special consideration'*, and details the IHR as a diverse physical landscape spanning the Siwalik foothills to the Tibetan Plateau. Having an area >530,000 km^2, the IHR extends 2500 km across 13 States/ Union Territories/ Districts, with their attendant socio-cultural diversity. The IHR is home to c. 77 million people (in 2011), with a further c. 900 million people on the Indo-Gangetic Plain depending on its resources (IHCAP, 2016; Sharma *et al.*, 2019).

Hazardous environmental processes are common owing to the interplay between seasonal monsoonal climate, fragile lithology, steep topography and active seismicity. Notable are floods, landslides, droughts and earthquakes (IHCAP, 2016; Vaidya *et al.*, 2019). Disaster statistics and their recent trends, alongside predicted future cryosphere changes in the Himalaya as a whole (Hock *et al.*, 2019), are cause for concern, underlining a need for effective disaster risk reduction. We illustrate this point across two scales:

HKH (Vaidya *et al.*, 2019, using data from CRED EM-DAT, 1980-2015, at a whole country level incorporating the HKH)

- 21% of global disasters, and 36% of major events were in Asia
- In India: 438 recorded climate/ hydro-meteorological/ geophysical events and 140,292 fatalities
- Increasing decadal trends of event occurrence, numbers killed and economics losses (1980 to 2010), reflecting deteriorating societal exposure and vulnerability, alongside increasing hazard frequency and magnitude.

Himachal Pradesh, IHR (HPSDMA, 2017, using State data 2007-2015) indicates *'Himachal Pradesh is one of the most multi-hazard prone States of India…the State routinely faces small to medium scale disasters'*. Average annual losses are: 1,678 human lives; 7,711 animals; 350,343 t of crops; 119,237 trees; 8,671 houses and unaccounted damages to roads and other infrastructure.

The Local Governance Gap

Gardner (2015) argues that risk governance and management in mountain regions have evolved from locally based systems practised by individuals and communities to that of more formal and centralised institutions. This reflects a transition from early isolation to that of colonial, nation state and commercial expansion (during the 18-20th Centuries in India), in which local knowledge was typically side-lined. More recent increases in vulnerability and risk to disasters resulting from escalating stressors (see previously) are driving demand for improved risk governance in these regions. A shift in emphasis, which seeks to reconnect local communities and their local knowledge (see Box 2) alongside District, State, National and International perspectives is therefore critical to delivery of effective 'disaster risk reduction' (see Box 2).

Vulnerability: *'The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards'* (UNDRR, 2020a)

Resilience: *'The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management'* (UNDRR, 2020a)

Disaster Risk Reduction (DRR): *'Is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development. Disaster risk reduction is the policy objective of disaster risk management, and its goals and objectives are defined in disaster risk reduction strategies and plans'* (UNDRR, 2020a)

Local Knowledge in DRR: *'What the residents know about natural hazard risks and what they believe and do about them in a given situation…We all have local knowledge: it refers to the relationship people develop with their surroundings over time…local refers to, and emphasises, a place, a region, a location as much as the regular movements between different points, rather than time.'* (Dekens, 2007)

Village Disaster Management Committee (VDMC): *'Community with all its social strata is at the centre of the CBDRR [community based DRR] process and community participation is the key for any DRR intervention…VDMCs play a central role of leading and managing…assessment, planning, capacity building and implementation processes.'* (NDMA, 2019b)

BOX 2

Definitions of Key Terminology

Policy Perspectives on Disaster Risk Reduction

The DRR Policy Environment: International & India

Disaster Risk Reduction (DRR) goals and their interconnections with wider global challenges, such as sustainable development and climate change, are well established in the policy landscape. Internationally, the UNDRR 'Sendai Framework for Disaster Risk Reduction 2015-2030' (SFDRR) (UNISDR, 2015) is the key pivot driving efforts to stem disaster losses via a targeted approach. Since 2015 the SFDRR has continued to mature from an elaborate framework statement to that of a growing implementation effort (i.e. 'Words into Action'). International progress check points have included events such as the Global Platform (e.g. Switzerland, 2019), the Global Assessment Report 2019 (UNDRR, 2019b), and Sendai Monitor (UNDDR, 2020b). Pan-national partnerships bring further focus to regional implementation, and relevant here are the Asia Regional Plan (revised with a 2018-2020 action plan, AMCDRR 2018a), Ulaanbaatar Declaration (AMCDRR, 2018b) and the 2020 Asia-Pacific Ministerial Conference on Disaster Risk Reduction concept note (APMCDRR, 2020; event deferred due to Covid-19).

India, a signatory of the SFDRR, has adopted a hierarchical governance structure, principally comprising National, State and District disaster management authorities. Their legal basis derives from the Disaster Management Act 2005 and the National Policy on Disaster Management 2009; which have a strong focus on prevention, mitigation, preparedness, response, relief and recovery. In this regime, communities are both recipients of a prevailing training ethos and, to a lesser (yet growing) extent, owners in the DRR process. This critical transformation to more effective local partnerships in DRR is the substantial opportunity and challenge facing policymakers and practitioners in India today, and has national (i.e. NDMA) target delivery dates from as soon as 2022.

Importance of Local Actors in DRR

'Supplementary Dataset 1' is a compilation of selected key statements from recent international/ national frameworks, agreements and policy document reviews. It provides Indian policymakers rapid access to current thinking, which frames the 'local' shift in DRR and thereby grounds the importance of the recommendations delivered in this science policy briefing.

We highlight perspectives on: (1) local knowledge; (2) vulnerable stakeholder inclusion; and (3) local/ partnered governance approaches. Key messages include:

'Combining indigenous and local knowledge with external expertise is vital for resilience'

The Hindu Kush Himalaya Assessment (Vaidya *et al.*, 2019, p403)

'Disaster risk is context specific. For a society to be truly resilient, everyone must be included. Disasters disproportionately affect different groups in society and impacts are most intensely felt at the local level…opportunity to harness the leadership, energy and innovation of women and girls, people with disabilities, indigenous and local communities, and young people as essential players in achieving resilient societies'

Asia-Pacific Ministerial Conference on Disaster Risk Reduction Concept Note (APMCDRR, 2020)

'It is centrally important that local actors…take part in DRR processes…It is at the local level where governments and communities can best engage with each other and work together'

Words into Action: Local Disaster Risk Reduction and Resilience Strategies (UNDRR, 2019a)

Debates in the Development of Community based DRR in India, with a focus on Himachal Pradesh

The Indian Prime Minister's ten-point agenda (2016), reiterated in the latest Indian National Disaster Plan (NDMA, 2019a), shows a high-level commitment to the international DRR localism program. The implementation of this agenda is however more challenging. Thus far, State (Himachal Pradesh) and District (Kullu) Disaster Management Plans (e.g. HPSDMA, 2017; DDMA, 2017), mandate Panchayati Raj Institutions, inclusive of 'Village Disaster Management Committees' (VDMCs- see Box 2), to undertake a significant role in exchanging local knowledge and providing local ownership in DRR processes. However, in their current versions, these State and District disaster management plans offer limited implementation guidance to fulfil these mandates. Most recently, draft 'National Disaster Management Guidelines: Community Based Disaster Risk Reduction' (NDMA, 2019b) detail an even greater devolution of responsibility to VDMCs (or their urban equivalents, i.e. Urban Local Board Disaster Management Committees [ULBDMCs]), including a leadership role in highly technical tasks such as disaster management planning.

Reflections

These policy debates present an opportunity to refine and re-align DRR implementation. However, this would require consistent communication and clear guidance appropriate to the local audience in order to foster a genuine two-way partnership to build resilience for disaster risk reduction.

This raises a broader question about the balance between top-down and bottom-up governance approaches to DRR. This is an ongoing debate in evaluations of the SFDRR. For example, Frerks (2015) and Wisner (2020) both caution that localism could be over-interpreted, thereby enabling governments to off-load their responsibilities to the risk bearers. At the same time, Johnson *et al.* (2018) detail that training-centric awareness schemes for local communities may actually fuel culturally-engrained expectations of government assistance, consequently falling short of the desire to effectively empower local communities, and also inhibit the up-sharing of local knowledge to contribute to enhanced DRR policy.

Approach

Research Aim

This research brings together local communities, government authorities, NGOs and international academic organisations. Together, since 2013, we have adopted a case study approach, focusing on the Phojal Nalla catchment and wider surrounds (Kullu District, Indian Himalaya); with multi-disciplinary field investigations, supplemented by extensive archive research in India, the UK and the USA. We have explored interrelated questions regarding flood disaster impacts, historical flood event databases and locally based approaches to DRR. Our findings are applicable to both floods and other hazard types. Drawing from this breadth, the '**Pathways to Resilience' Project,** aims to:

- Investigate local knowledge of past hazard/ disaster events and local understandings of and aspirations for disaster management
- Use public engagement, catalysed by film, to empower local people to better express, value and share their local knowledge
- Deliver key recommendations to a Government and NGO audience, to assist the advancement of their policy and practice actions for DRR, thereby enabling greater local ownership and partnership in DRR efforts.

Our research findings and recommendations focus on the village scale, in rural/ peri-urban settings; involving indigenous residents, migrants and refugees. The project has not worked with communities in larger urban locations.

Research Methods for 'Pathways to Resilience'

Our interdisciplinary, participatory and collaborative approach has enabled rigorous data collection-analysis-dissemination-engagement activities. Early work (2013-2018), culminating in Johnson *et al.* (2018), explored community vulnerability and resilience in disaster risk reduction in Himachal Pradesh. Since 2018, more substantive local/ regional engagement has occurred in four phases, with film being a central driver for DRR discussion amongst stakeholders. These included:

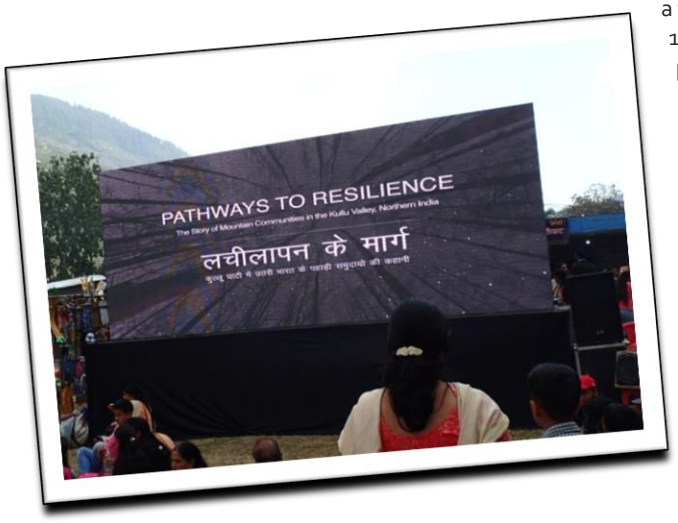
- **Phase 1** (April-June 2018): Village and government meetings, community questionnaires (n=50, in 10 villages, male = 64%/ female 36%, ages: 11- 70+), film capture and production (in English and Hindi) underpinned by Johnson *et al.* (2018) (Supplementary Dataset 2 a & b)

- **Phase 2** (June-July 2018): Workshops in Delhi, Kullu, and mountain villages (n= 5), involving film screening, discussion and questionnaires (Supplementary Dataset 3). In the mountain villages 210 people took part. See Kuniyal *et al.* (2019)

- **Phase 3** (October 2018): Villager semi-structured interviews, press-conference (leading to TV broadcasts and newspaper articles), large format film screening and discussions at the Kullu International Dussehra festival (see below), with wider screenings in Delhi and Mumbai, including questionnaires and discussion

- **Phase 4** (February 2019-October 2019): Enhanced public outreach, including hosting the Pathways to Resilience Film on the Kullu District government website (https://hpkullu.nic.in/pathways-to-resilience/) and associated social media platforms. Further film screenings and discussions in Delhi, Haryana and Shimla.

  Since 2018, activity has comprised: 19 film screenings involving 630 people, and a further 2139 people (by 18 June 2020) via online platforms; discussion and feedback via break outs (7 events); whole audience plenaries (15 events); and reflective questionnaires (3 events).



Research Evidence

Existing Local Knowledge

Extent of knowledge: a low level of formal (i.e. educated, science based (Mercer, 2012)) hazard knowledge exists in communities (18%), but greater hazard awareness exists via informal networks drawing on insider experiences (44%) (Supplementary Dataset 2). A promising step-change is occurring in current formal education, e.g. *'we read about disasters and teachers make us aware'*.

Types of knowledge: (i) awareness and/or observation of event occurrence and impacts including heavy rainfall and lightening, floods, landslides, building and forest fires, drought, earthquakes, and snow avalanches; (ii) fear of hazard processes; and (iii) recognition of the need for management.

Evidence of resilience to reduce risk: (i) constructing buildings away from rivers and locations of slope instability; (ii) good husbandry of forests and rivers; (iii) adopting traditional architectural styles for earthquake resistance (but brings issues of wood cost and availability); and (iv) avoiding high risk locations during events (e.g. river margins).

Evidence of vulnerability: (i) embedded perception that disasters are natural phenomena; (ii) elevated risk for those with ill-health, the elderly who wish to remain in exposed locations during hazard events, and gender inequalities. For example, one respondent stated, *'I am a lady, not authorised for this, that's why I don't have any idea of local knowledge'*. Although others recognise this shortcoming and acknowledge that local women's voices are often absent in disaster management; (iii) migrant/ refugee communities living in high risk locations. Whilst residents are aware, they express a lack of financial resources to relocate and see engineering defences as the key solution; and (iv) a feeling of being helpless and resorting to prayer for divine help.

Reflections: The evidence demonstrates rich local knowledge of DRR, but also opportunities to extend hazard education and awareness to reinforce resilience and challenge vulnerabilities.

Local Community Priorities

Key environmental foci: forest health and afforestation, river channelisation and slope stabilisation using gabion baskets, river pollution by plastics/ construction waste, and channel degradation by gravel mining.

Key societal foci: development aspirations for medical/ education/ water storage/ toilet facilities, road and bridge construction, and improved fire brigade services.

Reflections: DRR strategies must be locally appropriate and integrated with wider priorities. In this case, societal development and environmental management are repeatedly vocalised by the local community. A key challenge is to address the prevailing mind-set of providing and expecting top-down assistance, rather than adopting a more diverse package of measures. In this vein, 64% of the local community seeks training/ awareness programmes and government led engineering schemes. Yet, in contrast, 88% of respondents expressed a desire to use local knowledge in DRR (Supplementary Dataset 2).

DRR Capacity Development via VDMCs

Local understanding of and aspirations for VDMCs: In the period April-October 2018 local village communities typically had no awareness of VDMCs. However, upon discussion 96% (Supplementary Dataset 2) expressed an appetite for local partnership approaches to DRR, e.g. *'anything for the village, we have to involve the local people… We cannot rely on the authorities only for that purpose, because they don't know about the terrain of that village. The people's participation is a must for this'*. More specifically, community requests for VDMCs included: (i) female participation; (ii) a wide spectrum of community involvement across gender, age, caste/ scheduled tribes and a diversity of societal roles; (iii) people should be educated and have time; (iv) hold regular/ monthly meetings; (v) consider the linkage between VDMCs to account for cascading hazard processes in catchments; (vi) establish partnerships with government agencies, NGOs and academic researchers to share information and enhance disaster management planning; and (vii) have financial resources.

Progress in Establishing VDMCs: In April 2018 the District Government stated VDMCs have been mandated since 2014, with revised notifications sent to Panchayat Pradhans for local implementation. However, progress has been limited; one panchayat reports no VDMC exists, whilst another nearby states that one has *'existed for two years but they have done nothing to interact with the local community, as waiting for instructions…'*

Sharing information and recording knowledge via VDMCs: Respondents considered traditional tools for disaster awareness to include: films (Supplementary Dataset 3), street performances, mock drills, training workshops, leaflets, bill-boards, and Mahila Mandals (women's self-help groups). Particular emphasis was given to having information in local languages and the need to have official communication protocols to negate fake news and the spread of panic. In regard to emerging communications technology (e.g. mobile phones), 96% consider this important to learning and warning capabilities (Supplementary Dataset 2). Including the use of social media groups to share photos/ videos/ text, geo-located environment/ risk information via apps, and GPS locational apps to assist rescue, as used in the Sept. 2018 River Beas flood IAF airlifts.

Reflections: The opportunity and aspiration to develop VDMCs involving local communities and wider stakeholders is readily apparent. As with policy positions, local communities call for an inclusive approach with regular dialogue. A combination of traditional and digital communications technologies will enable two-way exchange of information.

FAST DATA

18%

Community members have formal hazards knowledge

44%

Community members possess hazards awareness, via informal networks

64%

Seek training/ awareness programmes and government led engineering schemes

88%

Express a desire to use local knowledge in DRR

96%

Express appetite for local partnership approaches to DRR; consider communications technology (e.g. mobile phones) important to learning and warning capabilities

Recommendations

1. Revise State and District disaster management plans. Reflecting international/ NDMA positions, sub-national plans should be revised to accelerate local 'capacity development'. The plans should include: (i) a dedicated section on VDMCs, detailing their purpose, and the intended roles and responsibilities of all stakeholders (e.g. government, NGO, community and academia); these should fully support rather than overload technical expectations of the local community/ VDMC; (ii) flow charts of local structures to provide operational clarity and their linkage to existing formal and informal village institutions; (iii) a checklist of actions with target dates; and (iv) clear implementation guidance.
2. Awareness campaigns. To enhance understanding and engagement, a series of bespoke materials should distil the key messages. These could include a short briefing note, introductory films, social media outputs, and leaflets. These should be readily accessible, in multiple languages, and be reinforced via a programme of training/ discussion workshops for both technical and local community audiences. It is important that these explain the value and types of local knowledge, and also headline the importance of developing and actively maintaining a deeper partnership approach for DRR.
3. Mobilising, upscaling, and mainstreaming local knowledge for resilience. There is a need for systematic government and citizen-science led approaches to identifying, recording, storing, analysing and openly sharing local knowledge of hazards and disaster risk adaptations. Funded trials in a small number of panchayats could be used to inform this practice ahead of upscaling. In addition to inclusive village meetings, consideration should be given to capturing the diversity of local knowledge via: (i) digitisation of panchayat/ village record books; (ii) recording local stories and songs; (iii) local community led walks to map flood and landslide locations using GPS and photography (i.e. a citizen science database); and (iv) VDMC social media accounts/ groups. It is vital that these are not one-off activities, but instead ongoing, to maintain the currency of local knowledge for effective DRR.

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Additional Resources

KEY WEBSITE LINKS

BSU 'Pathways to Resilience' Project homepage, this includes wider details of the project background, research process, and research insights. https://www.bathspa.ac.uk/projects/pathways-to-resilience/

G.B. Pant National Institute of Himalayan Environment http://www.gbpihed.gov.in/index.php

Pathways to Resilience Film: https://vimeo.com/285841577

SUPPLMENTARY RESEARCH DATA (DOI: 10.17870/BATHSPA.C.5036990)

Dataset 1: International/ Indian policy positions on local knowledge, local governance and inclusion

Dataset 2: (a) Phase 1, Phojal Nalla catchment, baseline knowledge questionnaire; (b) Questionnaire sample locations (April 2018)

Dataset 3: Phase 2, Kullu workshop questionnaire, non-academic respondents (June 2018)

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CITATION RECOMMENDATION

BSU & NIHE (2020) 'Accelerating Change: Engaging Local Communities in Disaster Risk Reduction in the Indian Himalayan Region'. Science Policy Brief, Bath (UK) and Almora (India), June 2020.

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Disclaimer

The data collected and presented here are in full compliance with our research ethics procedures, in which participant informed consents were obtained. The policy recommendations are the viewpoints of the authorship team based on an evaluation of the research evidence, and do not necessarily represent those of any named institutions.

Forwarding Statements

- **DOERS (NGO, Shimla):**
  'To build resilience in a changing climate calls for greater engagement of local communities, researchers, practitioners and policy-makers. The 'Pathways to Resilience' Project in district Kullu is a groundbreaking initiative to systematically bridge the gaps in the policy-practice interface through recommending a set of promising strategies to strengthen localized disaster risk management, not only in the district and the state, but quite possibly the entire region.'

- **International Union for Conservation of Nature (IUCN), India (New Delhi):**
  'This project brings powerful, timely and salient policy-practice recommendations for DRR in the Indian Himalayan Region. It advocates a shared approach by all stakeholders. The IUCN is already engaged in similar projects on building community resilience in the IHR, from which we wholeheartedly support the recommendations made in this briefing.'

- **Prof. R.B. Singh (Secretary General and Treasurer- IGU; Member-Vision India-2035; NITI Aayog):**
  'This project aims to improve our understanding about disaster vulnerability, exposure and risks based on scientific and local knowledge in order to assess impacts on the economy, society and policies. The project suggests decentralised investment and good governance by Panchayat and urban local bodies for effective Disaster Risk Reduction.'

Accelerating Change: Engaging Local Communities in Disaster Risk Reduction in the Indian Himalayan Region