Facilitating Nature-based Solutions in the Hindu Kush Himalaya

The International Centre for Integrated Mountain Development (ICIMOD) is a regional intergovernmental knowledge and learning centre. We serve our eight Regional Member Countries (RMCs) – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – working regionally for the benefit of the countries and communities of the Hindu Kush Himalaya (HKH).

The HKH covers an area of approximately 4.2 million square km, encompassing the whole of Bhutan and Nepal, and parts of Afghanistan, Bangladesh, China, India, Myanmar, and Pakistan. The region is a critical global asset. Being at the top of the world (with all major peaks above 7000 metres above sea level and the world's highest plateau) many changes occur here before they occur elsewhere, and these changes have major repercussions, for mountain communities and the 1.6 billion people who live in the river basins downstream.

The global 1.5˚C target is already too high for the HKH. Due to elevation-dependent warming, the region is projected to experience a greater rate of warming than elsewhere, and the impact of climate change is greatly evident – with accelerated glacier melt rates, increased permafrost thaw, and declining snow cover. Our recent report entitled 'Water, ice, society, and ecosystems in the Hindu Kush Himalaya' (HI-WISE) elaborates on the interlinkages between cryosphere, water, ecosystems and societies and the threats that a changing cryosphere poses to downstream infrastructure, human settlements, biodiversity and ecosystems, livelihoods, and the broader economy.

The HKH has not received the global attention it deserves, and the scale of investment required to address these complex mountain-specific challenges. While our eight RMCs have jointly endorsed the HKH Call to Action to meet the climate, biodiversity and sustainable development commitments for 2030 and beyond, increased and targeted investments are urgently needed to address mountain-specific environmental and societal challenges.

Investing in Nature-based Solutions (NbS) becomes particularly relevant for the HKH. NbS can offer viable win-win solutions for fragile and vulnerable mountain areas. NbS bring together sets of integrated actions that help address societal challenges while also delivering climate and environmental co-benefits. Some of the countries of the HKH, for instance, in their nationally determined contributions (NDCs) for climate, reference the role of biodiversity, ecosystems and nature's contribution to people as measures to address both the causes and consequences of climate change and biodiversity loss. NbS offer important opportunities to deliver on these commitments.

ICIMOD has components dedicated to NbS in two of its programme areas for 2023–2026: The Himalayan Resilience Enabling Action Programme (HIREAP) supported by the Climate Action for a Resilient Asia (CARA) programme of the UK's Foreign, Commonwealth & Development Office (FCDO); and the Building Capabilities for Green Climate Resilient and Inclusive Development in the Lower Koshi River Basin (HI-GRID) supported by the Australian Government's Department of Foreign Affairs and Trade (DFAT). The aim of HI-REAP and HI-GRID is to conceptualize and showcase NbS in the HKH context by addressing mountain-specific societal challenges around water insecurity, livelihood insecurity, and disaster risk. While HI-GRID will focus on NbS for disaster risk reduction (DRR), including flood risk management, HI-REAP aims at wide-scale adoption of NbS. The scaling of these NbS will be done through testing and experimenting with these concepts, promoting an enabling policy environment, enhanced institutional capabilities, and increased investment, as well as regional cooperation.

The Lima Adaptation Knowledge Initiative (LAKI), a joint initiative coordinated and convened by UNFCCC's Nairobi Work Programme (NWP) and UNEP's Global Adaptation Network (GAN), helps to prioritise adaptation knowledge gaps, and catalyse actions to close these gaps. We will be identifying NbS as a remaining knowledge gap, particularly what works, where and under which conditions.

In collaboration with ICIMOD, LAKI is now embarking on a second phase for the Hindu Kush Himalaya subregion to primarily support the implementation and upscaling of activities that address adaptation knowledge gaps for target knowledge users. In the process, ICIMOD will work with partners to address adaptation knowledge gaps and scale up nature-based solutions in the HKH.

Reflections around issues to be addressed in the First Regional Consultations on Nature-based Solutions as highlighted in the meeting:

Issue 1: Compendium of solutions: Prospects for NbS and examples from some of our RMCs

Bangladesh focuses on solutions for water and disasters, urban centres, and agriculture with NbS as an essential component. There are efforts focused on floating agriculture, mangrove belt development in coastal areas, submersible embankments, climate-resilient agriculture, springshed management, and swamp forest restoration.

In Bhutan, there are ongoing adaptation interventions in the agriculture and water sectors that feature NbS as critical components, including bioprospecting-based livelihoods, biological corridors, and connectivity development – to combat poverty, environmental degradation, and disaster risk management.

China's development vision of "ecological civilisation" underscores the consideration of environmental carrying capacity in its social and economic development. Several national policies, strategies, and government programmes have embedded NbS as measures to address issues such as economic development, biodiversity conservation, ecosystem restoration, natural hazard management and risk reduction, and water and soil conservation. The "Grain for Green Project", for example, is one of the many NbS-driven government interventions that aim to address the challenge of ecosystem restoration while providing livelihood security to the rural poor and Indigenous communities.

India's commitment is to achieve a scenario of "strong inclusive growth" without ignoring the issue of environmental sustainability. Although the term "ecosystem-based solution" is preferred over Nature-based Solutions, the enabling policy framework on climate and biodiversity offers ample opportunity to co-develop and scale NbS actions in India.

In Nepal, the National Strategic Framework for Sustainable Development 2015–2030 includes ecological system-based adaptation and impact evaluation of nature-based adaptation methods. Some sustainable land and water management practices include rainwater harvesting ponds, micro-watershed management, restoration of degraded land damaged by riverbank cutting and channel shifting, among others.

Some examples of NbS from the HKH include:

Springshed management: a holistic approach to conserve and restore freshwater springs by focusing on the entire hydrological landscape – the springshed – that contributes to their flow. It involves protecting upstream forests, promoting sustainable land use, and adopting water-efficient practices to safeguard spring sources. The solution fosters community participation, integrated planning, and collaborative governance to protect springs and their surrounding landscapes, contributing to both water security and ecosystem services management.

Bioprospecting-based value chain: the process of discovering, collecting, and commercialising valuable biological resources from nature. The value chain encompasses research, development, testing, and eventually, the creation of commercial products that can bring value to nature. Ethical and sustainable practices are embedded to ensure environmental sustainability and fair benefit-sharing with local communities.

Bioprospecting-based value chains drive innovation, economic development, and biodiversity conservation while respecting the principles of equitable access, sharing of benefits, and sustainable resource management.

Bio-engineering-based disaster risk reduction: a nature-inspired approach that uses plants, trees, and natural materials to stabilise slopes, control erosion, and mitigate flood risks. Afforestation, reforestation, and vegetation-based embankment management can help enhance ecosystem resilience, protect infrastructure, and preserve biodiversity. Bio-engineering methods are founded on traditional ecological knowledge and practices and provide cost-effective solutions for DRR and climate adaptation.

Birdwatching tourism: a Nature-based Solution that fosters biodiversity conservation and supports community livelihoods through birdwatching ecotourism. This sustainable approach raises awareness about avian diversity and promotes habitat protection and conservation efforts. Communities receive incentives for habitat preservation and sustainable land management through tourism revenue. It also fosters nature education, citizen science, and a sense of responsibility towards nature.

Regenerative agriculture combined with culinary tourism: this solution focuses on restoring soil health, enhancing biodiversity, and promoting sustainable farming practices. By nurturing diverse crops and ecosystems, it boosts food production and resilience to climate change. Culinary tourism celebrates traditional and local foods, while also preserving cultural heritage, expanding dietary choices, and encouraging traditional crops and processing knowledge and techniques. Integrating regenerative practices with culinary diversity ensures nutritious and abundant food sources for communities, addressing the crucial issue of food insecurity in the mountains.

Issue 2: Criteria, standards, and guidelines

Developing standards and criteria for NbS is challenging given the complexity and diversity of ecosystems and the need for context-specific approaches. While the IUCN Global Standard for NbS provides a broad framework for NbS, unpacking this for implementation is still challenging, as the solutions and the contexts to which they are applied are very diverse.

There is still a lack of consensus on the definition, scope and key criteria of NbS and their overlap with similar actions and approaches such as ecosystem-based adaptation, integrated conservation and development, integrated watershed management, climate-resilient

solutions, ecosystem services management and more – which calls for careful analyses of their scope and content.

Developing standardised and robust monitoring and evaluation systems for NbS effectiveness is urgent. This is a complex task given the need for multiple indicators and long-term temporal measurements of benefits from NbS. Furthermore, NbS is a cross-sectoral innovation and, in the context of existing sectoral policies, overcoming institutional silos and bureaucratic barriers is still very challenging.

Issue 3: Options to support investment on NbS

NbS need to be promoted at scale and thus require long-term investment that may not offer immediate returns. The costs associated with implementing and maintaining NbS can be substantial, and there are real concerns around the availability of adequate financial resources. How NbS are financed and incentivised, and the extent of assistance and cooperation from high income countries, UN agencies and other global institutions will be key for the HKH.

To catalyse such investments for the HKH, ICIMOD has designed the Mountains of Opportunity Investment Framework (MOIF) – a framework for responding to the needs of mountain communities. MOIF is a partnership of knowledge, investor, and public and private sector actors to identify solutions and mobilise investments for scaling.

In addition, from a mountain perspective, specifically in the context of geophysical fragility and remoteness, the following enablers can further support the investment for scaling of NbS in the HKH:

Knowledge and awareness: a lack of shared understanding of NbS among policymakers, practitioners, and the public can hinder their uptake and investment. Developing a shared understanding of what works, what the benefits and potential impacts are, and the effectiveness of NbS is critical.

Along with our eight RMCs, we have developed a roadmap for regional cooperation called the “HKH Call to Action”, which emphasises six priority actions including the need to build synergies, learn from each other’s strengths and experiences, and articulate a common voice for the region. Developing a shared understanding of NbS and learning about effective NbS implementation from across the HKH aligns with this vision. Here, the key is to co-design solutions and develop proof-of-concept to show what works, what doesn’t, and under what conditions.

Capacity building: Building the technical and institutional capacity of stakeholders, including governments, NGOs, and local communities to implement NbS according to established criteria and guidelines is key. Enabling this paradigm shift in intersectoral thinking and coordination remains a challenge.

Our HI-REAP and HI-GRID programmes emphasise capacity building of institutions at the local, sub-national and national level to enable intersectoral collaboration and partnerships for co-design, co-demonstration, co-evaluation, and scaling of NbS.

Alignment with national development priorities: Developing countries often face multiple development challenges, such as poverty alleviation, infrastructure development, and economic growth. There are often concerns that a strong emphasis on NbS might divert resources and attention away from other pressing needs and priorities. It is important to demonstrate how NbS can generate innovative development opportunities and create green, resilient, and inclusive economic opportunities. Exploring opportunities for blended finance by leveraging public-sector finances will be key. Options for blending green and grey infrastructure solutions should also be considered.

We are building an understanding of incentive measures that can support the scaling of NbS and how these incentives, financial and non-financial, can be applied to build wider support for NbS across the HKH.

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