



# Resilient Mountain Solutions in the Hindu Kush Himalaya

ICIMOD

FOR MOUNTAINS AND PEOPLE

The Resilient Mountain Solutions (RMS) approach combines economic, social, and environmental dimensions of sustainable development with climate change adaptation, resilience, and preparedness for future risks towards an integrated approach to resilient mountain development. It aims to equip communities with the tools and knowledge necessary to improve their resilience to change while fostering sustainable development.

The Resilient Mountain Solutions concept has evolved at the International Centre for Integrated Mountain Development (ICIMOD) on the basis of ongoing research and pilot activities jointly with partners, and follows a dynamic and evolving mechanism based on field experience as well as the latest academic discourse in the field of climate resilience. The approach is now being developed into a programme aiming to support the long-term resilience of communities in the Hindu Kush Himalaya (HKH) and downstream areas by testing and promoting “resilient solution packages” of locally



relevant integrated interventions and building the capacities of governments, institutions, and other relevant stakeholders in the region to implement these solutions. The programme will contribute to ICIMOD's three strategic impact areas of poverty reduction, reduced physical and social vulnerability, and improved ecosystem services.

The approach also contributes knowledge to the following sustainable development goals by providing relevant information for the implementation of goals, particularly in the mountain context.

### SUBSTANTIAL CONTRIBUTIONS



### PARTIAL CONTRIBUTIONS



### The objectives of the Resilient Mountain Solutions programme:

1. To enhance the resilience and adaptive capacities of vulnerable mountain communities in the HKH, in the face of climate and other changes. Through this effort the programme contributes to overall sustainable development of not only mountains but also the large downstream population across Asia which depends on ecosystem services from the mountains.
2. To build the capacities of local to national level governments and regional institutions to plan and implement programmes that support resilience to climate and other changes through the joint development and promotion of resilient solution packages.
3. To fill key knowledge gaps on climate change and other changes in the region, and to underpin the further development of resilient solutions, through research and knowledge generation.



A woman farmer sprays Jholmal – a homemade biofertilizer and biopesticide – on her cabbage patch. She strains the mixture using a cloth and dilutes the filtrate with water to spray the leaves.

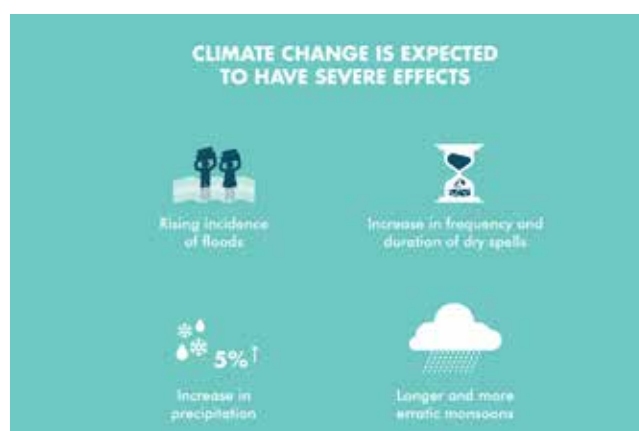
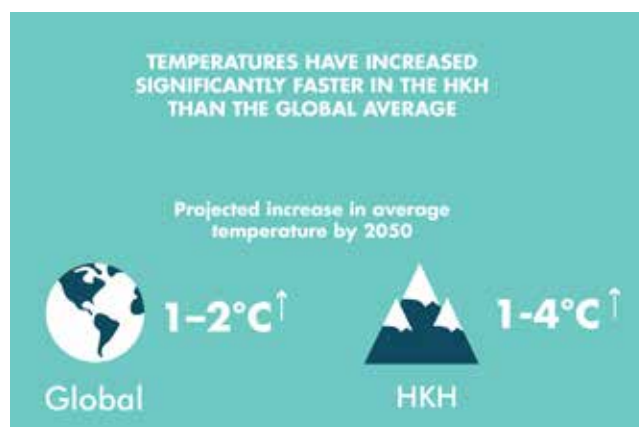
# Why a focus on resilience in the Hindu Kush Himalaya?

The vast HKH mountain range stretches from Afghanistan to Myanmar, passing through Pakistan, India, Nepal, Bhutan, China, and Bangladesh, and is home to important yet fragile ecosystems directly supporting the livelihoods of 210 million people living in the mountains and 1.3 billion living downstream.

Research at ICIMOD has revealed that temperatures in the mountains have increased significantly faster than the global average, and are projected to increase by 1–2°C on average by 2050. Precipitation patterns and water availability are likely to change, requiring improved water management practices. The research also indicates that the incidence of natural hazards such as floods, landslides, and dry spells are likely to increase. These changes pose a threat to people's livelihoods, their agricultural production, and food security, as well as to the availability of ecosystem services. Such changes will not only affect people in the mountains, but will have significant impacts on over a billion people living downstream of the HKH.

Furthermore, there is already high male labour outmigration from the region, which leads to labour shortages in the mountains, land being left fallow, and women taking on more responsibility for agriculture and natural resource management. However, due to their limited access to education and tools for adaptation and limited participation in decision making, women in the HKH are more vulnerable to the impacts of climate change and have less capacity to adapt.

These changes to the social and economic make-up of communities together with the changes in climate and the natural environment, pose new and challenging situations for people in the mountains. This highlights the importance of strengthening the resilience of communities and institutions to be able to deal with and adapt to current and anticipated changes. An important aspect to resilience building of mountain communities in the HKH is gender inclusiveness, and programmes need to meet the increasing role of women as farmers and managers of natural resources by acknowledging and targeting



women as central agents in resilience building and enhancing their capacities to adapt.

This calls for traditional knowledge and strategies to be coupled with continued scientific research and pilot actions on the ground in order to address the new situation and identify mountain specific solutions for building resilience to change.

The RMS programme is part of ICIMOD's effort to make a positive impact on three central areas of its Medium Term Action Plan IV (MTAP-IV) for 2018–2022: poverty reduction, reduced physical and social vulnerability, and improved ecosystem services. RMS further contributes to ICIMOD's Regional Programme 'Adaptation and Resilience Building' in the following manner:

Adaptation and resilience building		Contributions of the Resilient Mountain Solutions programme
Outcome	Indicators	
Enhanced resilience of women and men of the HKH to socioeconomic and environmental changes, including climate change.	1. Number of women and men who benefit from innovative interventions for risk and vulnerability reduction.	<p>RMS will contribute to all the programme indicators. More specifically, it will directly enhance resilience and the adaptive capacities of women and men in the pilot villages. It will indirectly affect resilience and adaptive capacity by raising awareness among populations beyond the pilot areas.</p> <p>The programme will be implemented through national partners and local institutions which will enhance their capacities to adopt gender sensitive, risk reduction, and resilience building practices beyond pilots as well.</p> <p>The RMS approach will contribute to mountain-specific sub-national and national development policies for adaptation, risk reduction, and resilience building by building the capacities of key stakeholders, including governments, relevant institutions, and other decision-making and implementing bodies, to take up resilient solutions and RMS recommendations, through exposure visits, strategic knowledge dissemination, and close cooperation.</p>
	2. Number of local institutions adopting gender sensitive, risk reduction, and resilience building practices in areas of community disaster risk management (DRR), tourism, access to clean energy, natural resource management, value chain development, and adaptation to climate change.	
	3. Number of regional, national, and sub-national institutions making use of the gender sensitive Resilient Mountain Solutions approach promoted by the programme that reduces risks and vulnerabilities, and promotes resilience.	
	4. Number of mountain-specific national or sub-national development policies making use of recommended practices and knowledge.	
	5. Effective regional knowledge and experience sharing mechanism supporting regional member countries to promote mountain-specific resilience practices.	
	6. Number of global fora at which ICIMOD's mountain-specific resilience agenda has been promoted by regional member country representatives and institutions.	

## Three components of the Resilient Mountain Solutions programme

There are three main components of the Resilient Mountain Solution programme. These are:

1) Resilient Mountain Villages, 2) Development of resilient solution packages, and 3) Knowledge dissemination and upscaling.

### Component 1: Resilient Mountain Villages

Resilient Mountain Villages (RMV), a comprehensive and integrated approach developed at ICIMOD, draws elements from the climate smart agriculture and climate smart villages approaches of the Food and Agriculture Organization (FAO) and the Consultative Group on International Agriculture Research (CGIAR). RMV, implemented jointly with




local partners and district authorities, addresses each of the three dimensions of resilience as shown in the graphic above to holistically build the resilience of mountain communities.

This component will address the issue of current climate variability at farmer and community levels by adopting climate friendly approaches to reduce the day-to-day risks arising from on-going climate variability and other changes. In this component, a series of practices combining traditional and scientific knowledge, aimed to further develop the productivity and resilience of farming systems, promote sustainable use of energy, as well as





## KEY INTERVENTIONS UNDER RMS

INTERVENTION AREA	KEY INTERVENTIONS
<b>CLIMATE RESILIENCE</b> 	<ul style="list-style-type: none"> <li>Improved cropping practices</li> <li>Testing of suitability of crop varieties for different rainfall patterns and climatic conditions</li> <li>Promotion of home-made organic pesticide and fertilizer solution (<i>Jholma</i>)</li> <li>Practices to reduce the amount of energy required for harvesting and tending land</li> <li>Harvesting of rain- and waste-water, and effective irrigation</li> <li>Management and restoration of local water springs</li> <li>Promotion of sustainable energy sources</li> </ul>
<b>SOCIOECONOMIC RESILIENCE</b> 	<ul style="list-style-type: none"> <li>Value chain approach to add value to farm products and develop market linkages</li> <li>Improve women's access to knowledge, tools, and resources to sustainably manage households and farms</li> <li>Work for women's inclusion in community and local level decision making</li> <li>Link forest users' groups with farmers' groups to integrate agriculture and forestry</li> <li>Work closely with village and district level governments to institutionalize practices, ensure ownership, and improve service distribution</li> <li>Build capacity of farmers' and women's groups at the local level for collective action</li> </ul>
<b>FUTURE RESILIENCE</b> 	<ul style="list-style-type: none"> <li>Phone-based crop and weather advisories to share information on weather and market prices</li> <li>Equip schools with meteorological stations</li> <li>Promote use of crop and livestock insurance</li> <li>Promote local insurance practices (financial and non-financial) contextualized to the mountains</li> <li>Capacity building for financial literacy skills—particularly for women</li> <li>Community-Based Flood Early Warning Systems to detect and respond to flood emergencies</li> <li>Capacity building for disaster preparedness at the household, local, and institutional levels</li> </ul>

build socioeconomic resilience and early warning systems to mitigate future risks, are introduced at a community and household level. A key aspect is the promotion of sustainable and adaptive farming practices and the development of value chains for niche mountain products to promote sustainable development by increasing the incomes of rural populations, with a particular focus on women farmers.

ICIMOD, together with the local implementing partner, Center for Environment and Agricultural Policy Research, Extension and Development (CEAPRED), has already successfully piloted RMV in Nepal across eight villages in Kavre district. Now ICIMOD is looking to develop the RMV approach further by strengthening the socio-economic and future resilience components, and expanding the approach to selected villages in Bangladesh, Bhutan, India, Myanmar, and Nepal.

### Component 2: Development of resilient solution packages

Though many knowledge gaps on change and resilience in the HKH have been filled by earlier research at ICIMOD, there remains a need to continue to further strengthen knowledge for resilient solutions targeted to the many and varied challenges that communities in the mountains face. In addition to continuing to refine and promote the solution packages mentioned above, RMS would work to develop new location-specific solutions and actionable proposals to build adaptive capacity through working closely with governments and other institutions in selected countries. This component will primarily focus on collaboration with relevant institutions for action research to develop and test new solutions.

### Component 3: Knowledge dissemination and upscaling

Based on the experiences of the approaches piloted in Component 1, and building on the continuous efforts to improve and refine these approaches as well as to identify new resilient solutions in Component 2, Component 3 will focus specifically on ensuring that the knowledge generated and the resilient solution packages developed and refined are made accessible to key stakeholders to ensure sustained impact. In addition to targeted activities for knowledge dissemination through knowledge products and outreach activities, the project will work closely with key stakeholders, including governments, relevant institutions, and other decision-making and implementing bodies, to build their capacities to take up these solutions and integrate them into relevant policies and programmes for adaptation, resilience building, and disaster risk reduction.

## Mode of implementation

With ICIMOD responsible for the programme, partners at different levels will be involved in the pilot, research, and upscaling. Implementing partners will be identified in Bangladesh, Bhutan, India, Myanmar, and Nepal for piloting resilient solutions and conducting on-the-ground research activities. Key knowledge partners will be engaged to support ICIMOD's significant in-house scientific and research capacity, and institutional and government partners at different levels in the pilot implementation countries. Identified pilot areas will be engaged to ensure the suitability of interventions to national, state-level, and local priorities as well as to sustainable ownership and the continuation of resilient solutions.



### For further information contact

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**Photos:** Jitendra Bajracharya

ICIMOD gratefully acknowledges the support of its core donors: the Governments of Afghanistan, Australia, Austria, Bangladesh, Bhutan, China, India, Myanmar, Nepal, Norway, Pakistan, Switzerland, and the United Kingdom.

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Prepared by ICIMOD Publications Unit, May 2017