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Working Towards Effective Adaptation

Contributions from HI-AWARE pilots to enhancing climate resilience in the HKH region



About HI-AWARE

HI-AWARE aims to enhance the adaptive capacities and climate resilience of the poor and vulnerable women, men, and children living in the mountains and flood plains of the Indus, Ganges, and Brahmaputra river basins. It seeks to do this through the development of robust evidence to inform people-centred and gender-inclusive climate change adaptation policies and practices for improving livelihoods.

The HI-AWARE consortium is led by the International Centre for Integrated Mountain Development (ICIMOD). The other consortium members are the Bangladesh Centre for Advanced Studies (BCAS), The Energy and Resources Institute (TERI), the Climate Change, Alternative Energy, and Water Resources Institute of the Pakistan Agricultural Research Council (CAEWRI-PARC) and Wageningen Environmental Research (Alterra). For more details see www.hi-aware.org.

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Key Message

The pilots implemented by HI-AWARE present contextually relevant and ecologically friendly technologies in the field of flood resilience, climate smart agriculture, and water and heat stress management. They have shown promising results and responses to existing climate risks at the local level, and in preparation for uncertainties relating to future climate risks.

The co-designing, planning, testing and implementation of various technologies with communities and other stakeholders, and existing technologies, are critical factors for successful pilots in the HKH region.



Introduction

HI-AWARE pilots aimed to understand what works and what doesn't as an adaptation intervention jointly with the community. The pilots included climate and flood resilient habitat and sanitation, water management, climate smart agriculture, and heat stress management in Bangladesh, India and Pakistan. The objective was to test these technologies on their contextual relevance, viability, cost-effectiveness and scalability. HI-AWARE uses the adaptive management approach for its pilots. At the same time, engagement with policy makers and private sector for scaling up and scaling out was an important part of the approach.

Findings

Teesta Basin, Bangladesh - Climate and Flood Resilient Habitat (CFRH):

CFRH technology successfully withstood the floods of 2017 when 530,000 traditional houses were inundated, while also providing shelter to neighbouring families and their livestock.

The homestead garden and hedgerow provided partial supply of vegetables during flood period.

Varieties of grasses and fruit trees that were planted on the slope and boundary of the raised area helped prevent soil/wave erosion.

Stakeholders at national, regional, upazila and community level have shown strong interest in considering the CFRH design parameters for their shelter programmes.

Gandaki Basin, India – Flood-Resilient Habitat (FRH):

The foundations of several Ecological Sanitation (EcoSan) units under construction withstood an extreme flood event in 2017. This confirmed that the flood levels for the past 20-25 years must be taken into account to determine height/foundation measurements, and led to further innovations in the toilet design.

One family integrated the flood resilience component of EcoSan with the traditional toilet design with their own resources.

The EcoSan intervention in Naya Tola in West Champaran District in Bihar was based on 25 years of flood related information before determining the construction details of toilets. This practice is recommended for the wider region as well.

Water quality testing of fourteen parameters in 75 dug wells and 70 hand pumps was undertaken. The results were shared with the community to help raise awareness about drinking water quality and its relationship with the depth of abstraction.



Upper Ganga Basin, India – Heat Stress Management through Modified Roofs (ModRoofs)

The ModRoof, specifically designed for slum areas, is said to reduce heat stress.

People owning a ModRoof reported more comfortable indoor room temperatures.

However, field measurements did not confirm a decrease in indoor temperatures under the ModRoof. Further testing is necessary.

Upper Ganga Basin, India - Promoting Sustainable Agricultural Practices in High Elevation Regions

Considerable decline in snowfall presented opportunities to grow crops such as potato and other horticultural produce.

Between 2017 and 2018, different crops were experimented with and communities were trained in land preparation, selection of crop varieties, cutting of the seeds, sowing and harvesting. Potato yields doubled from 2017 to 2018.

Indus Basin, Pakistan - Climate Smart Agriculture Practices:

Increased crop diversification has led to improved resilience in the face of climate induced changes, through multiple income sources. For example, small farmer incomes have increased by 3 to 4 times.

Adoption of high efficiency irrigation systems have enabled water saving for small farmers in a water stressed context and enabled them to double their cropping area.

The 'portability' of solar pumps allows large farmers the flexibility to increase irrigated area by 3 to 4 times.

Policy Action

Climate and Flood Resilient Habitat – Teesta Basin, Bangladesh

Under the constitutional provision for safe shelter for all citizens, the Government of Bangladesh (GoB) implements housing for the poor in both urban and rural areas. HI-AWARE is engaging with GoB so that the CFRH design parameters are considered in their housing programmes.

Engagements with the Department of Local Government (DLG), Directorate of Housing and Local Government Department, Rural Development Academy, Bogura, and House Building Research Institute (HBRI) of GoB to promote the uptake of the CFR Habitat model in housing schemes for the poor such as the Asrayan Project and Ekti Bari-Ekti Khamar (one home-one farm) Project.



Flood Resilient Habitat – Gandaki Basin, India

Government of Bihar through its Lohia Swachh Bihar Abhiyan (LSBA) has helped to promote ecological sanitation in flood prone areas by ensuring loans to the beneficiaries from JEEViKA (Bihar Rural Livelihoods Project) through the Sanitation, Health and Nutrition (SHAN) fund.

The recognition of EcoSan toilets as an alternative technology in flood prone areas of Bihar by LSBA has led to a statewide study on disaster resilient sanitation and ecologically sustainable technologies, to be undertaken by Megh Pyne Abhiyan, supported by UNICEF, Bihar.

The construction and continuous use of EcoSan can potentially facilitate a transformation in the predominant popular mindset from open defecation to open defecation free.

It is imperative to develop a narrative around disaster resilience and ecologically sustainable sanitation systems within Bihar given its close linkages with safe drinking water, especially in high water table conditions.

Heat Stress Management with ModRoofs – Upper Ganga Basin, India

Contrary to field measurements, ModRoofs are 'perceived' to be reducing indoor household temperatures. To better understand this contradiction, temperature trends continue to be monitored to assess for effectiveness. There is a strong need to come up with measures that work in informal and low-income neighbourhoods. Potential linkages with the Delhi Urban Shelter Improvement Board, Ministry of Rural Development, and the Ministry of Housing and Urban Development are being explored. Mahila Housing SEWA Trust can offer micro-finance for greater proliferation of effective technologies contingent on their success.

Promoting Sustainable Agricultural Practices in High Elevation Regions – Upper Ganga Basin, India

This community-based livelihood intervention aims to augment farmers' incomes in a region characterized by socioeconomic inequalities and lower-than-average incomes. The pilot directly relates to the Indian government's 'Agriculture Mission 2022: Doubling Farmers' Income', which aims to bolster farmers' incomes and profits through the introduction of high-value crops alongside traditional crops, increasing the area under cultivation and irrigation, reducing input costs, and raising productivity. HI-AWARE presented the outcomes of the pilot at the 'Agriculture Mission 2022: Doubling Farmers' Income' experts' meet in Delhi in February 2018, in the presence of Prime Minister Narendra Modi.

Climate Smart Agriculture Practices – Indus River Basin, Pakistan

The pilot has been able to influence many government institutions, international and private organizations, as well as individuals. Inputs have been sought by the Punjab province for schemes on high value agriculture through climate smart technologies including sprinkler irrigation systems.

Based on HI-AWARE's extensive work on solar water pumps, the Federal Government launched "Prime Minister's support program for farmers for solar tube wells" and invited two experienced members of the HI-AWARE team to lead policy formulation.

The International Fund for Agricultural Development (IFAD) has sought technical support from HI-AWARE for a forthcoming project in Gilgit-Baltistan worth PKR 12 billion, under which 50,000 acres of barren land will be converted to agriculture land.

The experience and success of the pilot will be used to reinforce climate smart agriculture in the National Climate Change Policy.

Conclusion

The HI-AWARE pilots have shown good potential in the areas of climate and flood-resilient habitat, water and sanitation management, climate smart agriculture, and reducing heat stress. Climate adaptation is a contextual, multi-sectoral and cross-scalar challenge, and hence interventions need to cater to these characteristics in their design orientation to be effective. Co-designing, planning and implementation and continued engagement with stakeholders and their existing technologies are crucial to success.

HI-AWARE adaptation interventions acknowledge and address the differential impacts of climate change, particularly on women, children and the disabled. They have gone beyond focusing merely on technical/technological solutions, to account for specific socioeconomic, cultural, and political cues in particular contexts, and responding accordingly.

Strategies for scaling up and scaling out must be developed from the beginning of the pilot intervention. Adaptive planning should cater to the evolving nature of interventions.

The sustainability of adaptation interventions requires community ownership, and public and private sector engagement.

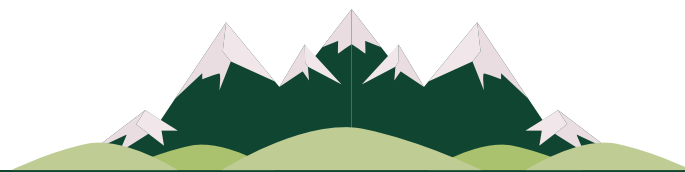
This brief is based on the following HI-AWARE publications:

Gorti, G. (2018). Can micro measures in urban cities offset the impact of heat stress? [Blog]. Retrieved from <http://www.teriin.org/article/can-micro-measures-urban-cities-offset-impact-heat-stress>

HI-AWARE. Experimenting with adaptation solutions: Snapshots from three pilot initiatives of HI-AWARE. Retrieved from <http://www.hi-aware.org/pilot-brochure.pdf>.

HI-AWARE (forthcoming) Experiences and Learnings from Climate Change Adaptation Pilots. HI-AWARE Working Paper.

TERI. (2018). Heat Stress: Learning to adapt before it gets too hot [Video]. Retrieved from https://www.youtube.com/watch?v=y_86hzM-bLU



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