

## **Call for case studies**

### **Sustainable and resilient infrastructure in the Hindu Kush Himalaya.**

The International Centre for Integrated Mountain Development (ICIMOD) is seeking submissions of best practice case studies on sustainable and resilient infrastructure from the Hindu Kush Himalaya (HKH) region. The intended publication is an opportunity to showcase proven solutions and approaches to sustainable and resilient housing infrastructure from the mountain regions. The HKH region is experiencing rapid, poorly planned, and haphazard urbanisation dominated by the construction of steel and concrete structures, including high-rise houses, that not only mar the natural beauty of the mountain environments but also have other adverse impacts on fragile landscapes. The preservation of mountain environments needs to be carefully balanced with the development aspirations of mountain communities in a fast-changing climate so that the mountain settlements are safe and liveable.

This call seeks to draw upon the collective expertise of practitioners, researchers, traditional/ Indigenous knowledge holders, and other relevant stakeholders from public and private sectors to enable the exchange of experiences and innovative approaches that could contribute to green, resilient, and inclusive development in the HKH region.

The selected best practices will be compiled and published as a compendium for wider dissemination. The target audiences in the HKH region are policymakers, researchers, educators, practitioners, architects, engineers, development organisations, and the private sector, who could influence policies, generate evidence, customise and promote these solutions/best practices in the mountain settlements. In addition to this compendium, selected case studies will be adapted as learning material for modules of an e-course and made available for free on a digital learning platform.

#### **Purpose**

Our aim is to promote regional learning on best practices and innovative approaches in sustainable and resilient infrastructure, particularly focusing on building/housing design, including the preservation of vernacular architecture, affordable and safe shelters, and low carbon emission pathways while simultaneously addressing the development needs and aspirations of mountain communities in the HKH region. The specific objectives are to-

#### **1. Document and showcase best practices**

- Gather context-specific mountain solutions/best practices on sustainable and climate resilient infrastructure, particularly focusing on buildings/housing for systematic documentation and wider dissemination in the HKH regions and beyond.
- Build understanding of mountain settlements for different users from ground-based experiences and evidence on low-carbon development, nature-based building materials, vernacular architecture, and climate/disaster resilient design for transitioning to green, resilient, and inclusive development.

#### **2. Promote Nature-based Solutions (NbS)**

- Showcase the integration of NbS, such as using local natural materials and climate-resilient design innovations in the HKH that can mitigate disaster risks and enhance environmental sustainability.

### 3. Understand critical barriers

- Identify critical challenges and opportunities for replicating and scaling these solutions/best practices in the mountain settlements.
- Understanding barriers to scaling adoption of these solutions in the form of policy, markets, aspirational aspects, etc.

### 4. Inform policy and planning

- The collected case studies will provide evidence-based insights to policymakers, planners, designers and private entities

### Thematic areas

To address critical developmental and societal challenges prevailing in the region, the call emphasises documenting proven solutions/best practice learnings from the HKH mountains covering various thematic topics, such as

- climate and disaster-resilient housing**
- nature-based building materials promoting nature-based solutions**
- blend of innovative modern and traditional building practices**
- passive design and energy-efficient building.**

We particularly encourage submissions that incorporate elements of nature-positive development and responsiveness to gender equality and social inclusion (GESI).

The thematic areas are detailed below:

- Resilient housing:** Perceived or speculated/designed behaviour of building, finishes, materials, systems and structures in response to nature and natural disasters for the safety and comfort of the users.
  - Safe location:** The house is built in a place that is not too close to rivers, steep hills, or landslide-prone areas. Risk maps are used to choose a safe site.
  - Structural durability:** The building is made using designs and materials that can handle shaking during earthquakes, high winds during storms, and water during floods and have fire resistance features.
  - Raised foundation (in flood-prone areas):** To stop water from entering the house, or other adaptation measures.
  - Good drainage system:** There are proper gutters and water outlets around the house so that rainwater does not collect and cause damage or make the area muddy and unsafe.
  - Emergency safety features:** The house has safe spaces where people can stay during disasters (like an open courtyard, safe roof, or secure ground floor area), and clear exits.
  - Fast recovery:** After a disaster, the house can be repaired quickly without needing a lot of money or materials.
  - Use of local knowledge:** Designs learned from the past (like earthquake-resistant traditional homes) are combined with modern techniques.

- b) **Nature-based building materials** and building systems having minimum impacts on the environment and ecology in the long run.
- a. Locally sourced: Materials like bamboo, mud, straw, stone, timber, or compressed earth blocks are sourced from nearby areas. This reduces transportation and supports local jobs.
  - b. Low energy use: Making these materials does not need a lot of machinery or fuel, which saves energy and reduces greenhouse gas emissions.
  - c. Eco-friendly: These materials do not harm nature and have a low carbon footprint compared to cement or steel production.
  - d. Reusable and biodegradable: When the building is broken down, these materials can go back to the soil or be reused again in other buildings.
  - e. Safe for health: Building materials that do not release harmful chemicals inside the house and are safe for health.
  - f. Supports biodiversity: sustainable use of renewable materials like timber, earth or straw does not harm biodiversity if done carefully, etc.
- c) Blend of **innovative design and Indigenous, traditional knowledge** in building practices, including revival of vernacular architecture systems.
- a. Use of traditional/vernacular elements in design: courtyards, sloped roofs, wooden windows, verandas, and local materials use, ventilation, etc.
  - b. Respect for culture: The aesthetic of exterior facades of houses looks and feels like local homes, preserving the identity and heritage of the community.
  - c. Affordable: Community, such as local builders, masons, and families, take part in planning and construction to make it affordable, and their knowledge is valued.
  - d. Easy to change: The building is designed in such a way that it can be expanded, upgraded, or repaired easily in the future.
  - e. Better performance: These homes can stay cool in hot months and warm in cold months, saving energy and making life comfortable.
- d) **Passive design and energy efficient buildings** use a sustainable design approach and resource saving options, such as reduction in energy use, rainwater harvesting, grey water recycling, groundwater recharge that reduce operational costs and are environmentally friendly for users.
- a. Insulation and ventilation: Walls, roofs, doors and windows are designed to keep the house cool in summer and warm in winter. Windows are placed to allow adequate sunlight and air flow.
  - b. Natural lighting: Windows, skylights, and open spaces reduce the need for electricity use during the day.
  - c. Use of renewable energy: Solar panels or solar heaters reduce electricity bills and pollution.
  - d. Circular water systems: Rainwater and snow harvesting for ground water recharge (open green unpaved surfaces, open jointed pavements, recharge pits, rain gardens, ponds, etc.) and grey water recycling.
  - e. Waste management: Recycled materials are used, and construction waste is minimised.

## Submission process

Interested applicants are encouraged to access the online application form available [here](#). Each submission should include a detailed case study as per the given template, with supporting images and any relevant data.

## Timeline

Tasks	Deadlines
Call for submissions start date	18 June 2025
Submission deadline	8 August 2025
Evaluation and selection of best practices	30 August 2025
Announcement of selected best practices	5 September 2025
Review and finalisation of case studies	26 September 2025
Editing, layout, and design of the compendium	20 October 2025
Compendium publication (printing)	31 October 2025

**(Please use the link below to submit your case studies online)**

<https://forms.icimod.org/green-economies/call-for-case-studies-sustainable-and-resilient-infrastructure-in-the-hindu-kush-himalaya/>

**Title:** Clear and descriptive title of the case study reflecting the essence of the project (maximum ten words). Include location in the title.

**Background:** Contextual information about the project, including location, purpose, typology and cultural settings, motivation behind the project (maximum 150 words).

**Project description:** Comprehensive description of the building's design and construction techniques and nature-based materials used (maximum 150 words).

- **Sustainability features:** (socioeconomic, environmental, and cultural) – Highlight detailed account of sustainable and low-carbon development practices such as energy efficiency measures, use of nature-based materials, water conservation and waste reduction, Indigenous knowledge, GESI, etc. (maximum 300 words).

- **Resilience measures:** Explain how the building is designed to withstand environmental and climate stresses such as extreme weather, climate change and disaster risks for long-term durability, adaptation and resilience building, Indigenous knowledge, and GESI (maximum 300 words).
- **Management features:** Resources, labour, GESI, and motivation (maximum 300 words).

**Challenges and solutions:** Explain insights on any obstacles faced during the project and how they were addressed. Clearly mention how the offered solutions are nature-positive, affordable, and GESI responsive (maximum 250 words).

**Replicability/scalability:** What are the critical success factors? Explain how the solutions can be contextualised for replication and scaling to other mountain settlements. (maximum 100 words).

**Outcomes and impact:** Present the results and benefits of the project, including environmental benefits, social impacts, and economic advantages (maximum 100 words).

**Multimedia:** In addition to text, submission of still images, illustrations, audio-visual (video clips, sound bites), 3-D models, animations, and simulations is welcome and will be used for e-learning purposes, if selected.

All multimedia submissions must follow ICIMOD institutional guidelines, ensuring informed consent, ethical representation, and proper attribution. Content should be original or appropriately credited, with no copyrighted material used without permission.

### Evaluation criteria

Submissions will be selected based on the following factors using the scores:

1. **Complete application form:** Submitted applications must be complete in all aspects; any incomplete submissions will not be accepted. Maximum score 10
2. **Relevance:** The featured solution/practice must align with the objectives and address the societal challenges and youth aspirations for sustainable mountain development. Maximum score 10
3. **Effectiveness:** The solution/practice must have already been implemented and achieved measurable results. Submissions that provide clear and quantifiable data and evidence for achieving effective results are more likely to be selected. Maximum score 20
4. **Innovation and creativity:** The featured solution/practice must highlight aspects of creative solutions, adaptive management, or blend innovations with traditional knowledge to meet the development aspirations of mountain communities. Maximum score 20
5. **GESI-responsiveness:** The solution/practice must ensure community engagement and be responsive to GESI. Maximum score 10
6. **Regional scalability and replicability:** The solution/practice must have potential for replication and scaling up in the larger HKH context. Those practices that can be readily customised, adapted and replicated in the diverse contexts of the HKH region will be prioritised for selection. Maximum score 15

7. **Impact and benefits:** The solution/practice must demonstrate or have the potential to demonstrate positive impacts on its intended community and surrounding environments. It must clearly articulate the positive changes and improvements in the human settlements for a green, resilient, and inclusive development. Maximum score

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## Recognition

Fifteen to twenty selected best practices will be announced in early **September 2025**. The documented cases will be fully acknowledged and published as a solutions compendium from the HKH region. The report will be launched in a regional workshop for wider dissemination, and the selected case studies will be provided an opportunity to showcase their work in person during the regional workshop in Kathmandu, with networking opportunities with diverse stakeholders.

In addition to being compiled in a compendium, the selected case studies will be adapted as learning materials for modules of an e-course made available for free on a digital learning platform.

We encourage you to participate and contribute your experiences and innovations to help build sustainable and resilient mountain settlements in the HKH region. For any inquiries or clarifications, please contact **Swornima Pandey** ([swornima.pandey@icimod.org](mailto:swornima.pandey@icimod.org)), and **Erica Udas** ([erica.udas@icimod.org](mailto:erica.udas@icimod.org))

## Background

The International Centre for Integrated Mountain Development (ICIMOD), based in Kathmandu, Nepal, is an intergovernmental organisation working in the HKH region spanning eight countries – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan. It aims to make this critical region greener, more inclusive and climate resilient. Under its Strategic Group: Resilient Economies and Landscapes and its Action Area: Economies, a dedicated intervention on ‘Settlements’ places significant emphasis on mountain settlements that are particularly vulnerable to the compounding impacts of climate change, rapid urbanisation, and inadequately planned development. The accelerated pace of urbanisation across the HKH mountain with increasing number of reinforced concrete buildings, subpar infrastructure and urban planning has given rise to haphazard development, loss of vernacular architecture and overextraction of resources imposing substantial pressure on biodiversity, water, energy, and other basic service provisioning systems, impacting the lives and living conditions of the mountain communities.

Globally, carbon dioxide emissions from buildings and the construction sector is estimated at 37%, coming from building operations (heating and cooling) and material production (UNEP, 2022). In the HKH region, the rate of built-up area expansion is 1.7 times higher than the population growth rate, and built-up areas have significantly increased by almost 75% over the two decades (2000-2020). The building materials, such as cement, iron, steel and aluminium, with a higher carbon footprint largely dominate building construction across the region. The traditional vernacular architecture, which is an identity and culture of mountain communities, is eroding and rapidly being replaced by modern reinforced concrete buildings with higher

operational costs for heating and cooling. Considering these pressing development challenges in the HKH region, bridging the critical data and knowledge gaps with science-based evidence becomes imperative for a positive change to balance ecological, social, and economic development goals.

The Himalayan University Consortium (HUC) has its mandate to develop an effective, sustainable network of universities in the Hindu Kush Himalaya, in collaboration with academic research and knowledge-generating and exchange institutions both within and outside the region. HUC focuses on fostering regional cooperation and collaboration among academic and research institutions to generate and exchange knowledge both within and outside the HKH region. This network engages top-notch professional women and men capable of undertaking high-quality research, education, teaching, and knowledge dissemination in the service of a mountain-specific, sustainable, fair, and inclusive development for HKH communities and adjoining mountainous areas. The Thematic Working Group on Sustainable Mountain Development was established in October 2024, through a 4-day intensive collaborative learning in Yunnan province of China, supported by Yunnan University.