

CONFERENCE
DISASTER RISK REDUCTION
SPECIAL FOCUS ON HIMALAYAN DISASTER RESILIENCE



THURSDAY, 27 MARCH 2025
HOTEL GRAND DRAGON, LEH

ORGANISED BY

16th FINANCE COMMISSION
GOVERNMENT OF INDIA

&

NATIONAL INSTITUTE OF DISASTER MANAGEMENT

MINISTRY OF HOME AFFAIRS GOVERNMENT OF INDIA

IN COLLABORATION WITH

UNIVERSITY OF LADAKH





वित्त आयोग
FINANCE COMMISSION INDIA

SIXTEENTH FINANCE COMMISSION INDIA



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Background

India is increasingly vulnerable to a wide range of disasters, with climate change intensifying the frequency and severity of extreme events. The Himalayan region, in particular, faces unique challenges due to its fragile ecosystem, steep terrain, and susceptibility to hazards such as glacial lake outburst floods (GLOFs), landslides, earthquakes, and extreme weather events. The rising risk in this region necessitates a reassessment of disaster risk frameworks, ensuring that policies and funding mechanisms reflect the evolving landscape of disaster vulnerability.

Discussions are underway on further refinement of the Disaster Risk Index (DRI) proposed by 15th Finance Commission to reflect state-wise Disaster risk profiles more accurately while also acknowledging threats from Disasters not notified under the Disaster Management Act such as Heatwaves and Lightning. The need for scientifically validated risk assessments, data transparency, and equitable fund allocation mechanisms has never been more urgent.

This conference brought together disaster management experts from various domains to address the growing challenges of disaster resilience, with a special focus on the Himalayan region. By examining evolving risks and vulnerabilities, the discussions aimed to shape a more robust disaster risk financing framework, promote scientific data-driven decision-making, and enhance regional preparedness. The insights from this conference will contribute to strengthening disaster governance, adaptive infrastructure, and community resilience in high-altitude and climate-sensitive areas of the Indian Himalayas.

Objectives

1. Evaluate the Disaster Risk Index (DRI) methodology and propose refinements for the 16th Finance Commission.
2. Discuss challenges and best practices in disaster risk reduction (DRR), particularly in the context of high-altitude and climate-sensitive regions.

3. Strengthen disaster resilience in the Himalayan region and promote the integration of scientific research into policy decisions, ensuring that disaster risk financing is evidence-based and impact-driven.

Summary of the Conference

The Conference on Disaster Risk Reduction, with a special focus on Himalayan Disaster Resilience, was jointly organized by the 16th Finance Commission of India and the National Institute of Disaster Management (NIDM) on March 27, 2025, in Leh, Ladakh, in collaboration with the University of Ladakh. The conference brought together policymakers, researchers, and disaster risk management experts to discuss evolving challenges in disaster resilience and risk reduction strategies, particularly in high-altitude and climate-sensitive regions of the mighty Himalayas.

The inaugural session began with the Welcome Address of Prof. (Dr.) Saket Kushwaha, Vice Chancellor of the University of Ladakh. Sh. Rajendra Ratnoo (IAS), Executive Director of National Institute of Disaster Management (NIDM) in his address emphasized the increasing frequency of disasters in the Himalayan region and the importance of revising India's Disaster Risk Index (DRI). The Keynote Address by Dr. Pawan Kotwal (IAS), Chief Secretary of UT Ladakh, highlighted the region's vulnerability to climate change and the necessity of mitigation strategies tailored to mountainous ecosystems. Dr. Arvind Panagariya, Chairman of the 16th Finance Commission, in his Opening Remarks, underlining the Commission's crucial role in shaping disaster risk financing policies.

The first panel discussion moderated by Dr. Vishwas Chitale from CEEW, focused on the Disaster Risk Index (DRI) for the 16th Finance Commission. Shri Shrawan Prabhu (CEEW) discussed the evolution of Finance Commission allocations, reflecting on ways for refinement of the Disaster Risk Index proposed by 15th Finance Commission such as through inclusion of additional notified Disasters under the framework and utilisation of newer data sources. Dr. P.G. Dhar Chakrabarti (RKMVERI) critically analysed the 15th Finance Commission's disaster funding model, arguing that past expenditure is not an accurate reflection of disaster risk. He proposed a revised scientifically validated risk formula that integrates multi-hazard vulnerability, GDP exposure, and resilience indicators, moving beyond the current population and area-based metrics. Dr. Roopam Shukla (IIT Roorkee) further stressed that risk assessments should not only focus on hazard, vulnerability, and capacity but should also account for actual disaster impact.

The second panel discussion, moderated by Dr. Preeti Soni, SPC, NIDM, focused on capacity building and best practices in disaster risk reduction. Sh. Rajendra Ratnoo (IAS),

Executive Director of NIDM, stressed the importance of mainstreaming disaster risk reduction (DRR) into development planning and ensuring that states effectively utilize their State Disaster Mitigation Funds (SDMF). Sh. Pradeep Kumar Jena (IAS), Former Chief Secretary of Odisha, shared Odisha's Early Warning System (EWS) model, which has successfully led to zero cyclone-related casualties. He identified the need to strengthen local governance and community-based disaster preparedness efforts. Ms. Shashanka Ala (IAS), (UT of Ladakh), highlighted the need for a balanced approach between development and environmental conservation in Ladakh, emphasizing the region's ecological fragility. She also stressed the importance of integrating local knowledge with scientific expertise for effective disaster risk reduction and sustainable resilience planning.

The third panel discussion, moderated by Sh. Rajendra Ratnoo (IAS), addressed the unique challenges of disaster resilience in the Himalayan region. Prof. Saket Kushwaha, Vice Chancellor of the University of Ladakh, highlighted the role of local academic institutions in disaster risk research, stressing the need for community-driven resilience models. Prof. Diwan Singh Rawat, Vice Chancellor of Kumaun University, discussed the increasing frequency of glacial lake outburst floods (GLOFs) and landslides, calling for a robust early warning and response framework. Dr. Sonam Lotus, Head of IMD Ladakh, provided scientific insights into the impacts of climate change on Himalayan weather patterns, stressing the importance of improved weather forecasting tools and adaptive infrastructure.

The conference concluded with a valedictory session and closing remarks of Smt. Annie George Mathew, Member of the 16th Finance Commission, acknowledging the valuable recommendations for revising the Disaster Risk Index. Sh. Rajendra Ratnoo (IAS), Executive Director of NIDM, delivered the Vote of Thanks, reiterating the significance of interdisciplinary collaboration among policymakers, scientists, and local institutions for a resilient disaster risk management framework in India. The conference evidenced participation from diverse stakeholders, including government officials, academic institutions, and industry leaders, creating a rich platform for knowledge exchange regarding the disaster resilience in the Himalayan Region.

Inaugural Session

Recognizing the high disaster vulnerability of Himalayan Region and crucial role of the 16th Finance Commission in shaping disaster risk financing, the conference was organized by the National Institute of Disaster Management (NIDM) and the Sixteenth Finance Commission in collaboration with the University of Ladakh. The inaugural session was graced by the following dignitaries:

- **Dr. Arvind Panagariya**, Chairman, 16th Finance Commission
- **Dr. Pawan Kotwal (IAS)**, Chief Secretary, Administration of UT of Ladakh
- **Smt. Annie George Mathew**, Member, 16th Finance Commission
- **Dr. Manoj Panda**, Member, 16th Finance Commission
- **Sh. Rajendra Ratnoo (IAS)**, Executive Director, National Institute of Disaster Management
- **Prof. (Dr.) Saket Kushwaha**, Vice Chancellor, University of Ladakh

Welcome Address by Prof. (Dr.) Saket Kushwaha, VC, University of Ladakh

Prof. (Dr.) Saket Kushwaha opened the conference by warmly welcoming all the dignitaries and distinguished participants. He emphasized the significance of the conference by emphasizing on the unique vulnerability of Ladakh to different kinds of disasters and extreme events owing to its distinct geological and atmospheric settings. He stressed on the importance of knowledge sharing, capacity building and disaster resilience in the region. He urged on developing innovative solutions and preparing effectively for encountering the challenges in upcoming future. He also spoke about the crucial role of experts, policy makers and academicians in refining the interventions addressing the gaps in the field of disaster risk reduction. Prof. Kushwaha concluded by reaffirming fruitful discussions to be held in fostering resilience and preparedness for different disaster prone areas of the country.



Context Setting by Sh. Rajendra Ratnoo (IAS), Executive Director, NIDM

Shri Rajendra Ratnoo IAS addressed the dignitaries, emphasizing the critical role of academia in disaster management. He acknowledged the sensitivity of 16th Finance Commission towards academic contributions in the domain of disaster risk reduction. He expressed his gratitude to the finance commission for considering his special request for ensuring that the voices of academia, particularly those from disaster-prone Himalayan states would be paid heed. He highlighted the unique challenges faced by Ladakh, a region of breath-taking landscapes yet highly vulnerable to disasters. He expressed his concern regarding the devastating impacts of disasters beyond damaging infrastructure hence erasing decades of development progress, posing a significant challenge to India's long-term growth. He also underlined that integrating mitigation and resilience strategies into disaster management policies is imperative to safeguard development gains and build a disaster-resilient nation. His remarks set the stage for a comprehensive exploration of disaster risk reduction in Himalayan states during the conference.



Keynote Address by Dr. Pawan Kotwal (IAS), Chief Secretary, UT of Ladakh

Dr. Pawan Kotwal delivered the keynote address by warmly welcoming the 16th Finance Commission to Ladakh and emphasizing the significance of holding a conference on disaster management in the newly formed Union Territory. He provided an overview of Ladakh's unique geographical and climatic profile, highlighting its vast area and its classification as a high-altitude cold desert. The region receives minimal precipitation annually making water resources highly dependent on seasonal snowmelt. He stressed that while Ladakh does not face fluvial flooding, it is vulnerable to other climate-related hazards such as heavy snowfall on mountain passes, avalanches, and water scarcity. He concluded by underlining the ecological fragility of the region and the critical need for context-specific, sustainable approaches to disaster risk management.



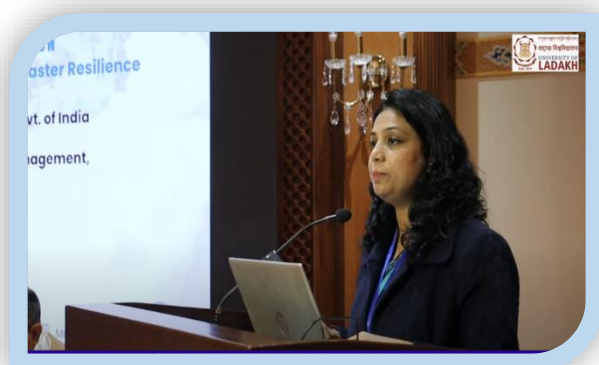
Opening Remarks by Dr. Arvind Panagariya, Chairman, 16th Finance Commission

Dr. Arvind Panagariya, Chairman of the 16th Finance Commission, delivered the opening address, providing a comprehensive overview of the constitutional mandate and the role of the Finance Commission in India. He explained the division of tax revenues between the Centre and the States, and the allocation of grants to states, local bodies, and for disaster relief from the Consolidated Fund of India. Dr. Panagariya emphasized the importance of the Commission's role in disaster risk financing and highlighted the relevance of the conference in this context. He noted that the 15th Finance Commission was the first to use the Disaster Risk Index (DRI) to allocate disaster relief funds and acknowledged feedback from states about the need to include a wider range of hazards in the index. He also outlined the Commission's consultative process, including visits to 21 states and regional academic consultations across the country. Concluding his remarks, he introduced the day's sessions, focusing on the DRI, capacity building, and resilience in the Himalayan region, and expressed hope for valuable insights from the expert discussions.



Vote of Thanks by Dr. Preeti Soni, Senior Project Consultant, NIDM

Dr. Preeti Soni delivered the vote of thanks at the conclusion of the inaugural session of the conference. She expressed heartfelt gratitude to the dignitaries, distinguished guests, and participants for their valuable presence in the inaugural session. She extended special thanks to Dr. Arvind Panagariya Chairman of the 16th Finance Commission, for his inspiring opening remarks, and to Dr. Pawan Kotwal, Chief Secretary of UT Ladakh, for his insightful keynote address that laid a strong foundation for the sessions ahead. She extended gratitude to other esteemed members of the 16th Finance Commission. Dr. Soni also acknowledged the visionary leadership of Sh. Rajendra Ratnoo, Executive Director of NIDM, for his commitment to advancing disaster resilience through collaborative efforts. She also extended appreciation to Prof. Saket Kushwaha, Vice Chancellor of the University of





Ladakh, for the warm welcome and technical support. She also recognized the contributions of the 16th Finance Commission officials, partner organizations, expert panellists, and the organizing teams from NIDM and the University of Ladakh. Her concluding remarks emphasized the importance of collective effort and knowledge-sharing to build a resilient Himalayan region.

Panel Discussion I:

Disaster Risk Index for 16th Finance Commission

Moderator: Dr Vishwas Chitale, Senior Programme Lead, Climate Resilience, CEEW

Session speakers:

1. Shri Shrawan Prabhu, Programme Associate, Climate Resilience, CEEW & **Shri Akash Mishra**, Analyst-Financial Sector, CDRI

2. Dr. P.G. Dhar Chakrabarti IAS (retd) Swami Vivekananda Chair Professor on Environment and Disaster Management RKMVERI

3. Dr. Roopam Shukla, Assistant Professor, IIT Roorkee

Welcome address by the Moderator: The Moderator opened the session by welcoming the speakers and encouraging the dignitaries to actively engage with the critical aspects of development of Disaster Risk Index for 16th Finance Commission throughout the session.

Speaker 1: **Shri Shrawan Prabhu**, Programme Associate, Climate Resilience, CEEW & **Shri Akash Mishra**, Analyst-Financial Sector, CDRI

Shri Shrawan Prabhu, Programme Associate, Climate Resilience, CEEW & **Sh. Akash Mishra**, Analyst-Financial Sector, CDRI delivered a presentation on “Disaster Risk Index”. The presentation featured exclusive importance on disaster risk financing, exposure assessment, and vulnerability estimation. The discussions of Shri Prabhu underscored the evolving frameworks within the Finance Commissions and the necessity for data-driven decision-making in disaster management. He emphasized on the evolution of disaster considerations in Finance Commissions, highlighting the introduction of a Disaster Risk Index by 15th Finance Commission as a paradigm shift in Disaster Financing through recognition of Disaster Risk Profiles of the states. For the 16th Finance Commission, proposals include adding heat waves and lightning, reflecting growing climate risks. While discussing about the vulnerability assessments he highlighted the rise in funding received by State Disaster Response Fund (SDRF) by 161% under the 15th FC and reflected on the weightages given



to different Disasters. The success of Odisha Early Warning System (EWS) was also highlighted.

Extending the talk to other crucial aspects of DRI, **Shri Akash Mishra**, Analyst-Financial Sector, CDRI, focused on disaster exposure assessment and vulnerability estimation methodologies, emphasizing variations in risk due to population density and affected areas. He emphasized on crucial indicators of the assessment framework such as the Hazard Index, Composite Index, and Hazard-Specific Exposure to determine disaster risk. He discussed about different vulnerability estimation models including the Tendulkar (BPL) method, the Multidimensional Poverty Index (2023), and the Monthly Per Capita Consumption Expenditure (2023-24). A key point of discussion of Shri Mishra was whether the vulnerability component should be removed from certain risk assessments to refine the overall framework.

Speaker 2: **Dr P G Dhar Chakrabarti** (IAS) (retd.), Swami Vivekananda Chair Professor on Environment and Disaster Management, RKMVERI

Dr. P.G. Dhar Chakrabarti, Swami Vivekananda Chair Professor at RKMVERI, Kolkata, presented on “Disaster Risk Index for Sixteenth Finance Commission”. In his online presentation he highlighted the evolution of disaster fund allocation, noting that earlier Finance Commissions relied heavily on past expenditure-based allocations, which fail to reflect actual disaster risks. Dr. Chakrabarti emphasized that past expenditure is not a reliable proxy for disaster vulnerability, as it does not account for external aid, infrequent high-impact disasters, or state-specific risk variations. He proposed a revised framework for the 16th Finance Commission, advocating for a scientifically validated DRI formula incorporating hazard, vulnerability, exposure, and resilience indicators. He recommended expanding the hazard list to include landslides, cloudbursts, avalanches, and pest attacks, replacing the poverty-based vulnerability index with NITI Aayog’s Multidimensional Poverty Index (MPI), and refining exposure metrics to reflect state GDP and population density. Additionally, he called for necessity of resilience-based capacity assessment, moving away from past expenditure as a funding determinant. His recommendations stressed the need for a more equitable, data-driven disaster financing system that ensures scientifically sound and need-based resource allocation, commending the 16th Finance Commission to align its approach with global best practices for disaster risk assessment and mitigation.



Speaker 3: **Dr. Roopam Shukla**, Assistant Professor, IIT Roorkee

Dr. Roopam Shukla, from IIT Roorkee's Center of Excellence for Disaster Mitigation and Management, emphasized the need for a refined Disaster Risk Index (DRI) for the 16th Finance Commission, integrating mitigation efforts alongside post-disaster relief. She highlighted the growing frequency of disasters in the Himalayan region due to climate stressors and stressed the urgency of action before the 1.5 °C temperature threshold is breached.

She highlighted the crucial need of a broader assessment that includes disaster impacts, damages, and losses beyond just hazards and vulnerability. A key challenge remains data availability, particularly regarding disaster impacts. She stressed the need for state-level engagement, global validation techniques, and further academic research on vulnerability. She concluded her address with a call for enhanced data collection and innovative proxy indicators to improve risk assessment and financial allocations, ultimately strengthening India's disaster resilience framework.



The session was followed by an engaging Q&A session enabling knowledge sharing among the experts. Further the session was concluded by the concluding remarks of the moderator.

Panel Discussion II:

Capacity Building and Best Practices in the Field of Disaster Risk Reduction

Moderator: Dr Preeti Soni, Senior Project Consultant, NIDM

Session speakers:

1. **Shri Rajendra Ratnoo, (IAS)**, Executive Director, National Institute of Disaster Management
2. **Shri Pradeep Kumar Jena, (IAS)**, Former Chief Secretary & Chief Development Commissioner, Odisha
3. **Ms. Shashanka Ala, (IAS)**, Administrative Secretary, UT Ladakh

Welcome address by the Moderator: The Moderator commenced the session by inviting the speakers and encouraging the dignitaries to contribute their valuable knowledge regarding the essential elements of Capacity Building and Best Practices in Disaster Risk Reduction during the session.

Speaker 1: **Shri Rajendra Ratnoo, (IAS)**, Executive Director, National Institute of Disaster Management

Sh. Rajendra Ratnoo, Executive Director at NIDM, emphasized the necessity to shift from a reactive to a proactive approach in Capacity Building for Disaster Risk Reduction (DRR). Despite increased funding, capacity-building efforts remain underutilized, as states often misinterpret funds meant for training and skill development as infrastructure investments. He highlighted key challenges, including limited technical expertise, inadequate training infrastructure, and insufficient investment in human resources, which weaken disaster preparedness at the community, institutional, and national levels. To address these gaps, he proposed developing a skilled workforce through enhanced education, training, and research collaborations, ensuring state and district-level training centres are strengthened, and leveraging technology-driven platforms like iGOT. He also stressed upon the importance of bridging policy, practice, and academia, with NIDM playing a key role in facilitating research and policy alignment. Additionally, he called for a greater focus on non-structural measures, such as behavioural change communication,



to instil a culture of resilience. Sh. Ratnoo urged the 16th Finance Commission to restructure DRR funding, prioritizing human resource development over material preparedness, ensuring that investments in training, research, and capacity building contribute to a sustainable and systematic disaster management strategy.

Speaker 2: Shri Pradeep Kumar Jena, (IAS) (retd), Former Chief Secretary & Chief Development Commissioner, Odisha

Shri Pradeep Kumar Jena, (IAS) (retd), Former Chief Secretary & Chief Development Commissioner from Odisha, highlighted Odisha's transformation into a disaster-resilient state, driven by lessons from past calamities like the 1999 Super Cyclone. Odisha pioneered India's first State Disaster Management Authority (OSDMA), emphasizing early warning systems, rapid response forces (ODRAF, OFDRA), and community participation. The state's zero casualty mission was evident in managing Cyclone Yaas (2021) amid COVID-19. Odisha also leads in tsunami preparedness, with 26 villages certified under UNESCO's IOTR program. For Himalayan states, he stressed local capacity-building and decentralized disaster planning. Key challenges include industrial hazards, urban flooding, and infrastructure resilience, requiring stronger financing, skilled response forces, and disaster-sensitive budgeting. He urged the 16th Finance Commission to prioritize risk-based funding and incentivize resilient governance, making Odisha a model for disaster management integration.



Speaker 3: Ms. Shashanka Ala, (IAS), Administrative Secretary, UT Ladakh

Ms. Shashanka Ala, Administrative Secretary, UT Ladakh, provided an in-depth analysis of the region's disaster vulnerabilities, emphasizing its susceptibility to avalanches, flash floods, and cloudbursts due to extreme climatic conditions. She highlighted the challenges posed by Ladakh's severe winters, short but intense summers, and heavy monsoon rains, which contribute to frequent natural disasters. The region's rugged terrain and high-altitude plateaus further complicate disaster response and mitigation efforts. She stressed the increasing risk of Glacial Lake Outburst Floods (GLOF) and detailed efforts to locate and monitor vulnerable glacial lakes. Additionally, she addressed human-induced hazards such as poor infrastructure planning, water scarcity, and unregulated tourism, which disrupt local ecosystems and demographics.



One of the major challenges in Ladakh's disaster management is the weak communication network, making rapid response difficult. She underscored the importance of sustainable development, particularly in infrastructure projects, to minimize environmental impact. Reflecting on the 2010 flash floods, she emphasized the critical role of community-based disaster management (CBDM) and local volunteer networks in responding during the "golden hour." She highlighted the collaborative efforts of the University of Ladakh and the UT Disaster Response Force (UDRF) in disaster preparedness, noting that four out of seven vulnerable glacial lakes were selected for early warning system implementation. Her address reinforced the need for proactive disaster risk reduction strategies, integrating scientific research with local knowledge to build Ladakh's resilience.

The session was followed by an interactive Q&A segment facilitating knowledge exchange among the experts. The session was concluded with the moderator's concluding remarks.

Panel Discussion III:

Disaster Resilience in Himalayan Region

Moderator: Sh. Rajendra Ratnoo, (IAS) Executive Director, National Institute of Disaster Management

Session speakers:

1. **Prof. Saket Khushwaha**, Vice Chancellor, University of Ladakh
2. **Prof Diwan Singh Rawat**, Vice Chancellor, Kumaun University, Uttarakhand
3. **Dr. Sonam Lotus**, Head India Meteorological Department, Ladakh

Welcome address by the Moderator: The Moderator commenced the session by inviting the speakers and encouraging the dignitaries to contribute their valuable knowledge regarding the essential elements of Capacity Building and Best Practices in Disaster Risk Reduction during the session.

Speaker 1: **Prof. Saket Khushwaha**, Vice Chancellor, University of Ladakh

Prof. Saket Kushwaha, Vice Chancellor of the University of Ladakh delivered an insightful presentation on "Efforts of University of Ladakh for Disaster Risk Reduction". Prof. Kushwaha emphasized the crucial role of academic institutions in enhancing disaster resilience. He underscored the importance of integrating disaster management education into university curricula, particularly in Himalayan institutions, to equip students and professionals with the necessary knowledge and skills. Highlighting the significance of research-driven policies, he encouraged for stronger collaborations between universities and disaster management authorities to develop localized solutions. Prof. Kushwaha also stressed the need for active community engagement in disaster preparedness, asserting that awareness programs and training at the grassroots level can significantly mitigate disaster impacts.



Additionally, he emphasized the importance of eco-sensitive and sustainable development, ensuring that infrastructure projects in vulnerable regions are designed with disaster resilience as a priority. Representing the University of Ladakh on behalf of Prof. Kushwaha as Panellist, Dr. Subrat Sharma (Dean, Research Studies), Dr. Mohd. Rafi (Department of Commerce), Dr. Mohamad, and Dr. Gowhar (Department of Disaster Management) contributed to the discussion.



Speaker 2: **Prof Diwan Singh Rawat**, Vice Chancellor, Kumaun University, Uttarakhand

Prof. D.S. Rawat, Vice Chancellor of Kumaun University, delivered presentation on “Capacity Building in Disaster Risk Reduction (DRR) in the Himalayan Region.” Prof. Rawat highlighted the urgent need for capacity building in Disaster Risk Reduction (DRR) in the Himalayan region, emphasizing increasing vulnerability due to climate change, resource depletion, and geophysical risks. He stressed local capacity building through training, disaster simulations, and early warning systems, tailored to the region’s unique challenges.

Prof. Rawat emphasized the role of research and technology in seismic risk assessment, landslide prediction, and climate adaptation, alongside community engagement for effective disaster preparedness. He also discussed sustainable financing for DRR, advocating government grants, international funding, and private sector involvement to bridge financial gaps, particularly for local resilience initiatives. He also highlighted about Kumaun University’s Center for Disaster Management actively involved in education, research, and community-based disaster preparedness. Using examples like the 2013 Kedarnath disaster, he called for collaborative action among policymakers, researchers, and local communities to develop a sustainable and resilient disaster management framework for the Himalayas.



Speaker 3: **Dr Sonam Lotus**, Head, India Meteorological Department, Ladakh

Dr. Sonam Lotus Head of India Meteorological Department, Ladakh delivered his presentation on “Status of Early Warning of Severe weather in Ladakh”. Dr Lotus highlighted the meteorological challenges that make the Himalayan region highly unpredictable in terms of weather and climate patterns. He discussed the increasing frequency of extreme weather events, such as cloudbursts, avalanches, and heavy snowfall, which significantly disrupt livelihoods and pose serious threats to both urban and rural communities.

Emphasizing the importance of accurate weather forecasting and real-time data dissemination, he underscored the need for better preparedness among communities and local governments. Dr. Lotus also highlighted the crucial role of the IMD in providing region-specific meteorological data, which aids in issuing timely warnings to minimize disaster impacts. He further stressed the necessity of enhanced coordination between meteorological agencies and disaster management authorities to improve response measures and mitigate risks effectively.

The session concluded with the concluding remarks of the moderator following an engaging Q&A session, where attendees discussed potential policy changes and actionable steps for improving disaster preparedness.



Valedictory session

Closing Remarks by Smt. Annie George Mathew Member 16th Finance Commission

The conference concluded with an insightful valedictory session, marked by the closing remarks of **Smt. Annie George Mathew**, Member of the 16th Finance Commission. She acknowledged the valuable discussions and recommendations put forth by experts on revising the Disaster Risk Index (DRI) to ensure a more equitable and scientific approach to disaster financing. Smt. Mathew appreciated the collaborative efforts of policymakers, researchers, and disaster management professionals in shaping a more inclusive and efficient disaster risk financing framework.



Way Forward and Vote of Thanks by Shri Rajendra Ratnoo IAS, ED, NIDM

Sh. Rajendra Ratnoo, Executive Director of NIDM, addressed the way forward, encapsulating the key discussions and presenting a roadmap for disaster risk reduction (DRR). He emphasized on following dimensions of DRR:

- He expressed that **Strengthening capacity building** in disaster risk reduction (DRR) is crucial across all levels. Training programs and integration of indigenous knowledge should be institutionalized in structured capacity-building initiatives for sustained resilience.
- He also suggested that the **16th Finance Commission should refine capacity-building (CB) funds**, ensuring at least 5% of National Disaster Response Fund for CB or a separate NDRMF/SDRMF fund as deemed appropriate channeled through NIDM for multi-sectoral and multi-layered CB efforts across all DM phases. Additionally, 5% of the SDRF for CB should be channelled through NIDM implying that NIDM can act as single channel for funnelling the 5% Capacity building funds to states under the SDRF window. He stressed that in the NDMF window 1-2% of Mitigation



fund can be designated for CB efforts so that Mitigation measures (both structural and non-structural) become effective.

- He emphasized that sustainable funding mechanisms are essential for long-term disaster preparedness and mitigation. One of his calls to attention verbatim reads “**Given the narrowing window, these resources are vital** for effective climate adaptation and mitigation. It becomes imperative for the Hon’ble 16th FC to renew its focus on the pressing Climate Action Gap.”
- He emphasized on the **expansion of DRI by the 16th Finance Commission**. He stressed on investing in Early Warning Systems (EWS) and integrating DRR into development planning while balancing economic and ecological priorities.

In his vote of thanks, he expressed gratitude to the distinguished panellists, participants, and organizers, acknowledging their contributions in shaping a robust disaster resilience framework.

Key takeaways/Recommendations:

- ❖ The conference highlighted capacity building as a cornerstone of resilient and sustainable disaster management particularly for climate-sensitive and geologically fragile regions like the Himalayas.
- ❖ Institutionalize capacity-building programs at national and state levels, integrating them with formal education, local governance systems, and community networks.
- ❖ Strengthen the role of academia and research institutions in order to enhance regional capacity towards disaster risk reduction and mitigation. One-third of the Capacity building funds can be used to finance research for bringing synergies with national priorities and national policy.
- ❖ Adopt community-based disaster management approaches inculcating the local communities by empowering them with disaster awareness, training, first response skills, and localized early warning systems.
- ❖ Foster technological integration within capacity building by implementing tools such as AI, GIS mapping, satellite monitoring, and Early Warning Systems (EWS) to minimizing the impact of disasters.
- ❖ The conference highlighted the need for considering the unique vulnerabilities of Himalayan region and developing customized capacity-building programs to deal with hazards like GLOFs, LLOFs, landslides, mudslides, avalanches, and infrastructure failure in extreme weather.
- ❖ The conference underscored the emphasis on collaborative efforts between different stakeholders while addressing the gaps in availability of primary data, training, and awareness.

- ❖ The conference gave a call to enhance and adapt vulnerability centric approach to address the social, economic and environmental vulnerabilities of the region ensuring better safety standards and preparedness.
- ❖ The conference underscored the importance of regular monitoring, evaluation, and updation ensuring the effectiveness of capacity-building efforts.
- ❖ Adopt dedicated funding mechanisms within the 16th Finance Commission and earmark committed fund for human capacity building within NDRF (5% fund for CB), SDRF (5% funds for CB funnelled through NIDM to States), N/SDRMF (separate funding window as deemed appropriate channelled through NIDM). Additionally, 1-2% of mitigation funds should be allocated to Capacity Building initiatives so that structural and non-structural mitigation measures become effective. Mitigation funds are critical to strengthen training, research, hazard specific monitoring and early warning systems and preparedness efforts, especially in high-risk regions.
- ❖ The conference called for a renewed focus of the Hon'ble 16th Finance Commission on the pressing Climate Action Gap, which is narrowing down fast leaving us with little time to act fast. And due to this fact allocating sufficient resources becomes vital for effective climate adaptation and mitigation.

PHOTO GALLERY



Conference Schedule

Annexure-I

DISASTER RISK REDUCTION: SPECIAL FOCUS ON HIMALAYAN DISASTER RESILIENCE

Date: 27th March 2025

Time: 09:30 am – 05:30 pm

Venue: Hotel Grand Dragon, Leh

Time	Schedule	Speaker
09:30 AM– 10:30 AM	Inaugural Session	
09:00 AM onwards	Registration	University of Ladakh
09:30 AM – 09:40 AM	National Anthem Deep Prajavalan Felicitation of Dignitaries on the Dias	All Dignitaries on the Dias Sh. Rajendra Ratnoo (IAS) Executive Director, National Institute of Disaster Management & Prof. (Dr.) Saket Kushwaha Vice Chancellor, University of Ladakh
09:40 AM- 09:50 AM	Welcome Address	Prof. (Dr.) Saket Kushwaha Vice Chancellor, University of Ladakh
09:50 AM– 10:00 AM	Context setting	Sh. Rajendra Ratnoo (IAS) Executive Director, NIDM
10:00 AM– 10:15 AM	Keynote address	Dr. Pawan Kotwal (IAS) Chief Secretary, Administration of UT of Ladakh
10:15 AM – 10:25 AM	Opening remarks	Dr. Arvind Panagariya Chairman, 16 th Finance Commission
10:25 AM – 10:30 AM	Vote of Thanks	Dr Preeti Soni Senior Consultant , National Institute of Disaster Management
10:30 AM – 11:00 AM	Group Photograph	
11:00 AM – 11:15 AM	High Tea	
11:15 AM – 01:00 PM	Panel Discussion 1: Disaster Risk Index for 16 th Finance Commission	
11:15 AM – 11:25 AM	Address by Moderator: Dr Vishwas Chitale Senior Programme Lead, Climate Resilience, CEEW	



11:25 AM - 11:35 AM	Disaster Risk Index	Sh. Shrawan Prabhu , Programme Associate, Climate Resilience, CEEW Sh. Akash Mishra , Analyst-Financial Sector, CDRI
11:45 AM - 12:05 AM	Disaster Risk Index for Sixteenth Finance Commission	Dr P G Dhar Chakrabarti IAS (retd) Swami Vivekananda Chair Professor on Environment and Disaster Management, RKMVERI
12:05 AM - 12:25 PM	Disaster Risk Index for 16th Finance Commission	Dr. Roopam Shukla Assistant Professor, IIT Roorkee
12:25 PM - 12:50 PM	Q&A session	
12:50 PM - 01:00 PM	Concluding remarks by Moderator	
01:00 PM - 02:00 PM	Lunch	
02:00 PM - 03:15 PM	Panel Discussion 2: Capacity Building and Best Practices in the field of Disaster Risk Reduction	
02:00 PM - 02:10 PM	Address by Moderator: Dr Preeti Soni Senior Consultant, NIDM	
02:10 PM - 02:25 PM	Capacity Building for Disaster Risk Reduction: A National Imperative	Sh. Rajendra Ratnoo , (IAS) Executive Director, NIDM
02:25 PM - 02:40 PM	Disaster Management in Odisha fighting the odds to win	Sh. Pradeep Kumar Jena , (IAS) Former Chief Secretary & Chief Development Commissioner
02:40 PM - 02:50 PM		Ms. Shashanka Ala Administrative Secretary, UT Ladakh
02:50 PM - 03:00 PM	Q&A session	
03:00 PM - 03:15 PM	Concluding remarks by Moderator	
03:15 PM - 04:40 PM	Panel Discussion 3: Disaster Resilience in Himalayan Region	
03:15 PM - 03:25 PM	Address by Moderator: Sh. Rajendra Ratnoo , (IAS) Executive Director, NIDM	
03:25 PM - 03:40 PM	Efforts of University of Ladakh for Disaster Risk Reduction	Prof. Saket Khushwaha Vice Chancellor, University of Ladakh
03:40 PM - 03:55 PM	Capacity Building in Disaster Risk Reduction (DRR) in the Himalayan Region	Prof Diwan Singh Rawat Vice Chancellor, Kumaun University, Uttarakhand
03:55 PM - 04:10 PM	Disaster Resilience in Himalaya: Status of Early Warning of Severe weather in Ladakh	Dr Sonam Lotus Head India Meteorological Department, Ladakh
04:10 PM - 04:30 PM	Q&A session	
04:30 PM - 04:40 PM	Concluding remarks by Moderator	
04:40 PM - 05:10 PM	High Tea	
05:10 PM - 05:30 PM	Valedictory session	
05:10 PM - 05:20 PM	Closing Remarks	Smt. Annie George Mathew Member, 16 th Finance Commission
05:20 PM - 05:30 PM	Way Forward and Vote of Thanks	Sh. Rajendra Ratnoo (IAS) Executive Director, NIDM

List of Participants

Annexure-II

S. No.	Name	Designation
16th Finance Commission		
1	Dr. Arvind Panagariya	Chairman
2	Smt. Annie George Mathew	Member
3	Dr. Manoj Panda	Member
4	Sh. Ritvik Pandey	Secretary
5	Sh. Rahul Jain	Joint Secretary
6	Sh. K K Mishra	Joint Secretary
7	Dr. Prasant K Panda	Economic Adviser
8	Sh. K. Balaji	Director
9	Sh. Kumar Vivek	PS to Chairman
10	Sh. Maanas Bajpai	Deputy Director
11	Sh. Liankhankhup Guite	Deputy Director
12	Sh. Sumeet Singh	Protocol Officer
UT Administration of Ladakh		
13	Dr. Pawan Kotwal, IAS	Chief Secretary, Ladakh UT
14	Dr. S.D Singh Jamwal, IPS	DGP, Ladakh Police
15	Sh. Bhupesh Chaudhary, IAS	Administrative Secretary
16	Ms. Shashanka Ala, IAS	Administrative Secretary
17	Sh. Santosh Sukhadeve, IAS	Deputy Commissioner/CEO, LAHDC Leh
18	Sh. Sazzad Hussain Mufti, IFS	Chief Wildlife Warden
19	Sh. Jigmat Takpa, IFS	Union Territory Level Environment Impact Assessment Authority
20	Mr Govind Rattan, JKPS	SP, UTDRF, Ladakh
21	Mr Regzin Sundup, JKPS	ASP, Leh
22	Mr. Khandu Hussain, JKPS	DySp, Leh
23	Mr. Jigmat Raftan, JKAS	Dy Secretary, DMRRR, UT Ladakh
24	Mr Khadim Hussain,	UTDRF, Leh
25	Ms Heena Jabin	Sr. Consultant, Disaster Management
26	Ms Sakina Bano	Supervisor, EOC, Leh
27	Ms Khatiza Feroj	UTDRF, Leh
28	Mr Rigzin Gurmet	Consultant, IT
National Institute of Disaster Management		
29	Sh. Rajendra Ratnoo	Executive Director
30	Ms Ritu Sood	Administrative Officer
31	Dr Preeti Soni	Sr. Consultant
32	Dr Pankaj Kumar	Assistant Professor
33	Mr Shiv Narayan Sidh	Assistant Professor

34	Dr Prerna Joshi	Assistant Professor
35	Mr Rohit Kumar	Assistant Professor
36	Ms Ritu Sood	Administrative Officer
Resource Persons & Participants		
37	Sh. Pradeep Kumar Jena	Former Chief Secretary & Chief Development Commissioner, Bhubaneswar
38	Prof Saket Kushwaha	Vice Chancellor, University of Ladakh, Leh
39	Prof Diwan Singh Rawat	Vice Chancellor, Kumaun University, Nainital
40	Mr Sonam Lotus	Head, India Meteorological Department, Leh
41	Dr Sushil Gupta	Team Lead, Study on Extreme Weather Events and Their Economic Impacts, World Bank
42	Ms. Ranjini Mukherjee	CDRI, Roorkee
43	Sh. Vishwas Chitale	Senior Programme Lead, Climate Resilience, CEEW
44	Dr P.G. Dhar Chakrabarti, IAS (Online)	Swami Vivekananda Chair Professor on Environment and Disaster Management RKMVERI
45	Prof. Roopam Shukla	Centre of Excellence in Disaster Mitigation and Management, IIT Roorkee
46	Mr Deepak Singh	Lead Disaster Risk Management Specialist, World Bank
47	Ms Sheena Arora (Online)	Disaster Risk Management Specialist, World Bank
48	Mr Prasad Unnikrishnan	Team Lead, Disaster Risk Management Financing in India Review, World Bank
49	Mr. Raj Vikram Singh	Senior Specialist DRF, CDRI
50	Mr. Akash Mishra	Analyst-Financial Sector, CDRI
51	Mr Shravan Prabhu	Programme Associate, Climate Resilience, CEEW
52	Prof. Amit Kumar Dhiman	Deptt. of Chem. Eng., IIT Roorkee
53	Sh. Safi Ahsan Rizvi (online)	NDMA
54	Shri Shishir Agarwal (online)	Sr. Consultant (DRF), NDMA
55	Mr. Antony Joh Moothedan (online)	UFRMP, NDMA
56	Sh. Chandan Singh (online)	NDMA
57	Col. S. Raviprakash	14 Corps, Leh
58	Col. Sandeep Kumar	CO, 176 Medium
59	Mr. Aditya Pratap Singh	ITBP, Leh
60	Mr Kunga Dorje	ITBP, Leh
61	Ms. D. Angmo	ITBF, Leh
62	Mr. I. Namgail	ITBF, Leh
63	Mr. Rinchen Tundup	ITBF, Leh
64	Ms Stanzin Desal	ITBF, Leh



	University of Ladakh	
65	Dr Sonam Joldan	Dean Academic Affairs
66	Dr Jigmet Dechan	Dean Student Welfare
67	Dr Subrat Sharma	Dean Research Studies
68	Dr Stanzin Mentok	Dean Commerce & Management
69	Mr Nawang Tundup	Regsitrar
70	Dr Md Rafee	Commerce Department
71	Dr Jigmat Stobdan	Commerce Department
72	Dr Kailash Goswami	Economics Department
73	Dr Amzad	Zoology Department
74	Dr Md Akbar	Disaster Management Department
75	Dr. Gwahar Ali	Disaster Management Department
76	Dr Sonam Wangmo	Mountain Research Institute
77	Ms Lamo Dolma	Centre for Space Sciences
78	Ms Rigzin Wangmo	Centre for Space Sciences
79	Ms Jigmet Angmo	Centre for Space Sciences
80	Ms Sonam Angmo	Centre for Space Sciences
81	Ms Sampriti Bhuyan	Centre for Space Sciences