Submission from ICIMOD
to be considered in SBSTA 41

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Submission from International Centre for Integrated Mountain Development (ICIMOD) with reference to and based on the mandates contained in the following conclusions: FCCC/SBSTA/2013/5, paragraph 13 (b) and FCCC/SBSTA/2014/L.13, paragraph 7), ICIMOD makes submission to the Nairobi Work Programme.

The ICIMOD submission provide information on good practices and lessons learned in relation to adaptation planning processes, including on monitoring and evaluation, addressing the four issues of ecosystems, human settlements, water resources and health with specific reference to the mountain of the Hindu Kush Himalaya region.

In this submission, and based on ICIMOD mandate, this submission is covers the following four topics:

1. Planning Responsive Adaptation
2. Ecosystem-Based Adaptation (EBA)
3. Community-Based Early Flood Warning Systems
4. Building the Adaptive Capacity of the Migrant sending households

1. Planning Responsive Adaptation

Planning adaptations that are responsive to community needs

While governments discuss how to respond to climate change, rural communities are compelled to act immediately to secure their livelihoods. At present, there are few structured processes through which communities can talk to scientists and policy makers about climate change adaptation. As a result planned adaptation processes are not sufficiently responsive to community needs and fail to consider or support spontaneous community adaptation measures that are already in place. An inclusive planning process is needed – one that incorporates learning from existing community adaptation measures and addresses community concerns.

Adaptation Learning Highways is a strategic process that fosters information and knowledge exchange between communities, scientists, and policy makers to inform the decision-making process and make it more inclusive. By recognizing autonomous community adaption as a basis for planned adapation, this initiative seeks to make planned adaptation more effective, targeted, and responsive to community needs. To that end, the Adaptation Learning Highways initiative engages communities in a number of fora at different stages, namely: community-to-community knowledge exchange fora (C2C KEF); community-scientists interface fora (CSIF); forum for interaction and exchange with policy makers (FIP); and state/regional consultation workshop on adaptive strategies.

Community-to-community knowledge exchange fora (C2C KEF)

The first stage in the Adaptation Learning Highways is the establishment of community-to-community knowledge exchange fora (C2C KEF). C2C KEFs brings community members from villages or village clusters together to hold focus group discussions and share what they are doing to adapt to climate change. These exchanges are facilitated by a mentor or facilitator and are conducted in the presence of representatives from technical agencies (research institutions and line departments) that are involved as observers, participating only when their expert opinion is sought. Discussions are centered around community responses to stresses brought about by change and the impact of such change on household livelihood security. Community members are encouraged to share their concerns, and facilitators draw out coping and adaptation mechanisms. Ideally, each focus group discussion focuses on a specific theme, which means that exchanges need to be held on multiple occasions.

The discussion should result in participatory verification, assessment, and peer evaluation of the reported coping and adaptation mechanisms. As part of this assessment, the strengths and weaknesses of promising adaptation measures are discussed to determine the potential for up-scaling them, particularly through community-led initiatives and cross-community exchange. The potential for up-scaling is discussed to identify gaps in supportive services and the support required from different agencies at the local and higher levels. At this stage the role of the expert observer becomes proactive. The C2C KEFs should help identify how local bodies, line agencies, the local administration and research institutes can be more responsive to the needs of the community. The proceedings of the C2C KEFs are documented audio-visually by a process documenter, preferably

from the media or with a strong understanding of media, for wider dissemination and use at subsequent fora.

Stage 2: Community-scientists interface fora

The main objective of the community-scientists interface fora (CSIF) is to stimulate dialogue and exchange between community members and scientists on the coping and adaptive mechanisms documented during the C2C KEF and to initiate a participatory assessment of such adaptive mechanisms. The CSIF is also a catalyst for changing scientists' perception of community innovation, and fosters appreciation and respect for community-based knowledge and practices.

The CSIF consists of community representatives, particularly knowledge innovators (developers of promising adaptation mechanisms) and key informants identified during the C2C KEFs; representatives of technical line departments who participated in the C2C KEFs; members of the scientific community; and representatives of civil society organizations. CSIFs are conducted by experienced facilitators to ensure that the exchanges between community members and scientists take place on an equal footing, with each group respecting the other's viewpoint. At no stage should scientists be allowed to act in a 'superior' way or become dismissive of community innovations.

Promising adaptive mechanisms identified during the C2C KEFs are introduced at this stage for discussion and evaluation. Community members and scientists are both encouraged to express their viewpoints to ensure an objective assessment of each adaptive mechanism. Adaptive mechanisms are then selected for subsequent scientific validation, which is conducted 'on farm' rather than on experimental plots at research stations. Finally, a process of participatory assessment and monitoring is agreed upon and a way of sharing results established to facilitate wider dissemination and up-scaling.

Stage 3: Forum for interaction and exchange with policy makers

The third stage in the Adaptation Learning Highway is the establishment of a mechanism for regular interaction and exchange with policy makers at the local or district level. The forum for interaction and exchange with policy makers (FIP) is initiated by the implementers of the Adaptation Learning Highway or a local development partner in conjunction with the local administration. It can be strategically useful to work with the government structure for climate change adaptation planning at the local level or to partner with such structures at the higher level.

The FIP involves key knowledge innovators, representatives from civil society, and members of the scientific/technical community, and is facilitated by senior members of the partnering project. Activities at this stage involve reporting the results of the C2C KEF and CSIF including sharing promising adaptation mechanisms and innovations and highlighting issues, concerns, and gaps in support systems raised during these exchanges. The objective of the FIP is to identify ways in which supportive services can be made more responsive to community needs and to identify existing programmes and institutional mechanisms for adaptation that need to be more proactive and responsive. Areas that require action on the part of higher authorities to make delivery mechanisms more effective are identified during this stage.

Stage 4: State/regional consultation workshop on adaptive strategies

The fourth and final stage of the Adaptation Learning Highway is the state/regional level consultation workshop, which brings together knowledge innovators, members of the scientific and technical community, representatives of local administration, and line departments, as well as the facilitating project partners. The objectives are multiple, but primarily to: share the findings and lessons from all fora to promote knowledge innovators and provide them with a platform to present their innovative adaptation mechanisms; present the validation assessments conducted by scientists; request policy action from policy makers; and advocate for policy support for up-scaling promising and effective adaptive strategies and identifying policy action necessary to make local delivery mechanisms more effective.

The workshop should be organized by the facilitating project partner in conjunction with the state authority responsible for climate change adaptation. At this stage, the findings from the C2C KEFs, CSIFs, and FIP, together with the concerns raised at each forum, are discussed with the aim of generating potential solutions. The consultation workshop's primary objective is to set in motion a process that results in the formulation of adaptation strategies to respond to stress resulting from change. The consultation should highlight promising adaptation strategies developed autonomously, present the results of peer assessment and scientific validation, and raise any concerns in regard to the up-scaling of such mechanisms. The workshop should also identify mechanisms required to translate community based adaptation mechanisms into formal planned adaptation strategies. Overall, the workshop is designed to contribute to policy refinement and formulation that supports building upon autonomous adaptation and makes planned adaptation more responsive.
The Adaptation Learning Highway has been initiated in India and Nepal through Adapt Himal partners – Meghalaya Livelihood Improvement Project, North Eastern Region Community Resource Management Project, and Uttarakhand Livelihood Improvement Project (in India) and the Western Upland Poverty Alleviation Project and Leasehold Forestry and Livestock Promotion Project (in Nepal). The Adaptation Learning Highway has been facilitated by ECARDS in Nepal and by Uttarakhand Organic Commodities Board in Uttarakhand, India. The findings from the Adaptation Learning Highway in India have contributed in shaping the Uttarakhand State Action

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2. Ecosystem-Based Adaptation (EBA)

Overall objective:
The objective of this programme is to improve understanding of the impact of climate change and associated changes in the ecosystems in order to enable research institutions, governments, and civil society organizations to develop better strategies for adaptation. The programme thus seeks to support strategic thinking and interventions that can enhance ecosystem resilience in the four river basins of the Hindu Kush Himalayas (HKH), thereby contributing to research, adaptation planning and practices under the Nairobi Work Programme (NWP).
The specific objectives of the programme are to: (a) develop a better understanding of the trends of ecosystem change and the drivers of these changes; (b) enhance understanding of ecosystem management and identify possible adaptation measures; (c) develop an understanding of the valuation of ecosystem services with clear linkages with possible adaption planning.

Project purpose:
The Hindu Kush Himalayan (HKH) region is endowed with a rich variety of gene pools and species and ecosystems of global importance. It is a storehouse of biological diversity and a priority region for many global conservation agendas (Brooks et al., 2006). The region has many unique ecosystems that play a critical role in protecting the environment and in providing livelihoods for much of Asia and beyond (Erikson et al., 2009). The ecosystem services, as defined by the Millennium Ecosystem Assessment (2005), provided by the HKH include fresh water which is used by more than 200 million people living in the region and by 1.3 billion people living in the ten downstream river basins (Schild, 2008)

The ecosystems of the HKH region, like many other ecosystems worldwide, are being degraded by anthropogenic factors (Xu et al., 2008). Growing demand for ecosystem goods and services stemming from a burgeoning human population and haphazard infrastructure development, combined with unsustainable use, poor management, and low investment in conservation, have all led to habitat degradation, biodiversity loss, and decreased agricultural productivity (Chettri et al., 2008b; Xu et al., 2008; GOI 2009; Sharma et al., 2009; Tsering et al., 2010). The extensive modification of vital ecosystems may affect their natural processes and reduce their capacity to provide services in future.

In order to address these issues, the Himalayan Climate Change Adaptation Programme (HICAP) has adopted an integrated approach with a focus on ecosystem services in the selected four river basins, namely the Bramhaputra, Upper Indus, Koshi and Mekong-Salween, in the HKH region. Among the five major components of HICAP, the ecosystem services component aims to follow the concept of ecosystem-based adaptation that is suited to the mountain context. EBA is one of the key approaches that are being used in these river basins for long-term ecosystem management and sustainable supply of ecosystem services.

Key Programme Activities
Sub Component 1: Understanding the state of ecosystem and drivers of ecosystem change

a. Building stakeholders' capacity to understand ecosystem change and the drivers of these changes
b. Field-based action research on ecosystem change trend analysis coupled with GIS and remote sensing tools

Sub Component 2: Understanding social and economical value of ecosystem services
a. Provide training on valuation of ecosystem services to key partners.
b. Conduct research on the social and economic value of ecosystem services, and community mapping of services generated from various ecosystems.

Sub Component 3: develop and practice possible financial instruments for ecosystem services management (such as payment for ecosystem services)
a. Conduct stakeholders' consultation both at local and regional level for assessing possible financial-based instruments for ecosystem-based adaptation, such as payment for ecosystem services (PES).
b. Conduct a field test of PES or similar mechanisms in selected watersheds within the river basins
c. Facilitate upstream and downstream communities for a possible ecosystem services agreement.

Sub Component 4: Practice ecosystem-based adaptation measures for possible policy support
a. Develop EBA-based approach to adaptation planning at the local level
b. Pilot and test EBA interventions
c. Support policy formulation process on EBA and ecosystem management

Expected Outputs
The Programme aims at the following main outputs that are closely linked to the programme objectives and components:
a. National and regional level research on ecosystem-based adaptation
b. Possible PES mechanism at local (watershed) level becomes functional
c. Detailed investigation of the state of ecosystem change and the drivers of these changes
d. Detailed social and economic valuation of ecosystem services
e. Methodology for economic valuation developed and tested at the watershed level
f. A set of adaptation options identified and recommended for ecosystem and communities

Indicator of Achievements
a. Enhanced knowledge on ecosystem change and the drivers of these changes
b. National institutions are capable of adopting the PES mechanism
c. Possible PES mechanism adopted both at local and national level
d. EBA approach taken into consideration during local and sub national planning
e. National and regional institutions have enhanced capacity to understand the impact of climate change and adaptation policies

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3. Community-Based Early Flood Warning Systems

Overall objective:
The Hindu Kush Himalayas (HKH) is subject to water-induced disasters caused by many factors, of which the most important is high intensity of rainfall in the monsoon and steep mountain slopes. Most of these water-induced disasters happen during the monsoon season; at this time of year "too much water" becomes a bane to the mountain people. Paradoxically, these very same mountain people are now increasingly facing water shortages in the dry months of the year. This is especially true in the middle mountains where springs are increasingly drying up leading to acute shortage of drinking water. Given this overall scenario, our objective is twofold:
1. How to minimize the impact of "too much" water by investing in community-based early flood warning systems
2. How to minimize the impact of "too little" water through investments in building understanding of spring hydrology and in appropriate policies and institutions

Project purpose:
Based on the overall objectives, the project purpose is to help local communities in adapting to climate and non-climate induced changes in the HKH. This will be done through investment in community-based early warning systems in flash flood areas and by enhancing understanding of spring systems in the mid hills of the HKH.

Activities for the community-based early warning system:
The Hindu Kush Himalayan (HKH) region is one of the most dynamic and complex mountain systems. It is extremely fragile and sensitive to the effects of climate change and other drivers of change. Floods and flash floods are hazards that can cause considerable loss of life and property in lowland communities of the region, particularly during the monsoon season. Floods in small rivers and tributaries are particularly destructive, and the relief and support provided by concerned agencies is not always sufficient. Therefore, the Community-Based Flood Early Warning System (CB-FEWS) is a low cost technology for reducing flood risks and enhancing the adaptive capacity of vulnerable communities.
CB-FEWS is an integrated system of tools and plans managed by communities to reduce flood risks and enhance adaptive capacities. It provides early warnings to the downstream communities and enhances cooperation between upstream and downstream in sharing real time flood information. By doing so, it addresses one of the major gaps identified by Hyogo Protocol and the UNFCCC's Special Report on Extreme Events and Disasters (SREX 2012) in communicating flood information to the most vulnerable communities. CB-FEWS is based on people-centered, timely, simple and low-cost technology that can guide vulnerable communities on how to act on flood warnings. It incorporates four major elements:

1) Risk Knowledge: Flood risk maps were prepared based on GIS and remote sensing data, and vulnerable communities were selected through the process of ground truthing. Based on their past experiences and perceptions, communities identified vulnerable areas to be included in the community risk map.

2) Monitoring and Early Warning Systems: The CB-FEWS technology was manufactured in collaboration with the Sustainable Eco Engineering, Nepal. A

prototype was tested before it was installed in the field. The system consists of two units: a transmitter and a receiver. The transmitter is installed along the riverbank of vulnerable upstream villages, and the receiver at a house near the river. A flood sensor attached to the transmitter detects rising water levels. When the water reaches a critical level, a signal is wirelessly transmitted to the receiver. The flood warning is then disseminated via mobile phone to concerned agencies and vulnerable communities downstream. The wireless technology has some drawbacks related to the range of transmission, sensor pipe, battery, etc. Other options are being explored to address these issues.

3) Dissemination and Communication: The flood information received by the receiver household is provided to the local District Disaster Management Authority (DDMA), contact person at Aaranyak and key persons in the downstream villages. DDMA and Aaranyak contact persons, in turn, pass the information on to the downstream communities. At present 42 vulnerable communities along the Jiadhal River and 18 along the Singora River are directly receiving flood information. A formal network will be prepared and institutionalized through the DDMA to ensure sustainability and regular information flow.

4) Response Capability: Community members were trained to regularly monitor and record flood events and changes in weather conditions, particularly temperature and rainfall. Using downscaled climate and hydrological scenarios, they identified three major drivers of change and prepared two future scenarios based on their own experiences. Through this activity, they were able to envision future changes and gain an understanding about how to develop flexible community plans to enhance their adaptive capacity. The flexible flood management plan could be used by DDMA while preparing local-level disaster flood action plans.

Activities for mapping spring water systems

In the mid hills of the HKH, springs are often the only source of drinking water. Over the last few years, a lot of anecdotal evidence has emerged which shows that these springs are increasingly drying up, leading to untold misery for the local population dependent on these sources. Faced with increasing water scarcity, men and women are adapting in a number of different ways – lifting water through pipelines, imposing rationing on available water and harvesting rainwater. However, there is very little scientific documentation of both hydrogeological; social and policy dimensions of water scarcity in the mid hills. To fill this gap, we suggest the following activities:

1. Hydrogeological mapping of springs in a few selected locations of the HKH (Nepal, India and Bhutan, to begin with)
2. Social and institutional mapping of springs and spring users in the same selected sites
3. Training of local stakeholders in spring mapping and spring rejuvenation activities.

Expected results:

There are two broad categories of expected results, each related to theme of ‘too much’ and ‘too little’ water. We expect that community-based early warning systems will be piloted in several locations in the HKH and then accepted as an effective tool for adaptation for those who face the risk of riverine and flash floods. We also expect that such low-cost community managed systems will be mainstreamed in all the

countries of the HKH and will find mention in policy documents. On the issue of 'too little' water, we expect that the proposed work on mountain springs will lead to an inventory of springs in selected locations and a better understanding of the socio-political dimensions of coping with water scarcity.

Indicators of achievement:
Community based early warning systems tested and piloted in at least three locations in HKH and springs inventory prepared in at least three locations. Based on these pilots and studies, research reports and journal articles will be prepared and they will be disseminated through various relevant fora.

Expected outcome:
The knowledge generated by this project is utilized in the UNFCCC, SBSTA and NWP and MEA processes such that mountain ecosystems and mountain environment get due recognition in the global processes and negotiations.

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4. Building the Adaptive Capacity of the Migrant Sending Households

Overall objective

The objective of this action research is to demonstrate a sustainable, scalable, and replicable approach to build the adaptive capacity of the migrant sending households in the HKH region by leveraging the investment of remittances in flood preparedness and flood resilient value chains through financial literacy, flood preparedness, and value chain trainings, and associated community level extension services.

Project purpose

Financial remittance, which is the money sent home by the migrant workers, can be a 'local' financing mechanism for the unmet adaptation requirements of the migrant sending households in the mountain communities. This will require a supportive policy framework and institutional arrangement that facilitates access to information and technical guidance at various levels (e.g., national, provincial, and local). However, there is limited understanding of the relationship between migration and adaptation planning and practices in the migrant sending households and origin communities in the HKH region. Public and policy discourses in the HKH region show a bias arising from negative perceptions of migration. These discourses ignore the benefits of migration: employment, purchasing power, food security, asset creation, livelihoods diversification (e.g., income, sector, and geographic), disaster risk reduction, changes in attitude, knowledge, or skills. For example, Sapkota (2013:1321) has shown that remittances are equivalent to a much larger share of GDP in Nepal than official development assistance and foreign direct investment.
Adaptation planning and practices need to explore circumstances that allow human mobility to prevent the erosion of adaptive capacity (e.g., social, financial, human, physical, and natural) or build such capacity so that individuals, households, or communities can effectively cope with the effects of climate change.

People in the mountains largely depend on natural resources for their livelihoods. Mountain households employ a 'multi-income' livelihood system, combining agricultural (e.g., farming and animal husbandry) and non-agricultural systems (e.g., wage employment, trade, or remittances) (Schutte and Kreutzmann 2011). Natural resource dependent households are more vulnerable than those whose livelihoods are based on sectors that are less climate sensitive (MoE 2010:14). Migration for work is a traditional livelihood strategy in the mountain communities across the HKH region. Pakistani cities such as Muzaffarabad, Peshawar, Rawalpindi, Lahore, and Karachi were major destinations of migrant workers from the mountain areas (Schutte and Kreutzmann 2011). A fairly recent household survey (2010/2011) suggests that 56 per cent of Nepali households receive remittances (both domestic and foreign) (CBS 2011). However, national and sub-national policies on adaptation, sustainable development, and poverty reduction across the HKH region have not taken this seriously into consideration. The National Adaptation Programmes in India, Nepal, and Pakistan ignore the potential of migration and remittances to address future adaptation and welfare needs of the migrant sending households and origin communities.

The role of migration and remittances in climate change adaptation is an emerging policy concern at the global level. Paragraph 14f of the Cancún Adaptation

Framework (2010) mentions the need for “measures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at national, regional and international levels” (UNFCCC 2011:5). However, there is little empirical evidence on the mechanisms to support migration-related actions and activities - such as the delivery of social and financial remittances – that can build adaptive capacity of the migrant sending households and resilience of the origin communities to environmental stresses and shocks (e.g., drought, floods, flash floods, etc.).

The present policy framework and institutional arrangement need to acknowledge the significance of migration in the rapidly changing societal fabric of mountain communities in the HKH region. The role of migration and remittances need to be explored as part of the national adaptation agenda on sustainable development, livelihood diversification, and community resilience. An evidence-based policy engagement is needed to encourage and support the investment of financial remittances or use of social remittances in poverty reduction and climate adaptation. This action research aims to demonstrate a sustainable, scalable and replicable approach to build the adaptive capacity of the migrant sending households by leveraging the investment of remittances in flood preparedness and flood resilient value chains through financial literacy, flood preparedness, and value chain trainings, and associated community level extension services.

The latent nature of adaptive capacity makes it difficult to examine until after its realization or mobilization within a system. Besides, a large number of socioeconomic variables with uncertain coefficients determine the adaptive capacity (Vincent 2007). Knowledge about actions during past or present stress events (e.g., droughts, floods, storm surges) can be used as a proxy to empirically investigate how systems might (or might not) build and mobilize their adaptive capacity to prepare for and respond to future climate changes (Engle 2011:563). In this action research, an array of rural communities, which are affected to different extents by the riverine floods/ flash floods, will provide a proxy for the future impacts of climate change induced floods. This action research will be conducted in India (Lakhimpur district in the Assam province), Nepal (Udayapur district), and Pakistan (Hunzanagar district in the Gilgit-Baltistan). The flood impacts differ between and within these countries because of the nature, frequency, and magnitude of the floods as well as the local vulnerabilities and adaptive capacities, which are an outcome of the social, economic, environmental, and political factors.

The patterns of migration vary across the HKH region. For example, the migration from the Lakhimpur district in Assam is, predominantly, internal in nature. Main urban centres in the plains of Pakistan are the destination of the majority of the migrant workers from the Hunzanagar district in Gilgit-Baltistan. There are some semi to low skilled professionals from the Hunzanagar district who migrate to the Persian Gulf countries in search of economic opportunities in transportation, restaurants, construction, cargo services, and oilfield. In the Udayapur district of Nepal, migration is oriented to the Persian Gulf countries, South East Asia, and East Asia. India remains a major destination for the poorer migrant workers from Nepal because of the open border. The migration outcomes vary depending on the destination of a migrant worker. This action research will include the households of the migrant workers belonging to the major streams from the research area.

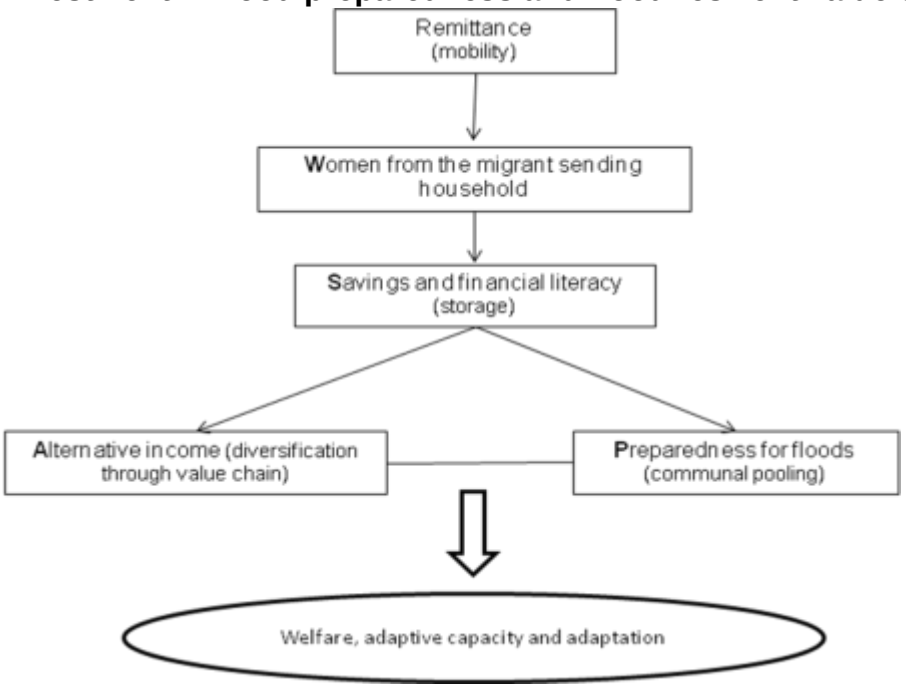
Overall, this action research will provide an ensemble of the adaptive outcomes of migration, which are set within the same conceptual framework but are customized according to the local context. A better understanding of the relationship between labour migration (hereafter, migration) and adaptive capacity will increase the ability of the migrant sending community to cope with climatic shock or stress.

Adaptive capacity can be conceptualized in several ways. Bebbington (1999) suggested that a household could increase its adaptive capacity by expanding its asset base, both the tangible resources (e.g., natural capital and productive resources) and the capabilities to do so (e.g. social and human capital).

This action research builds on the 'capital assets' approach suggested by Chambers (1987) and the Sustainable Livelihoods Framework proposed by Scoones (1998) through the WASP approach (i.e., women, alternative income, savings and preparedness). The 'women' from the migrant sending households are envisaged as the household level 'change maker'. Given the predominantly male out-migration from the research areas, the women members of the migrant sending households (e.g., wife, mother), particularly in India and Nepal, are the recipients of remittance. They have an important role in the decision to utilize the remittance, which is mainly used to meet the basic needs. Due to a low volume of remittances and a lack of knowledge, information, technical expertise, and market access, these women have yet to internalize the idea of 'savings' and using remittances to generate 'alternative income' (i.e., in-situ climate resilient income generation), or 'preparedness' for flood disasters (disaster risk reduction). This action research aims to address these issues by providing them access to information, training, and community level extension services (refer to Figure 1 and Figure 2).

The information aspect of this action research (i.e., financial literacy, flood preparedness, and value chain trainings) will help enhance human capital in the migrant sending households. Financial literacy and flood resilient alternative income are aimed at maximizing the financial returns for the migrant sending households. Investing remittances in flood preparedness measures (e.g., emergency food, water, and crop storage; rescue equipment; housing; transport; livestock shelter) will build the physical capital of migrant sending households. This action research identifies the migrant sending households as a special interest group in the rural communities. A group of migrant sending households will be trained in the research communities. This intervention thus brings the migrant sending households together and enables them to identify their unique characteristics and requirements. This in turn will help enhance the social capital of the migrant sending households.

Figure 1: Figure illustrating the WASP approach for leveraging remittance investment in flood preparedness and flood resilient value chains



Activities

Financial literacy and flood preparedness training: The women from the migrant sending households will be provided financial literacy and flood preparedness training. These trainings will be conducted in two phases: Training I will focus on increasing the financial literacy (e.g., basic arithmetic functions, household level budget planning, information on financial services, and planning of remittance savings and utilization) of the beneficiary households. Training II will reflect on the household level flood preparedness (e.g., assessment of a household's flood preparedness, identification of priority areas, use of remittances in emergency food, water, and crop storage, first aid, rescue equipment, housing, transport, livestock shelter, and climate smart livelihood options). These trainings will be facilitated by experts in financial literacy, disaster risk reduction, migration, gender, and value chain. The expert group will be assisted by village level extension workers, who will carry out 'round-the-clock' monitoring and serve as a conduit of information between the beneficiary households and the experts.

Flood resilient value chains: The research team will identify and analyse flood resilient value chains that are suitable for the research area and the beneficiaries. Beneficiary households will be guided by the relevant experts to channel remittances into these value chains in order to diversify the household income base. This will reduce the impact of flood on household income, which at present is overwhelmingly dependent on natural resources.

Baseline and end line surveys: The impact assessment will be documented through baseline and end-line surveys. A baseline survey will be conducted in the research villages to document the status of (a) access to financial services (loan, savings account, other financial products); (b) self help groups/ cooperatives/ MFIs, (c) remittance transfer (e.g., frequency/ cost/ recipient), (d) remittance utilization, (e) flood impacts, (f) household level flood preparedness, and (g) role of the local

institutions involved in disaster preparedness. Upon completion of the intervention, an end line survey will be conducted to document the impacts of the action research on the adaptive capacity of the migrant sending households.

Peer review publication, policy briefs, and roundtables: The results and learning will be disseminated through peer reviewed publications, policy briefs, and roundtables.

Expected outputs

The expected outputs are closely linked to the objectives and components of this research:

g. Identify knowledge and policy gaps regarding the use of remittances to build the adaptive capacity of the migrant sending households.

h. Identify enabling and constraining factors to leverage remittances to build the adaptive capacity of the migrant sending households.

i. Identify research and implementation capacity building needs

j. Demonstrate a sustainable, scalable and replicable approach to build the adaptive capacity of the migrant sending households by leveraging the investment of remittances in flood preparedness and flood resilient value chains.

k. Contribute empirical evidence to the global discourse on migration and climate change adaptation.

l. Provide actionable recommendations for the government institutions, non-government organizations, and international development agencies.

Indicators of achievement

f. National institutions have enhanced knowledge on the relationship between climate change adaptation and migration and are able to incorporate these learning in relevant policy processes.

g. Provincial and local institutions have enhanced understanding and capacity to incorporate the migration and remittance aspects in the provincial and local adaptation planning.

h. This approach is recognized as a 'best practice' in the HKH region.

Expected outcome

The knowledge generated in this research is used in the UNFCCC, SDG, NAPA, SAPCC, and GFMD processes such that migration and remittances receives due recognition in global and national policy processes on sustainable development and climate change adaptation.

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