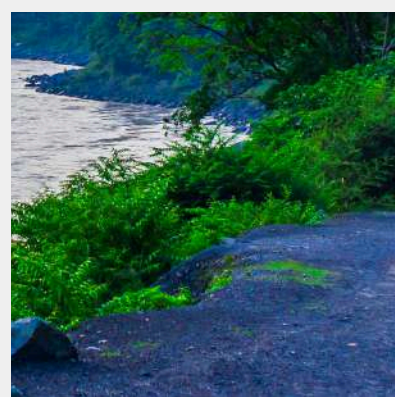
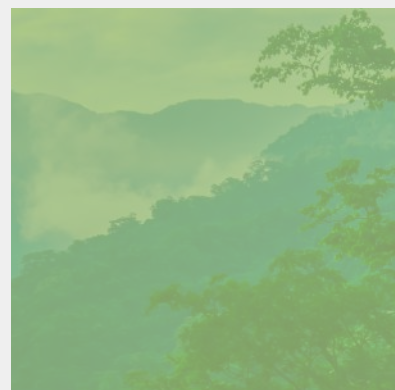
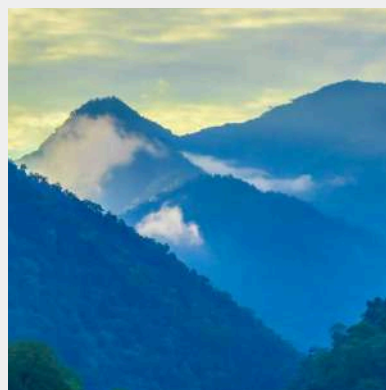
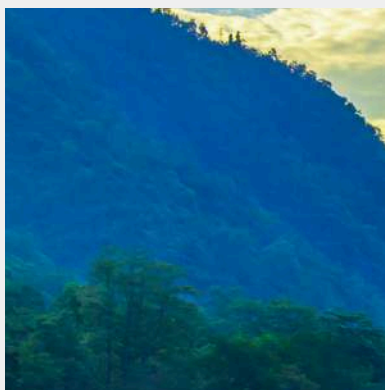




Sustainable Mountain Development Summit - XII

September 26 -27, 2025



ORGANISED BY

INTEGRATED MOUNTAIN INITIATIVE AND
SUSTAINABLE DEVELOPMENT FORUM OF UTTARAKHAND

WITH SUPPORT FROM

NATIONAL INSTITUTE OF HIMALAYAN ENVIRONMENT, ALMORA
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UTTARAKHAND FOREST DEVELOPMENT CORPORATION,
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UCOST,
GOVERNMENT OF ARUNACHAL PRADESH
DOON UNIVERSITY, DEHRADUN

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Sustainable Mountain Development Summit - XII

**Changing Agro-Ecological Landscape and Disasters in Himalaya:
Resilience Building and Policy Imperatives for *Viksit Bharat***

SUMMIT PROCEEDINGS

September 26 -27. 2025

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SUSTAINABLE MOUNTAIN DEVELOPMENT SUMMIT 'SMDS-XII' 2025

Changing Agroecological Landscape and Disasters in
the Himalaya: Resilience Building and Policy Imperatives
for Viksit Bharat

26 - 27 September, 2025

Venue: Dr. Nityanand Auditorium, Doon University, Dehradun, Uttarakhand



ICIMOD



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SUSTAINABLE MOUNTAIN DEVELOPMENT SUMMIT SMDS XII

"Changing Agroecological Landscape and Disasters in the Himalaya:
Resilience Building and Policy Imperatives for Viksit Bharat"

25-27 September 2025

Venue: Dr. Nitendra Kumar Auditorium, Doon University, Dehradun, Uttarakhand



FOREWORD

It gives me immense pleasure to share the report of the **12th Sustainable Mountain Development Summit (SMDS XII)**, organised by the Integrated Mountain Initiative (IMI), Sustainable Development Forum of Uttarakhand and Doon University, Dehradun, with the theme “Changing Agro-Ecological Landscape & Disasters in Himalaya: Resilience Building and Policy Imperatives for Viksit Bharat.” The Summit brought together around 250 participants who were scientists, policymakers, legislators, farmers, social workers, researchers, students and representatives of mountain communities to deliberate on some of the most pressing challenges facing the Indian Himalayan Region, together with the exhibition of local food, handicrafts and publications.

The summit deliberations reaffirmed that the Himalaya cannot sustain development models that disregard its ecological importance and sensitivity as well as the knowledge and aspirations of its communities. The increasing frequency and magnitude of disasters, changing agro-ecological systems, climate change, water insecurity, and growing pressures on mountain livelihoods require us to rethink our development pathways. We must build a development paradigm that is science-based, people-centric, nature-aligned and resilient, integrating modern scientific knowledge with the rich traditional wisdom of mountain communities. The Summit highlighted the importance of strengthening mountain agroecology, promoting risk-sensitive planning, ensuring integrated water-resource management, and developing region-specific policies and institutions. Equally important is to ensure that mountain communities remain central to decision-making processes and are recognised as partners and custodians in building a resilient Himalayan future.

The Dehradun Declaration, emerging from the Mountain Legislators’ Meet, represents a collective commitment to elevate the voices of mountain communities and advance a sustainable, equitable and climate-resilient Himalaya. The call for a dedicated institutional mechanism for strategic environmental planning and green infrastructure for the Indian Himalayan Region is particularly significant in the context of increasing ecological and disaster-related challenges.

I would like to place on record my sincere gratitude to Shri Subodh Uniyal, Hon’ble Minister for Forest, Language and Technical Education, Government of Uttarakhand, for his valuable support and engagement. I also extend my appreciation to Shri Trivendra Singh Rawat, Hon’ble Member of Parliament, Lok Sabha, and Hon’ble Speaker Smt. Ritu Khanduri Bhushan, for their representation and for contributing to the important dialogue on sustainable and resilient development in the Himalaya.

I express my gratitude to the distinguished legislators and public representatives who participated in SMDSXII and contributed to the deliberations with a special focus on increasing disasters in the Himalaya. I am grateful to Shri Nabam Tuki, former Chief Minister of Arunachal Pradesh; Hon’ble MLAs from the Himalayan States - Shri Munna Singh Chauhan, Shri Kishore Upadhyay, Smt. Savita Kapoor, Shri Brijbhushan Gairola and Smt. Asha Nautiyal from Uttarakhand, Sushri Anuradha Rana from Himachal Pradesh, Smt. Hekani Jakhalu and Shri Wangpang Konyak from Nagaland, along with Shri Tikender S. Panwar, former Mayor Shimla, and Shri Anoop Nautiyal of SDFU for the session moderation. Their participation and valuable perspectives enriched the discussions and strengthened the collective commitment to addressing the challenges facing the Indian Himalayan Region.

My sincere gratitude to the distinguished keynote speakers and experts - Prof. Anil Kumar Gupta, Dr. Devinder Sharma, Dr. Ravi Chopra, Dr. Durgesh Pant and Dr. ID Bhatt whose insights enriched the discourse on Himalayan resilience, agroecology, food systems, environment and sustainable development. I thank them for their continued engagement and support towards advancing knowledge, research and policy dialogue for the Himalayan region.

I express my sincere gratitude for the valuable support extended by the Government of Arunachal Pradesh, particularly the Hon'ble Chief Minister and Hon'ble Deputy Chief Minister, towards the Summit and the broader objectives of strengthening mountain-focused dialogue and collaboration. Our appreciation goes to ICIMOD, Himmotthan Society, National Institute of Himalayan Environment, Government of Uttarakhand, Uttarakhand Forest Development Corporation, Center for Public Policy and Good Governance, SARG and UCOST. Such partnerships are essential for building bridges between knowledge, policy and action across the Himalayan region.

A special word of appreciation goes to Prof. Surekha Dangwal, Vice-Chancellor Doon University, Dr. Vipin Kumar, HoD, Geology Department and the entire team of Doon University for their warm hospitality, institutional support and meticulous efforts in facilitating the Summit. My sincere appreciation to all session moderators and chairs for their inputs in the session design, and all the expert speakers for their contributions in the dialogue and collective reflection. Also special thanks to the farmers and community representatives whose participation enriched SMDSXII's objectives.

My heartfelt gratitude to former Presidents, Shri PD Rai and Shri Sushil Ramola for their continued guidance, encouragement and invaluable contribution. Their continued commitment and contributions have been instrumental in advancing IMI's efforts towards sustainable and resilient mountain development. My sincere appreciation to the IMI Governing Council and all members of IMI for their support to strengthen IMI as a platform for dialogue, collaboration and knowledge exchange across the Indian Himalayan Region.

The future of the Himalaya is closely connected to the future of our country. As we work towards the vision of Viksit Bharat, we must ensure that development in the mountains is sustainable, inclusive, locally rooted and resilient. Let us continue to work together to ensure that the Himalaya remains a source of life, livelihoods, culture and ecological security for generations to come.

Ramesh Negi

President

Integrated Mountain Initiative (IMI)



ABOUT IMI AND SMDS

Integrated Mountain Initiative (IMI) is a civil society led forum working across the Indian Himalayan Region with a vision of “Making India proud of our Mountains”. It brings mountain concerns to the centre stage in regional, national, and global agendas through sustained and informed dialogue among all stakeholders. IMI operates through an ecosystem of state and regional chapters who are aligned to IMI’s vision.

SMDS has been hosted in a different mountain state each year since 2011 when the first Summit was organised in Nainital, Uttarakhand. SMDS brings together a diverse group of stakeholders to discuss themes relevant and important to the mountains that warrant urgent attention at the state and national level. These summits are pursued by IMI subsequently for actionable outputs that include the Meet of the Mountain States with key policy makers. The Mountain Legislators’ Meet and the Indian Himalayan Youth Summit are two events which are integral components of SMDS.

SMDS XII

The Integrated Mountain Initiative’s Sustainable Mountain Development Summit (SMDS) XII was organized in Uttarakhand on September 26 -27, 2025. It was at the premises of the Doon University, Dehradun and hosted by the Sustainable Development Forum of Uttarakhand (SDFU) and the Integrated Mountain Initiative (IMI). The theme of SMDS XII was “Changing Agro-Ecological Landscape and Disasters in Himalaya: Resilience Building and Policy Imperatives for *Viksit Bharat*”. The summit brought together individuals, government agencies, academic and research institutions, farmers, policy think tanks, NGOs, entrepreneurs, elected representatives, bilateral agencies, donors, students and mountain enthusiasts from IHR and beyond to deliberate on different themes of the Summit. The following sessions were organised during SMDS- XII:

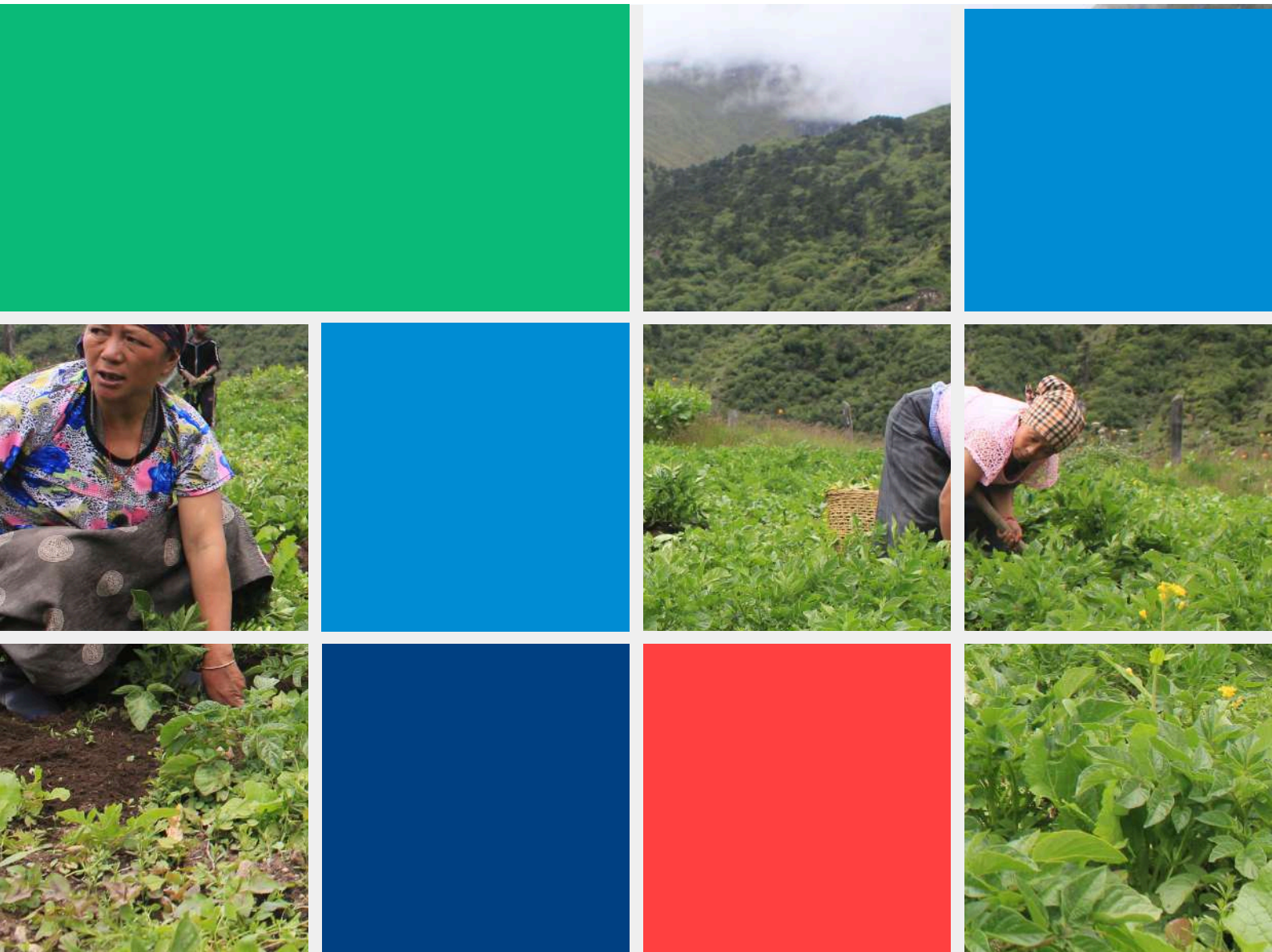
- Inaugural Session
- Session I - Agro Ecology Resilience for Climate Change
- Technical Session II - Financing Solutions for building resilience in the Agroecology of IHR
- Session III: Biodiversity and Agroecology in Himalaya; Changing Patterns in Livelihood and Food and Nutrition Security
- Session IV : Voices from the Grassroots
- Session V: Climate Change Adaptation & Resilience: Good Practices in the Himalayan States
- Session VI: Beleaguered Waters of Himalayas: Blessings and a curse
- Side events:
 - Mountain Legislators Meet
 - Poster presentations
 - Photography Exhibition
 - Display and sale of traditional agricultural products from mountain states
- Valedictory session and Summing up



INAUGURAL SESSION

Changing Agro-Ecological Landscape and Disasters in Himalaya: Resilience Building and Policy Imperatives for *Viksit Bharat*

Chief Guest: Shri. Subodh Uniyal, Hon'ble Minister, Forest & Environment,
Government of Uttarakhand



Welcome and Context Setting

Mr. Roshan Rai, Secretary - IMI

Mr. Roshan Rai welcomed all the dignitaries and delegates to the Sustainable Mountain Development Summit 2025 (SMDS) and introduced the Integrated Mountain Initiative (IMI) as a civil society collective initiative for recognizing the value of mountain regions. IMI's work to address cross-cutting issues related to climate change, mountain agriculture and livelihoods, disaster risk reduction and resilience, plastic waste management and sustainable mountain cities, which are relevant for sustainable mountain development were highlighted.

The annual Sustainable Development Summits (SMDS), since 2011, followed by Meet of Mountain States (MoMS) engages various stakeholders to come together and take part in an informed dialogue on themes of specific relevance to the mountain communities and regions of India. The events bring together distinguished legislators, central and state government representatives, civil society, practitioners, academicians, industry leaders, media and communities together to deep delve on issues and to sensitize and advocate with national policymakers and practitioners.

He pointed out that in recent times the Himalaya has emerged as a multihazard zone with increasing frequency of events which are the result of development choices and interventions intersecting with climate change impacts. There is a need for resource allocations to be made commensurate and appropriate through a proper socio-ecological loss analysis, and not just from a lives lost narrative. Importantly disasters in the Himalaya can no longer be looked at as single events confined to relief and rehabilitation but need to be examined through a broader perspective that includes our development paradigm, climate change impacts and transboundary implications.

He concluded that SMDS 2025 with the theme "Changing Agroecological landscape in Himalaya: resilience building and policy imperatives for *Viksit Bharat*" as an important dialogue from a long term vision perspective as only with *Viksit Himalaya* can there be *Viksit Bharat*. SMDS is set within a larger goal of IMI to inform policymakers for a greater mountain sensitivity of policies on agroecology as well as allocation of appropriate knowledge and financial resources to mitigate the challenges that are impacting agroecology in the IHR including climate change.



Introduction and background

Prof. Surekha Dangwal, VC, Doon University



Prof. Surekha Dangwal, VC, Doon University warmly welcomed all distinguished scientists, scholars and representatives attending the SMDS 2025 at Doon University, and reflected on her perspective as an observant citizen and academic administrator rather than a technical expert. She emphasized that while scientific data on Himalayan challenges is already available and well understood, the critical gap lies in the lack of integrated and collaborative efforts among institutions, governments and stakeholders.

She highlighted that responses to disasters often remain fragmented, with new committees repeatedly starting from scratch and failing to incorporate the knowledge and feedback of experienced scientists, community representatives and institutions that have long worked in the Himalayan region. This disconnect, she noted, weakens effective disaster preparedness and response.

She underlined the significant research capacity already present in Dehradun, including well-established GIS, geological engineering and cartography laboratories, as well as, the contributions of major institutions like the Wadia Institute.

She emphasized that the collective voices of scientists, academics, and community representatives needed to be heard, especially since many disasters occur despite prior scientific warnings that go unheeded. Recognizing the extensive work already done by numerous scholars and institutions, she called for integration and recognition of these efforts.

She appreciated the role of the Integrated Mountain Initiative in bringing together diverse stakeholders, including policy makers from Uttarakhand and other states, to build a strong, evidence-based collective voice. She urged that the recommendations emerging from the two-day conference should not remain merely documented but should be actively advocated for and implemented through sustained collective effort.

President's Address

Mr. Ramesh Negi, President - IMI



In his Presidential Address, Mr. Ramesh Negi, President, IMI shared the vision of IMI, the collective challenges faced by Himalayan states, and the urgent need for integrated and sustainable development policies.

Mr. Negi traced the origin of IMI to the vision of its founders, particularly Dr. RS. Tolia of Uttarakhand, emphasizing that the term “Integrated” signifies unity across Himalayan states, cultures, institutions and stakeholder groups. He highlighted that the Himalayan region’s limited political representation at the national level necessitates a strong, unified voice to ensure that mountain concerns are effectively heard in national policymaking.

He referred to past collective efforts by Himalayan leadership that resulted in special financial allocations by the Finance Commission, recognizing the region’s vital ecosystem services, particularly water and forest conservation. He cautioned that these financial shares must be protected and not diluted amid competing national priorities.

Mr. Negi raised serious concerns regarding prevailing development models in the Himalaya, particularly high-altitude hydropower projects in seismically active zones. Citing incidents in Uttarakhand, Sikkim and Himachal Pradesh, he questioned whether big hydropower can truly be considered clean energy when it results in loss of life and ecological damage. He stressed the need for technologies and development approaches that do not later become sources of disaster. On tourism, while acknowledging its employment potential, he warned of growing negative impacts such as water scarcity and plastic pollution, especially in spiritually significant regions like Uttarakhand. He called for greater environmental responsibility among visitors and policymakers.

His address concluded with an appeal for political unity, environmentally sensitive development, and collective action from Himalayan states to safeguard fragile mountain ecosystems while ensuring justice, safety, and sustainable livelihoods for local communities.



Keynote address - Disaster

Prof. Anil Kumar Gupta, Professor and Project Director of the Integrated Centre for Adaptation, Disaster Risk-Resilience and Sustainability (ICARS), IIT Roorkee

Delivering the keynote address focusing on disaster risk reduction, Prof. Anil Kumar Gupta highlighted the need to rethink development approaches in the Himalayan region. He observed that while environmental sustainability is frequently referenced in policy documents, implementation on the ground often falls short of genuinely nature-compatible and ecologically sensitive practices. He emphasized that sustainable development in the Himalayas cannot rely solely on modern scientific and technological interventions but also draw upon the rich repository of traditional knowledge and community-based practices that have enabled mountain societies to coexist with fragile ecosystems for generations.

Prof. Gupta expressed concern over the rapidly increasing pressure of religious and leisure tourism across the Himalayan landscape. While acknowledging the economic benefits and livelihood opportunities generated by tourism, he cautioned that unregulated growth has led to mounting environmental challenges, including plastic pollution, waste management issues, pressure on natural resources, and increased ecological vulnerability. He noted that the long-term sustainability of mountain regions depends on balancing economic gains with environmental protection and responsible tourism practices.

To advance a more resilient and sustainable Himalayan future, Prof. Gupta proposed several key measures:

- Application of Artificial Intelligence in Disaster Management such as AI-based tools for early warning systems, risk assessment, real-time monitoring, and improved disaster response to address the region's growing vulnerability natural disasters.
- Recognizing and integrating indigenous knowledge systems in natural resource management, climate adaptation, sustainable agriculture, and community-led disaster preparedness.
- Strengthening farmers' capacities to adopt environmentally sustainable agricultural practices that enhance soil health, biodiversity conservation, food security, and climate resilience.
- Encouraging Innovation-Driven Entrepreneurship by supporting local innovators, youth, and entrepreneurs in developing context-specific solutions, value-added products, and green enterprises that create livelihoods while conserving the region's ecological wealth.

Prof. Gupta concluded by emphasizing that the future of the Himalayas depends on a development model that harmonizes ecological integrity, community well-being, and economic opportunities, ensuring that growth does not come at the cost of the region's unique environmental and cultural heritage.

Keynote address - Agroecology

**Dr. Devinder Sharma, Agricultural Scientist & Environmentalist.
Member of the Supreme Court Committee on Agrarian Reforms**

Dr Devinder Sharma delivered his keynote address focusing on agroecology and the future of agroecology in the Himalayan region, critically examining prevailing development models, climate change negotiations, agricultural policies and their implications for fragile mountain ecosystems.

Dr. Sharma opened his address by situating agroecology within the larger context of unprecedented disasters in the Himalaya. He argued that this moment of crisis presents an opportunity to reassess agricultural practices and development pathways in mountain states. Using compelling illustrations, he explained the inherent contradiction between GDP-driven growth economics and ecological sustainability highlighting that standing trees, clean rivers, and healthy ecosystems do not directly increase GDP while environmental destruction, pollution, healthcare costs, and remediation projects artificially inflate GDP figures.

His keynote further underscored that disasters attributed solely to climate change are often compounded by systemic mismanagement and lack of integrated planning, drawing examples from recent floods in Punjab. He emphasised that disaster resilience requires integration across global policy frameworks, national and state-level planning and local ecological and socio-economic realities, in the absence of which mountain regions would continue to face escalating risks.

Through examples involving river pollution, urban congestion, and public health impacts, Dr. Sharma shared how conventional economic indicators reward environmental damage rather than conservation. Dr. Sharma critically analysed the role of global climate governance, particularly the Intergovernmental Panel on Climate Change (IPCC). He observed that while the IPCC has repeatedly warned against limiting global temperature rise beyond 1.5°C, international political and economic forums such as the G7 and G20 continue to prioritise GDP growth, effectively undermining climate commitments.

He cautioned that gradual acceptance of higher temperature thresholds reflects policy failure rather than scientific inevitability, stressing that without redefining development priorities, climate mitigation efforts will remain ineffective.



Agroecology and Indigenous Livestock Systems

A significant portion of the address focused on livestock diversity and indigenous cattle breeds. Dr. Sharma challenged the dominant narrative that traditional breeds are unproductive, sharing examples where Indian indigenous breeds outperformed exotic breeds such as Jersey and Holstein-Friesian under appropriate management.

He argued that traditional breeds are more resilient, sustainable, and climate-adaptive, making them particularly suitable for Himalayan regions highlighting the diversity richness with over 50 native cattle breeds documented by India's National Bureau of Animal Genetic Resources, each adapted to specific ecological zones.

Agriculture, Emissions, and Food Systems

Addressing environmental impacts of agriculture, Dr. Sharma highlighted that nearly 34% of global greenhouse gas emissions originate from the entire food system—from production to wastage. He challenged claims that industrial or genetically modified agriculture is essential for food security, pointing out that the world already produces food sufficient for nearly 14 billion people and hunger persists due to inequitable distribution and excessive food wastage (Nearly 30% of overall produce).



Critique of Industrial Dairy and Trade Pressures

Dr. Sharma warned against opening India's dairy sector to global market pressures, explaining how linear overproduction in industrial dairy economies leads to price crashes, farmer distress, and market dumping in developing countries.

He noted that calls for dairy imports often serve corporate and geopolitical interests rather than farmer livelihoods or food security. Emphasising the principle of local livelihoods and local food systems, he urged policymakers to resist narratives that undermine domestic agricultural resilience.

Dr. Sharma strongly questioned claims regarding genetically modified crops and gene-editing technologies, stating that no empirical evidence show GM crops significantly increase yields and warned against exaggerated productivity claims.

Dr. Sharma drew attention to the interconnectedness of the food industry, pharmaceutical sector, and insurance companies, explaining how contaminated food systems generate profits across multiple sectors while undermining public health. He reiterated that economic growth achieved at the cost of human and ecological health is fundamentally flawed.

Dr Sharma highlighted positive international trends, including the European Union's substantial investment in agroecology under its Common Agricultural Policy, and noted that global recognition of safe, healthy, and sustainable food systems is reinforcing the relevance of agroecology as the future of agriculture.

Reducing food waste and promoting agroecological practices would be more effective than increasing production through environmentally destructive methods.

Address of the Chief Guest

Shri Subodh Uniyal, Hon'ble Minister of Forest,
Govt of Uttarakhand

Hon'ble Minister emphasized that forests were traditionally managed by communities and effective environmental protection today requires putting people at the center of policies. Climate change, disasters, and forest management cannot be addressed without strong community participation, transparency and livelihood support. Reforms such as climate-appropriate plantations, ecotourism with local ownership, Van Panchayats, herbal farming, direct market access for farmers and elimination of middlemen will strengthen both ecology and economy. Forest fire mitigation improved by involving village institutions and incentivizing pine needle collection are needed.

His speech highlighted that there is a need for region-specific policies for the Himalayan states that focus on carrying capacity, scientific infrastructure, disaster-sensitive planning, and protection of border and mountain areas. Unplanned tourism, riverbed settlements and weak road and drainage systems increase disaster risks that must be redressed. Since more than 50% of India's water comes from the Himalaya, their protection is a national priority. He stressed that sustainable development in the Himalaya is possible only through community involvement, local livelihoods, balanced ecology-economy planning and special policy attention to mountain regions.



Session I:

Agro- Ecology Resilience for Climate Change

Thematic Lead: Ms. Binita Shah, Treasurer, IMI &
Mr. RP Gurung - GC Member, IMI



Introduction and Context



**Ms. Binita Shah,
Treasurer- IMI**

Ms. Shah opened the session by contextualizing agroecology specifically for mountain regions, drawing on 25 years of experience in Uttarakhand.

Key highlights included:

- **The State of Agriculture in Uttarakhand:** Over the last 25 years, the state has seen a decline in traditional apple orchards, area under millets, and a rise in "ghost villages".
- **The Role of Women:** Women are the primary farmers in the mountains, facing immense physical drudgery to secure fodder and maintain livestock.
- **Decline of Traditional Grains:** While millets are "mighty grains of power" with high nutritional value (e.g., finger millet calcium content) and celebrated in the Year of Millet 2023, many varieties like Proso and Foxtail millet are disappearing with reducing seed availability too.
- **The Irony of Commercialization:** Uttarakhand has obtained Geographical Indication (GI) tags for many crops (e.g., Black Soybean, Perilla) but sadly there is currently no active seed program or production plan.

Ecological Literacy and Food Systems



**Dr. Ishwari Singh Bisht,
Himalayan Agroecology
Initiative**

Dr. Bisht, a National Consultant for the Himalayan Agroecology Initiative, discussed the transition toward sustainable and resilient food systems.

- **Ecological Awareness:** He emphasized "ecological literacy," urging that everyone must be aware of resilient resource management mechanisms.
- **Core Areas:** The transition must focus on three pillars: sustainability, resilience, and social equity.
- **Focus Areas:** His work emphasizes indigenous food sovereignty, eco-nutrition, and community empowerment.

He emphasized the importance of ecological literacy and the transition to agroecological food systems as a pathway to sustainability, resilience and social equity. Agroecology is not a new concept, but a living, evolving system deeply rooted in indigenous knowledge, traditional land-use practices and community-based resource management across regions such as the Northeast of India.

Dr. Bisht warned that market-led monocultures, plantation expansion (oil palm, rubber, etc.), and narrow yield-focused metrics are eroding traditional seed systems, local governance, ecological balance and farmers' dignity. This is described not only as an ecological crisis but also an epistemological one, involving the devaluation of indigenous knowledge.

To reclaim the narrative, he called for redefining productivity to include nutrition, soil health, ecosystem services, cultural continuity and community well-being. Examples from civil society—such as agroecological learning circles, community farm schools and integration of traditional foods into school meals—demonstrate hopeful, community-led pathways forward.

The following were highlighted as was forward-

- Need for policy reforms that recognize indigenous agroecological systems,
- Investment in local institutions and seed systems,
- Supporting appropriate technologies and the adoption of resilience-based metrics, Agroecology to be integrated into mainstream policies linked with climate action, biodiversity conservation, nutrition and livelihoods.
- Need to renew solidarity with farmers and indigenous communities rather than treating agroecology as a pilot or alternative model.



The Himalayan Agroecology Initiative



Dr. Lal Singh,
Himalayan Agroecology
Initiative

Dr. Singh presented the progress of the Himalayan Agroecology Initiative, which was a collaborative effort across Nepal, Bhutan, and India to develop a roadmap for sustainable food systems.

Current Progress

The initiative has reviewed 88 national and 36 sub-national policies in India and established a scientific committee of 36 experts.

Future Outlook

A high-level launch of the combined roadmaps for Bhutan, Nepal, and India is planned for early 2026 in Delhi.

The Seven Pillars of the Roadmap

- Stepping up food system governance.
- Ensuring access to land, water and soil.
- Climate resilience.
- Promoting healthy and sustainable diets.
- Building fairer, shorter supply chains.
- Reducing food losses and waste.
- Putting trade in service of sustainable development.

Reclaiming Agroecology in Northeast India



**Mr. Amba Jamir (IMI Member)
Senior Policy Analyst &
Development Strategist**

Mr. Amba Jamir highlighted that the "reclaiming" of agroecology in Northeast India not as a new, borrowed concept but as a foundational path already practiced by indigenous communities. He stressed the critical need to transition from market-centric industrial models back to traditional systems to ensure biodiversity, climate resilience and food sovereignty.

Mr. Jamir elaborated on the current crisis highlighting the significant threats from several converging factors such as biodiversity loss and climate vulnerability, top-down development schemes and market-centric models that overlook local ecological wisdom and social disconnection of youth from the land, combined with a weakening of community institutions.

Citing key examples, he highlighted successful, time-tested indigenous practices in Northeast India -

- Shifting Cultivation: Landscape-level, alder-based systems that maintain forest health.
- Apatani Rice-Fish Culture: A highly integrated system of wet-rice and fish farming.
- Diverse Land Use: This includes terrace rice, complex home gardens and community-managed forests and water sources.
- Governance: Systems that are supported by customary laws and community-led seed banks.

He also showcased ongoing community-led initiatives -

- Agro- ecological Learning Circles (ALCs): Facilitated by NESFAS to promote horizontal knowledge sharing.
- Farm Schools: Programs like those in Chizami that bridge the gap between traditional wisdom and modern education.
- Nutritional Integration: Incorporating wild and uncultivated foods into school meal programs to link livelihoods with nutrition.



Agroecology must be viewed as a "whole food system" that encompasses forests, rivers, and uncultivated foods across all seasons.

Key recommendations:

- Official Recognition of traditional indigenous systems as valid agroecological models.
- Prioritize regeneration of local soil health and indigenous seed systems.
- Redefine "productivity" to include resilience, dignity and food sovereignty.
- Ensure indigenous voices are central to policy-making and fund community-led conservation and farming models.

Climate Resilience, Seed Sovereignty, and Food Security in the Traditionally Managed Farming Systems of the Eastern Himalaya: Agro-ecosystem diversity in the Sikkim Himalayan region



Dr. Ghanashyam Sharma,
Head,
The Mountain Institute

Dr. Ghanashyam Sharma presented the complex and biodiverse agroecosystems of the Sikkim Himalayan region. He highlighted a unique blend of traditional knowledge, immense genetic diversity and modern conservation efforts.

He talked of Sikkim's agriculture highlighting the five distinct altitudinal systems -

- High Altitude (2000–5500m): Nomadic and mixed pastoral systems.
- Mid-to-Low Altitude (300–2800m): Integrated hill farming, remnants of Jhum (shifting cultivation) and tea plantations.
- Cash-Crop Systems: Widely distributed (300–2800m).
- Terrace-Based Irrigated Systems
- Agroforestry and Forest-Dependent Systems.

Dr. Sharma spoke on the importance of traditional bodies with the example of Dzumsas which were vital for resource management and conservation that managed rotational grazing to conflict resolution and revenue collection. He also raised his concern about changing traditional labour-sharing practices like *Pareli* and *Perma* and the joint-family system (*Thulo-pariwar*) that were evolving due to modernization and a shift toward paid labour (*Rojkari*). He also highlighted key government programmes such as Mero Rukh Mero Santati that planted 108 saplings for every child born.

He concluded by outlining the key challenges which were climate change, invasive species and land-use shifts, rapidly declining per-capita landholdings, urbanization, market pressures from tourism and hydropower, lack of "convergence" or alignment between formal government institutions and local farmers.





Session II:

Financing Solutions for building resilience in the Agroecology of IHR

Thematic Lead: Mrs. Bharti Gupta Ramola, Founding Member- IMI
Moderator: Mr. Reuben Gergan, Project Officer- UNEP





**Mrs. Bharti Ramola,
Member IMI**

Introduction and Context Setting

Mrs. Ramola introduced the session, emphasizing the need to discuss how agroecology initiatives, with all their challenges, will be financed. She highlighted possible sources including climate finance, payment for ecosystem services (PES), and green credits.

Input from the panelists

Mr. Castellino discussed a project in the Chamoli-Gopeshwar region involving three to four villages where they regenerated close to 300 acres of land that had been invaded by *Lantana camara*. The villagers converted the invasive species into biochar, which has a carbon content of 75% to 76%. The cleared land was replaced with lemongrass and the harvest revenue goes primarily to male farmers.

The biochar project is entirely women-run, employing over 100 women who are also trained to use a digital MRV system. They are working to generate 650 biochar carbon credits and are expected to generate around 60 lakh rupees in revenue, which will employ approximately 10,000 to 15,000 woman-days of work. A carbon credit buyer provided an upfront payment of 25% because they were interested in the overall ecosystem and livelihood aspects of the project.



**Mr. Ronald Castellino
(Practitioner)**



**Mr. Pankaj Tiwari,
CEO, Arohi**

Mr. Tiwari provided his experience working in the Kumaon region (five districts) of Uttarakhand for the last 30 years, collaborating with over 200 Van Panchayats. Their program follows an integrated approach, including health and education alongside forest and agro-biodiversity. The project aims to plant 4 million plants in 4,000 hectares of which 3.5 million plants have been planted.

The project, which includes afforestation, reforestation, and regeneration, is supported by a carbon credit program that is under validation under the Verified Carbon Standard (VCS) and VM0047 standards. The 20-year program is expected to sequester or reduce around 1 million tons of carbon. 70% of the revenue from carbon sequestration (based on market rates after the fourth year) will go back to the community for livelihood and natural resource management programs. They have also attracted additional resources in health and livelihood, reaching around 500 villages.



**Mr. Santosh Singh,
CEO, Intellecip**

Mr. Singh provided a perspective on the broader ecosystem of financial solutions stating that agroecology interventions could be financed through climate finance, which can generate revenue from carbon trade for activities like land ecosystem, farm, livelihood, and community work.

He emphasized that activities which either reduce or remove carbon emission should have a proven scientific methodology to measure the reduction/ removal, and have a willing buyer. Challenges highlighted include aggregation (large area needs for projects to be viable - 4,000 to 5,000 acres for agroforestry) and pre-financing (as carbon credits are paid only after generation).

He also highlighted the difference in carbon credit prices which is driven by cost, co-benefits (like Climate, Community & Biodiversity Standards (CCBS), and the permanence of carbon removal.

He urged project developers to get a firm buyer commitment before engaging with the community. He also discussed the Green Credit Program as the first manifestation of a systematic Payment for Ecosystem Services (PES) mechanism, focusing on non-carbon benefits like water conservation and biodiversity.

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**Mr. Mridul R. Ranjan,
General Manager,
NABARD**

NABARD is the National Implementing Entity for the Green Climate Fund (GCF), Adaptation Fund, and the Government of India's National Adaptation Fund to Climate Change (NAFCC).

Mr. Ranjan introduced the NABARD Green Lending Facility (NGLF), created in March 2025, to provide debt for both mitigation and adaptation areas, including renewable energy, compressed biogas, and e-logistics. NGLF offers a unique opportunity for hill states to finance climate-resilient and adaptation-focused initiatives.

NABARD has also created a Carbon Fund (initially 300 crore rupees for the current year, launched in June), which is a flexible fund to support carbon finance activities in debt or grant mode. Hill states are considered the most promising area for the Carbon Fund due to the amount of agroforestry.

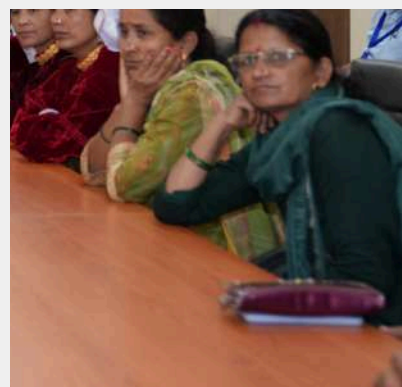
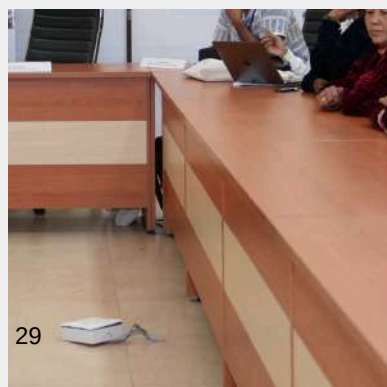
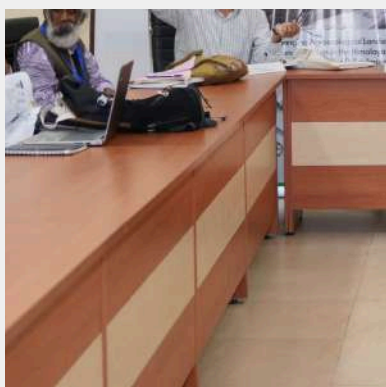
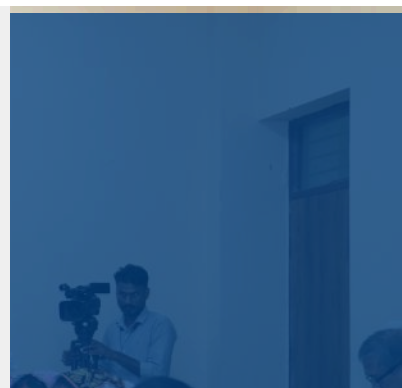
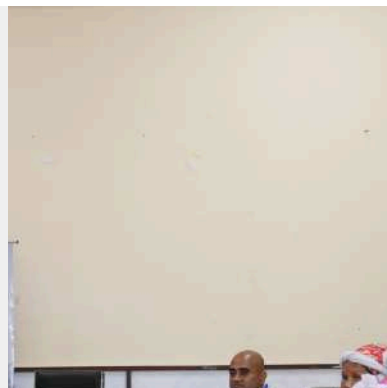
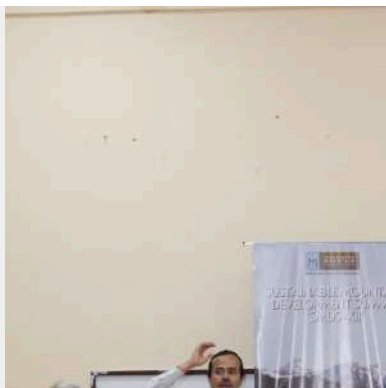
The issue of the equity gap, where those who bear the social and environmental costs do not proportionately share the financial reward, was discussed. Solutions included reducing information asymmetry, building stakeholder capacity, and leveraging digital technologies for direct money transfer. It was also stressed that the owner of the carbon is the person whose activity was changed and whose lifestyle is changing.



Session III

Voices from the grassroots

Forgotten Food Crops and Resilient Seeds:
An Agroecological Pathway for Sustaining
Mountain Agriculture



Introduction and Context setting

Dr. Vinod Bhatt,
Chairman,
IRD Foundation

The discussion highlighted the richness of traditional agricultural diversity and the wisdom embedded in cultural practices, and how it evolved with strong ecological reasoning. Close links of agricultural practices with rituals and religious traditions were highlighted, and how crops were grown for productivity as well as for spiritual and cultural significance, and to address specific environmental challenges (Withstand drought, resist strong winds, etc.) while taste and nutrition were also significant factors.

Crop diversity was fundamentally aimed at strengthening security and resilience - a single disease could destroy the entire crop in a monoculture, while diversified systems had higher chances of survival. Multicropping was based on principles of recycling, biomass management, efficient use of solar radiation, carbon sequestration, microclimate management, and the enhancement of biodiversity and these interactions were carefully balanced to strengthen biological benefits.

Traditions consistently underline that diversity leads to prosperity such as the philosophy of “Vasudhaiva Kutumbakam” reflects the idea that the entire world is one family, encompassing all life forms and knowledge systems such as the Charaka Samhita discuss food diversity, seasonal eating. Crops that were climate-resilient and nutritionally rich and were part of a self-sustaining system are now gradually disappearing due to market-driven promotion of cash crops and adverse policy directions which negatively impacted traditional farming. The erosion of indigenous knowledge has weakened people’s understanding of food as medicine.

The shift toward processed and packaged foods has further contributed to health challenges such as diabetes, hypertension, and digestive disorders. Natural diversity in the field ensured comprehensive nutrition which is now missing in daily diets which has drastically reduced from nearly 1,500 plant species to just about 30 plant species, with wheat, rice, soybean, and sugarcane dominating production. This imbalance has created vulnerabilities in both nutrition and ecological stability. The very definition of food security has shifted—from the ability to grow one’s own food to the ability to purchase it. In the past, buying food from the market was considered a sign of poverty; today, reliance on homegrown food is often perceived as backward.

Declining nutritional quality among food was also illustrated and how consuming one traditional tomato could provide sufficient iron where as now more than 1,600 tomatoes would provide the same nutritional value according to studies. This comparison underscores the severe depletion in nutrient density of modern produce. The presentation concluded with a call for reflection and action on how to preserve and restore agricultural diversity when India was once known for its agriculture-base.

“ Reviving respect for agriculture and biodiversity is essential if we are to rebuild resilience, nutrition, and ecological balance for the future.

Green and Climate-Resilient Agriculture

Mr. Kamal Aryal,
NRM Analyst,
ICIMOD

The presentation highlighted the ICIMOD's focus on promoting green and climate-resilient agriculture in the Hindu Kush Himalayan (HKH) region in response to global climate, socioeconomic, and anthropogenic changes aiming to build greener, more inclusive, and climate-resilient mountain systems. Three dimensions of resilience were emphasised: climate resilience, socioeconomic resilience, and future resilience.

The key strategy of Community Learning Centers was highlighted that promotes simple, affordable, replicable, and context-specific technologies that can be adopted by farmers. The centers allow farmers to directly observe practical technologies and practices before adoption, which also generates scientific evidence through collaborative action research with universities. The evidence produced is used to engage policymakers and influence policy reforms.

Some innovations adopted were low-cost soil-cement water tanks, validation of traditional practices such as liquid manure for crop production and pest management, value addition and product diversification in large cardamom, and the use of digital tools for pest identification and market information. The program also works closely with academic institutions to involve students in participatory action research and to update university curricula to reflect current climate challenges. The initiative has contributed to policy integration, including embedding climate-resilient and nature-based solutions into provincial agricultural development strategies, with governments allocating resources for implementation. The approach has expanded beyond Nepal to countries such as Bhutan, Bangladesh, and Pakistan.



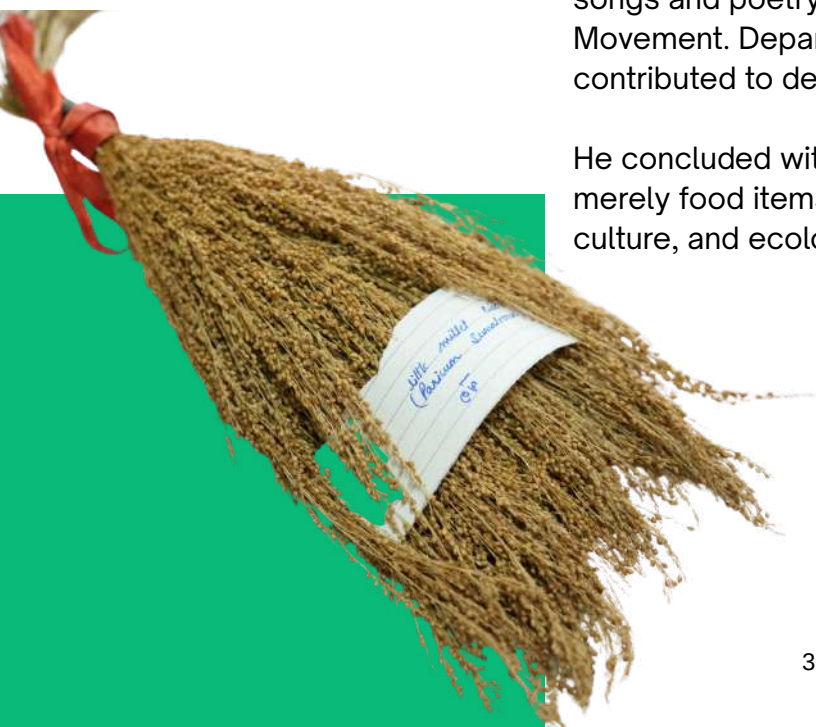
**Mr. Vijay Jardhari,
Environmentalism,
Social Worker and
Farmer**

He began his presentation highlighting concerns on the limited representation of community farmers in decision-making spaces and that voices of farmers often remain unheard, confined to the margins. Reflecting on his personal journey he introduced himself as a custodian of traditional community knowledge and not a leader, and that his primary focus has been to preserve and protect the agricultural wisdom inherited from previous generations. He noted that there was a time when traditional foods were ridiculed and considered inferior leading to them being devalued. Wheat bread became a symbol of status, while traditional grains were neglected or even hidden when guests visited, and the cultural foundation of agriculture began to erode, despite its nutritional richness and ecological suitability. Some of the grains were often labeled as “coarse cereals” including mandua, jhora, and kauni, were looked down upon simply because they were associated with rural communities, and efforts to revive them were met with skepticism.

He pointed out that now ironically, traditional foods that once disappeared from local plates are reappearing in urban markets and high-end hotels as specialty or health products. There is growing recognition, particularly among more affluent populations, of the nutritional and medicinal value of traditional grains. What was once dismissed as inferior is now being rediscovered as a source of health and resilience.

He further highlighted that farming in mountain regions was inherently natural and there was no separate concept of “natural farming” because agriculture was intrinsically aligned with ecological cycles. Farming and livestock rearing formed the backbone of mountain communities’ culture, lifestyle, and identity, and food habits, clothing, and lifestyle practices were historically adapted to specific environmental conditions. The connection have long been acknowledged, and reflected in songs and poetry during movements such as the Chipko Movement. Departing from this ecological balance has contributed to declining health and sustainability challenges.

He concluded with a reaffirmation that traditional crops were not merely food items but that they are integral to nutrition, medicine, culture, and ecological balance.



Food that was once dismissed as inferior and coarse is now being rediscovered as a source of health and resilience.



Agroecology interventions under NMHS

Dr. Smriti Panwar,
RA, IMI

The presentation highlighted the agroecology project being implemented across three states—Uttarakhand, Himachal Pradesh, and Sikkim—in collaboration with partner organizations.

The key objectives include assessing the impact of climate change on local agro-ecological systems, conserving traditional seed diversity, strengthening climate-resilient farming techniques, improving productivity, and ensuring better commercialization and fair pricing. The project aims to connect farmers in the state and the development of sustainable market systems.

Major challenges identified across all regions were the limited availability of traditional seeds, along with issues such as pest infestation, reduced livestock and organic manure availability, migration, poor connectivity, and limited market access.

To address these challenges, the project provides quality seeds along with training on composting, organic farming practices, (bio-pesticides and vermicompost units,) and initiated organic certification processes. Post-harvest management, value addition, storage improvement, and seed exchange platforms are also promoted for higher economic returns.

**Mr. Chewang Lepcha,
Conservationist and
Farmer, Sikkim**

Mr. Lepcha expressed deep respect for the elders acknowledging that his work reflects their lifelong commitment to preserving traditional seeds and community knowledge and conservation oriented. He mentioned that his efforts are rooted in dedication to his community, culture, and agricultural heritage. Recognizing the rapid transition of mountain agriculture from traditional food crops towards high-yielding commercial hybrids cash crops (like large cardamom and ginger), he stepped in to preserve the native, climate-resilient landraces. His initiative strengthens the traditional Lepcha barter-exchange system known as *batar*, in which seeds are lent to community families during the sowing season which is returned in equal or slightly larger amounts after a successful harvest. This non-monetary system provides an essential safety net against crop failure, protects the genetic purity of native crops, and strengthens the socio-cultural bonds of the Dzongu community.

His observation of the vanishing traditional varieties in his grandfather's fields motivated him to search, collect and conserve seeds, gradually restoring lost varieties. Today, he has successfully preserved important traditional varieties, while also working ensure intergenerational continuity, for the work to be carried forward by the younger generation.

Referring to the GLOF incident that isolated his village for over a week, he mentioned that local communities managed to survive without external assistance due to their food self-sufficiency. Traditional skills, including the construction of rope and cane bridges, were instrumental in restoring connectivity which highlighted the importance of preserving indigenous knowledge systems and maintaining community self-reliance.

Outlining the key challenges faced by farmers, he highlighted crop damage from wildlife as a key concern. He also raised the issue of migration among younger generations who moved to cities in search of low-paying jobs, and stressed on the need for effective government policies and programs to incentivize rural livelihoods and encourage youth to return to villages. Existing subsidies and loan schemes were also highlighted as insufficient, and he advocated for stronger financial support to enable rural youth to establish viable enterprises and sustain themselves through agriculture. With increase in demand of traditional crops such as millets and paddy, appropriate support could make rural livelihoods more attractive and sustainable.

In conclusion, he reiterated the importance of strengthening traditional agriculture, providing meaningful institutional and financial support to farmers, and creating enabling systems that motivate young people to remain in or return to villages. He ended his remarks with gratitude and a renewed call for collective responsibility in preserving agricultural heritage and ensuring rural sustainability.

**Mr. Nawang Tashi,
Farmer, Himachal
Pradesh (Lahaul and
Spiti)**

Mr. Nawang Tashi, representative from a tribal community and a progressive farmer in Himachal Pradesh shared reflections on agricultural changes in their valley. He shared his experiences of growing local varieties of barley (naked barley or Kneu), black pea (Tsanma nakpo), wheat (Tro), potatoes along with growing recently introduced green pea. Green peas were introduced during 1980s which has now emerged as the main commercial crop of Spiti valley, which significantly improved local incomes and farmers shifted to large-scale green pea cultivation, leading to a gradual decline of traditional crops.

He highlighted that he continues traditional farming practices with the knowledge received from his forefathers and through his own experiences of over 30 years of farming practices, advocating for traditional Kuhl irrigation, use of local seed sources, farm yard manure, weeding and crop harvesting methods and practices.

Emphasising on the ongoing climate impacts he mentioned how agricultural patterns are being affected, and that certain project supported by the Ministry of Environment, Forest and Climate Change to strengthen traditional crops like barley and black peas were highly important for the valley. These traditional crops are better suited to local geographical conditions, showing greater resilience with fewer pest and disease incidences. Further he stressed on the need to improve market opportunities for traditional produce to encourage farmers to continue their cultivation. He concluded with a call for continued support to protect traditional farming systems while adapting to emerging climatic challenges.



Mrs. Sushila Raj,
Van Panchayat
Farmer, Pauri,
Uttarakhand

Mrs. Sushila Raj from Pauri has been with the Van Panchayat since 2010 and has engaged in community work since then. She shared her experiences and observations regarding community development and livelihood initiatives in her region, where migration has become a growing concern. She recollected the launch of natural resource initiative in 2018, under which new groups were formed, creating fresh avenues for participation. She assumed multiple leadership positions, despite challenges on the personal front, serving as group president, organization and cluster president, and later as a member of the APO.

Highlighting the importance of capacity building, she mentioned that several women-led enterprises have become operational, including café, dairy (ghee), and bakery units engaging around 206 women and employing over 15 women. Women are also engaged in adding value to traditional crops such as *mandwa* and *jhora*, through biscuit making reaching markets as far as Delhi and received positive consumer response. The role of FPO/APO was also critical that delivered training within the villages to ensure wider participation. A dedicated shop has been opened to facilitate regular sales. One woman manages marketing and sales, while production is handled by a team of women supported by a skilled artisan. The bakery unit currently generates an approximate monthly turnover of ₹1.3 lakh, from which members' wages are paid.

In the dairy sector, she reported doubling of daily milk collection (80 litres to nearly 150 litres) although fluctuations occur due to migration. There was however declining number of indigenous Badri cows, as farmers shifted toward Jersey breeds. Continued focus on health, education, and livelihood generation was emphasized as essential to reducing distress migration and strengthening the local rural economy.

Ms. Preeti Pant,
Farmer,
Joshimath,
Uttarakhand

Mrs. Preeti Pant, a smallholder farmer from Tapovan village shared her insights of having benefitted from Himmotthan Society's Livelihood Development Programme highlighting her journey after joining a Producer Group in 2022 after which training and technical guidance enabled her to adopt improved agricultural practices. She was selected for High-Density Apple Orchard Programme (2023–24), receiving 100 quality apple saplings, a drip irrigation system, a trellis system, and continuous technical support, and the orchard now provides her with sustainable income. She serves as an inspiring example of how capacity building, modern technologies, and institutional support can empower smallholder farmers, particularly women, to achieve economic self-reliance.

Ms. Pant shared her experience of livelihood recovery and diversification following the disaster that affected the region in 2021 which disrupted local farming activities and livelihoods. In 2022, Himmotthan's initiative to introduce and promote alternative livelihood options, including apple horticulture, butter production, and mushroom cultivation supported the community to overcome the loss. She conveyed appreciation for the support and opportunities provided, noting that these interventions have helped her move forward toward improved livelihood security.



Mrs. Manju Dungriyal, Farmer from Niti Valley, Uttarakhand

Mrs. Manju Dungriyal is a resident of Kailashpur village in the Niti Valley of Chamoli district, Uttarakhand. As a member of the Bhotiya community, she follows the traditional seasonal migration system, residing in Kailashpur for nearly six months during the summer to carry out agricultural activities and moving to Birahi in Chamoli during the winter. She has been engaged in farming for many years and is well known for her dedication to preserving the traditional agricultural practices of the valley. She cultivates indigenous crops such as naked barley (uwa), buckwheat (phaphar), rajma, and seasonal vegetables, while also working with locally available products, including medicinal herbs (jadi-buti). Her knowledge of local crops, wild plants, and traditional farming practices has been passed down through generations and continues to support her family's livelihood.

Despite the challenges of farming in a high-altitude Himalayan region, including a short growing season, erratic weather, and crop losses caused by wild animals, Mrs. Dungriyal remains committed to agriculture. She actively participates in community-led initiatives promoting the conservation of traditional seeds, climate-resilient farming, and sustainable use of local biodiversity. Her experience reflects the resilience of mountain farming communities and highlights the importance of conserving indigenous crops and traditional knowledge for future generations.

**Mrs. Damiyanti Devi,
Farmer and Field
Assistant, Niti
Valley, Uttarakhand**

Mrs. Damiyanti Devi is a resident of Tapovan village, near Joshimath in Chamoli district, Uttarakhand working as Field Assistant with the Himmotthan Society, where she actively supports local communities in promoting sustainable agriculture and livelihood development. Here regular interactions with the community has helped develop a strong understanding of traditional farming systems, local agricultural practices, and indigenous products of the Himalayan region, and she is a trusted resource person in implementing community-based development initiatives.

Mrs. Devi shared her journey of earning through the indigenous Badri cow through butter production which emerged as a practical and sustainable livelihood option for the remote village. She explained that the Badri breed holds significant cultural and economic value in the region, as its milk and traditional dairy products are widely regarded for their purity and quality. Since the past 3 years, the initiative provides her income and also fulfils milk requirement for the household. Reflecting on the programme, she appreciated the efforts of the supporting agency in creating livelihood opportunities for rural women, pointing out that it had expanded to involve more than 100 women in the village.

The president of a self-help group further shared about the journey of empowerment and how women had understood the value of collective action after receiving skill-based trainings in multiple sectors and through formation of Producer Groups. Market access had significantly improved by reducing dependence on middlemen and higher incomes. She highlighted her transition from financial dependence to self-reliance and noted that she is now able to support her children's education. She expressed deep gratitude to the government and supporting institutions for enabling this socio-economic transformation

**Mr. Ganesh Chettri,
Farmer, Sikkim**

Mr. Chettri shared that he is a fifth-generation farmer from Sikkim with a long family tradition in agriculture, particularly in large cardamom cultivation, along with ginger, potato, and subsistence vegetable farming. He mentioned that the family practiced diversified farming across different altitudes, growing vegetables and rice according to elevation zones. With the decline in productivity of the primary cash crop, an improved variety (locally known as "Heemer") was introduced at mid-altitudes.

He also mentioned that diversifying to community based tourism centered around homestays was a key strategy to cope with loss of income from agriculture, and it had now expanded to around 40 households in the village. He emphasized the need for government support through fair pricing, proper marketing, and promotion of local products. With appropriate policy backing and market linkages, the farmer believes that traditional agriculture in the region can be sustainably revived and strengthened.

Discussion points

- Agriculture in hill regions is currently perceived as unprofitable, leading to declining youth participation, and there is a need to transform farming into an “aspirational” livelihood that offers dignity, recognition, and economic viability.
- For increasing youth engagement in farming sector, pilot programmes for selected youth could be launched which would provide financial support and technical support for initial one to two years to establish integrated farming units.

Conclusion by Dr. Vinod Bhatt

Dr. Bhatt appreciated the effective conduct of the session and noted that a detailed summary would be provided in the subsequent session. He highlighted that, traditionally, farming functioned through strong community systems in which most households kept dogs to protect crops from wild animals, and villages assigned individuals daily responsibility for field guarding.

He observed that the gradual breakdown of this community-based system has contributed to the current increase in human–wildlife conflict. Additionally, he pointed out that relocated monkeys, now habituated to human settlements rather than forests, have further aggravated crop damage in villages.

The session ended with expressions of thanks and renewed commitment to take forward the outcomes of the meeting.

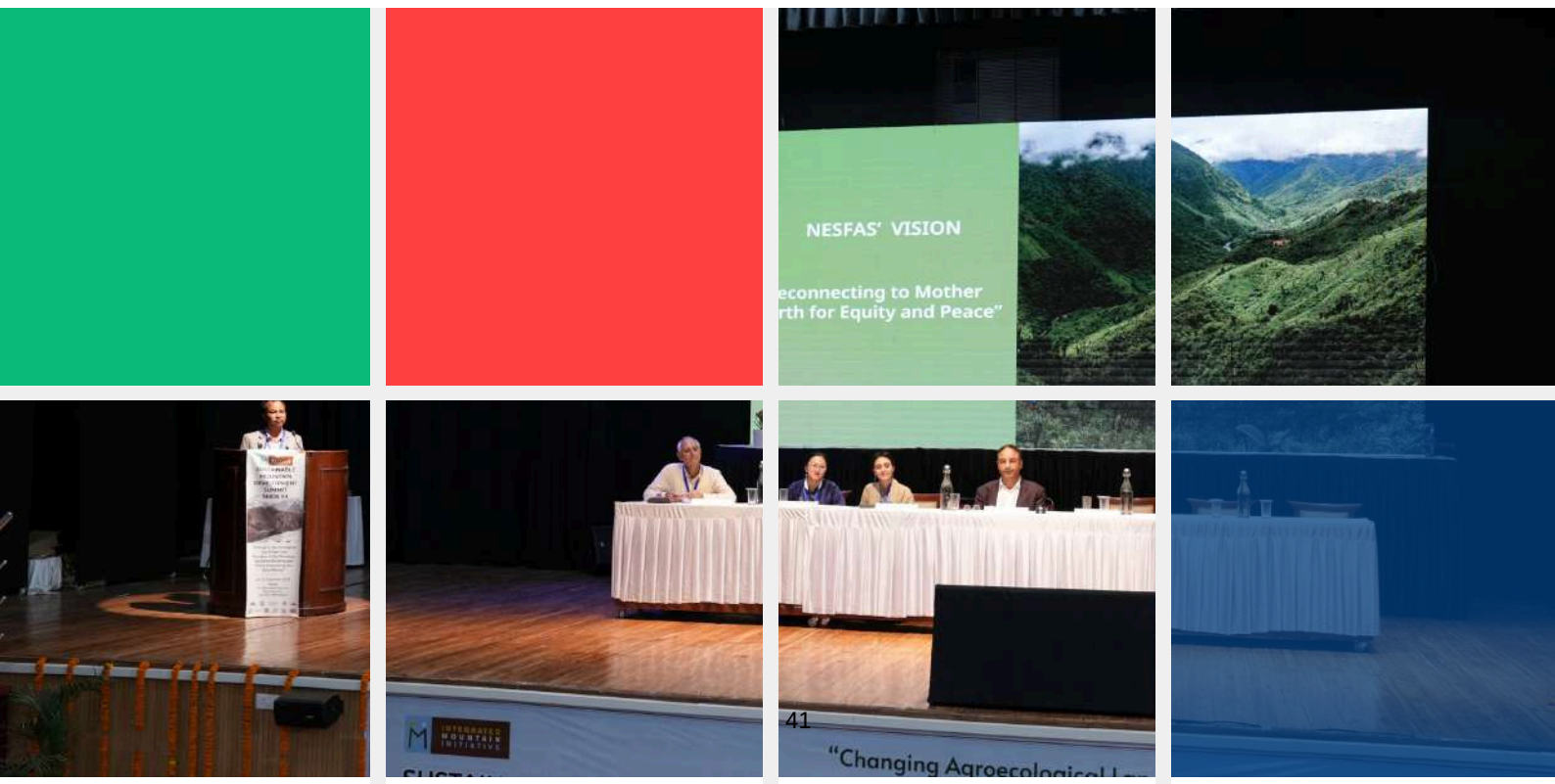




Session IV

Biodiversity and Agro ecology in Himalaya; Changing Patterns in Livelihood and Food and Nutrition Security

Thematic Lead: Dr. Rajan Kotru, Governing Council Member, IMI





**Dr. Rajan Kotru,
Governing Council
IMI**

Introduction and context Setting

The session was introduced by Dr. Rajan Kotru, Governing Council Member, IMI. He highlighted the significance of agrobiodiversity. He emphasized the critical role of agrobiodiversity in sustaining mountain livelihoods, ensuring food and nutrition security, and enhancing resilience to climate change in the Himalayan region.

Introduction to SKUAST, Jammu

Prof. Nazir presented an overview of the Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu (SKUAST-Kashmir), highlighting its significant role in advancing agricultural education, research, and extension services in the Union Territory of Jammu & Kashmir since 1982.

He mentioned that the university offers a wide range of academic programmes in agriculture, horticulture, veterinary sciences, dairy technology, agricultural engineering and fisheries, while also undertaking research on climate-resilient agriculture, crop improvement, natural resource management and livestock development.

Prof. Nazir emphasized the university's commitment to translating scientific research into practical solutions for farming communities. Through its network of Krishi Vigyan Kendras (KVKs), research stations, and extension programmes, SKUAST-Kashmir facilitates the dissemination of innovative technologies and knowledge to farmers, thereby contributing to agricultural development, livelihood enhancement and food security across Kashmir and the broader Himalayan region.

Recognizing the importance of continued collaboration and knowledge exchange among mountain stakeholders, Prof. Nazir also expressed SKUAST-Kashmir's willingness to host the next Sustainable Mountain Development Summit (SMDS), reaffirming the university's commitment to supporting dialogue and action on sustainable development in mountain regions.



**Prof. (Dr) Nazir Ah. Ganai,
VC, SKUAST,
Kashmir**



Dr. Bandana Shakya,
Lead,
ICIMOD

Agroecological pathways for climate resilient economies in the Himalaya

Dr. Bandana Shakya emphasized that Himalayan rural economies are under increasing stress due to youth migration, declining farm profitability, degraded agroecosystems, and climate change impacts. Conventional agriculture models based on monoculture and chemical inputs are failing to provide dignified and sustainable livelihoods, particularly for young people.

She proposed agroecology and Nature-based Solutions (NbS) as a transformative pathway for building climate-resilient mountain economies. The approach focuses on restoring agrobiodiversity, strengthening ecosystem services, and creating green enterprise opportunities for youth and women.

Key opportunities identified include ecotourism, agro-processing, seed and nursery enterprises, eco-restoration services, and farm-to-fork value chains. The presentation highlighted ICIMOD's efforts in mentorship, incubation, and bio-based product development in Nepal and Bhutan as promising models.

To scale impact, she suggested monetizing ecosystem services, promoting green business strategies, and reorienting policies and subsidies toward agroecological practices. The conclusion stressed that with targeted institutional support and market development, agroecology can revitalize Himalayan agriculture, generate dignified rural employment, and strengthen climate resilience.

Agro-Ecology Resilience for Climate Change on Agriculture of Changthang in Cold Arid Desert Ladakh



Dr. Jigmet Yangchen,
Chief Scientist,
School of Agriculture
Science and Technology
University, Ladakh

Dr. Jigmet Yangchen, Professor and Chief Scientist at the School of Agricultural Science and Technology, University of Ladakh, shared her presentation on unique agro-ecological approaches in the fragile cold desert ecosystem of Ladakh. Her work focuses on developing sustainable, climate-resilient, and community-centered agricultural systems that integrate scientific innovation with traditional knowledge.

Recognizing the unique challenges faced by Ladakh, including extreme temperatures, water scarcity, soil degradation, and the impacts of climate change, Dr. Yangchen has promoted agro-ecological farming systems such as agro-horticulture and agro-pastoralism. Her interventions have demonstrated how sustainable agriculture can improve livelihoods while conserving natural resources.

One of her notable contributions is the promotion of vermicomposting under extreme cold-arid conditions through innovative techniques adapted to temperatures as low as -30°C , that improved organic waste decomposition and soil fertility, reducing dependence on chemical inputs while enhancing farm productivity. Dr. Yangchen has also championed natural farming practices, training hundreds of farmers across Ladakh in low-cost, environmentally friendly agricultural methods which has improved soil health, water retention, and farm resilience while reducing production costs. Sustainable water management, restoration of traditional water harvesting systems such as the *Zing*, development of artificial glaciers, and promotion of solar-powered irrigation and micro-irrigation technologies are other components of her work. These efforts have improved water availability for agriculture in one of India's most water-stressed mountain regions transforming barren and marginal lands into productive agricultural areas, while also strengthening nutritional security and income opportunities for rural communities.

Dr. Yangchen's work continues to demonstrate how agro-ecology can provide practical solutions to the environmental and livelihood challenges of high-altitude mountain regions. Her work serves as an important model for sustainable development in the Himalayas, illustrating the potential of combining ecological stewardship, local knowledge, and technological innovation for resilient mountain agriculture.

Agroecology Resilience for Climate Change in the Mountains: Lessons from Meghalaya, North East India



**Dr. Kitboklang Nongrum,
Sr. Consultant - Ecology &
Research at NESFAS**

Dr. Kitboklang Nongrum presented the role of agroecology and Indigenous Peoples' Food Systems (IPFS) in strengthening climate resilience in Meghalaya, part of the Indo-Myanmar Biodiversity Hotspot. NESFAS collaborates with 590 indigenous communities to revive and promote traditional food systems that support biodiversity conservation, sustainable livelihoods, and climate adaptation.

Indigenous food systems in Meghalaya are diverse and integrated, including wet rice cultivation, shifting cultivation, home gardens with livestock, orchards, forest gardens, and wetland-based systems. These practices, developed through traditional knowledge, ensure sustainable resource use, ecological balance, and food and nutritional security.

Assessment using FAO's Tool for Agroecology Performance Evaluation (TAPE) showed moderate-to-high performance of these systems. Key strengths include high crop diversity, strong traditional knowledge, active community participation in resource governance, women's involvement, and efficient ecological practices. These characteristics make indigenous agroecological systems sustainable and resilient. Guided by principles such as respect for nature, self-reliance, collective governance, integration of traditional and modern knowledge, these systems contribute to year-round food security, biodiversity conservation, sustainable livelihoods, climate resilience, and preservation of cultural values.

The presentation emphasized that agroecology offers a practical and scalable solution for climate-resilient mountain development. Strengthening and scaling Indigenous Peoples' Food Systems through partnerships among communities, institutions, and governments can significantly enhance climate adaptation, food security, and sustainable development in mountain regions.



Session V:

Climate Change Adaptation & Resilience: Good Practices in the Himalayan States

Thematic Lead: Dr. GS Rawat, Governing Council Member, IMI





Dr. GS Rawat
Governing Council
IMI

Introduction and Context Setting

Dr. GS Rawat, Governing Council, IMI opened the session by welcoming participants and explaining that the objective is to share and discuss good practices from different Indian Himalayan states.

A distinguished panel were invited to share their experiences. Referring to the inaugural session, the speaker noted that future planning especially around climate action had been strongly emphasized further adding that Himalayan states are currently preparing or reviewing their State Action Plans on Climate Change which provided the opportunity for inclusion of emerging issues and challenges.

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Dr. SP Subudhi,
Chairperson, Biodiversity
Board, Uttarakhand

Dr. Subudhi emphasized the need to move beyond conventional approaches and adopt local, nature-based solutions tailored specifically to Uttarakhand, rather than copying models from other states like Himachal Pradesh, which faces its own climate resilience challenges. International examples such as Switzerland show that scientific planning and risk analysis in infrastructure development can prevent disasters like landslides—something often lacking in Uttarakhand. He also questioned the procedure that granted work to lowest-bidder which would result in compromised environmental safeguards.

Further he added on the issues of forest management particularly the historical prioritization of chir pine, which led to increased forest fires and poor regeneration. While new plantations had been stopped for over two decades, pine continued to spread naturally into oak and sal forest areas, stressing on the need for targeted interventions to restrict pine to its natural zones and prevent encroachment into other forest types.

He called for scientifically planned, locally adaptable, community-friendly interventions and integrated natural resource management as key strategies for climate resilience and sustainable development in Uttarakhand.



Ms. Neena Grewal
PCCF
Uttarakhand

Ms. Neena Grewal spoke on positive impacts of adopting a watershed approach which was proved as a highly effective strategy for building climate resilience, particularly in mountain states where rural livelihoods depend heavily on agriculture. Treating the watershed as a single planning unit and adopting sustainable natural resource management of the approach strengthened local climate resilience and adaptation capacity, with impacts that are measurable and well demonstrated across India, she reiterated. There was a strong scientific basis for area selection and comprehensive planning and continuous, meaningful community involvement, and the following points were outlined -

- The approach emphasizes raising community awareness about climate change and natural resource management,
- Local people are engaged planning and decision-making with the recognition that communities best understand their own needs.
- Funds directly provided to communities with government departments to serve as technical facilitators which leads to better, more sustainable outcomes.
- Overall, the watershed approach combines science and community ownership to deliver long-term environmental and livelihood benefits.

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Mr. Takpa reflected on the August 2010 cloudburst disaster in Ladakh, during which over 234 people died and hundreds were injured, and shared lessons on disaster management, mitigation, and climate adaptation based on firsthand experience as Relief Commissioner. He highlighted the exceptional nature of community participation for disaster response through swift coordination among the administration, armed forces and local communities, with relief camps set up within a day and full restoration of roads, bridges, telecommunications, hospitals and buildings with interventions completed within two months.

He mentioned that post-disaster, Ladakh's approach of extensive micro-level planning at the village level, focusing on resource management, challenges and sustainable development led to quick outcomes for climate adaptation. Renewable energy, especially solar power along with hydropower, wind energy, green transport (including electric and hydrogen buses), and energy efficiency measures have further strengthened Ladakh's move toward carbon neutrality which were also showcased at the Paris Climate Conference (COP) as a global best-practice model. Complementary efforts such as mass plantation drives, eco-tourism (including snow leopard tourism), handicrafts, women-led self-help groups and sustainable tourism have enhanced livelihoods and resilience.



**Mr. Jigmet Takpa, VP, IMI
and President (SDFL)**



**There is a need a
comprehensive Himalayan
policy framework to
promote sustainable,
resilient, and prosperous
development across the
entire Himalayan region.**



Dr. Rajan Kotru,
Governing Council,
IMI

Dr. Kotru argued that “best practices” are temporary unless they are consistently followed up and their learning institutionalized; without continued care, they tend to fade over time. Dr. Kotru described a pioneering initiative of Palampur that addressed water security and forest degradation through upstream–downstream collaboration with the municipal committee paying the panchayat for environmental services under a 20-year micro-plan focused on forest protection, fire control, and regeneration. Administrative changes later disrupted continuity, highlighting the fragility of such initiatives.

Another intervention highlighted was resolution of decades of legacy solid waste dumped near a river sub-basin through collaboration with municipal bodies, youth groups, and other institutions, in which waste was collected, segregated, bio-remediated and large quantities of old plastic were processed and co-processed in cement plants.

The speaker emphasized three key principles for sustainable impact: Collaboration (working with government and other NGOs rather than in isolation), accumulation of efforts, and consistency. Best practices must generate learning that feeds into policy and this approach helped influence Himachal Pradesh’s long-term vision document, incorporating ideas such as payment for ecosystem services, eco-zoning, transparent muck management plans for infrastructure projects, and accountability for hotels and road builders.

Dr. Pradeep Mehta highlighted vulnerabilities of the Himalayan communities though their traditional livelihoods especially agroforestry-based agriculture were inherently sustainable and evolved over centuries. Rapid changes in the past few decades, made without fully understanding their consequences, have weakened these systems and led to increase of climate-related disasters across the region.

Traditional agricultural resilience was built on diversity, which are now being rediscovered as “superfoods” and this indigenous knowledge requires documentation, grassroots-level research and revival. He further also noted gaps between official agricultural data and ground realities.

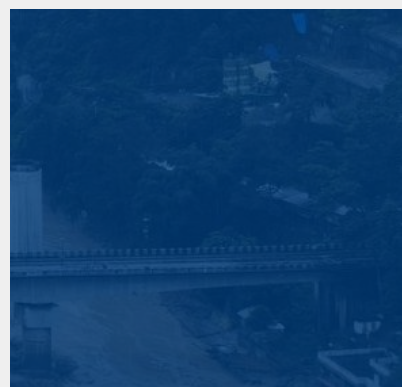
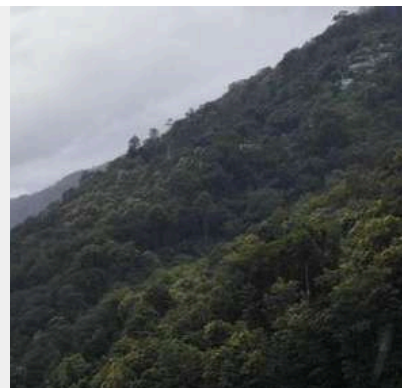
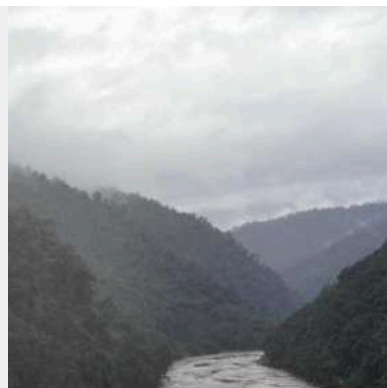
He advocated for supporting integrated farming systems with clear guidance, value addition, branding and premium pricing for traditional crops, as seen in initiatives like “House of Himalayas.” Overall, the speaker called for renewed focus on indigenous knowledge, local research and traditional practices to strengthen climate resilience in the Himalaya.

Dr. Pradeep Mehta,
Program Manager,
UNDP

Session VI:

Beleaguered Waters of Himalayas: Blessings and a curse

Thematic Lead: Dr. Vipin Kumar, HOD Geology,
Doon University, Dehradun



Introduction and Context Setting



**Dr. Vipin Kumar, HOD
Geology,
Doon University,
Dehradun**

Introducing the session, Dr. Kumar elaborated on the Himalayan region and its profound ecological tension, where the water resources provide essential sustenance through its perennial rivers, holds immense hydropower potential for regional economies, and anchors a sacred cultural landscape that draws millions of pilgrims and tourists. The same landscape, he mentioned, is increasingly beleaguered by a "water scarcity threat" amidst plenty, driven by climate instability and ecological degradation, further manifested in the rising frequency of natural disasters, where the very rivers that provide life become agents of destruction during extreme hydrometeorological events.

He connected the aggressive pursuit of development to the escalating risk of disaster, with states like Uttarakhand witnessing a massive transformation in road infrastructure that had also significantly increased geological hazards. Rapid infrastructure projects often destabilize fragile slopes, leading to landslides and increase vulnerability during other calamities such as flash floods.



He emphasized a transition toward sustainable development that prioritizes geological stability and climate-resilient planning that involves integrating early warning systems with traditional knowledge, ensuring that infrastructure expansion does not come at the cost of the region's long-term environmental and social security.

Weather Hazards, Climate Change, and Disaster Risk Reduction in the Himalayas



**Dr. Anand Sharma,
President, Indian
Meteorological Society,
New Delhi**

Dr. Anand Sharma highlighted that the Himalayan regions suffered repeated losses due to extreme rainfall and disasters and there was urgent need for greater caution and preparedness. He explained that damage was not caused only by cloudbursts but even moderate high-intensity rainfall over short durations were known to trigger landslides, floods, and infrastructure collapse, as evidenced by past events in Sikkim and Uttarakhand.

He distinguished between predictable large-scale weather systems such as those involving western disturbances and low-pressure systems and isolated cloudburst events, which are highly localized and difficult to predict due to their short life span and small spatial scale. While modern tools like satellites, radars, and weather models enable detection and monitoring, the available warning time for localized cloudbursts is often limited to 10–15 minutes.

He highlighted the importance of effective early warning systems, which must consist of four integrated components - Risk analysis and dynamic risk mapping, Weather monitoring and prediction, Reliable all-weather communication systems, an timely action and response. Failures in any one of these components would render early warnings ineffective, as seen in past disasters, highlighting communication as a critical challenge.

He advocated for mandatory disaster warning scrolls on television channels, the use of WhatsApp groups, and widespread promotion of community radio, including hand-cranked radios that function without electricity or batteries, especially in rural and mountainous areas. He further stressed on dam management citing that improper water release during heavy rainfall worsened disasters in multiple regions. He further called on the need for strong statistical evidence to distinguish climate change impacts from natural variability.

In conclusion, he asserted that solutions exist for improved forecasting, through artificial intelligence, and coordinated institutional action, and early warnings need translation into timely action to prevent disasters. This would allow for redirection of relief resources toward sustainable development and economic growth.

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Presentation from Dept of Earth Sciences, IIT - Roorkee



Dr. Pradeep Srivastava,
HoD, Dept. of Earth
Science, IIT Roorkee

Dr. Srivastava explained the study of sedimentary deposits to reconstruct past flood magnitudes and human activity, elaborating how ancient mega floods shaped Himalayan landscapes long before human interventions. The study uses luminescence and other techniques to infer flood strength, frequency, and river behaviour, particularly at river junctions and widened channels, and also the indicate evidence of human presence, such as bones, tools, and hearth remains, allowing reconstruction of how humans adapted to changing landscapes.

The talk contrasted the Indus and Brahmaputra river systems that though both originate near the Tibetan Plateau, their flood magnitudes differ due to large-scale topography and monsoon interactions. The Brahmaputra, was influenced strongly by the Indian Summer Monsoon and glacial lake outburst floods from Tibet, experienced extraordinarily large “mega floods,” with sediment deposits tens of meters thick and hundreds of meters above current river levels. In contrast, the Indus Valley, lying largely in a rain-shadow zone, shows smaller but still significant floods.

A key conclusion made was that continental-scale topography and climate warming control flood magnitude and frequency. Damage-prone zones in the Himalaya are scientifically predictable using geomorphology and geology, these could be identified through expert engagement. He further mentioned the importance of using geological data in planning processes, as reviews on flood disaster show geology is almost completely absent from flood disaster management. The speaker stressed that without incorporating geology and earth-surface processes, flood risks cannot be properly understood, leading to repeated and avoidable disasters. The address concluded with acknowledgement of students, mentors, and collaborators who contributed to the speaker’s understanding of Himalayan geology.

Himalayan Springs



Dr. Vinod Kothari,
Executive Director,
Himnotthan Society

Dr. Kothari's presentation focused on springs, emphasizing their importance as the primary lifeline for water and livelihoods in the Himalayan region, especially for rural communities. He highlighted the serious lack of primary data on springs which led to a collaborative initiative led by a spring-shed consortium with IIT Roorkee to undertake a large-scale spring census in which data were collected during lean seasons covering over 10,000 springs over 2400 villages in Almora and Tehri Garhwal. Around 55 attributes were documented, grouped under location and ownership, water characteristics, infrastructure, environmental context, management, and community dependence.

The key findings of the study were presented as -

- 82–84% of springs were perennial while 16–18% are seasonal or drying and evidence of rapid decline in flows with 47% of drying occurred within the last 5 years.
- 59% reported reduced flow, with 27% springs reported flow reduction of greater than 50% and these were across all land-use types including forests.
- Over 86% of households depend on springs for drinking, irrigation, and daily needs, despite piped water schemes.
- Water quality is threatened as spring recharge zones often overlap with agriculture and settlements, increasing risks from fertilizers, sewage, and waste.
- Abandoned or unploughed agricultural land doubles the likelihood of spring drying, as groundwater recharge decreases.

The conclusion underscored the urgent need for integrated spring-shed management grounded in geological understanding and community-level data to protect water security and rural livelihoods in the Himalaya.

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Towards Sustainable Management of Mountain Water Resources: Adaptation Strategies for the Indian Himalayan Region



Dr. Sobhan Singh Rawat,
Scientist F, National
Institute of Hydrology,
Roorkee

Dr. Rawat's presentation outlined the critical transition of the Indian Himalayan Region (IHR) from a global "Water Tower" to a zone of extreme "Water Stress." It emphasized the urgent need for a paradigm shift from merely managing water as a resource to ensuring the sustainability of its primary sources. He highlighted the crisis of water stress in the "Water Tower" that despite being the origin of the Indus, Ganga, and Brahmaputra basins which support nearly 2 billion people, the Himalayas are under unprecedented hydrological pressure that Indus basin alone dropped by 27.78 BCM (1985–2015) with disappearance of glaciers at a rate 65% faster (2011–2020) than in the previous decade.

He referred to how climate change is altering the composition of Himalayan runoff, leading to increased hazards from runoff where, in sites like Rishikesh, there is a measurable increase in glacial melt and rainfall runoff. He spoke on the current programme for revival of springs with the first spring census of the country, with National Institute of Hydrology (NIH), and that in terms of policy, source sustainability was now a mandatory component of the Jal Jeevan Mission (JJM) under WDC-PMKSY 2.0.

Composite Water Management Index (CWMI) data revealed trends of low-performing states representing 48% of India's population and 40% of its agricultural produce, which underscores that for achieving the Sustainable Development Goals (SDGs) in the mountains, spring health and vulnerability had to be looked at. Concluding with a roadmap for building resilience by 2035 are the following points -

- Comprehensive mapping of water resources to identify at-risk and vulnerable zones.
- Prioritizing "green" infrastructure over traditional "grey" engineering to regenerate natural aquifers.
- Implementing Early Warning Systems (EWS), low-cost purification, and Remote Sensing (RS/GIS) for real-time monitoring.
- Ensuring that road and infrastructure expansion does not compromise existing water sources.

From Himalayan Springs to Downstream Taps:

An Integrated Water Resources Management (IWRM) Framework for Sustainable Water Resource Management in Bhagirathi Basin

The presentation delivered by Mr. Bhaisora of SDC provided an overview of SDC's mandate, areas of operation in India, and its key interventions in the Indian Himalayan Region, with a particular focus on climate adaptation, disaster risk reduction, and integrated water resource management.

The SCA Himalaya Programme (Strengthening Climate Adaptation in the Himalayas) supports science-based interventions to strengthen climate adaptation and resilience, particularly in water and disaster risk management sectors in Uttarakhand, Himachal Pradesh, Sikkim, and Manipur. Key interventions include stream and river management, glacial studies and policy-oriented research. In Sikkim, SDC supports a Glacial Lake Outburst Flood (GLOF) at South Lhonak Lake. In Uttarakhand, efforts include landslide early warning policy briefs and rock-ice avalanche modeling based on the 2021 Chamoli event.



**Mr. Bhupendra Bhaisora,
Technical Expert - Swiss
Agency for Development
and Cooperation (SDC)**

SDC undertook the development of an Integrated Water Resource Management Plan for the Bhagirathi River Basin that promotes equitable social and economic benefits while ensuring environmental sustainability, in line with the Central Water Commission's framework. Advanced climate and hydrological models, including the SPHY model for glacio-hydrological analysis were used including analysis of a 30-year global climate data from 1990 to 2020 validated with ground-level data. Findings indicated nearly 64 percent of rainfall occurs during the monsoon season, and the basin has experienced a temperature rise of approximately 0.17°C per year. The study emphasized the importance of downscaling climate data to micro-watershed and block levels. Localized hazard, vulnerability, and risk assessment maps are essential for effective disaster risk reduction, climate-resilient agriculture, and infrastructure planning.

Mountain Legislators' Meet

Ever increasing disasters in the Indian Himalayan Region: What must states do differently?

Moderator: Mr. PD Rai, Former President- IMI & Former MP - Lok Sabha (Sikkim)
supported by Mr. Anoop Nautiyal, Member -SDFU

Session Chair: Mrs. Ritu Khanduri Bhushan,
Hon'ble Speaker, Uttarakhand State Assembly

Guest of Honour: Mr. Trivendra Singh Rawat,
Hon'ble MP - Lok Sabha (Uttarakhand)



The Mountain Legislators' Meet (MLM) is a key side event that is organised during the Sustainable Mountain Development Summits that bring together the legislators, policy makers and others to deliberate on pertinent issues that are aligned with the theme SMDS.

The Mountain Legislators' Meet 2025 was organised with the theme of "Ever increasing disasters in the India Himalayan Region: What states must do differently in response". The MLM was chaired by Speaker of the Assembly of Uttarakhand State Government, Ms. Ritu Khanduri Bhushan and moderated by Mr. PD Rai, Former President, IMI and Former MP - Lok Sabha- Sikkim)

Opening address from moderators

In his opening address, Mr. Rai stressed the importance of the title of the MLM "Ever increasing disasters in the Indian Himalayan Region: What the states must do differently?" with examples of growing disasters across the Himalaya. He highlighted the multiplicity of factors that have resulted in us experiencing increasing disasters in the Himalaya and the need to really think deeply as to why this is happening and what we must do differently to respond to this crisis.

He shared the immense responsibility and possibility of the representatives at the MLM to really chart pathways that the IHR requires urgently at the landscape level.



Mr. Anoop Nautiyal, SDFU presented an eight-point agenda for policy-making tailored to Himalayan states that addresses the issue of increasing disaster in the mountains and requested the elected representatives discussions commensurate with the gravity of the issue. Mr Nautiyal highlighted the need to rethink the development model; state-wide project reviews with disaster as a thematic;

- A National Indian Himalayan Region framework for development interventions;
- Early preparation for the 2026 monsoon;
- Stop using climate change as an excuse for the disasters;
- Engage in genuine DPR, SIA, and EIA processes;
- Address over-tourism and retreating glaciers;
- Strengthening functional early warning systems and
- Ensuring the humanitarian angle for deliberation by the members on the theme of the MLM.

Inputs from Experts



Dr. Durgesh Pant
Director General
UCOST

Dr. Pant highlighted the use of space technology in disaster resilience and Himalayan development referring to an earlier meeting focused on identifying the space-technology requirements including the use of Synthetic Aperture Radar (SAR) to enable monitoring during cloudy and monsoon conditions.

He highlighted the valuable knowledge of communities and that traditional and local knowledge must be integrated with modern science and technology. The need for shifting disaster management from a post-disaster relief-oriented approach to prevention, preparedness and resilience-building through science and technology by building a culture of preparedness with youth and border communities. District-level Science and Innovation Centres can help connect scientific knowledge, technology, local communities and disaster-risk reduction.

The importance of science, technology and innovation policies was highlighted, particularly policies that promote data sharing, research collaboration and dissemination of scientific knowledge to the public.

Speaking on migration, he mentioned that sustainable livelihoods options needed to be explored for retaining people in mountain areas with opportunities around renewable energy, agriculture, environmental conservation, tourism, innovation and green enterprises. Carbon-credit mechanisms needed to be understandable and accessible to rural and mountain communities so that environmental conservation can also generate livelihood benefits.

He referred to successful initiatives such as Ladakh's renewable-energy models and Sikkim's spring-rejuvenation programmes as lessons for replication across the Himalayan region, also highlighting the importance of documenting and sharing, including the response to the Silkyara tunnel incident in Uttarakhand, as an example of technology, coordination and preparedness.

He concluded that greater institutional collaboration is required among governments, scientists, universities, civil society organisations and communities so that research and innovations are translated into action.



**Dr. Ravi Chopra,
Environmentalist**

Dr. Ravi Chopra provided an overview of climate change contextualising it to the Himalayas which is reflected through rising temperatures, changing precipitation patterns, increasing frequency and intensity of extreme events, drying of streams, changes in crop productivity, etc. He stressed that the Himalaya while visually looking massive and strong is fragile with continual seismic activities and landslides. He presented the multi hazards faced by Himalaya stating that the attention the issue deserves is neither sufficient nor truly effective, and disasters would continue to rise.

He drew attention to middle elevations, where small streams and rivulets are drying up documented by a study of NITI Aayog in 2018 that around 5,000 water sources in the Himalayan region have either dried up or are on the verge of drying up. He stressed the need for urgent action and investment in climate adaptations across the IHR.

He mentioned that tourism is concentrated in fragile destinations, which increases disaster exposure necessitating planning for alternative routes, evacuation corridors and carrying capacity. Speaking on early warning systems, he highlighted the need to strengthen them across the Himalayas, and not depend exclusively on sophisticated technology. Other potential indicators include changes in river flow and water levels, ground movement, tilting of trees, and local observations of unusual weather conditions.

Key points from Dr. Chopra's presentation are summed up as-

- Shift focus from glaciers alone to downstream valleys and communities for disaster preparedness.
- Adopt mountain-specific standards for roads and infrastructure based on the geological stability, slope, carrying capacity and ecological sensitivity.
- Environmental regeneration and employment generation should go hand in hand - Moving towards a green economy and create more jobs that are regenerative and protection focused.
- Assess the carrying capacity of Himalayan towns and tourist destinations.
- Develop alternative evacuation and access routes in high-risk tourist areas.
- Strengthen climate-resilient agriculture and local livelihoods.
- Rethink development in the mountains which was not a replication of the plains model.
- Revise State Action Plans on Climate Change integrating updated information, traditional knowledge and engaging community who are impacted most to become living frameworks for implementation.



**Community-based
monitoring should
complement scientific
early-warning
systems.**

Following the expert presentations, elected representatives from across the IHR deliberated on the theme of the MLM.

Address by Chief Guest and Session Chair



Chief Guest, Member of Parliament and former Chief Minister Mr. Trivendra Singh Rawat stated that development in the Himalayas cannot be measured merely in terms of roads and buildings. “True development must link conservation of natural resources with the livelihoods of local communities. Ongoing efforts in this direction must be accelerated,” he said.



Addressing the gathering, Speaker Ms. Ritu Khanduri said, “The Himalaya is an extremely sensitive region where life requires resilience. We must frame policies that ensure active participation of local communities. Only by integrating science with traditional knowledge can we secure a prosperous future for the Himalayas and the generations to come.” She further emphasized the need for a coordinated approach to Himalayan research, innovations, and policy-making across all Himalayan states that build resilience especially against disasters building on traditional knowledge.

Mr. Tuki stated that the mountains are generous but also vulnerable, and what happens in the mountains should concern everyone as the Himalaya support vast populations of people downstream. He further stressed that Himalaya being the youngest mountains, were more impacted from unsustainable practices. He referred also to the spread of processed foods that was impacting farming and farming communities.



Ms. Anuradha Rana pointed out the shrinking availability of safe land for housing amid rising population density and suggested policy interventions to identify secure settlement areas.

Mr. Kishore Upadhyay called for synergy between scientists, policymakers, and community participation in policy-making for the Himalayas.



Mr. Wangpang Konyak emphasized that local communities have the deepest understanding of the Himalayas and that their traditional knowledge must be integrated into modern lifestyles. Speaking on Nagaland's recurring blocked road condition due to landslides, questioned the risks involved with improper road construction, and whether the construction companies were following environmental practices. Policy makers and experts must come together for more dialogue so that science could guide policy making processes, he mentioned.



Mr. Brijbhushan Gairola stressed that the outcomes of such summits needed to be simplified for students and the general public.

In his speech, Mr. Munna Singh Chauhan made a reference to the World Disaster Conference organised in Dehradun, which had the key insight that no disaster effort can succeed without fusion of modern science and indigenous knowledge. He further elaborated on how road construction processes and how it could be made more environmentally sustainable.



Mr. Tikender S. Panwar highlighted that the Himalaya have been looked at from a lens of extractive development, which marked the beginning of disasters in the mountains - be it tourism promotion or hydropower. Panwar called for redefining the concepts of development and aspiration.

Ms. Hekani Jakhalu urged collective efforts for Himalayan conservation, adding that construction without scientific validation should not be permitted.



Mountain Legislators Meet (MLM)

The Dehradun Declaration (2025)

September 27, 2025

We, the elected representatives of the States, Union Territories, Autonomous Councils, and Districts of the Indian Himalayan Region, convened at the Mountain Legislators' Meet (MLM) on Saturday, September 27, 2025, as part of the Sustainable Mountain Development Summit - XII - (SMDSXII), in Dehradun, Uttarakhand under the aegis of Integrated Mountain Initiative (IMI).

Having heard the experts and voices of the communities on Disaster and Agroecology at the SMDSXII, we recognize the Himalaya as the world's youngest, most fragile, and transboundary mountain system. We affirm that disasters and ecological challenges in these mountains transcend political boundaries and require coordinated regional responses. The Himalayan rivers, glaciers, forests, and ecosystems sustain nearly two billion people across Asia, and their preservation is a matter of common survival, peace, and prosperity.

We acknowledge with deep sorrow the lives lost, families affected, properties destroyed and economies ruined by recent recurring disasters in the Indian Himalayan Region and extend our solidarity to mountain communities across the wider Himalayan region who face similar vulnerabilities.

We further express grave concern over the compounded threats of climate change, infrastructure development, ecological degradation, and anthropogenic pressures that jeopardize not only the unique geology, cultures, and biodiversity of the Himalaya but also regional stability and security.

In this spirit, we affirm the following commitments and calls to action as part of the Dehradun Declaration:

1. We pledge to define a new, science-based, resilient development model for the Himalaya.
2. We demand establishing a dedicated Cell or Centre for Strategic Environmental Planning and Green Infrastructure for the IHR within NITI Ayog.
3. We call for urgent monitoring of glaciers and action on risks Glacial Lake Outbursts Floods and Glacial Retreats on downstream settlements and hydro projects.
4. We recognise the increasing incidences of climate events in the Himalayan Region. At the same time lack of proper monitoring of environmental norms in developmental projects cannot be overlooked. Therefore we recommend zero tolerance to human negligence on part of implementing agencies.
5. We call on a comprehensive assessment of all river basins for restoration and strategic environmental planning and interventions.

6. We will ensure regular monitoring of environmental benchmarks in the complete lifecycle of a project in a transparent manner with active participation of local community and environmental experts.
7. While we acknowledge the importance of tourism for our mountain communities, we also understand the need to address the tourism impacts and take strong measures to combat over tourism through promotion of responsible and sustainable tourism that respects the carrying capacity of important tourist destinations
8. We commit to proactively strengthen disaster preparedness as the first line of action before disaster relief, advocating for cross-border data sharing, coordinated action on risks, establishing state of the art early warning systems, and community involvement.
9. We pledge to institutionalise quicker relief, rehabilitation, and inclusion of mental health support for disaster-affected families, and encourage cross-border humanitarian collaboration during shared crises, and coordinated disaster response mechanisms to mitigate cascading impacts across the Himalaya.
10. We commit to proactively prepare for the monsoon of 2026 and beyond.
11. We recognise that disasters transcend boundaries, and that coordinated and collaborative transboundary actions are an urgent need of the hour across the mountain states. We hereby resolve to elevate the voices of our mountain communities.

These above measures we believe are essential for sustainable, equitable and climate resilient Himalaya that is vital for achieving the vision of *Viksit Bharat*.

Signed:

1. **Shri Trivendra Singh Rawat**, Hon'ble MP - Lok Sabha and Former Chief Minister, Uttarakhand
1. **Shri Nabam Tuiki**, Former Chief Minister, Arunchal Pradesh
2. **Shri Munna Singh Chauhan**, Hon'ble MLA, Uttarakhand
3. **Sushri Anuradha Rana**, Hon'ble MLA, Himachal Pradesh
4. **Shri Kishore Upadhyay**, Hon'ble MLA, Uttarakhand
5. **Smt Hekani Jakhalu**, Hon'ble MLA, Nagaland
6. **Smt. Savita Kapoor**, Hon'ble MLA, Uttarakhand
7. **Shri Wangpang Konyak**, Hon'ble Advisor and MLA, Nagaland
8. **Shri Brijbhushan Gairola**, Hon'ble MLA, Uttarakhand
9. **Smt Asha Nautiyal**, Hon'ble MLA, Uttarakhand
10. **Shri Tikender S Panwar**, Former Mayor, Himachal Pradesh
11. **Smt Ritu Khanduri**, Hon'ble Speaker, Uttarakhand (Session Chair)
12. **Shri. Prem Das Rai**, Former MP, Lok Sabha - Sikkim
13. **Shri Ramesh Negi**, President- IMI

Other events:

Poster Presentation

Organised by: Sustainable Development Forum of Uttarkhand

Judging Panel:

Dr. GS Rawat, IMI Member and Mr. Amba Jamir - IMI member (Nagaland)



A key event along the sides of SMDS 2025 was a Poster Presentation for researchers and students. The event invited participants to present their work in various fields, which were then displayed at the event for 2 days.

A panel of judges was constituted to grade the posters based on their relevance, content including methodology and scientific contribution, visual display and overall clarity in communicating the key message.



Dr. Smriti Panwar / NMHS Team
Changing Agroecological Landscape
and Disasters in the Himalaya:
Resilience Building and Policy
Imperatives for Viksit Bharat



Anirudh Mishra / Amit Bora
Terrain Destabilization and
Livelihood Transition in the Tehri
Dam Region



Isha Rawat And Ojasvi Bisht

Smart City Program On Green
Spaces - A Case Study Of Dehradun

List of posters presented:

S.N	Presenters Name	Topic
1	Janki kumari	SWOT Analysis of Homestay and Adventure Tourism for Sustainable Development: A case study of Dharchula Block, Pithoragarh
2	Nilambar Singh Basnet	From rainfall to risk: An integrated hydrologic-hydraulic modelling approach in a data-scarce Himalayan city
3	Nidhi Rawat	Urban Heat Island Effect And Land Surface temperature In Dehradun
4	Manisha Panjiyar	Assessing the socio-ecological impacts of recurring floods on human and wildlife in Nagaon, Assam
5	Hiya Mahanta	Kaibartas at Risk: Urbanization and Climate Impacts in Deepor Beel
6	Geetika & Bhupendra	Urbanization and Women Health: Assessing the Health Care Facilities, Nutrition and Lifestyle Disease in Dehradun City
7	Alok Kumar, Ishu, Dr. Abhilasha Kanaujia, Dr. Sonu Kaur	Time Series Analysis of NDVI, NDWI, LST, AND Precipitation in Pithoragarh, Uttarakhand
8	Vishesh Nautiyal, Abhishek Thapliyal, Ashish Thapliyal, and V.P. Uniyal	Bumblebee Biodiversity and Apple Agroecosystems in Uttarkashi: Implications for Himalayan Livelihoods and Food Security

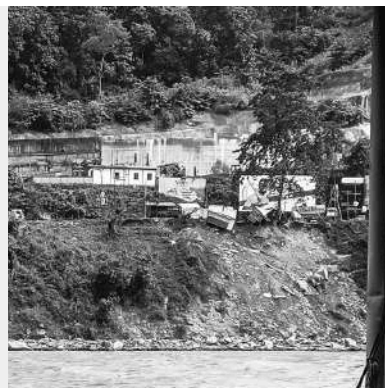
Other events:

Photography Exhibition

Lest We Forget - The Teesta Disaster

Curated by: Darjeeling Himalaya Initiative

Photographs: Mr. Praful Rao and Mr. Praveen Chettri





Mr. Subodh Uniyal, Hon'ble Minister for Forest and Environment at the photo exhibition

“Lest we forget - the Teesta Disaster 2023” a visual narrative of the October 4, 2023 Glacial Lake Outburst Flood, dam breach and the subsequent flooding of Teesta river was part of the SMDS 2025. Curated by Praful Rao and Praveen Chettri from Darjeeling Himalaya Initiative and SaveTheHills, the photo exhibition had been part of the International Mountain Day event in Kalimpong, and also traveled to Sikkim, Darjeeling and New Delhi.

The visual narrative documented in detail the aftermath of the disaster and became part of the Report and recommendations on GLOF affected areas between Chungthang, Dikchu in Sikkim, and the Teesta Low Dam Project III in Kalimpong (West Bengal) by SaveTheHills and Darjeeling Himalaya Initiative.

The complete report and recommendations can be found [here](#):

Valedictory Session



Closing address from IMI



Mr. Sushil Ramola
Former President
IMI

Mr. Ramola highlighted key takeaways from the discussions, emphasizing that a one-size-fits-all approach will not work for the Indian Himalayan Region (IHR). There is a strong need for region-specific policies and greater empowerment of local communities, who are rich in knowledge but often lack adequate resources and decision-making power.

He stressed the importance of integrating science, policy, and practice, aligning environmental concerns with economic and equity considerations, and grounding decisions in data and evidence. Existing development models are no longer suitable; new, reimagined approaches are required, with institutions like IMI playing a facilitative role.

Funding is identified as essential, with green and innovative financing opportunities available if supported by strong ideas and institutional capacity. He also called for rethinking traditional GDP measures by prioritizing green and digital development, leveraging India's strengths in sustainability and technology for mountain states.

To carry the work forward, he proposed forming renewed focus groups that include legislators, scientists, grassroots practitioners, and civil society. The session concludes with optimism, noting that the past two days have produced a strong framework for a sustainable, resilient, and prosperous IHR—one that can contribute meaningfully to India's vision of inclusive development by 2047 through collective responsibility and sustained action.

Closing address from SDFU



Mr. Pankaj Naithani
Directorate of
Economics & Statistics

Mr. Pankaj Naithani, Additional Director, Directorate of Economics and Statistics, Govt of Uttarakhand appreciated the opportunity to participate in SMDS and the learning gained from grassroots practitioners. A key takeaway from the deliberations was a “back to basics” approach combining modern science and technology with traditional knowledge, emphasizing the need to integrate diverse forms of knowledge, communities, and regional experiences across Himalayan states.

He highlighted the need for a dedicated and separate policy framework for the Himalayan region akin to a national-level institution similar to NITI Aayog, focused exclusively on IHR. He highlighted the importance of designing schemes, projects, and programs that are tailored to the specific needs of Himalayan states and local communities, rather than relying on uniform, centrally designed models. Acknowledging existing financial support mechanisms, he stressed the need for greater local application of knowledge and context-sensitive planning, and concluded by endorsing the broader recommendations already outlined in the forum as a collective way forward.



**Dr. Manoj Pant,
Additional CEO
CPPGG**

Dr. Manoj Kumar Pant, Additional Chief Executive Officer, Center for Policy, Practice and Good Governance, Govt. of Uttarakhand appreciated the efforts of IMI and SDFU in organising the SMDS in Uttarakhand and congratulated them for the successful deliberations.

He mentioned that CPPGG was working to assist the state government departments in policy-level support to provide support to state departments and to accelerate the implementation of Sustainable Development Goals (SDGs) in Uttarakhand. He mentioned that CPPGG had been working with IMI for the past few years on these issues.

He highlighted that the Hon'ble Chief Minister of Uttarakhand was committed to the promotion of ecology and economy, and that both needed to move hand in hand, and CPPGG was working with these broad goals. He further stated that the deliberations from the summit and its outcomes would be taken forward by the institute.

Session summaries

Climate adaptation and Good Practices in the Himalayan States

**Presented by
Dr. GS Rawat**

The discussion highlighted several effective community-led and traditional approaches for ecological resilience in the Himalayas. Dr Rawat noted that unlike earlier decades, forests affected by fires now often fail to regenerate naturally due to the spread of invasive alien species, underscoring the need for targeted restoration measures such as biochar and briquetting.

A key best practice presented was community-based forest fire prevention, with the example of Shitla Kates in Uttarakhand, where local communities successfully manage fire prevention with minimal government support offering a replicable model for other Himalayan states. The importance of integrated watershed and spring-shed management was also emphasized, showing that empowering communities to manage water resources and agriculture enhances agroecology and environmental stability.

Further, the session also stressed the value of traditional ecological knowledge, particularly multi-cropping and climate-resilient farming systems practiced by hill farmers, which remain underutilized and need documentation, replication, and institutional support. He recommended that state and district climate adaptation action plans incorporate these participatory, community-driven models.

Finally, a case study from Himachal Pradesh's Vision 2047 illustrated how better local-level planning for infrastructure, land use, and sediment management can significantly reduce future disaster risks.



**Mr. Biju Negi,
Beech Bachao Andolan**

Voices from Grassroot session

Mr. Biju Negi from Beech Bachao Andolan provided key inputs from the Voices from Grassroots session. He highlighted that a key discussion point was around exclusion of grassroots stakeholders in policy dialogue processes. Stronger stakeholder consultations were required and farmers' voices needed to be heard.

He spoke on the issue of human wildlife conflict that was also discussed in the session as one of the key challenges for agroecology, and that it needed larger discussions and acknowledgement.

Mountain Legislators' Meet

**Presented by
Mr. PD Rai**

Mr. Rai reflected on a four-hour marathon session focused on the theme of increasing disasters in the Indian Himalayan Region (IHR) and what states must do differently. Chaired by the Hon'ble Speaker of the Uttarakhand Assembly, the session included distinguished guests such as former chief ministers and legislators from Uttarakhand, Arunachal Pradesh, Nagaland, Himachal Pradesh, with strong representation from Uttarakhand.

A key consensus across speakers was the acknowledgment of rising disasters and the shared understanding that current development and settlement practices must change, particularly avoiding habitation in floodplains. Legislators brought ground-level perspectives, leading to practical and forward-looking discussions.

He emphasized the importance of engaging young legislators, noting that such forums help sensitize future leaders who may later hold key positions of power and influence policy outcomes. Overall, the session was described as highly impactful, with its deliberations consolidated into the Dehradun Declaration, to be formally presented later.



Sharing of Dehradun Declaration

**Presented by
Mr. Ramesh
Negi**

Mr. Negi presented the Dehradun Declaration which was a set of 11 collective commitments aimed at building a sustainable, equitable, and climate-resilient Himalayan region. These included

- Adopting a science-based resilient development model for the Himalayas;
- Establishing a dedicated strategic environmental and green infrastructure centre for the Indian Himalayan Region (IHR)
- Strengthening glacier monitoring and addressing risks such as glacial lake outburst floods;
- Enforcing strict compliance with environmental norms and zero tolerance for negligence;
- Undertaking comprehensive river basin assessments; ensuring transparent, lifecycle-based environmental monitoring with community participation;
- Promoting responsible tourism to curb over-tourism;
- Prioritizing disaster preparedness and early warning systems;
- Institutionalizing faster relief, rehabilitation, and mental health support;
- Preparing proactively for future monsoons, especially 2026 and beyond; and
- Strengthening transboundary and inter-state coordination, recognizing that disasters cross political boundaries.

In the concluding reflections, Mr. Negi noted that saving the Himalayas is a joint responsibility of governments and people, while also acknowledging that current vulnerabilities are the result of collective actions and inaction.

A sense of dissatisfaction with existing planning processes was clear, pointing to the need for more flexible, region-specific planning rather than rigid, centralized models. Mr. Negi also highlighted the critical role of youth, appreciating leaders who emphasized education, awareness, and empowering young voices, underscoring that while Himalayan states may be small, their voices must be louder to be heard.



**Himalayan states are
small, so our voices
have to be louder to be
heard.**

Vote of Thanks

Mr. Roshan Rai

Mr. Roshan Rai delivered the vote of thanks and closing remarks for the 12th Sustainable Mountain Development Summit (SMDS-12). Gratitude was extended to key dignitaries, including the Hon'ble Speaker of Uttarakhand, the State Forest and Environment Minister, and Doon University, particularly its Vice-Chancellor, for hosting and supporting the summit.

Thanks were conveyed to elected representatives, policymakers, panellists, community members, academics, civil society participants, donors, and partners, including state governments, forest departments, international partners, and IMI's extended institutional network.

Special appreciation was given to the IMI team, SDFU members, students of Doon University, rapporteurs, organizers, media team, and volunteers, whose efforts enabled the successful conduct of long and intensive discussions.

The summit was highlighted as one of the longest and most in-depth SMDS events, reflecting the urgency of issues related to disasters, agroecology, and climate impacts in the Himalayan region. Mr. Rai concluded with a hopeful message that the deliberations should lead to meaningful change, honor traditional wisdom, and contribute to a safer, more sustainable future for Himalayan communities and future generations.

The final day of the 12th Sustainable Mountain Development Summit featured three parallel sessions on climate change adaptation, disaster preparedness, and water management. Session leads highlighted critical issues such as strengthening mountain agroecology, addressing the rising frequency of mountain disasters, and the urgent need for region-specific policies.

Experts, policymakers, and scientists from across Himalayan states shared best practices, assessed emerging risks, and recommended actionable strategies. Key recommendations included the establishment of dedicated mountain policy and decision-making bodies at the national level, supported by participatory planning processes and adequate financial allocation. Discussions also emphasized community-driven resilience, risk-sensitive planning, and integrated water resource management as essential approaches for the future.

The summit concluded with the adoption of the "Dehradun Declaration", reaffirming a collective commitment to sustainable and inclusive mountain development. The two-day summit drew around 250 participants, including scientists, policymakers, social workers, students, and farmers from Himalayan states. A special attraction was the exhibition of local products at the venue, which highlighted the cultural and ecological richness of the region.

List of participants

No	Name	Affiliation
1	Mr. Subodh Uniyal	Forest Minister, Govt of Uttarakhand
2	Mr. Ramesh Negi (Retd. IAS)	Integrated Mountain Initiative
2	Mrs Arti Rana	Secretary, MLA Himachal Pradesh
4	Dr. Manoj Kumar Pant	Centre for Public Policy and Good Governance (CPPGG), Government of Uttarakhand
5	Dr. Durgesh Pant	Uttarakhand State Council for Science and Technology
6	Prof. Anil Kumar Gupta	Integrated Centre for Adaptation, Disaster Risk Resilience & Sustainability)
7	Mr. Santosh Singh	Intellectap
8	Mr. Amar Singh Thakur	Himachal Pradesh Forest Ecosystems Climate Proofing Project
9	Mr. Anand Sharma	India Meteorological Department
10	Mr. Aryansh Bisht	Organic Himalya Honey
11	Dr. Pankaj Tewari	Aarohi Foundation
12	Mr. Samiran Naryan	Aarohi Foundation
13	Ms. Apurva Kumar	Rajiv Gandhi Institute for Contemporary Studies, Delhi
14	Ms. Lal Malsawmi	Mizoram Sustainable Development Forum
15	Dr. Lal Singh	Himalayan Agroecological Initiative
16	Mr. Karma Nidup Bhutia	Ecotourism and Conservation Society of Sikkim
17	Prof Yashpal Sundriyal	Doon University
18	Dr. ID Bhatt	Director, G.B. Pant National Institute of Himalayan Environment
19	Dr. Vinod Bhatt	Founder, IRD Foundation
20	Dr. Jigmet Yangchan	Sher-e-Kashmir University of Agricultural Sciences and Technology
21	Mr. Egam Baser	Department of Horticulture, Govt of Arunachal Pradesh
22	Dr. Vipin Kumar	Doon University
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26	Mr. Alok Kumar	Doon University
27	Dr. Kitboklang Nongrum	North East Slow Food and Agrobiodiversity Society
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29	Mr. Amba Jamir	Integrated Mountain Initiative
30	Mr. Utsav Baluni	Doon University
31	Ms. Ananya Pasbala	Doon University
32	Mr. Rajendra Prasad Gurung	Integrated Mountain Initiative
33	Ms. Binita Shah	Integrated Mountain Initiative
34	Mr. Vijay Jhardari	Beech Bachao Andolan
35	Dr. Harish Adhikari	Doon University
36	Mr. Abhishek Kumar Srivastav	Doon University
37	Mr. Padam Singh	Agrinet Foods and Beverages Pvt Ltd
38	Mr. Sanjay Negi	Amar Ujala, Dehradun
39	Mr. Rakesh Kumar	SARG Vikas Samiti
40	Mrs Kamla Devi	Farmer, Niti Valley, Uttarakhand
41	Mrs. Indu Devi	Farmer, Niti Valley, Uttarakhand
42	Mrs. Rukmani Martolia	Farmer, Niti Valley, Uttarakhand
43	Mrs. Yashwanti Rana	Farmer, Niti Valley, Uttarakhand
44	Mrs. Manju Devi Dungriyal	Farmer, Niti Valley, Uttarakhand
45	Mr. Chewang Lepcha	Farmer, Dzongu Valley, Sikkim
46	Mrs. Pemkit Lepcha	Farmer, Dzongu Valley, Sikkim
47	Mr. Ganesh Chettri	Farmer, Dzongu Valley, Sikkim
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49	Ms. Sonam Dorje	Farmer, Spiti Valley, Himachal Pradesh
50	Ms. Tamdin	Farmer, Spiti Valley, Himachal Pradesh

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55	Mr. Kundan Singh Shastri	Farmer, Dehradun
56	Mr. RB Chauhan	Farmer, Dehradun
57	Mr. Arjun Singh	Himachal Pradesh Innovative Farmer
58	Mrs. Roshni Devi	Farmer, Pauri, Uttarakhand
59	Mr. Bhagwan Singh	Farmer, Pauri, Uttarakhand
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64	Mr. Dhanpal Singh Rana	SARG Vikas Samiti
65	Mr. Gireesh Chandra Vashisth	SARG Vikas Samiti
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75	Mr. Anirudh Mishra	Doon University

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93	Ms. Geetika	Doon University
94	Mr. Anil Maikhuri	SIDH, Mussoorie
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96	Mr. Roshan Rai	Integrated Mountain Initiative
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111	Mrs. Shivani Gehlot	Uttarakhand Forest Development Corporation
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165	Mr. Vipin Raithwan	Uttarakhand Forest Development Corporation
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189	Mr. Rakesh Nautiyal	Dehradun
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191	Dr. LM Upreti	Rudraprayag
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198	Mr. K Rai	Dehradun
199	Mr. Abeer Bajimaya Kharki	Dehradun
200	Mrs. Susheela Devi	Pauri Garhwal, Uttarakhand

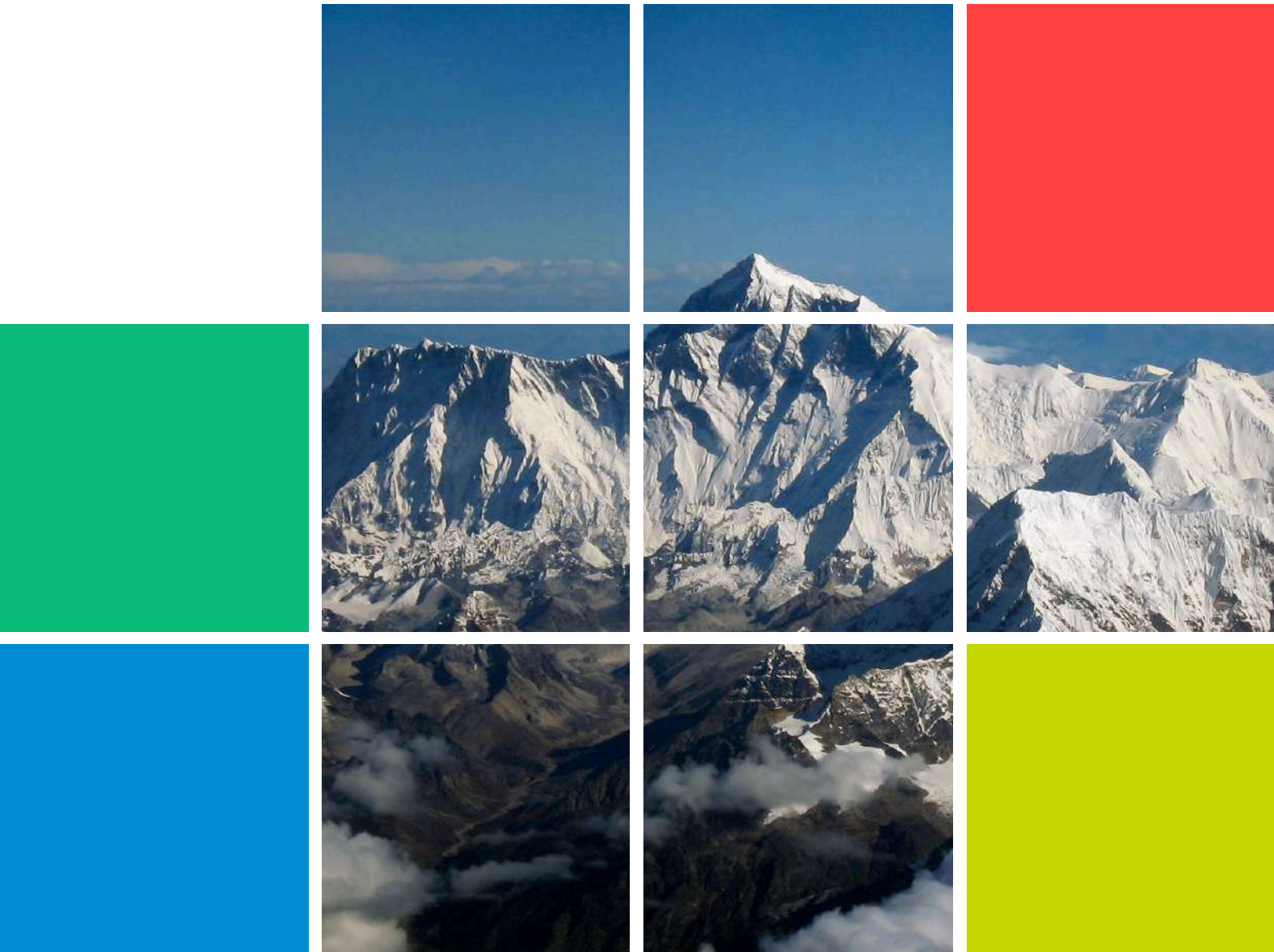
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205	Mr. Sanjay Negi	Amar Ujala, Dehradun
206	Mr. Pratesh Panwar	Documentary Maker
207	Mrs. Megha Prakash	Down to Earth
208	Mr. Rupesh	Documentary Maker
209	Mr. Yogesh Arya	HNN 24*7
210	Mr. Pradeep Bhandari	Samachar UP/UK
211	Mr. Peter John	Samachar UP/UK
212	Mr. Mohd Nasir Mahsuri	DN 24 News Channel
213	Mr. Manoo	Door Darshan
214	Mr. Vikas	DD News
215	Mr. Gaurav Talwar	Times of India
216	Mr. Kunwar Santosh	Raftaar Media
217	Mr. Pitambar Kumar	RVP Times
218	Ms. Bharti Saklani	News 18
219	Mr. Chetan Jasola	ANI Channel
220	Ms. Shaily	ANI Channel
221	Ms. Shivani Azad	Times of India
222	Ms. Shivendra	Press Trust of India
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224	Mrs. Renu Upreti Pant	DD News
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231	Ms. Auni Gurung	IMI Secretariat
232	Mr. Mast Ram Negi	IMI Secretariat
233	Mr. Akshay Kumar Gautam	SARG Vikas Samiti
234	Mr. Basant Upadhyay	SARG Vikas Samiti
235	Mr. Anil Kumar Arya	SARG Vikas Samiti
236	Mr. Tarminder Singh	Photographer Team, The Wedding Container
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239	Mr. Anand Sharma	India Meteorological Department, New Delhi
240	Dr. HC Purohit	Doon University
241	Ms Prerna Raturi	Chitku, Dehradun

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4	Ms. Anuradha Rana	MLA Lahaul and Spiti, Himachal Pradesh
5	Mr. Tikender Panwar	Former Mayor, Shimla, Himachal Pradesh
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15	Mr. Durgeshwar Lal	MLA Purola, Uttarakhand
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