

27 October 2026

meadowes

The **imperilled**
future of Himalayan
pasturelands

On the occasion
of the
International Year
of Rangelands
and Pastoralists
(IYRP 2026)

SESSIONS

- ▶ Permafrost Degradation,
Cryosphere Dynamics and
Climate Risk
- ▶ Geopolitics of the Himalaya
Climate Security,
Borders and
Regional Cooperation
- ▶ Sustainable Pasturelands,
Yak Landscapes and
Indigenous Mountain
Communities
- ▶ Science Diplomacy,
Sustainability
and Future Pathways for
mountain Governance



Organised by: SaGAA-LIGHTS
Venue: Multipurpose Hall,
Kamaladevi Block, India
International Centre,
New Delhi

The Rationale



Permafrost systems, alpine pasturelands, and high-mountain ecosystems are increasingly recognised as critical components of global climate stability, biodiversity conservation, hydrological security, and regional geopolitical stability. Rapid warming across the Arctic, the Tibetan Plateau, and the Hindu Kush Himalaya (HKH) is accelerating glacier retreat, degrading permafrost systems, altering pasture productivity, and threatening mountain-dependent communities and pastoral economies.¹ The Qinghai-Tibetan Plateau plays a crucial role in regulating the Asian monsoon system and supporting freshwater systems across Asia. Scientific studies indicate that warming trends across the Tibetan Plateau and surrounding mountain regions are contributing to large-scale ecological transformations, including changing vegetation dynamics, shrinking alpine ecosystems, and hydrological instability.²

Climate-induced degradation of pasturelands and cryosphere systems has emerged not only as an environmental challenge but also as a strategic and geopolitical concern. Changing mountain ecosystems directly affect the transboundary river systems, food and water security, climate migration, infrastructure stability, biodiversity conservation, and borderland resilience. Research on thawing permafrost systems demonstrates that warming temperatures are deepening thaw layers, destabilising hydrological systems, and amplifying carbon-climate feedback mechanisms. Studies further indicate that alpine permafrost regions such as the Tibetan Plateau may account for nearly one-fourth of vulnerable thaw-related carbon emissions globally.³

The Himalayan and Tibetan regions are also witnessing severe socio-economic impacts on pastoral communities and yak-based livelihoods. Reports from Ladakh, Bhutan, Nepal, and Tibetan regions show declining pasture productivity, changing migration patterns, increasing ecological vulnerability, and reduced

¹ Mukherjee, N., Gao, B., Coon, E. T., et al. (2025). *Climate change impacts on supra-permafrost soil and aquifer hydrology*. arXiv.

² *ibid*

³ Levyz. (2022, March 15). *Alpine permafrost could account for a quarter of thawed carbon based on Plio-Pleistocene paleoclimate analogue*

livelihood security among yak-herding communities.⁴ According to recent reports, warming temperatures and declining snowfall have significantly affected yak populations in Ladakh, with younger generations increasingly moving away from traditional pastoral livelihoods.⁵ Similar concerns have been documented in Bhutan, where deteriorating pasture conditions and invasive species are threatening yak-based pastoral systems and high-altitude sustainability.⁶

The conference is proposed within the broader framework of the **International Year of Rangelands and Pastoralists (IYRP 2026)**, declared by the United Nations General Assembly and led globally by the **Food and Agriculture Organization (FAO)**. The initiative emphasises the importance of sustainable rangeland governance, pastoral livelihoods, biodiversity conservation, and climate resilience. ⁷Against this backdrop, SaGAA-LIGHTS proposes a **one-day conference** to facilitate interdisciplinary dialogue among scientists, policymakers, diplomats, strategic experts, environmental institutions, and regional stakeholders on the interconnected dimensions of permafrost degradation, climate, pastureland sustainability, geopolitics, cryosphere governance, and pastoral resilience. The proposed conference is intended to contribute meaningfully to policy discussions relevant to institutions such as the Ministry of External Affairs (MEA), the Ministry of Earth Sciences (MoES), and the Ministry of Environment, Forest and Climate Change (MoEFCC), as well as to the scientific and regional cooperation framework.

About Us

Learning in Geography, Humanities, Technology, and Science (LIGHTS) is a not-for-profit research and capacity-building foundation registered under the Societies Registration Act, 1860, with a distinguished legacy since 2003 of advancing interdisciplinary knowledge and action in India and beyond. Climate change research and science-policy engagement form a core domain of LIGHTS' institutional work. Through interdisciplinary research, geospatial analysis, policy dialogues, and international platforms, LIGHTS has consistently focused on understanding the impacts of climate change on fragile ecosystems and vulnerable communities. Through its flagship programmes, the policy platform and Think Tank SaGAA (Science and Geo-politics of Arctic and Antarctic) and the Parliamentary and Administrative Research Institute (PARI), LIGHTS bridges scientific inquiry with strategic dialogue and advocacy at national and international levels. SaGAA, institutionalised under the LIGHTS umbrella, is India's first dedicated think tank on polar and cryosphere science and geopolitics, regularly convening experts from government, academia, and civil society to shape research agendas and policy responses to climate and high-altitude systems. Its outreach platform, Geography and You, is known for its intellectual accuracy and in-depth podcasts focused on sustainability.

Objectives and Outcomes

- To examine the impacts of climate change and permafrost degradation on mountain ecosystems and pasturelands, and flag the implications of environmental transformations on border infrastructure, transboundary river systems, ecological security, and regional stability in the Himalayan border areas.

⁴ Yasin, D., & Arasu, S. (2025, July 29). *High in India's Himalayan mountains, yak herders struggle to survive a warming world*. Associated Press.

⁵ *Ibid*

⁶ Ferrarini, H. (2025, July 9). *In Bhutan, yaks are in danger in the land of happiness*. *Le Monde*.

⁷ Food and Agriculture Organization of the United Nations. (2026). *About | International Year of Rangelands and Pastoralists 2026*. FAO.

- To analyse the geopolitical and strategic implications of changing cryosphere systems across Asia to usher in sustainable pastureland governance, biodiversity conservation, and ecosystem resilience.
- To facilitate interdisciplinary dialogue among scientists, diplomats, policymakers, and regional stakeholders from the Himalayan and neighbouring countries.
- To explore the role of indigenous and pastoral knowledge systems in climate adaptation and sustainability, and build towards a science-policy engagement on cryosphere governance and sustainable mountain futures.

The conference is expected to:

- Create a multidisciplinary dialogue platform on permafrost, pasturelands, and mountain sustainability.
- Contribute to discussions on the strategic and geopolitical implications of environmental change across the Himalayan frontier and the Tibetan Plateau, particularly regarding regional stability and borderland resilience.
- Generate policy-relevant recommendations for climate-resilient mountain governance that help strengthen discussions on regional scientific cooperation and environmental diplomacy.
- Promote collaboration among scientists, policymakers, diplomats, and pastoral stakeholders.
- Encourage policy-oriented discussions on the Himalayan Border's infrastructure and ecological footprint across the Tibetan Plateau, and their implications for regional environmental governance and strategic balance.

Proposed Conference Structure

Meadwoes: The Imperilled Future of Himalayan Pasturelands

October 27, 2026

11.00 am - 12.00 noon	Inauguration
12.00 noon - 12.30 pm	Tea
12.30 pm - 01.30 pm	Session 1: <i>Permafrost Degradation, Cryosphere Dynamics and Climate Risk</i>. This session will examine changing cryosphere systems, thawing permafrost, glacier retreat, and climate-induced risks across high-mountain regions. Discussions will focus on environmental vulnerability, hydrological instability, infrastructure risks, disaster vulnerabilities, and scientific observations from Himalayan and Arctic-linked systems, with particular attention to their implications for climate resilience and long-term regional sustainability.
01.30 pm - 2.30 pm	Lunch
2.30 pm - 3.30 pm	Session 2: <i>Geopolitics of the Himalaya: Climate Security, Borders and Regional Cooperation</i>. This session will explore how environmental transformations are increasingly shaping geopolitics, borderland governance, strategic infrastructure development, transboundary river systems, and regional diplomacy across the Himalayan region and neighbouring countries. Discussions will also examine climate security, ecological stability, water governance, and the growing importance of scientific and environmental cooperation in sensitive frontier regions.

3.30 pm - 4.30 pm	Session 3: Sustainable Pasturelands, Yak Landscapes and Indigenous Mountain Communities. This integrated session will focus on the ecological and socio-cultural significance of alpine pasturelands, yak-based pastoral systems, and traditional grazing landscapes across the Himalaya, Tibetan Plateau, and adjoining mountain ecosystems. Discussions will examine biodiversity conservation, ecosystem resilience, sustainable grazing systems, land degradation, carbon cycles, pastoral livelihoods, indigenous knowledge systems, mobility patterns, food systems, and climate adaptation strategies adopted by mountain communities facing rapid environmental and socio-economic transitions.
4.30 pm - 5.00 pm	Tea
5.00 pm - 6.00 pm	Session 4: Science Diplomacy, Sustainability and Future Pathways for Mountain Governance. The concluding session will focus on strengthening science-policy engagement, regional cooperation, climate governance frameworks, and international collaboration for sustainable mountain futures. The session will emphasise interdisciplinary research, transboundary scientific cooperation, environmental diplomacy, and the policy pathways required to address emerging challenges across Asia's cryosphere, borderlands, and high-mountain regions.
6.00 pm - 6.30 pm	Validectomy

Expected Participation

Approximately 100 participants, including scientists, policymakers, diplomats, strategic experts, academicians, environmental researchers, government officials, pastoral community representatives, students, and stakeholders from institutions working on climate change, cryosphere science, Himalayan studies, sustainability, and regional cooperation.



Preliminary List of Proposed Speaker:

Chief Guest: Shri Kiren Rijiju, Hon'ble Union Cabinet Minister for Parliamentary Affairs and Minority Affairs Government of India (to be confirmed).

Ambassador Pankaj Saran

Former Deputy National Security Adviser; Former Ambassador of India to Russia

Ambassador H.E. Mr. Atul Malhari Gotsurve

Ambassador of India to Mongolia

Shri Pintso Namgyal Lepcha

Hon'ble Minister for Forest and Environment Government of Sikkim

Shri Tanmay Kumar

Secretary, Ministry of Environment, Forest and Climate Change (MoEFCC)

Dr. N. Kalaiselvi

Secretary, Ministry of Earth Sciences (MoES)

Ambassador (Dr.) Acquino Vimal

Joint Secretary (UNES Division), Ministry of External Affairs; Former Ambassador of India to Norway

Ms. Aparna Ray

Head, UNES / CCCS Division, Ministry of External Affairs

Dr. Thamban Meloth

Director, National Centre for Polar and Ocean Research (NCPOR), Ministry of Earth Sciences; Cryosphere & Polar Science Expert

Dr. I.D. Bhatt

Director

Govind Ballabh Pant National Institute of Himalayan Environment (NIHE)

Dr. Jagvir Singh

Scientist 'G' & Head, Outreach Division, Ministry of Earth Sciences

Ms. Karen Marie Oseland

Advocacy & Networking Specialist, International Centre for Integrated Mountain Development (ICIMOD)

Mr. Thupden Lachungpa Bhutia

Secretary General, Yak Federation of India

Shri Sushil Kumar Awasthi, IFS

Director General of Forests & Special Secretary, Ministry of Environment, Forest and Climate Change

Smt. Kanchan Devi, IFS

Director General, Indian Council of Forestry Research and Education (ICFRE) & Chancellor, Forest Research Institute

Dr. H.S. Ginwal

Deputy Director General (Research), Indian Council of Forestry Research and Education

Dr. Pema Gyamtsho

Director General, International Centre for Integrated Mountain Development (ICIMOD)

Dr. Prakash Chauhan

Director, National Remote Sensing Centre (NRSC)

Dr. Vandana Chaudhary

Scientist 'G', Ministry of Earth Sciences

Rear Admiral Monty Khanna

Vice President, LIGHTS; Former Assistant Military Adviser, NSCS

Dr. Rasik Ravindra

Senior Vice President, LIGHTS; Former Director, National Centre for Polar and Ocean Research

Dr. K.J. Ramesh

Former Director General, India Meteorological Department; Member, LIGHTS

Shri Sang Dorjee

President, Yak Federation of India

Dr. S. Pattanayak

Director, Institute of Forest Biodiversity, Hyderabad

Dr. Dhriti Banerjee

Director, Zoological Survey of India

Dr. Mihir Sarkar

Director, ICAR-National Research Centre on Yak, Dirang

Dr. Vineet Kumar Gahalaut

Director, Wadia Institute of Himalayan Geology

Prof. Sunil Bajpai

Chairman, Research Advisory Committee, Wadia Institute of Himalayan Geology

Prof. Milap Chand Sharma

Professor, Centre for the Study of Regional Development, Jawaharlal Nehru University

Prof. Naresh Chandra Pant

*Professor (Retired), Department of Geology
University of Delhi, Delhi, India*

Dr. Stuti Banerjee

Research Fellow, Indian Council of World Affairs
(ICWA)

Dr. Manisha Thapliyal

Director, Himalayan Forest Research Institute
(HFRI), Shimla

Prof. Dr. Marcus Nüsser

Professor of Geography & South Asia Institute,
Heidelberg University

Dr. Uttam Kumar Sinha

Senior Fellow, Manohar Parrikar Institute for
Defence Studies and Analyses (MP-IDSA)

Mr. Babar Khan

Regional Lead, Regional Action and Global
Advocacy, International Centre for Integrated
Mountain Development (ICIMOD)

Mr. Avash Pandey

Intervention Manager – Regional Cooperation,
International Centre for Integrated Mountain
Development (ICIMOD)

Mr. Tashi Dorji

Rangelands and Yak Pastoralism Specialist,
International Centre for Integrated Mountain
Development (ICIMOD)

Dr. Partha Jyoti Das

Head, Water, Climate & Hazard Division, Aranyak

Dr. Y. R. Satyajit Rao

Director, National Institute of Hydrology

Shri Asit Saha

Director General, Geological Survey of India

Dr. Arun Bhardwaj

Scientist & Cryosphere Expert, National Centre for
Polar and Ocean Research

Dr. Roxy Mathew Koll

Climate Scientist, Indian Institute of Tropical
Meteorology



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