



UNIVERSITY OF LADAKH



***Training cum Faculty Development Programme on Disaster Resilient Development in Mountains: Context of Ladakh***

**Leh, Ladakh, July 8, 2024** – A three day training cum Faculty Development Programme on Disaster Resilient Development in Mountains: Context of Ladakh, was jointly organized by the National Institute of Disaster Management (NIDM), Ministry of Human Affairs, Government of India, New Delhi, and the University of Ladakh. The event is being hosted at the, University of Ladakh, Leh Campus, UT Ladakh. This program held from 5th to 7th July 2024 at the University of Ladakh, Leh Campus, brought together notable experts and speakers to address critical issues and strategies pertaining to disaster resilience in mountainous regions, with a specific focus on Ladakh.

About 120 participants attended a training cum faculty development programme, with 24 from Kargil and 70 from Leh, representing 15 different villages and other parts of Ladakh. They hailed from diverse departments including the District Disaster Management Authority, Leh Tourism & Culture, Higher Education Department, Technical Education & Skill Development Department, Social & Tribal Welfare Department, Labour & Employment Department, Rural Development & Panchayat Raj, Municipal Committee, Medical Department, Soil Conservation Department Kargil, UTDRF Ladakh, Forest Department, Revenue Department, Disaster Management Department, Municipal Committee, PHE Department, Power Development Department, Horticulture Department, State Taxes Department, and Excise range Leh-Kargil and many more.

Distinguished guests including Prof. Talat Ahmad, Chairman Governing body from Wadia Institute of Himalayan Geology, Dehradun; Anil Gupta, Head of ECDRM at NIDM, Ministry of Human Affairs; Sh. Pradeep Singh, SP Fire and Emergency/UT Disaster Response Force; and Prof. Devesh K Sinha, Dept of Geology, University of Delhi graced the occasion with their presence.

The event commenced with a formal welcome of the esteemed guests by Dr. Subrat Sharma, Dean Research, University of Ladakh who emphasized the critical importance of disaster management in the region. Prof. Devesh Sinha delivered the keynote address, highlighting the resilience inherent in local communities and stressing the importance of leveraging these natural strengths. Sh. Pradeep Singh provided special remarks during the inauguration session, underscoring the significance of effective disaster management strategies. Prof. Anil Kumar Gupta further elaborated on the importance of disaster preparedness, emphasizing the need for integrating disaster management into all levels of development planning. Prof. Talat Ahmad shared insights on solar energy and the unique topography of Ladakh, emphasizing the importance of preserving natural ecosystems while pursuing development goals. Training program was successfully coordinated by Dr Ibrahim Yousuf, Assistant Professor, Geology, UoL, Ms Fatima Amin, NIDM, Ms Kratika Pandey, NIDM.

A series of technical sessions were held to discuss various aspects of disaster management and climate change, particularly focusing on the Himalayan region. The sessions featured presentations from experts in the field who provided insights into integrated risk resilience, disaster management practices, and climate-induced disasters. The programme aims to equip participants with knowledge and skills essential for disaster-resilient development, considering the unique challenges and opportunities posed by the mountainous terrain of Ladakh.



**Day 1 – 5<sup>th</sup> July, 2024**

***Technical Session - 1: Integrated Risk Resilience (IRR) Model for HKH Regions – Strategies, Planning and Actions***

***Speaker : Prof. Anil K. Gupta***

In the first technical session, Prof. Anil K. Gupta delivered a detailed presentation on "Focusing Integrated Risk Resilience (IRR) Model for HKH regions - Strategies, Planning and Actions." He discussed various aspects including Disaster Risk Reduction, Emergency Management, protection of livestock, tourism impact, and sustainable development practices. Prof. Gupta outlined the importance of developing robust strategies to enhance risk resilience in HKH regions. Effective planning methodologies to anticipate and mitigate risks were discussed. Practical actions and interventions that can be implemented to bolster resilience were highlighted.

***Technical Session - 2: Basics of Disaster Management: Context to Leh Ladakh, India***

***Speaker: Ms. Kratika Pandey YP, NIDM***

Ms. Kratika Pandey from the National Institute of Disaster Management (NIDM) presented the fundamentals of disaster management with a specific focus on Leh Ladakh, India. Her presentation provided an in-depth look at the basic concepts of disasters, including hazards, vulnerabilities, and risk factors. An overview of what constitutes a disaster, its hazards, vulnerabilities, and risk factors. Ms. Pandey elaborated on the Disaster Management Act, 2005, which provides a structured framework for managing disasters in India. The major objectives of the act were highlighted. Emphasized the critical role of community involvement in effective disaster management. Detailed the processes involved in disaster relief and rehabilitation, stressing the importance of timely and efficient response.

### ***Technical Session - 3: Climate-Induced Disasters***

***Speaker: Dr. Subrat Sharma, Dean of Research, University of Ladakh***

Dr. Subrat Sharma provided a detailed presentation on climate-induced disasters, focusing on the indicators of climate change and their impact on disaster frequency and intensity. He also discussed historical climate anomalies and their relevance to current climate conditions. Dr. Subrat Sharma highlighted various indicators, including proxy indicators of temperature increase in Ladakh, and discussed historical climate anomalies. He put detailed light on the general classification of Disaster Group – technological which includes industrial accidents, transport accidents, and miscellaneous accidents and general classification of Disaster Group – Natural which encompasses biological, extraterrestrial, meteorological, hydrological, climatological, and geophysical disasters. He said, according to the Intergovernmental Panel on Climate Change (IPCC), a changing climate leads to alterations in the frequency, intensity, spatial extent, duration, and timing of extreme weather and climate events, potentially resulting in unprecedented extreme weather events. Dr. Subrat Sharma presented data on the number of recorded natural disaster events from 1900 to 2022, illustrating the trend and magnitude of climate-induced disasters over time.

The technical sessions provided valuable insights into disaster management and climate resilience, particularly for the Himalayan region. The presentations underscored the importance of integrated risk resilience, the framework provided by the Disaster Management Act, 2005, and the impact of climate change on disaster frequency and intensity. Engaging communities in disaster management and understanding historical climate data are crucial for developing effective strategies to mitigate and manage disasters.

### **Day 2 – 6<sup>th</sup> July, 2024**

#### ***Technical Session - 4: Glacier Dynamics of Ladakh Region: Dr. Sandipan Mukherjee***

Dr Sandipan Mukherjee in his presentation discussed about the GLOF in the Himalayas. He mentioned that source for the drinking water in the Himalayas are glacier. Almost 17000 glaciers are in Ladakh out of which 3000 glaciers are in Leh and area of all the glaciers are decreasing day by day. And 40% of all the glaciers in Himalayas are in Ladakh. In Ladakh there are only two physically monitored glacier because of limited logistics glaciers are not able to be monitored. Dr Mukherjee stated that all the glaciers in the world is retreating and he also described the importance of glacier in the mountains. He explained forecasting of GLOF with the help of dynamic model and time series model by regular monitoring.

#### ***Technical Session - 5: Siphoning glacial lakes to create artificial glaciers Or automated ice reservoir for community engagement: Er Basit Afzal and B Suryanarayan***

Er Basit Afzal and B Suryanarayan are co-founder of Acres of Ice and they presented jointly. They stated that 90% of glaciers in Ladakh are not qualified to be called as glacier. They focussed on the importance of glacier in Ladakh region. Both the speakers speculated that by the end of 2050 about 10% of villages of Ladakh may be abandoned. 20 % of villages of Ladakh have already used their ice reservoirs. They have trained many villagers to use Automated Ice Reservoir (AIR) kits assembled by their team.

#### ***Technical Session - 6: Introduction to Remote Sensing and GIS: Ms Nayani Verma***

Ms Nayani Verma is working as a research fellow at HIAL institute. She explained basics of remote sensing and its advantages in the various fields. She also explained the uses, function and limitation of Geographical Information system (GIS). Ms. Nayani explained the application of remote sensing and GIS in geology, hydrology, urban planning, land use and land cover planning. She also presented her work which includes fire mapping of Uttarakhand.

***Technical Session - 7: Enhancing resilience: A water centred integrated risk assessment approach for mountain cities- A case study of Leh Ladakh , India : Ms Fatima Amin***

Ms Fatima explained the importance of river system in an ecosystem. She described about climate change and its causes, greenhouse gases, deforestation and industrialization. She discussed the link between climate change and intensity of floods in Indian River system. She also explained the effect of changing precipitation on Indian Rivers. She suggested formation of vulnerability assessment team in every village so that villagers can manage every kind of disaster. After technical session all the participants actively participated in the group activity. Participants suggested many mitigation and remedial solutions for disasters like flood, earthquake, fire and cloudburst.



**Day 3 – 7<sup>th</sup> July, 2024**

This training programme summarizes the key discussions and recommendations from the technical sessions, highlighting the need for integrated approaches to manage and mitigate disaster risks in the face of climate change. Day three started with the recapitulation of day 1 and 2 followed by an enlightening talk by Dr Subrat Sharma. In the last, the Valedictory session was conducted. Honorable Vice Chancellor, University of Ladakh joined the valedictory session and thanked all the participants for making the event successful. Summary of the programme was delivered by Dr Ashu Rajput, Assistant Professor, and Department of Education. Closing remarks were given by Dr Subrat Sharma, Dean Research, and University of Ladakh. All the participants received their certificate by Honorable Vice Chancellor. A ‘Vote of Thanks’ was given by Dr. Ibrahim Yousuf, Assistant Professor, Dept of Geology, UoL.

