

THE 3RD SCIENCE POLICY FINANCE DIALOGUE ON NATURE BASED SOLUTIONS

25-27 NOVEMBER 2025

PARO, BHUTAN

CONVENING PAPER



FROM RISK TO RESILIENCE

**Nature-Based Solutions for a Green,
Resilient and Inclusive Hindu Kush Himalaya**

Section I

Introduction

The Hindu Kush Himalaya (HKH) region, spanning eight countries - Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan, is one of the most ecologically and culturally significant mountain systems in the world. It hosts vast biodiversity, provides essential ecosystem services, and sustains the livelihoods of over 240 million people. At the same time, the region faces profound challenges: climate change, unsustainable development, biodiversity loss, and socio-economic inequalities threatening the resilience of communities and ecosystems alike.

In response to these challenges, Nature based Solutions (NbS) are gaining prominence as integrated, cost-effective, and comparatively sustainable approaches to address water management challenges, enhance ecosystem services, support community livelihoods, and reduce disaster risks enhancing resilience of communities and infrastructure.

In the HKH, countries are increasingly implementing NbS to address these interconnected challenges and promote sustainable development. Among these, community – and institution-led management and restoration of forests and watersheds are the most widely adopted approaches.

While NbS offer multiple co-benefits, critical gaps remain in knowledge, policy integration, and practice. There is limited guidance on identifying the most effective NbS options and typologies suited to the diverse ecological and socio-economic contexts of the HKH. Similarly, existing analytical frameworks for assessing the effectiveness and impact of NbS remain fragmented and are not yet well integrated into local policy frameworks, socio-economic transition pathways, and spatial planning processes.

This regional dialogue served as a platform for policymakers, scientists, financial institutions, practitioners, and community representatives to catalyse cross-sectoral collaboration, facilitate knowledge exchange, and advance investment and policy mechanisms that support the scaling of nature-based solutions in the HKH region.

Key objectives of the Dialogue

- Facilitate an informed dialogue on science-policy-finance interfaces to build a common understanding of NbS and promote the mainstreaming and upscaling of NbS across the HKH region.
- Showcase best practices, innovations, and evidence on NbS for resilience through water security, sustainable livelihoods, and disaster risk reduction.
- Explore enabling financial mechanisms and policy instruments for wider adoption of nature-based solutions and approaches, including climate and development finance.
- Build regional cooperation and partnerships across HKH countries to support green, inclusive and resilient development pathways.

Organisers

The International Centre for Integrated Mountain Development (ICIMOD) in collaboration with the Ministry of Energy and Natural Resources of the Royal Government of Bhutan, convened the third Hindu Kush Himalaya Science-Policy-Finance Dialogue (SPFD) under the theme “From Risk to Resilience: Nature-based Solutions (NbS) for Green, Resilient and Inclusive HKH region” in Thimphu, Bhutan, on 25–27 November 2025. This dialogue was funded by the United Kingdom International Development through ICIMOD’s Himalayan Resilience Enabling Action Programme (HI-REAP) and the Swiss Agency for Development and Cooperation (SDC).

PARTICIPANTS:

More than 60 participants comprising of scientists/researchers, experts (including professionals, practitioners, and managers), and policymakers from within and outside of the HKH region.

Section II

Opening Remarks and Sessions

In the opening session Eklabya Sharma (Strategic Advisor, Ashoka Trust for Research in Ecology and Environment) set a broad and compelling frame for Nature-Based Solutions (NbS). He emphasised that NbS should not be narrowly understood as tree planting or ecosystem restoration alone, but as integrated approaches that address climate change, water insecurity, disaster risk, biodiversity loss, land degradation, pollution, and socioeconomic vulnerability. Drawing attention to the global importance of mountains and particularly the Hindu Kush Himalaya (HKH), he highlighted that the region is warming faster than the global average, is central to biodiversity and food security, and provides water to around two billion people downstream. He underscored that NbS must deliver benefits for both people and nature, support mountain bioeconomies, and be grounded in strong science-policy-practice linkages, regional cooperation, and community-led action.

Building on this regional framing, Sayed Ahmad Khalid Sahibzada (Director General, Directorate of Rangeland Management, Afghanistan) spoke about NbS as a critical pathway for climate-vulnerable countries like Afghanistan. He shared that the country already has policy foundations supporting NbS through environmental laws, protected-area frameworks, and a newly approved national strategy for nature and natural resources.

He highlighted practical actions underway such as watershed restoration, anti-desertification efforts, sustainable grazing, and community-led land management while candidly noting challenges related to financing, institutional capacity, and data systems. He stressed that long-term climate finance, community empowerment, and regional and international cooperation are essential to scale and sustain NbS.

Kongkan Chakma (Joint Secretary, Ministry of Chittagong Hill Tracts Affairs, Bangladesh) focused on the lived reality of climate change and the need for genuine, nature-led restoration. He reflected that nature cannot be restored artificially and that indigenous and traditional practices already offer powerful NbS, such as community flood-management methods used by farmers. While Bangladesh does not yet have a unified national NbS policy, he noted that elements are embedded across ministries and in the National Adaptation Plan. He emphasized restoring damaged ecosystems, reducing river pollution, strengthening coordination across government, and investing in knowledge systems as prerequisites for sustaining livelihoods and food security.

From Bhutan, Karma Nyedrup (Specialist, Ministry of Energy and Natural Resources (MoENR)) highlighted that NbS are deeply rooted in Bhutanese culture, even if the terminology is new. He outlined Bhutan's strong policy commitments to carbon neutrality, biodiversity conservation, and ecosystem-based adaptation, including the updated National Biodiversity Strategy and Action Plan. He emphasized the integration of traditional knowledge, science, and community participation, alongside innovative financing mechanisms such as carbon markets, biodiversity credits, and payments for ecosystem services. His remarks reflected Bhutan's effort to align NbS with climate goals, rural livelihoods, and long-standing constitutional commitments to environmental protection.

Representing Nepal, Mohan Raj Kafle (Provincial Secretary, Ministry of Environment and Forest, Nepal) stressed the importance of sustained science-policy dialogue in addressing escalating climate risks, disasters, and biodiversity loss. He noted that ecosystem-based and community-driven approaches are already embedded in Nepal's climate, biodiversity, and adaptation strategies, supported by growing institutional capacity within government. He emphasized the need to better translate scientific evidence into actionable policy, strengthen data and coordination across ministries, and deepen regional cooperation, recognizing that Nepal's mountain ecosystems have transboundary implications for South Asia.

Saad Sikandar Khan (Additional Secretary, Ministry of Climate Change and Environmental Coordination, Pakistan) spoke candidly about Pakistan's extreme climate vulnerability, citing increasingly frequent floods, extreme heat, and massive economic losses. He highlighted major NbS initiatives such as the Ten Billion Tree Tsunami and the Living Indus project, which aim to restore forests, wetlands, and river systems while

improving water security. He argued for moving beyond GDP-focused development toward well-being-oriented approaches that value ecological balance, community stewardship, and long-term resilience, and called for stronger regional collaboration on shared ecosystems.

The session concluded with reflections from Chief Guest Dasho Karma Tshering, (Secretary, MoENR, Bhutan) who tied the discussions together by emphasising urgency, shared responsibility, and the need for a common understanding of resilience. He underscored the HKH's global significance as the Third Pole and warned that climate impacts are already outpacing responses. He called for prioritising nature-based solutions in national and regional planning, strengthening long-term mountain monitoring and data sharing, reforming climate finance to suit mountain contexts, and elevating mountain voices, traditional knowledge, and community leadership in global climate processes.



Section III

Panel Discussion

Technical session I: Springshed Management as a Nature-based Solution

Moderator: Bandana Shakya, Landscape Lead, ICIMOD

Scene Setter: Sunita Chaudhary, Biodiversity Lead / Ecosystem Services Specialist, ICIMOD

Panellists:

- Md. Mahfuzur Rahman, Additional Chief Engineer (Civil), Bangladesh Water Development Board (BWDB), Dhaka, Bangladesh
- Prakash Chandra Tiwari, Senior Fellow, Centre for Ecology, Development and Research (CEDAR), India
- Anushiya Shrestha, Thematic Lead-Water, South Asia Institute of Advanced Studies (SIAS), Nepal
- Santosh Nepal, Researcher, International Water Management Institute (IWMI), Nepal
- Ashiq Ahmad Khan, Executive Advisor, Human Welfare and Development Organisation, Pakistan

The session was opened by Sunita Chaudhary, who set the context by emphasizing springshed management (SSM) as a practical, people-centered nature-based solution for addressing water insecurity in mountain and downstream landscapes. She highlighted the growing stress on local water sources due to climate change, land-use change, and weak governance, and framed SSM as an approach that connects science, policy, and community action while strengthening upstream–downstream linkages.

From Bangladesh, Md. Mahfuzur Rahman stressed the importance of conserving haor (wetlands) ecosystems, improving groundwater recharge, and strengthening community-based wetland management. He argued that riverbank stabilization and effective policies for small rivers offer low-cost entry points for sustainable sediment and water management, and cautioned against over-reliance on permanent infrastructure, advocating instead for flood-resilient agricultural practices.

Prakash Chandra Tiwari reflected on the paradox of increasing water scarcity in mountain regions despite rich traditional knowledge systems. He pointed to national programs such as the Jal Jeevan Mission and National Water Mission as strong opportunities to integrate SSM, while noting key gaps in awareness, technical capacity to identify recharge zones, and the need for more women-centered approaches. He emphasized that SSM must be embedded within integrated watershed management and linked to agriculture, horticulture, and medicinal plant initiatives.

Anushiya Shrestha from SIAS, emphasised that springshed management cannot function as a standalone intervention and must be mainstreamed into regular planning processes to prevent further spring degradation. She highlighted the importance of upstream–downstream interconnections, existing capacity gaps at the local government level, and the strong potential of SSM to attract climate finance. She also underlined the value of small, predictable funding, private sector engagement, and alignment with ESG approaches.

From IWMI, Santosh Nepal focused on what it takes to make SSM investment-ready. He stressed the need for strong evidence, clear impact pathways, and sound investment design, noting that impacts go beyond water security to include agriculture, kitchen gardens, reduced workloads for women, food security, and education outcomes. He highlighted the importance of developing bankable projects, ensuring investment security, and learning from successful irrigation finance models in Africa, while encouraging blended finance and CSR-linked approaches.

From Pakistan, Ashiq Ahmad Khan highlighted major governance and institutional gaps, including the absence of an ecosystem governance mechanism, weak intersectoral collaboration, and conflicts within springsheds. He noted that information on springs is fragmented across institutions, with no single coordinating body, and emphasized the urgent need for long-term, standardized monitoring systems aligned with international best practices.

Key insights

- Springshed management is most effective when integrated into regular planning and watershed frameworks, not treated as a standalone project.
- Community-based approaches and traditional knowledge remain central but require stronger institutional support and coordination.
- Governance gaps, fragmented data, and weak intersectoral collaboration limit the scaling of SSM across countries.
- Making SSM investment-ready requires evidence, measurable impacts, and bankable project design.
- Climate finance, blended finance, CSR, and ESG-linked investments offer promising pathways to scale springshed management.



Technical Session II: Nature-Based Pathways to Disaster Risk Reduction for enhanced Resilience

Moderator: Niladri Gupta, Regional Coordinator, Water and Wetlands Asia, International Union for Conservation of Nature (IUCN)

Welcome and introduction: Saswata Sanyal, Intervention Manager- Disaster Risk Reduction, ICIMOD

Panellists

- Md Aminul Moven, Director, Climate Change and Risk Mitigation, Sustainable Agriculture Foundation (SAF), Bangladesh
- Sonam Tobgay, Chief Forestry Officer, Department of Forests and Park Services (DFPS), Bhutan
- Ravinder Singh, Senior Consultant, National Institute of Disaster Management (NIDM), India
- Dinesh Prasad Bhatta, Chief Executive of the National Disaster Risk Reduction Management Authority (NDRRMA), Nepal
- Zakir Hussain, Director General, Gilgit-Baltistan Disaster Management Authority (GBDMA), Pakistan
- Kyla Matias, Climate Change Officer, Asian Development Bank (ADB), Bhutan

The joint ICIMOD–IUCN presentation by Saswata Sanyal and Niladri Gupta outlined a context-driven NbS for DRR approach in the HKH and Asia-Pacific, centred on ICIMOD’s framework aligned with the IUCN Global Standard and the Sendai Framework for DRR. It highlighted strong baseline assessments, GESI-responsive, community-co-designed solutions, and hybrid grey–green measures that reduce risks and enhance ecosystem services. IUCN reinforced principles of rights-based, inclusive, evidence-driven NbS. Overall, the session positioned NbS as a key pathway for DRR and climate resilience, requiring community leadership and supportive policy and financing environments.

The panel session that followed reflected strong regional consensus on the need to systematically integrate NbS into DRR policies, plans, and governance across all levels. While countries shared diverse experiences, three themes dominated: financing, community leadership, and policy integration, with the donor perspective (ADB) receiving the most attention.

Zakir Hussain highlighted the dual role of NbS in restoring ecosystems and protecting mountain communities, citing Pakistan’s experience with human early warning systems for Glacial Lake Outburst Flood (GLOF) events and innovations such as ice stupas. He stressed the need for community-led NbS, stronger coherence, capacity building, institutional collaboration, knowledge sharing, and more synergised financing.



Ravinder Singh noted that India has substantial resilience and GLOF-related funds but that community-level NbS implementation remains challenging in remote, transboundary mountain areas. He pointed to community-led initiatives in Sikkim and mitigation efforts in Ladakh and Kashmir, emphasising the need for improved documentation of existing NbS and multi-hazard planning in rapidly urbanising Himalayan towns.

Sonam Tobgay underscored that in Bhutan, NbS must be locally led and technically sound, highlighting emerging work on forest fire detection and management. He reiterated that mountain contexts require flexible, context-specific policies, rather than one-size-fits-all approaches.

Dinesh Prasad Bhatta emphasised that Nepal is integrating NbS into local DRR plans and forming community DRR teams that incorporate ecosystem-based measures. He highlighted the importance of embedding NbS across policies and plans at all governance levels and the need for stronger private-sector engagement.

Md Aminul Moven stressed Bangladesh's significant climate finance gap and pointed to opportunities in quality carbon projects, mangrove restoration, and blended finance models such as agriculture insurance. He underlined that scaling NbS requires strong evidence, monitoring, and transparent reporting.

Kyla Matias outlined a practical model that donors tend to use for unlocking NbS finance - Awareness, Availability, Accessibility, and Ambition, supported by differentiated, equitable, and affordable financing approaches.

Key Insights:

- Building awareness and understanding of NbS at institutional and community levels.
- Improving availability and accessibility of financing instruments and meeting funder requirements, including blended and differentiated financing models mixing public, private, development-partner, and carbon-market sources to meet the needs of diverse countries and vulnerable groups.
- Ensuring ambition and alignment among government, private sector, and communities, with ADB's AAAA framework (Awareness, Availability, Accessibility, Ambition) providing a pathway for unlocking NbS finance
- Strengthening evidence, MEL systems, and proof-of-concept to unlock larger investments, while strengthening community leadership, local ownership, and policy integration of NbS. Existing community-led solutions need documentation and support to scale.

Overall, the panel agreed that financing is the central bottleneck for scaling NbS, and that progress requires coordinated ambition, stronger evidence, community leadership, and financing models tailored to the realities of mountain countries.

Technical Session III: Enabling NbS for sustainable mountain livelihoods

Moderator: MA Sattar Mandol, Professor, Former Vice Chancellor- Bangladesh Agricultural University and Former member of Bangladesh Planning Commission, Bangladesh
Scene Setter: Abul Kalam Azad, Senior Intervention Manager, ICIMOD

Panellist:

- Tsheten Dorji, Chief of Sustainable Livelihoods Division, Royal Society for Protection of Nature (RSPN), Bhutan
- Lyu Youling, Deputy Secretary General, Lijiang Conservation and Development Association, China
- Arjun Kumar Shrestha, Dean, Faculty of Agriculture, Agriculture and Forestry University (AFU), Nepal
- Shikha Thapa Magar, Executive Director, Nepal Development Research Institute (NDRI), Nepal
- Khadim Hussain Saleem, Secretary/Programme Coordinator, Gilgit-Baltistan Economic Transformation Initiative (IFAD), Pakistan

The panel opened with Tsheten Dorji highlighting the growing climate pressures on mountain communities across the HKH, particularly on water resources and livelihoods. He noted that Bhutan's strong environmental governance and carbon-neutral commitment provide a solid foundation for scaling nature-based solutions (NbS). He outlined key mechanisms for scaling NbS in agroecology and livelihoods, including clear government leadership, concessional financing, community-based schemes, and local monitoring systems, stressing that success depends on partnerships and the meaningful engagement of women, youth, policymakers, and the private sector within local development and climate adaptation plans.

Lyu Youling shared ground realities where illegal hunting and deforestation for charcoal continue to threaten ecosystems. She highlighted innovative incentive-based approaches, such as fostering local pride through community-authored tourism guidebooks and reversing rural brain drain by creating livelihoods as nature guides and homestay managers. She acknowledged barriers to scaling NbS, including institutional rigidity, long time horizons, and human capital gaps, and emphasized solutions such as legalizing sustainable commercial use, blended finance, and reframing farmers as ecological stewards through eco-tourism and environmental education.

Arjun Kumar Shrestha focused on the role of academia, noting ongoing curriculum revisions that integrate climate-resilient development and NbS into university programs. He emphasized student and faculty engagement through workshops and field research, while stressing the persistent gap between research and real-world application. He called for long-term investment in field-based research and monitoring to ensure NbS interventions are evidence-driven and practical.

Shikha Thapa Magar shared practical experiences from responsible tourism initiatives in Dhankuta under the HIGRID program, where water restoration and recharge activities improved livelihoods for vulnerable and marginalized groups. She described co-designed ecosystem-based adaptation solutions in agriculture, including the establishment of over 200 recharge ponds, and emphasized soil fertility, water harvesting, and the potential for scaling such approaches across the HKH through strong multi-stakeholder collaboration.

Khadim Hussain Saleem emphasized that NbS offers a way to address tensions between development and conservation. He highlighted IFAD-supported initiatives in Gilgit that aim to reach around 100,000 people through agriculture value chains, noting that blended finance is essential given limited private investment and insufficient public funding. He stressed the importance of embedding NbS into policies and local development planning to ensure long-term impact.

The moderator concluded by observing that the HKH is rapidly shifting from subsistence to market-oriented agriculture, making it essential for NbS to balance productivity with ecological sustainability. She cautioned that high-tech interventions can sometimes conflict with NbS objectives and emphasized the need to manage trade-offs carefully. Understanding land ownership, access to resources, and local rights was highlighted as fundamental to enabling communities to sustainably manage their landscapes.

Key Insights:

- Scaling NbS requires strong government leadership, enabling policies, and integration into local development and climate plans.
- Community-based approaches, including monitoring and stewardship, are central to sustaining NbS outcomes.
- Incentives linked to pride, social recognition, and livelihoods such as eco-tourism can effectively drive conservation.
- Blended finance and concessional loans are critical to bridging gaps between limited public funds and cautious private investment.
- Universities and research institutions play a key role in bridging science and practice through applied learning and field research.
- NbS must balance market-oriented livelihood growth with ecological sustainability, land rights, and resource access.

Technical Session IV: Data and information for NbS scaling

Moderator: Babar Khan, Regional Lead, ICIMOD

Presenters:

- Birendra Bajracharya, Senior Intervention Manager – Regional Information Services, ICIMOD
- Kiran Shakya, Geospatial Application Development Specialist, ICIMOD
- Dasho Galey Norbu, Director General, National Land Commission, Bhutan

The session focused on the central role of data in scaling nature-based solutions across the Hindu Kush Himalaya. Speakers and participants emphasized that while data gaps remain significant across the HKH, the challenge is not only the lack of data but the need to transform data into usable intelligence. Discussions highlighted ICIMOD's Regional Information Service, including its core components, and the growing importance of big data, advanced technologies, and regional database systems in supporting mapping, monitoring, and decision-making. Participants stressed that an excessive focus on national-level data often obscures transboundary realities, underscoring the need for regional perspectives, interoperable systems, and tools, such as mobile applications that enable communities to contribute to data collection and monitoring.



The shift from open data to open science was also noted, alongside questions on how regional systems can still provide country-specific datasets for HKH nations.

In his reflections, Dasho emphasized that despite good intentions, many sustainability initiatives remain fragmented and siloed, limiting long-term impact. He stressed that collaboration must be built on reliable, dynamic, interoperable, and accessible data, and that accessibility alone is insufficient without a clear Single Source of Truth and defined institutional responsibility. Highlighting rising climate risks and ecosystem fragility in the HKH, he argued that science-driven planning and budgeting are now essential. He shared the example of the country's launch of the National Spatial Data Infrastructure (NSDI) in August 2025, which brings together standardized geospatial and thematic data through cross-government collaboration. With hundreds of officials engaged and dozens of cleaned datasets already hosted, the initiative was presented as a practical demonstration of how coordinated, cross-agency data platforms can strengthen evidence-based decision-making and align with ICIMOD's vision for regional resilience and data harmonization.

Key Insights:

- Data gaps persist across the HKH, but the larger challenge lies in converting data into actionable intelligence.
- Regional and transboundary data perspectives are critical and often missed by national-level approaches.
- Scaling NbS requires reliable, interoperable, and well-maintained datasets with a clear Single Source of Truth.

- Community-driven data collection, supported by mobile technologies, can strengthen monitoring and ownership.
- The shift from open data to open science can accelerate collaboration and innovation.
- Coordinated, cross-agency platforms like NSDI demonstrate how shared data systems can enable evidence-based planning and long-term sustainability.

Technical Session V: Catalysing Investments for Nature-Based Solutions

Moderator: Masood Arshad, Senior Director (Programmes), WWF, Pakistan

Scene Setters

- Chiden Oseo Balmes, Regional Lead (Asia), Global Green Growth Institute (GGGI), Korea
- Saurav Malhotra, Founding Managing Director, Mountains to Mangroves, Conservation International, India

Panellists:

- Khondkar Morshed Millat, Faculty Member, Bangladesh Institute of Bank Management (BIBM), Former Director, Sustainable Finance Department, Bangladesh Bank (the central bank of Bangladesh)
- Sunpreet Kaur, Programme Lead, The Nature Conservancy Centre, India
- Sudesh Upadhyaya, Senior Deputy Chief Executive Officer, Nepal Merchant Bank, Nepal
- Syed Abdul Waheed Shah, Secretary, Forest, Wildlife and Environment, Government of Gilgit-Baltistan, Pakistan
- Kyla Matias, Climate Change Officer, Asian Development Bank, Bhutan

The session focused on the challenges and opportunities for mobilising finance for NbS in the HKH. Chiden Oseo Balmes highlighted that global climate finance is heavily skewed toward mitigation, leaving adaptation and especially NbS significantly underfunded in highly vulnerable regions like the HKH. He stressed that while the HKH is rich in natural capital and critical for nearly two billion people, it remains one of the least-funded regions, facing structural gaps including limited project pipelines, high perceived risk, weak local capacity, lack of long-term sustainability plans, and sectoral fragmentation. Chiden emphasized the strong economic case for NbS, noting that every USD 1 invested in adaptation can generate more than USD 10 in benefits, and highlighted priority areas such as springshed management, forest and landscape restoration, climate-

resilient agriculture, ecosystem-based disaster risk reduction, and wetland restoration. Innovative financial instruments like blended finance, payments for ecosystem services, parametric insurance, and green bonds were suggested as ways to bridge these gaps.

Saurav Malhotra also highlighted the importance of integrating NbS into local and regional planning, connecting science, policy, finance, and communities to ensure long-term impact.

Khondkar Morshed Millat stressed the absence of MRV (monitoring, reporting, verification) systems and risk-mitigation tools for NbS. He called for a shift from project-to-project thinking to long-term planning, supported by green taxonomies, proper fund allocation, and investor incentives, with blended finance enabled by strong domestic arrangements.



Sunpreet Kaur focused on sustainability, emphasizing the need for strong community ownership to ensure interventions continue beyond project funding, with governance structures and support systems in place to maintain long-term results. Sudesh Upadhyaya shared experiences from green banking, noting initial hesitancy toward financing green and small energy projects, and the need to ensure bankability and long-term returns. He highlighted blended finance and regional collaboration as critical for overcoming risks and scaling investments.

Syed Abdul Waheed Shah highlighted gaps between project needs and climate finance mechanisms, noting technical barriers, limits of funding instruments like the GCF, and the challenges of translating national policies into actionable projects, especially across borders. Kyla Matias emphasized the shortage of finance experts in NbS planning, the need to integrate NbS into national fiscal systems, and the importance of translating NbS into terms communities and investors understand to attract private sector engagement and larger investments.

The discussion underscored the “glocal” challenge: bridging global finance frameworks with local implementation through harmonized priorities, regional partnerships, and integrated project pipelines.

Key Insights:

- Global adaptation and NbS remain underfunded in vulnerable regions due to weak policy frameworks, limited bankable projects, data gaps, and poor institutional coordination.
- Despite existing green finance frameworks, lack of regulations, MRV systems, risk-mitigation tools, and investor readiness limits private and foreign investment.
- Adaptation projects must demonstrate a strong business case and long-term value for money to attract finance.

- Adaptation projects must demonstrate a strong business case and long-term value for money to attract finance.
- Regional cooperation, harmonized priorities, and engagement of finance ministries are critical for scaling integrated NbS projects.
- Blended finance, innovative instruments, and private sector participation are essential to turn fragmented adaptation efforts into scalable, bankable regional investments.

Technical Session VI: Regional Cooperation and Collaboration for scaling NbS

Moderator: David Thomas Potter, Head of Regional Action and Global Advocacy, ICIMOD
Scene Setter: Babar Khan, Regional Head, ICIMOD

Panellists:

- Kongkan Chakma, Joint Secretary, Ministry of Chittagong Hill Tracts Affairs, Bangladesh
- Karma C. Nyedrup, Specialist, Environment Assessment and Compliance Division, Ministry of Energy and Natural Resources, Bhutan
- Nistha, India
- Srijana Shrestha, Under-Secretary, Ministry of Forests and Environment, Nepal
- Saad Sikandar Khan, Additional Secretary, Ministry of Climate and Environmental Coordination, Pakistan

The session focused on strengthening regional collaboration for nature-based solutions (NbS) across the Hindu Kush Himalaya (HKH). Kongkan Chakma highlighted the shared hydrological systems in the region, stressing that upstream actions like deforestation directly impact downstream areas, and underscored the need for joint management, open knowledge sharing, and regular technical platforms to inform policymakers. Karma C. Nyedrup emphasized the importance of openly discussing both successes and gaps, integrating NbS into environmental assessments, aligning with global definitions, and using ICIMOD as a trusted platform to guide regional coordination.

Saad Sikandar Khan advocated starting with small, practical steps to build trust, drawing inspiration from local wisdom and shared cultural heritage, while acknowledging that large political platforms like SAARC may not be immediately feasible. Srijana Shrestha recommended cross-learning and informal networking platforms to complement formal forums, ensuring lessons from these discussions feed into policy and coordinated action. Nistha stressed the need to clarify NbS concepts for diverse stakeholders, focus on small scalable projects, communicate science in simple terms, and present a unified South Asian voice on global platforms.

During the Q&A, panelists noted that NbS are most effective when communities take ownership, and scaling requires policies that consider local realities. Incorporating NbS into higher education remains a challenge, requiring dedicated curricula, trained educators, and continuous knowledge updates. Dedicated platforms for collective action should start with non-controversial, shared issues to build trust before expanding to broader, complex initiatives.

Key Insights:

- Strengthen cross-border cooperation through shared hydrological and ecosystem management.
- Increase awareness among communities, policymakers, scientists, and businesses on NbS concepts and benefits.
- Promote open knowledge sharing of species information, innovations, and research outcomes.
- Utilize technical platforms like ICIMOD for regular exchanges, guidance, and coordination.
- Document and communicate both successes and challenges in NbS implementation.
- Integrate NbS into environmental assessments and align with global definitions for science-based cooperation.



- Begin with small, practical, replicable projects to build trust before scaling regionally.
- Leverage cultural heritage and local knowledge to strengthen conservation and collaboration.
- Establish informal networking spaces to facilitate cross-learning and feed insights into formal policies.
- Institutionalize NbS education through dedicated curricula, trained educators, and continuous updates.
- Translate scientific knowledge into accessible messages for communities and policymakers.
- Present a unified regional voice in global platforms to advocate shared environmental and climate priorities.

Break out group – Way forward for scaling NbS

Group Discussion 1: Nature-Based Solutions for Water Security

Group moderator: Sunita Chaudhary, ICIMOD

Participants highlighted the growing challenges of water insecurity across the HKH region, including declining spring flows, changing precipitation patterns, and increasing pressure on water resources. Discussions emphasized the need for stronger evidence generation, standardized water data systems, and platforms for regional knowledge sharing. They also stressed the importance of integrating indigenous and local knowledge into water management, strengthening governance mechanisms, and improving coordination among institutions. The group identified capacity building, community ownership, and sustainable financing as critical enablers for scaling nature-based approaches to water security.

Group Discussion 2: Nature-Based Solutions for Disaster Risk Reduction

Group moderator: Saswata Sanyal, ICIMOD

Discussions focused on the increasing frequency and intensity of climate-induced hazards across the HKH region and the role of Nature-Based Solutions in enhancing resilience. Participants emphasized the need to integrate NbS into national and sub-national disaster risk reduction policies and planning processes. Strengthening science-policy-finance linkages, improving multi-hazard risk assessments, and enhancing regional cooperation on monitoring and early warning systems emerged as key priorities. The group also highlighted the importance of community participation, inclusive decision-making, and sustained investment to support long-term resilience outcomes.

Group Discussion 3: Nature-Based Solutions for Sustainable Mountain Livelihoods

Group moderator: Abul Kalam Azad, ICIMOD

The group discussed opportunities to strengthen mountain livelihoods through climate-resilient agriculture, agroecological practices, ecosystem-based enterprises, and sustainable value chains. The discussions highlighted the importance of promoting evidence-based NbS, documenting indigenous knowledge and traditional practices, and improving access to finance for farmers, small businesses, and local entrepreneurs. Participants also stressed the need for stronger market linkages, innovation, capacity development, and policy support to scale sustainable livelihood approaches while ensuring equitable benefits for women, youth, Indigenous Peoples, and local communities.

Closing Session

Moderator: Avash Pandey, ICIMOD

The closing session reflected on key insights, lessons, and actionable recommendations from the three-day dialogue on nature-based solutions (NbS) for the Hindu Kush Himalayan (HKH) region.

Kongkan Chakma (Bangladesh) highlighted how communities are already implementing simple NbS, such as rooftop vegetable cultivation and floating hyacinth systems, which provide climate mitigation and environmental benefits often unrecognized in formal policy. He stressed the importance of documenting and validating community innovations, promoting scalable practices, and leveraging cross-country learning to build a coordinated NbS movement.

Karma C. Nyedrup (Bhutan) emphasized the need for flexible, context-specific regional recommendations that can be translated into national policies and programmes. While countries face different developmental stages and challenges, shared concerns offer opportunities for collective action. Consolidating dialogue insights into practical, implementable recommendations was seen as critical for real impact.

Mohan Raj Kafle (Nepal) underlined the value of multi-stakeholder participation, cross-learning, and incorporating practical experiences into national policy frameworks. He expressed Nepal's commitment to long-term collaboration with ICIMOD member countries and emphasized the importance of documenting and exchanging field practices.

Saad Sikandar Khan (Pakistan) noted that informal networks and personal connections formed during the dialogue are as important as technical discussions, helping accelerate regional collaboration through easier communication and coordination.

Babar Khan (ICIMOD) reflected that the dialogue succeeded in building a common understanding of NbS, strengthening science-policy-finance interfaces, identifying good practices, and exploring instruments to fund and promote NbS at national and regional levels. The session emphasized ICIMOD-led mechanisms for transboundary collaboration and formal institutional support for NbS. Actionable recommendations from breakout groups will inform policy and investment decisions, culminating in the “Paro Roadmap on Nature-Based Solutions for a Resilient Hindu Kush Himalayan Region.”

Jigme Lhundup, MoENR (Bhutan) expressed gratitude to all participants, recognizing their contributions, and thanked the organizers, mentors, and teams supporting the event. He acknowledged minor inefficiencies and committed to continuous improvement for future dialogues.

Key Insights and Recommendations from the Closing Session

- Communities are already practicing effective, low-cost NbS (e.g., rooftop farming, floating vegetation) that can be scaled and documented.
- Systematically capture, validate, and share community-led innovations across countries.
- Regional recommendations must be adaptable to different national contexts while building on shared priorities.
- Integrate NbS insights into national policies, programmes, and frameworks for real impact.
- Multi-stakeholder participation, including banks, NGOs, communities, and government, is essential for knowledge exchange and collaboration.
- Personal networks and informal connections complement formal discussions, supporting long-term regional cooperation.

- Strengthen ICIMOD's role in coordinating, facilitating, and promoting transboundary NbS initiatives.
- Actionable recommendations will feed into the “Paro Roadmap” to guide NbS adoption, policy integration, and regional implementation.
- Continuous dialogue, practical demonstration, and knowledge exchange are critical to sustaining momentum for NbS in the HKH region.
- Future dialogues should build on the successful format, ensuring inclusiveness, practicality, and long-term collaboration.



THE PARO ROADMAP

ADOPTED IN PARO, BHUTAN, ON 27TH NOVEMBER 2025.

This brief outlines the Nature-based Solutions (NbS) Roadmap for a green and resilient Hindu Kush Himalaya (HKH) for its people and the environment. Co-developed at the Third HKH Science-Policy-Finance Forum (SPFF) in Paro, Bhutan, on 25-27 November 2025, this roadmap addresses the urgent need to pilot and scale NbS to mitigate the impacts of rapid warming, glacier melt, and biodiversity loss on nearly 270 million mountain communities and another 1.64 billion living downstream in South Asia.

Rationale:

The HKH region is currently experiencing intensifying impacts of the global triple planetary crisis—climate change, biodiversity loss, and pollution, further compounded by environmental degradation and socio-economic shifts. The region's cryosphere is warming rapidly, with glaciers melting approximately 65% faster than during the previous decade¹. At the same time, the frequency and severity of multi-hazard events—including floods, landslides, and glacial lake outburst floods—have increased substantially, contributing to an estimated 399,609 casualties across the region between 2000 and 2010². Hydrological systems are also under growing stress. Studies indicate that nearly half of the springs in the HKH (n=0.8 million) are drying out or experiencing significant declines in discharge, posing serious challenges to drinking water security and rural livelihoods³. Environmental degradation is further exacerbated by worsening air pollution; nearly 1 billion people are exposed to hazardous air quality on a daily basis, contributing to approximately one million premature deaths annually and reducing average life expectancy by more than 3 years⁴. In addition, the region is witnessing accelerating biodiversity loss, degradation of ecosystem services, and increasing vulnerability of mountain communities whose livelihoods are closely tied to fragile ecological systems.

While the ICIMOD's regional member countries' policy landscape demonstrates growing recognition of Nature-based Solutions (NbS) as a strategy for addressing climate and ecological challenges, a significant disconnect persists between national-level commitments and effective regional implementation. This gap constrains the potential contribution of NbS to achieving key international and national frameworks, including the Sustainable Development Goals (SDGs), National Adaptation Plans (NAPs), National Biodiversity Strategies and Action Plans (NBSAPs), and Nationally Determined Contributions (NDCs) under the Paris Agreement.

Analysis of Current Policy Coverage

The available data and information indicate that NbS is no longer a "fringe" concept; it is being institutionalized across the HKH through three main policy vehicles:

Policy Vehicle	Focus Areas by Country
Nationally Determined Contributions (NDCs)	Bangladesh, Bhutan, China, India, and Nepal primarily use NDCs to frame NbS as a tool for carbon sequestration and forest cover restoration.
National Adaptation Plans (NAPs)	Pakistan and Nepal emphasize climate-smart agriculture and "green infrastructure," while Bhutan focuses on Ecosystem-based Adaptation (EbA) in human settlements.
Legislative Frameworks	China and Myanmar have moved beyond strategy into law, such as the Yangtze River Protection Law and Myanmar's Environmental Conservation Law.

Critical Policy Gaps

Despite the integration of NbS into national documents, several gaps prevent these solutions from reaching the scale necessary to combat the current climate trajectory:

- **Lack of Transboundary Frameworks:** While the brief notes that disasters in the HKH are increasingly "transboundary," the policies and programmes listed (e.g., India's Green India Mission or Pakistan's Recharge Pakistan) remain strictly national in scope. There are no shared regional policy frameworks for managing shared landscapes/watersheds, cascading risks, and transboundary ecosystems.
- **Fragmented Analytical Frameworks:** There is no harmonized HKH-wide guidance for identifying which NbS typologies (e.g., "sponge mountains" vs. reforestation) are best suited for specific socio-economic and ecological contexts.
- **Missing Integration in Spatial Planning:** NbS is often treated as a "sectoral" environmental project rather than a core and mandatory component of mainstream development planning for mountain infrastructure, hydropower, or mountain development.
- **Knowledge-to-Practice Void:** There is limited guidance on measuring the long-term "effectiveness" of NbS, leaving a gap in data-driven policy adjustment and implementation.

Rationale for Scaling NbS in the HKH

To address the warming of the HKH at twice the global average, we must move from pilot projects to regional scaling. The rationale is built on three pillars:

A. Water Security (The "Water Tower" Resilience)

With glaciers melting and springs drying at an "unprecedented rate," traditional grey infrastructure (dams/pipes) is insufficient. Scaling NbS such as ecosystem restoration, watershed management, recharge ponds and land use planning is the only cost-effective way to manage the timing and availability of water for riverine and coastal ecosystems and the 1.9 billion people living downstream.

B. Disaster Risk Reduction (Eco-DRR)

As multi-hazard risks (floods, landslides) become more uncertain, Eco-DRR (e.g., bio-engineering works such as green river embankments along riverine belts/flood plains, mangrove forestation in Sundarbans and Indus Deltaic regions, or watershed plantations in the Indian Himalayas, Gilgit-Baltistan and Chitral in Pakistan, and the Chittagong Hill Tracts region in Myanmar) provides a flexible buffer that "hard" infrastructure lacks. Scaling these prevents the catastrophic economic losses associated with transboundary floods and coastal erosion.

C. Ecosystem and Community Resilience

Biodiversity is the foundation of mountain development. By scaling NbS such as agroforestry and community-led mangrove restoration, countries provide dual benefits: protecting ecosystems and securing the livelihoods of Indigenous Peoples and local communities who are on the front lines of climate change in hazard-prone mountainous areas, floodplains, and coastal belts.

Strategic Framework for NbS Scaling

The HKH region faces significant barriers to NbS adoption, including fragmented evidence and a disconnect between science, policy, and finance. This roadmap provides a structured pathway to transition from risk to resilience across eight member countries: Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan.

Goal 1: Water Security through NbS (Springs) [1-5 years]

Objective: Strengthened institutions and partnerships through GESI-responsive science, policy, and programmes for water security and ecosystem health.

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<i>Key Activity</i>	<i>Priority Actions</i>	<i>Timeline</i>	<i>Approach</i>	<i>Output</i>	<i>Incentives & Finance</i>	<i>Relevant agencies</i>
Data & Science	Generate standard quality and GESI-disaggregated water data; a comprehensive inventory of indigenous knowledge.	3-5 years	Standardise GESI-aggregated and indigenous knowledge data generation tools related to springs. Develop or use an existing data repository to store.	Database on water availability (drinking, irrigation) and indigenous knowledge	Global Climate Finance, Public Finance, Blended Finance	ICIMOD, International Water Management Institute (IWMI), Asian Development Bank (ADB), South Asia Institute of Advanced Studies (SIAS), Bangladesh Water Development Board (BWDB)
Governance	Integrate water security into national policy frameworks and review bottlenecks, and co-design locally accepted adaptation solutions.	1-3 years	Engagement with policymakers to identify bottlenecks and inroads to addressing them. Engagement with local stakeholders to understand and identify adaptation solutions	Integration of water security in national policy frameworks. Review report on policies and locally accepted adaptation solutions	Multilateral Development Banks (MDBs), Earmarked public sector institutional finance	ICIMOD, IWMI Ministry of Energy and Natural Resource (Bhutan), Ministry of Forest and Environment (Nepal) and Ministry of Climate Change and Environmental Coordination (Pakistan)
Capacity	Conduct multi-stakeholder training and support community ownership of water sources.	1-3 years		Training modules and toolkits/framework for inclusive ownership	Payment for Ecosystem Services (PES), CSR funds, and innovative finance models	ICIMOD, IWMI, Royal Society for Protection of Nature (Bhutan), WWF (Pakistan), Centre for Ecology, Development and Research (India)

Goal 2: Reducing Disaster Risk (DRR) through Nature-Based Pathways [1-5 years]

Objective: Identification of investment opportunities for scaling NbS for DRR and enhancing regional collaboration.

Key Activity	Priority Actions	Timeline	Approach	output	Incentives & Finance	Relevant Agencies
Policy Integration	Review and integrate NbS for DRR into national/sub-national plans with GESI components.	3-5 years	Standard review template to identify and integrate NbS into DRR policies	Review document of policies on NbS for DRR integration	Green Finance , Carbon markets, Public-Private Partnerships (PPP)	ICIMOD, International Union for Conservation of Nature (IUCN), National Institute for Disaster Management (NIDM) [India], National Disaster Risk Reduction and Reconstruction Management Authority (NDRRMA) [Nepal], Gilgit-Baltistan Disaster Management Authority (GBDMA) [Pakistan]
Science-Finance Linkages	Reinforce research hubs and organize demand-driven dialogues to bridge investment gaps.	1-3 years	Identification of existing research hubs and need analysis for a new research hub	Research hubs and dialogue platforms identified and developed, if needed	Donor grants, Blended finance, Private sector investment	ICIMOD, Global Green Growth Institute (GGGI), Asian Development Bank (ADB), IWMI, Sustainable Agriculture Foundation (SAF) [Bangladesh]
Hazard Management	Conduct regional multi-hazard risk assessments and install Early Warning Systems.	3-5 years	Standard template for multi-hazard risk assessments and identification of areas for Early Warning Systems	Muti-hazard risk assessment including areas for early warning systems	MDBs, Public and Private Finance	ICIMOD, IWMI, IUCN, Department of Forests and Park Services (DPFS) [Bhutan]

Goal 3: Enabling NbS for Sustainable Mountain Livelihoods [1-5 years]
Objective: Strengthening food systems and livelihoods through agroecological practices and enhanced stakeholder collaboration.

Key Activity	Priority Actions	Timeline	Approach	output	Incentives & Finance	RELEVANT AGENCIES
Agroecology	Share climate-resilient crop varieties and document and support native seeds and indigenous farming practices.	1-3 years	Identification of climate-resilient crop varieties,	Repository of climate resilient crop varieties and native and indigenous crops and cropping practices	Seed funding, Small research grants, Donor grants	ICIMOD (Living Mountain Lab), IWMI, AFU (Nepal), LCDA (China), GBETI (Pakistan)
Finance & Enterprise	Develop farmer-friendly lending, crop insurance, and incubation hubs for SMEs.	3-5 years	Research on existing schemes and framework for inclusive schemes	Insurance scheme and incubation hub for SMEs	Low-interest loans, Blended finance, Women/IPLC-led enterprise support	Asian Development Bank (ADB) , GGGI, NMB Bank (Nepal), Bangladesh Insitute of Bank Management (BIBM) [Bangladesh]
Eco-Tourism	Promote eco-tourism through workshops and seminars, and lobby effectively for certifications of organic food/ handicraft, and green tourism standards.	1-3 years	Targeted workshop and trainings in targeted areas. Framework for organic certification.	Workshops and certification roadmap	Market-based incentives, Certification premiums	Royal Socieity for Protection of Nature (RSPN) [Bhutan], ICIMOD, Nepal Development Research Institute (NDRI) [Nepal], Gligit Baltistan Economic Transformation Initiative (GBETI) [Pakistan]

Implementation Principles

Gender Equality and Social Inclusion (GESI): All activities must ensure the meaningful participation of women, youth, and marginalized communities to achieve equitable outcomes.

Regional Collaboration: Actions marked as "Regional" involve transboundary cooperation to manage shared hazards and water basins.

Science-Policy-Finance Interface: Regular dialogues are essential to translate scientific evidence into bankable projects and actionable policies.

Expert Note: To ensure the success of this roadmap, a dedicated Working Group will review and refine these strategies, supporting national-level implementation within the ICIMOD member countries.



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