

*Technical Support Training Manual*  
*on*  
**Scaling Up and Scaling Out of Climate  
Change Adaptation Good Practices in Nepal**

*Adaptation at Scale Prize Project (A@SPP) IDS/N-CGED/N/SIAS; Kathmandu, 2017*

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## **A@S Prize Project Background**

Adaptation at Scale A@S Prize encourages eligible organizations to develop new and innovative ways to scale-up community driven climate change adaptation (CCA) initiatives in Nepal. It has already offered financial awards to 15 successful organizations with *Protsahan* Prize in Stage 1. This award was expected to motivate other organizations to develop innovative plans for scaling up and scale out the existing successful adaptation projects. Stage 2, *Karyanwayan* Prize, will be awarded to those organizations that can demonstrate their scaling up and scaling out approaches are most innovative, successful and has newness.

The *Protsahan* Prize was awarded in December 2016, to community based and driven projects with positive results, and showed evidence to scale-up and scale out covering more area, more sector, more and people as well as making knowledge and policy relevant impacts. The winners had clear objectives and innovative implementation plans for expansion.

The *Karyanwayan* Prize was launched in early 2017. It will be awarded to organizations that will exhibit positive outcomes for poor and vulnerable individuals and households using new, innovative and transformative ideas and approaches.

An innovation prize is very different from a loan or grant funding. It is a type of Results Based Payment. Initially, the A@S plan to scale up and scale out has to be new and innovative. It must be something that isn't currently being done at the time that the prize is launched. Then, the plan has to be put into action and becomes a project or an initiative. Financial rewards are only given after the results have been achieved. By taking part in the prize, you can show everyone that your new initiative truly works. We will be promoting the prize and its applicants through the media. This can help raise the profile of your organization. A lot of people will get to hear about the work you are doing.

Under the overall Department for International Development (DFID) of UK Government supported program on Ideas to Impact (I2I), the Adaptation at Scale (A@S) Prize Project (A@SPP) is being run since December, 2015 in Nepal. The objective of the A@S is to stimulate and sustain transformative change in climate change adaptation thinking and action among Nepalese innovators and practitioners using financial incentives in the form of cash awards. The project is operating under an umbrella agreement between the governments of Nepal and the United Kingdom and is informally guided by a Project Advisory Committee (PAC) headed by the Head of Climate Change Division in the Ministry of Population and Environment (MoPE), Government of Nepal. The project works with carefully selected adaptation practitioners who demonstrate institutional capacity and knowhow and commit to maximize the benefit to poor, vulnerable and deprived population of Nepal by improving their capacity, skills and knowledge in adapting to climate change vulnerabilities and impacts.

Climate change impacts individuals and households, especially poor and marginalized groups of people if not addressed appropriately. Various organizations are working on the field of climate change adaptation. Adaptation at Scale Prize Project (A@SPP) aims to identify and reward cash awards to those organizations that have new, adaptive and innovative ways to scale up and scale out community driven climate change adaptation initiatives, though.

After the successful completion of Stage 1 (*Protsahan Prize*), the Stage 2 (*Karyanwayan Prize*) of the A@SPP is under implementation from March, 2017 and is expected to end in April, 2019. The Stage 2 is being co-managed by a joint venture consortium comprising of IDS-Nepal, CGED-Nepal and

SIAS in Nepal. The Nepal team works closely with the UK consortium team led by the IMC Worldwide.

This manual is prepared to effectively deliver the training and promote learning and sharing among partners on Climate Change Adaptation (CCA) with Special Focus on Scaling up and Scaling Out of new and innovative adaptation initiatives and practices. The manual has been prepared using a Modular approach to content delivery. It is organized in units and lessons that enable the training team to select content they consider most relevant to the I2I A@S project, training needs and learning objectives they seek to address in conducting a course on monitoring and evaluation in A@S. The modules and lessons contained in module should be delivered sequentially and comprehensively depending upon the availability of time and resources. The modules are organized around key themes and specific learning objectives enabling training teams to custom-design courses as per the needs of the A@SPP. Training members are expected to use the overview section of each module to quickly gain insight into what each module offers. They then build the most relevant course materials to meet the needs of the trainees that needs to be conducted within a short period of 3-5 days but the trainees should use the modules during the entire period of their competition and beyond. It is estimate that each module will require about 3-5 hours of the time to conduct the lessons in full.

### **Preparation of guidelines for the Trainers:**

- A. The learning objective:** The learning objective for each lesson is followed by guidelines on how to prepare in advance for each lesson. Preparation involves engaging learners to draw on their knowledge and practical adaptation resources on Nepal for contributing to the course activity well before the course begins in early September. It should involve assigning background readings ensuring an enabling learning objective by organizing and preparing in advance thereby avoiding un-prepared learners, especially the new partners feel disconnected in the classroom.
- B. Trainers' notes:** Trainers' notes linked to each lesson provide helpful hints about ways to engage learners in the various activities within a lesson, to encourage group interaction, to get across certain points, to keep time, or to use the training team's judgment about ways of generating the best learning from a lesson. The notes will help training teams use and modify the course material to best effect in their respective settings.
- C. Summary of main learning points:** A summary of main learning points for each lesson ensures that training teams are able to help learners focus on key take home messages following a lesson that may have generated diverse input and ideas through conversation. The summaries relate to the respective learning objectives and will aid the training team in keeping the course on track while also promoting creativity and ingenuity in learners.
- D. Exercises:** The exercises describe tasks that pairs or groups of trainees can undertake to explore in more depth particular topics introduced in a lesson. The exercises are intended to contextualize the learning activity in the working environments of Training support participants, and generate insightful content for the lessons.
- E. Examples:** Examples are provided of case studies or presentations by A@S training participants especially the Stage 1 awardees or outputs from some of the group exercises that would be conducted during the workshop. The examples illustrate the types of information and insight that might be generated by these important inputs to the course by the A@S trainees.
- F. Handouts:** Simple and practical (How Dos) handouts provide learners with summaries of key materials from the lessons to take home from a course for their reference. Training experts can distribute the handouts at the conclusion of the lesson to reinforce the material covered and provide participants with a written reference of key concepts, diagrams, and terms introduced

in the curriculum. By the end of the course lessons, participants will have the key points of a curriculum to take home with them, to reference later and use while implementing the A@S project

#### G. List of Exercises

### Getting most out of this manual

To use the manual most effectively, the users first should review content and organization. The manual's Table of Contents reveals the topics around which the training curriculum is organized into units, modules and lessons. Each lesson is comprised of a sequence of activities. Get familiar with the content of the curriculum, and the estimated time required for respective modules and activities. In particular, the trainers should pay attention to the points highlighted below:

**Prepare in advance.** Carefully study the selected course material to learn the main points well enough to deliver key concepts in the team's own words. Plan to incorporate your personal experience and learning into the lessons, as well as built in the experience of participants during the course delivery. Give assignments to participants in advance of the course so they come well prepared to contribute from their experience with M&E. When possible, prepare to present and demonstrate key concepts.

**Demonstrate confidence.** Build credibility by being open with participants about what you know and what you do not know about the subject being discussed. Reference sources and institutions relevant to trainees should be provided. Take time to get to know the participants and their CCA up-scaling plan and a most matching example to be given and exercise to be conducted during the workshop.

**Set a positive tone:** Develop a close relationship or rapport with the trainees. Incorporate ice breakers, short activities to energize participants and develop a sense of comfort, into the opening of the course and delivery of lessons. Establish course management rules that are sourced from participants and agreed upon by all. Exemplify good listening, reflecting on participants' contributions and asking questions to further open conversation to the group.

**Facilitate rather than direct:** Encourage participants to share ideas and experiences. Listen actively and ask questions to encourage discussion. Rephrase questions that are unclear or do not require many/elaborate responses from the participants if basics are clear to them. Encourage participants who have been quiet to speak. Use open-ended questions as well as questions which remind participants of earlier lessons. Be mindful of participants who may dominate discussion and steer conversation to others.

**Evaluate.** Review key ideas at the end of each lesson, engaging participants in this exchange. Encourage participants to share feedback.

**Reflect.** Engage participants in active reflection on the results of a training course, reviewing course evaluations and other feedback. Discuss with participants individually or in groups how the manual could be improved.

### Priority Technical Support and Training Areas:

During the Orientation Training Workshop organized by the A@S team, the stakeholders prioritized six major areas of training support needs for implementing their submitted A@s plans. This is the main rationale for developing and delivering these skill transfer training courses. In order to make these training courses truly a learning-by-doing sessions, this manual aims to provide the trainees modular approach based lectures, interactive discussions and work sheets. The, participants will also be provided easy-to-understand reference materials and some examples with visuals that will be used to make the training delivery more effective. It is suggested to the trainers that they should consider the national climate change policies, strategies and plans such as NAPA, LAPA, NAP Guidelines as well as low-carbon economic development strategies (LCEDS) while preparing notes on capacity building in climate change adaptation. The A@S supports transformative adaptation (adaptation that makes households and communities move to a resilience or self-sufficiency stage from coping stage and avoids mal-adaptation). Based on the analysis of the training support needs expressed by the participants, the following areas were prioritized for trainings to be conducted under the A@S Project.

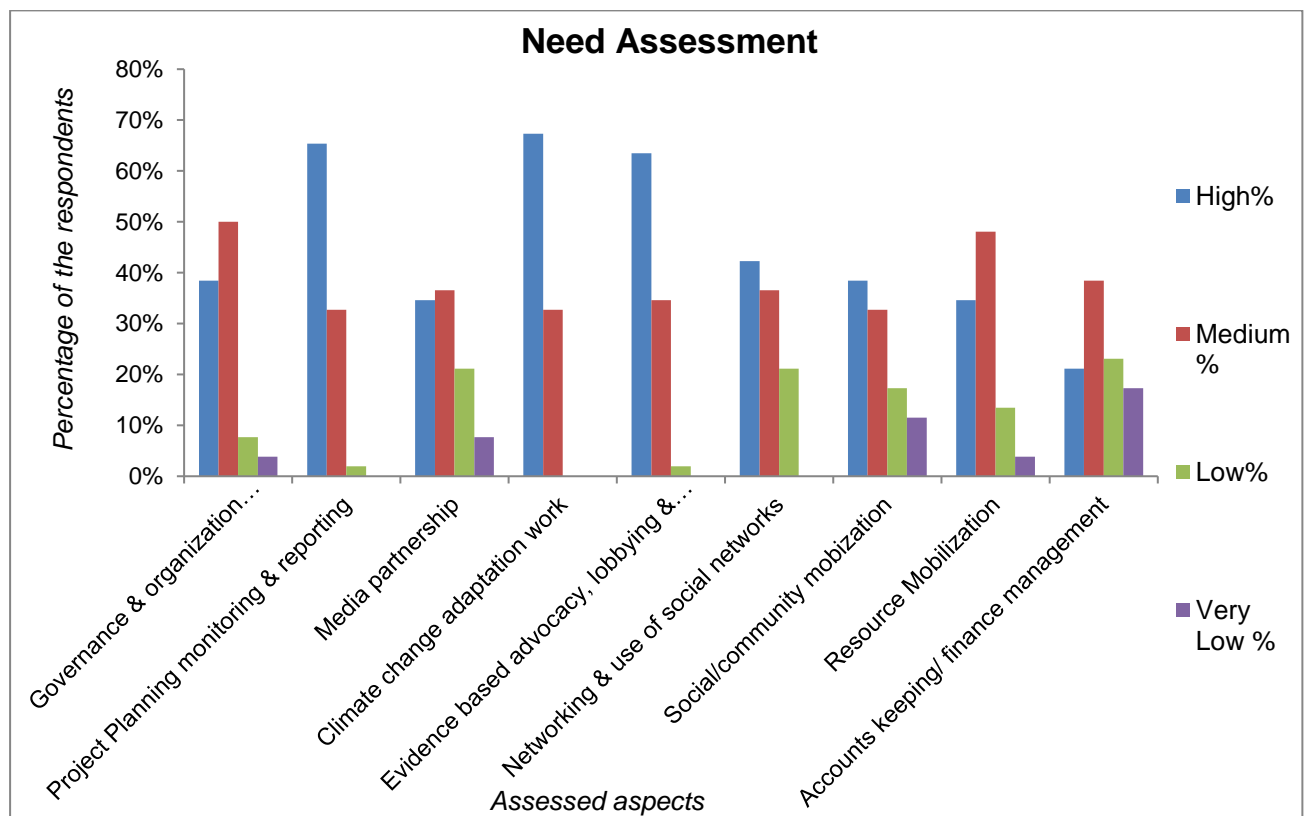


Figure 1: Diagram demonstrating the training needs of the participants

1. Climate change adaptation (VIA, CBA, EbA, DRR, Local ecosystem based adaptation)
2. Project planning, monitoring and reporting
3. Evidence based advocacy, lobbying and campaigning and training.
4. Adaptation governance and organization development
5. Networking and use of social networks



## 6. Social, community and resource mobilization

The rationale of prioritization for conducting training on the above topics relevant to climate change adaptation related topics lies in the concerns raised by adaptation designers, development partners and project managers that grass roots level adaptation practitioners and workers lack specific knowledge and skills in understanding the complex problems of climate change in relation to other socio-economic problems faced by the community. Cutting across different sectors and adding a new dimension of challenges to consider climate change problems while doing watershed level or Gaunpalika or Nagarpalika (local governments) level planning and programming are new area of work to Nepalese CBOs, NGOs, INGOs and private businesses. Climate change is impacting all the basic sectors related to livelihoods and human development of the Nepalese society and therefore development professionals, civil society organizations and policy makers have to consider it in all their work. These are the basic considerations taken in developing this Technical Support Training Manual (TSTM) for A@SPP partners under the A@S Prize Project.

### **Learning Objective:**

After the completion of the 3-5 day training, the participants will be able to;

- ✓ Prioritize their specific CCA needs and crystalize plan for implementing scaled-up CCA focusing on reducing vulnerability of the poor and vulnerable groups in their community;
- ✓ Scale up and scale out already existing and ongoing CCA projects and solutions to benefit larger number of people in larger geographic areas;
- ✓ Measure progress, monitor, report and evaluate the process, outputs and impacts of the CCA Project;
- ✓ Manage scarce human, financial, and physical resources for leading to a successful scaled out or scaled-up CCA project
- ✓ Document their CCA success, achievements and communicate the results and lessons learned to local, national and international audience

### **Participants:**

Target groups for the course include:

- ✓ INGOs, NGOs, community-based organizations (CBOs) and Private organizations who are duly registered to participate in the A@SP project.

### **Length of workshop (3-5 days combining basic plus advanced modules):**

The basic modules will be delivered in two days with the session hours lasting between 8 to 12 hours. The advanced modules will be delivered in 3 days with sessions of equal length focused on implementing and managing the A@S plans submitted by the participants. Suitable examples will be provided, exercise conducted and reference materials distributed at the end of each course delivery by concerned trainers/experts.

### Training Methodologies:

Training support workshops will be organized through a series of interactive discussion sessions. Shared learning and group based exercises will be conducted. Reading assignments will be provided by each trainer one day before the course delivery. The sessions are planned to be quite intensive and since each person learns in a different way, the content of each module is delivered using a range of training methodologies. These include:

- ✓ Audio-visual presentations and short lectures by the facilitator referring to the A@S projects
- ✓ Small group work and discussions
- ✓ Questioning techniques
- ✓ Brainstorming and panel discussions
- ✓ Case studies

### Training Content:

**Table 1: Description of the proposed indicative training modules for A@SP participants**

Module No.	Topic	Overall Objective	Input persons/trainers (proposed)
Module I	Orientation on Climate Change Adaptation (CCA); covers CBA, EbA, DRR, Local ecosystem based adaptation	Concepts of climate change and climate variability, investigates the causes and effects of climate change, explores the linkages between climate change and disaster risk reduction	Madhav and Sarba
Module II	Participatory climate change vulnerability and impact assessment (VIA) for visioning and planning climate change adaptation	To build an understanding of community-specific climate change impacts, identifying key areas of vulnerability, and assessing the community's capacity to respond to climate change.	Madhav and Sarba
Module III	Scaling-up and Scaling-out of the Climate change Adaptation practices	To understanding CCA scale up and scale out, identifying and sharing example of CCA scale out and scale up around country and also know what is innovation and indigenous knowledge	Madhav, Dinesh, Lokendra and Ngamindra
Module IV	Monitoring, verification, reporting, reflections and learning	To understand important of monitor and evaluate, different between monitoring and evaluation, outputs and outcomes, accountability and learning, indicator and information collection	Lokendra, Sarba, Prakash and Pawan

Module V	GESI, Good Governance and organization Development	Conceptual aspects of gender and climate change; Integrating gender and CC in development planning; Gender and social dimension of CC through social inclusion and gender equality, empowerment and justice lenses; Gender sensitive adaptation options	Prabha and Lokendra
Module VI	<b>EVIDENCE BASED Policy Interventions</b> (Knowledge and evidence based advocacy, lobbying and campaigning for policy planning and implementation in different level in context of climate change adaptation focusing CBA)	Knowledge and information based awareness building; knowledge and lessons sharing and evidence based policy advocacy and influencing good governance practices in CCA	Dinesh, Madhav and Pawan
Module VII	Report Writing; Learning documentation, knowledge management and communication	To document and report your work for judges to evaluate; use of the A@S templates and formats; document lessons learned (what worked, what did not and why?); effective communication of your results	Prakash, Sarba and Pawan

### Tips to use the Module for Training

Each learning unit has been developed to enable learning through discussions, presentations and involvement of the trainee in groups. Following are the important methods that can be applied to make the learning easy and interesting for the participants:

- (i) Question-Answer/Quiz Sessions: these sessions have been kept to evaluate understanding of concepts of disasters, climate change and development.
- (ii) Group discussions/work: Group activity is included in each learning unit to facilitate knowledge on developing skills related to analysis, planning and formulating strategies.
- (iii) After each group work, a presentation session has to be included, to motivate the participants in knowledge grasping, participation and sharing.
- (iv) Table-top/classroom exercises to enhance ability of focused discussion in the group.
- (v) Case studies to provide live examples from the field so that knowledge could be connected with the ground reality.

## **Module 1: Orientation on Climate Change Adaptation (CCA)**

Trainers: Madhav Karki and Sarba Raj Khadka

This unit introduces the science and practice of climate change. It covers the concepts of climate change and climate variability. It investigates the causes and effects of climate change, with particular highlight on how climate change is affecting their community and country. It explores the linkages between climate change and disaster risk reduction, and examines what is being done at the national level, regional level and community level to deal with climate change.

**LEARNING OBJECTIVES:** By the end of this unit, participants will be able to:

- ✓ Describe climate change, its causes and its main effects.
- ✓ Describe how climate change is affecting country and community (including key sectors such as health, agriculture, fisheries, water, environmental management etc.).
- ✓ Explain what a changing climate means for disaster risk reduction.
- ✓ Explain the main approaches to address climate change (adaptation and mitigation) and how to integrate these responses into DRR initiatives.  
Describe key national, regional and community level climate change initiatives.
- ✓ To study the potential impacts of climate change on different regions of the world.
- ✓ To understand impact of climate change specifically in Nepal

### **Lesson Introduction**

Trends and Impacts of Climate Change in Nepal are explained below:

Figures 1: Figures 1 Temperature variability trend in Nepal

## Maximum and minimum temperature trend (1987-2008) in Nepal

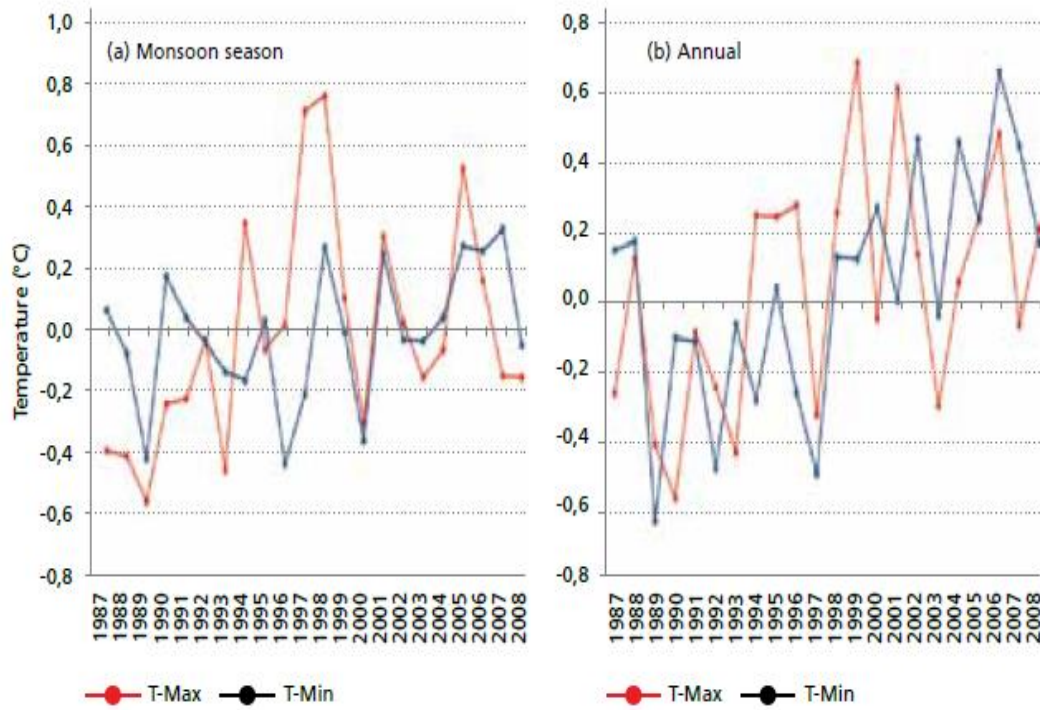
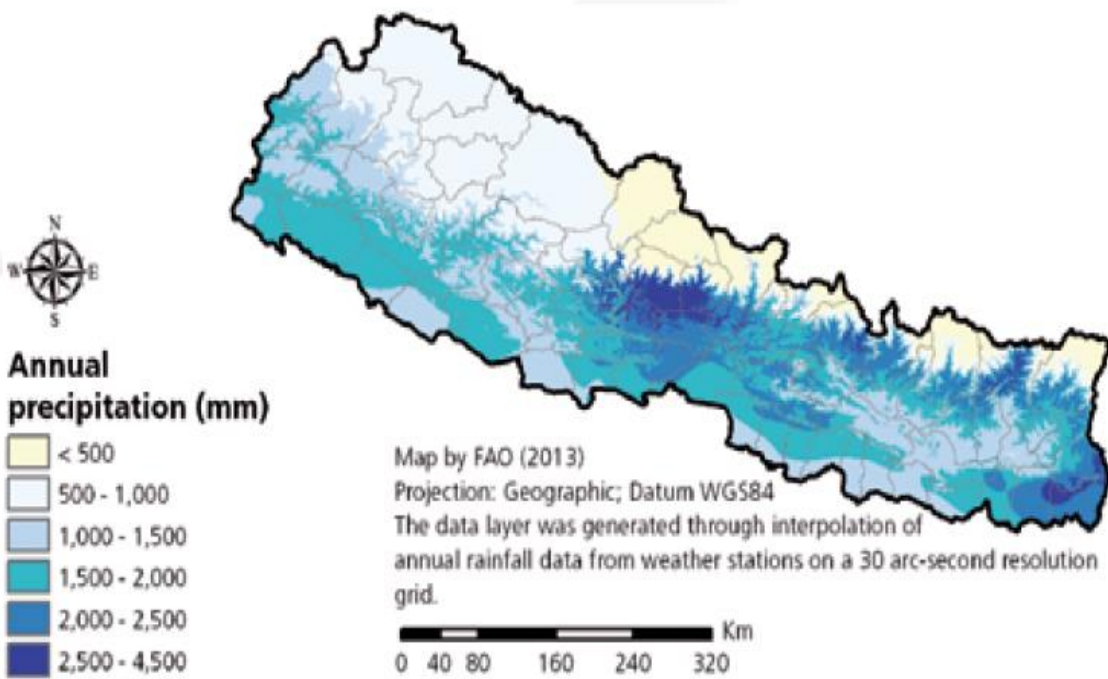


Figure 2: Precipitation distribution in Nepal



**Water Resources:** Water resources have high impacts due to the climate change. More than 60% of the impacts observed today because of climate change fall on the water resources. Snow and ice are important sources of fresh water for Nepal and downstream countries particularly for maintaining flows in rivers during the dry season. But the rapid melting of snow due to global warming has clearly indicated water scarcity in future. The disturbance in the rain cycle as a matter of changing climate illustrates the impacts further. The overall impacts of climate change on water resources can be described in the following points:

***Too much water and too little water-*** As a result of climate change, the distribution pattern of rainfall has changed. Some areas receives high amount of rainfall whereas some areas receive very little or no rain. Because of too much water in some area faces different problems like landslides, floods etc., while with too little water the drinking water shortage and drought intensifies the problem in other parts.

**Wrong type of water-** Particular in our Tarai region, drought and erratic rainfall events have been observed in more intense form with longer duration. Such events make the water availability scarce or muddy making it unsafe for drinking. Those zones with wrong type of water become highly prone to water induced diseases, sometimes breaking out epidemics. This causes loss of life.

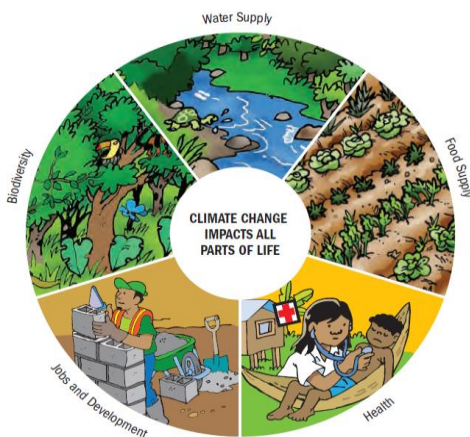
**Wrong time of water:** The onset of monsoon in Nepal *has been traditionally June*. But now if we see the past trends we can see that there has been a shift in the rainfall pattern. When we expect rain, we do not get and when we do not expect we get rainfall in wrong time. All this *is happening* because of the changing climate.

**Melting Glaciers and GLOF:** Nepal comprises of about 3252 glaciers and 2323 glacial lakes which are the fresh water resources for more than 1.3 billion population across South Asia. These are also regarded as the Water Tower of Asia. But the rapid rate of warming is challenging the existence of such glaciers due to the rapid melting. Water scarcity will be a major problem in this region. *For example* Rika Samba Glacier in the Dhaulagiri zone is shrinking at the rate of 10 meter per year. With this *rate many small and lower altitude glaciers in Nepal* might disappear by 2060 AD. About 67 percentage Glaciers of the Himalayan Region have already witnessed change in its size. The melting of glaciers accumulates large volume of water in the glacial lake. The natural dam (moraines) covering the lake then cannot withstand the pressure exerted by water and finally outbursts as a flood. This is called as Glacial Lake Outbursts Flood (GLOF). This creates massive loss in the downstream areas. The loss includes loss of life, property, costly Infrastructure of education, health, basic services etc. This also forces in the population



displacement due to its negative impact on fresh water sources for domestic p. A Hydropower station was washed away by Dig Tsho Glacier Lake Outburst Flood back in 1985AD.

Climate change is challenging our development activities as well. 5 glacial lakes of Sagarmatha National park and Kanchanjanga Conservation Area have already outburst destroying trails, More than 20 glacial lakes of Nepal carry potential risks for GLOF. Particular impacts on different sectors are observed: Agriculture: More than 67% of the total population of Nepal is engaged in Agriculture (Source: Census 2001). Also it contributes for more than 40% in the Nation's Gross National Product. Our agriculture is totally dependent on the Precipitation as the irrigation facility is only limited to certain part of the country due to lack of resources. Agriculture is going to be the most critical sector from climate change perspective. All the consequences of climate change in Nepal, i.e.; temperature rise, variation in rainfall, rise in drought period and increasing intensity and frequency of extreme climatic events will adversely affect the global agricultural practice and production. Therefore the change in precipitation pattern arose due to climate change has brought a decline in the agricultural production. Similarly the fluctuations in the temperature, decline in the soil moisture content, wind events and hailstorm have also affected our traditional mode of agricultural system. Floods and drought also reduces the fertility of the soil because of which the agricultural yield decreases. Also, new variety of pests and diseases hamper the crops.





**Health:** Climate change is a significant and emerging threat to public health, and changes the way we must look at protecting vulnerable populations. The health status of millions of people is being affected. Disease and injury due to heat waves, cold waves, floods, storms, fires and droughts are increasing as the increase in climate induced disasters. Moreover, in hot areas, the diseases become highly prone to break out. Skin, respiratory and other infectious diseases becomes very prone.

**Forests and Biodiversity:** Forest fires, deforestation, extinction of tree species are the dangers to forest and biodiversity. The forest cover of Nepal is about 29 percentages. Forest holds high significance ecologically and economically. They act as Carbon Sink as they intake carbon dioxide during photosynthesis thus contributing in reducing climate change impacts to some extent. Forests are the habitat of different varieties of Flora and fauna. The massive deforestation that occurred after 1950s has greatly reduced the biodiversity and local economy of the inhabitants dependent on the forests. This has created loss and even extinction of species. Forest, plants and animals require good environment with optimum temperature, water, food and nutrients. They are unable to adjust to the changing climate which causes their extinction also. According to a study about 2.4 percentage of the biodiversity is in danger of extinction due to climate change. Increasing temperature is reducing the soil moisture and keeping air dry because of which forests become prone to fires. Floods, landslides, soil erosion also trigger the forest destruction. Forest destruction will directly impact plants and animals and the people whose livelihood are directly linked with the forests.

#### **Did you know?**

1. Nepal accounts for 2.1 % of share of biodiversity in the world, and Climate Change possess significant loss of habitats and possible extinction of some plant and animal species;
2. Direct financial losses from climate change could run globally at £213 billion a year by 2050, not counting social and environmental costs

#### **Exercise:**

Exercise 1: This exercise is on CC Impact as the trainees have to act as per the climate change impact.

- ✓ To review/ check on participant understanding the CC induced impacts in their community;
  - ✓ To ensure that the participants are able to distinguish between climate induced and non-climatic impacts such as Landslides.
1. Introduce the exercise and process, and again emphasize the importance of all participants having a common understanding of basic ‘climate change’ language to be used within this modular learning process.
  2. After the given time (15 minutes), the facilitator should ask participants to STOP, and display their answers to the exercise; ask groups for their scores (optional). After, review ‘vocabulary’ and or concepts that have presented a common challenge to participants, i.e. most common mistakes.

**Table 2: Typical Q&A**

Questions	Answers
1. What are the most common climate change impacts in your region? Which sector is most impacted?	The rainy season seems to be coming later and later every year, and when it does rain, storms are getting stronger
2. What are some of the common problems all communities feel affected and pose risk for their future wellbeing?	Because of this year's drought, forests fires destroyed ten houses;
3. What are the positive and negative changes in water resources, agriculture and food security, terrestrial ecosystems and biodiversity?	Farmers have started to use nets to protect their crops, and bamboo to protect their soil during the rainy season
4. Climate change and disaster risk reduction: What does a changing climate mean for disasters?	Increased flash floods, more devastating monsoon floods, landslides; health epidemics such as bird/swine flu

*Video presentation:*

*Group exercise:*

Understanding of Climate Change and its impacts

FIELD VISIT:

Indigenous Tharu Peoples' Irrigation System, Manigram, Rupandelhi:

The *Sorah-Chhatis Mauja* system was initiated by *Tharu* communities. They started building annual trash dam in the nearby *Tinau* River and divided the main canal into two branches: 16 *Mauja branch*



and 36 *Mauja* branch canals. The water is allocated in the ratio of 40:60 based on the size of the command area. The timing and number of days of voluntary labour contribution for constructing and repairing the dam and the canals are decided by the head of the management committee (in olden days it was done by the Tharu leader or the *Chaudhary*) based on the feedback received from *Meth Mukhtiyar* (head technician) and *Mukhtiyars*(technicians). The community which is now a mixed community of

native *Tharus* and hill migrants still use the *Tharu* language terms such as *Jhhala* (tree and shrub branches), *Tin Khutiya* (tri-pod to support the trash for diverting water), and *Kulhars* (canal workers) ( see the picture below). In recent years, the water dam design has been improved by combining reinforced cement concrete and traditional stone and trash technologies to adapt to the increasing slope of the river bed.

## **MODEL 2: CLIMATE CHANGE ADAPTATION PLANNING THROUGH VULNERABILITY IMPACT ASSESSMENT (VIA)**

Madhav Karki and Sarba Raj Khadka

### **Learning Objective**

1. Provide conceptual basis on adaptation and mitigation approaches;
2. Know how these approaches are important for Nepal particularly in the community the trainees are working in.
3. Learn about vulnerability impact assessment tool with an example and adaptation planning methods

### **Introduction:**

This unit focuses on understanding the concept of adaptation, mitigation, vulnerability (Hazards + Risks) and the adaptation planning needs due to high vulnerability prevailing in different parts of Nepal. This Unit highlights the need for awareness building an improving understanding of community on location/situation specific climate change impacts, identifying key sources, nature and types of vulnerability – their different dimensions - and assessing the community's capacity to respond to climate change. Participants are also challenged to develop a vision for a climate adaptive community.

OBJECTIVES: By the end of this unit, participants will be able to:

1. Identify the main climatic and non-climatic impacts and vulnerability;
2. Understand the climate change and disaster threats facing their community;
3. Understand different measures community can adopt to adapt to the changes such as crop and livelihood diversifications; water source protection; water storage plastic pond construction and afforestation, reforestation, grazing control, community forestry, agro-forestry, SALT, and water conservation practices in relation to climate change adaptation;
4. Identify Physical, social, economic, and environmental as well as multi-dimensional vulnerability;
5. Discover Social vulnerability of poor, women, dalit and marginalized group of populations;
6. Recognize Gender Equality and Social Inclusion concerns and solutions

Climate change solutions: There are two parallel strategies to combat climate change: 1. Mitigation and 2. Adaptation



- Mitigation:** Mitigation is done to avoid, prevent, reduce and mitigate against the unpreventable, unmanageable and already existing risk such as Co<sub>2</sub>, Methane (CH<sub>4</sub>), and Nitrous Oxide (NO<sub>2</sub>) in the atmosphere.
- Adaptation:** Adaptation is done to manage or adapt to the unavoidable and unpredictable risk, hazards, threats, problems and impacts.

**Introduction:** Nepal's greenhouse gas (GHG) contribution to the global share is very low. So, it doesn't have significant role in terms of GHG reduction or mitigation from global scale. However it can do its best to utilize it in carbon marketing such as through REDD+ or Co<sub>2</sub> Offsets. This means, the level of GHG reduced from a part of Nepal can be claimed for

money from developed countries which have mandatory obligations in GHG reduction set by

# जलवायु परिवर्तन बुझौ, बुझाऔ

**जलवायु परिवर्तन के हो ?**



मानवीय कारणले पृथ्वीको औद्योगिक तथा कृषिको साथै जल, स्थल र वायुमण्डलमा हुने परिवर्तन नै जलवायु परिवर्तन हो।

**जलवायु परिवर्तनका कारणहरू**



CO<sub>2</sub>, NO<sub>2</sub>, CFC  
गर्मायुक्त गैस

**जलवायु परिवर्तनका परिणामहरू**



जमीनी उपलब्धता घटी



जलवायु परिवर्तनको असर



घटी, धरि-रिवाट, बाढ, जल र अतिथि प्रभावकारी गरी



जमीन क्षिप्ततामा असर

**जलवायु परिवर्तनको अनुकूलनका उपाय**



**तालिम तथा क्षमता अभिवृद्धि**  
जनसहभागिता चेतना जगाउनु



**सही योजना**  
सही योजना तर्जुमा तथा कार्यान्वयन



**कृषि प्रणाली**  
कम तथा घटी पानीमा पनि खेती गर्न सकिने र जलवायु परिवर्तनलाई खेती सजिलो पारी ल्याउने



**अध्ययन, अनुसन्धान**  
जलवायु परिवर्तन र सोको असरवारे मितरमित अध्ययन अनुसन्धान गर्नु

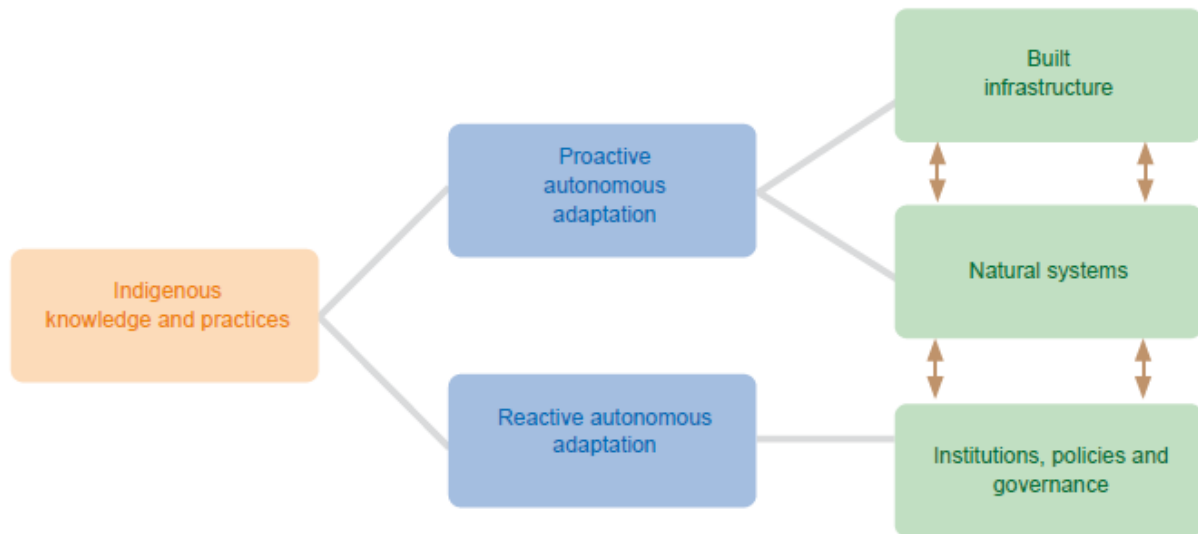
जलवायु परिवर्तन अनुसन्धान एकीकृत कार्यक्रम  
संस्था संस्था, सिमाना इतिहास र विकासको अनुसन्धान, सिमाना, काठमाडौं, नेपाल, कोष: १००१११००१११, फोन: १००१११००१११, ईमेल: info@moct.gov.np, वेबसाइट: www.moct.gov.np



Paris Climate Change Agreement.

But the impacts of the climate change are inevitable. The only way to do is reducing the vulnerability of the negative impacts. This can be done by adopting necessary approaches or measures at local or community level. Adaptation can reduce vulnerability, both in the short and the long term. It is a better combating strategy for developing countries. There are several organizations in Nepal who are doing different kinds of adaptation such as a) Community Based Adaptation; b) Eco-system based Adaptation (EbA) and c) Local Situation based Adaptation Practices including DRR, Bio-engineering. The other examples include a) Landslide stabilization, Pond construction, Flood control techniques that are called adaptation measures; b) Increasing the height of the dykes can protect from flooding; c) Introduction of New variety of disease resistant and high productive crops; d) Introducing cash crops like banana in rice field where precipitation has significantly reduced to support rice plants; e) Intercropping, crop rotation and shifting cultivation and f) Climate induced disaster preparedness by the community but building Gabion wire box dam along the river.

**Figure 3a: Indigenous practices and climate change adaptation**



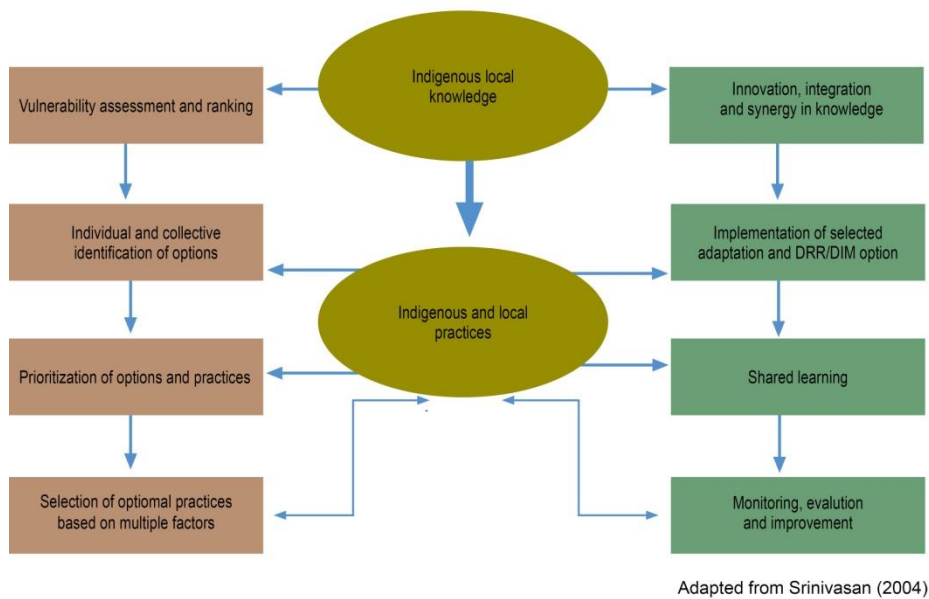
*Key learnings: a) MITIGATION: “The causes of climate change are removed by reducing Green House Gases emissions and increasing the carbon stock.” b) ADAPTATION: “The effects of climate change are dealt with by coping with their negative impacts by the responsive adjustments.”*

*“Adaptation is the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploit beneficial opportunities”.*

*“Mitigation is an anthropogenic intervention to reduce greenhouse gas sources and emissions and enhancing greenhouse gas sinks”.*

**Use of Indigenous and Local knowledge and Practices in Adaptation:**

Figure 1: Application of ILKP in CCA and DRR in Nepal



Over the years, local people have used their knowledge and practices to adjust to changing economic, ecological and social dynamics. They continue to do so to reduce the hazards and risks imposed on them by climate change and these adjustments have developed into indigenous adaptation practices (Anik, 2012). These practices are helping communities to minimize disaster risks and formulate cost-effective and participatory adaptation measures to prepare them to respond better to disasters (Nakashima et al., 2012). Figure 1 illustrates how indigenous practices evolve out of ILK. The fact that local climate adaptive practices have evolved in response to changes in weather and climate for centuries is why indigenous adaptive practices can be called climate adaptation practices. The logic is that indigenous resiliency is the basis for indigenous adaptation practices (Prakash, 2013).

Specific ILK and information that communities use to adapt to climate change comprises of knowledge of a) seasons, b) historical storm patterns, c) the colour of rain-bearing clouds, and d) wind patterns, direction and types (wind from the west dries crops and wind from the east is cool and brings rain). This indigenous knowledge enables people to plan their agricultural activities and adopt management practices such as setting irrigation schedules and constructing shelters, wind breaks, storm walls and homestead fences appropriately (Mukhopadhyay, 2010). Local communities predict rain and hailstorms that may damage crops and property by judging the colour of clouds and the sound of thunder as well as the duration of drought (Gearheard et al., 2010). ILK is the basic information available to local people for carrying out community preparedness-, peer learning- and knowledge-based decision-making in CCA. In the A@SPP activities, there is high scope for exploration and use of the existing ILK based adaptation practices for scaling-up and scaling-out.

Adaptation responses vary from tackling the risks of disaster due to extreme weather events such as floods to dealing with changes in species and shifts in rainfall events. Indigenous and local knowledge about natural and managed ecosystems helps communities adjust their practices in agriculture, animal

husbandry, land, water and other natural resource management. This gradual amendment of on-going practices constitutes what is currently known as local communities' coping mechanisms and autonomous adaptation practices adopted in the face of climate change and other stressors (Prakash, 2013).

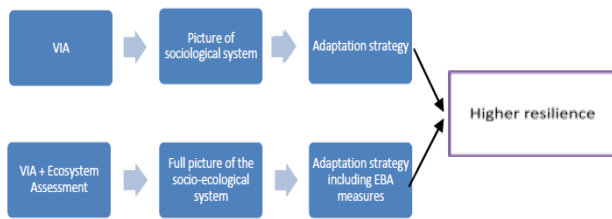
Below some pictures are given to show example of adaptation practices adopted in a community by using indigenous and local knowledge in most instances:



### **Vulnerability Impact Assessment:**

For developing adaptation strategies, having a good understanding of how climate change impacts on societal and geographical features is important. In Nepal both climate change induced and other natural and human activities induced vulnerability exist which is called multi-dimensional vulnerability. Assessing multi-dimensional vulnerability helps in defining the problem and identifying the appropriate adaptation options based on both scientific information and indigenous knowledge. Integrated assessment of socio-economical, physical, and ecological hazards and risks gives more holistic and complete picture of vulnerability thus helping ecosystem managers decide suitable resilience building and adaptation strategy taking a system approach (Figure 1) (CBD, 2013)





Thus vulnerability impact assessment (VIA) from ecosystem perspective first, assesses the conditions of essential ecosystem services that are used by local communities to help them in supporting adaptation efforts. Second, by looking at the historical climate variability and future climate

projections, we assess how they are impacted by current as well as future climate variability and based on the extent of vulnerability, adaptation options are identified. The, risk reduction measures and adaptation strategy that are based on integrated VIA results lead to more resilient human and natural systems (Morgan, 2011). Thus the VIA done from EbA perspective leads to building the resilience of society and ecosystem by addressing three elements: a) vulnerability of combined systems; b) resilience to shocks and serious disturbances; 3) holistic improvement in resilience building of the system.

#### *The VIA Assessment in EbA Project*

Based on the above concept, in Nepal with support from several development partners an EbA pilot project in Panchase was implemented during 2013-2016. The goal of the project was to plan and implement adaptation activities based on improved management of ecosystem services by addressing both the climatic and non-climatic drivers of change thereby enhancing both community and ecosystem resilience. Panchase was selected for piloting the EbA project based on the five criteria: a) ecosystem services are vulnerable to climate change; b) human wellbeing is highly dependent on ecosystems goods and services; c) EbA options are available and will be acceptable to local communities; d) partners have adequate capacity to implement; and e) potential to scale up/replicate exists. The Panchase ecosystem (PE) is considered vulnerable to climate change, due to observed negative consequences on water resources, agriculture and biodiversity (UNDP, 2011). The PE is likely to face more climate risks in future due to rising temperature, increasing number of landslides, high sedimentation flow, precipitation extremes, and biodiversity loss. The wetlands of the PE also face degradation. Moreover, this area is considered unique in Orchid diversity with 113 species of wild - including 2 endemic species (*Panisea Panchasenensis* and *Eria Pokharensi*) (MoFSC, 2012). Major non climate pressures include increased landscape disturbances due to environmentally unsound development work such as unplanned road construction, over-exploitation and unsustainable use of forests, overgrazing, and forest fire. Climate induced pressures include habitat destruction, biodiversity loss, occurrence of invasive species, change in species composition, and declining food production. The project explicitly recognizes the importance of coupled human-environmental systems (CHES) which is common in the mountain ecosystems of the Himalayas (Locatelli et al, 2008, ICIMOD, 2010). It is also recognized that local and regional ecosystem services are more relevant for adaptation than global changes in temperature and rainfall (UNEP, 2009). In Panchase, all the four ecosystem services as defined by MEA and the TEEB (CBD, 2013) are highly important. Supporting services such as bio-geo nutrient cycling contribute to the enhanced adaptive capacity of the agro-ecosystems. Provisional services such as primary productions are important for the functioning, resistance and resilience of the human and ecosystem. Regulating services such as

hydrological processes decrease the sensitivity of CHES since water generated supports agriculture, biodiversity, and human health. Habitat services support sustenance of biodiversity.

### Objectives and Scope:

The general objective of the VIA is to undertake an ecosystem level VIA and develop innovative strategies and ecosystem-based adaptation framework that can build resilience and adaptive capacity of local community and ecosystem in Panchase. The study proposes an approach to replicate and upscale the framework across Nepal. The specific objectives of the study are: a) conduct a VIA of PE with particular focus on important ecosystems services; b) identify the EBA activities that could reduce vulnerability and/or increase resilience of the area to climate change; and c) map vulnerability and EBA options; and d) provide recommendations for the implementation of EBA activities. The specific scope of the Paper is to describe the vulnerability impact assessment (VIA) of the PE giving particular focus on identification of key ecosystem services generated by the ecosystem. In the process of VIA, the study identifies the potential adaptation activities that could reduce vulnerability and/or increase resilience of the area to climate as well as socio-economic changes. The paper also maps the vulnerability by wards and sub-watersheds based on which different EBA options using spatial planning techniques (GIS tools) are provided.

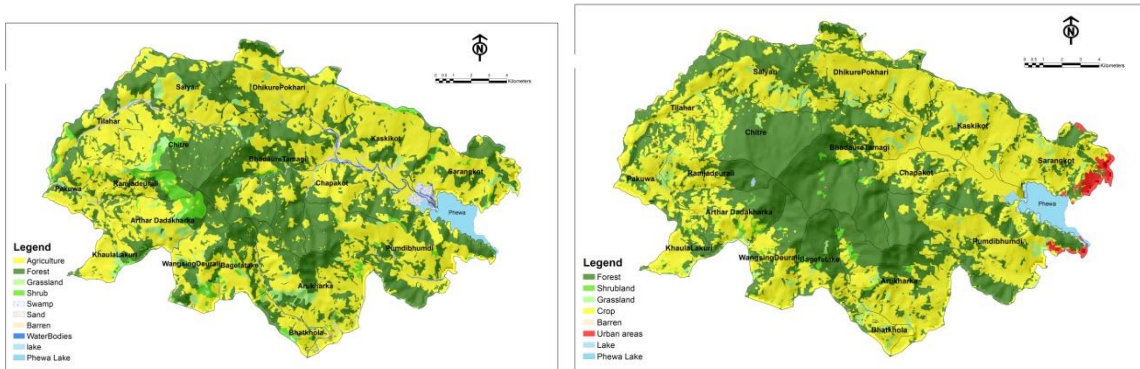
### The study area description:

The Panchase ecosystem (PE) is composed of seventeen (17) Village Development Committees

(VDCs) of Kaski, Parbat and Syangja districts of Nepal (Map 1). It is a unique and rich ecosystem representing the Mid-hills ecological regions of Nepal. 'Panchase' which literally means confluence of 'five seats', is the meeting place of different hills and number of different ecosystems characterized by a large number of forest types, species mixes, eco-types, wetlands/lakes, rivers, religious and cultural sites, and overall is a centre of biodiversity for endemic species of Orchids,



Rhododendrons, Oaks etc. The PE has tremendous biological, cultural, and religious diversities and natural beauty with commanding view of surrounding world famous Himalayan mountain peaks of Annapurna and Dhaulagiri ranges above the horizon and lush green hills below spread in multiple catchments and watersheds. Panchase represents an important Midhills ecological zone of Nepal which has received less attention in terms of protected area coverage and biodiversity conservation as compared to Tarai and Himali ecological zones. Panchase is therefore, an important ecosystem connecting Inner Tarai and Midhill vegetation. Within the PE boundary the core area – comprising of 9 VDCs - has been declared by the Govt. of Nepal as the Panchase Protected Forest (PPF) that covers an area of 57.76 sq km. The forest is dominated by sub-tropical and temperate vegetation spreading from an altitudes varying from 1450 to 2517 masl. A famous religious lake 'Panchase' is situated at the altitude of 2,250 meter of the area. The PE has been undergoing marked land use land cover changes (some positive) as shown by the comparative maps of 1990 and 2010 situation:



Map 2 and 3: Land use land cover changes between 1990 (left) and 2010 (right) (ICIMOD, 2012)

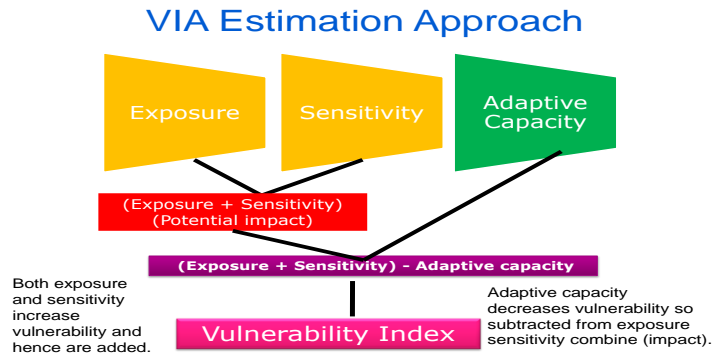
### VIA Methodology:

Vulnerability generally refers to the propensity to suffer damage i.e., the extent to which a population, system and individuals are likely to experience harm due to exposure to a natural and/or human-induced hazards (UNEP, 2000). The scientific meaning of ‘vulnerability’ has its roots in three academic disciplines namely: a) risk and hazard or biophysical elements, b) political economy, and c) ecological resilience (We ADAPT, 2011)<sup>1</sup>. Some vulnerability studies are focused on systems, places and activities and others on individuals, livelihoods, thematic sectors, and landscapes, ecosystems (Blaikie 1994: 9) who defines vulnerability as “The characteristics of a person or group in terms of their capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard. It involves a combination of factors that determine the degree to which someone’s life and livelihood is put at risk by a discrete or identifiable event in nature or society.” (Blaikie, 1994: 9). Generally, all definitions are based on the measurement of exposure and resilience. The IPCC has defined vulnerability as “the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes” (IPCC, 1997). It has defined 3 (three) components of vulnerability: a. exposure, b. sensitivity, c. adaptive capacity. Eakin and Luers (2006) have described the three lineages with examples. The major elements of vulnerability assessment are risk and hazard as shown in the Figure 3 which classifies vulnerability into two: a) Outcome vulnerability, and b) Contextual Vulnerability.

*VIA Estimation methods:* The VIA tool uses 32 indicators. We first calculated value for three components of vulnerability: *Exposure*, *Sensitivity*, and *Adaptive Capacity*. The 32 indicators that cover both human and environmental aspects are then categorised under 3 components: Exposure, Sensitivity, and Adaptation Capacity. The first two components are given weightage of 0.5 each for the total value of 1.0 and adaptive capacity is given a higher value of 1 to show the possibility for zero for moderate vulnerability, 1 for highest vulnerability and -1 for lowest vulnerability. Since both exposure and sensitivity are negative attributes we estimate the values arrived for the indicators categorised under each of them. However since adaptive capacity is positive attributes, we subtract the

<sup>1</sup>For more detail visit: <http://weadapt.org/knowledge-base/vulnerability/vulnerability-definitions>

value arrived for measuring adaptive capacity to calculate vulnerability index using the following formula:  $V = Ex + Sen - Ac$ . The method is illustrated with the following diagram:



Each indicator is ranked from 1 to 13 (for sub watershed scale as there are 13 sub watersheds) based on the value assigned by the stakeholders during the key informant survey. Each exposure ( $Ex$ ) category in each cluster is added to obtain a composite value for that cluster (Wards, VDC, watershed unit or ecosystem). The ranking is obtained is by clusters. The ranking number obtained is converted by giving 0.5 weightage for each component in order to get the ranking in pre designed range (very high vulnerability to very low vulnerability). Ranking range will not change even when cluster number and/or exposure indicators increase or decrease. Similar approach is taken for measuring sensitivity ( $Se$ ) by giving the weightage of 0.5. This mean that the exposure sensitivity combine get a weightage of 1. The adaptive capacity ( $Ac$ ) gets a maximum weightage of 1 as explained above. Ranking for adaptive done similarly. Vulnerability index ranges from between -1 (highest) to +1 (lowest). Five categories of vulnerability (very low to very high). The range for each vulnerability class is given below:

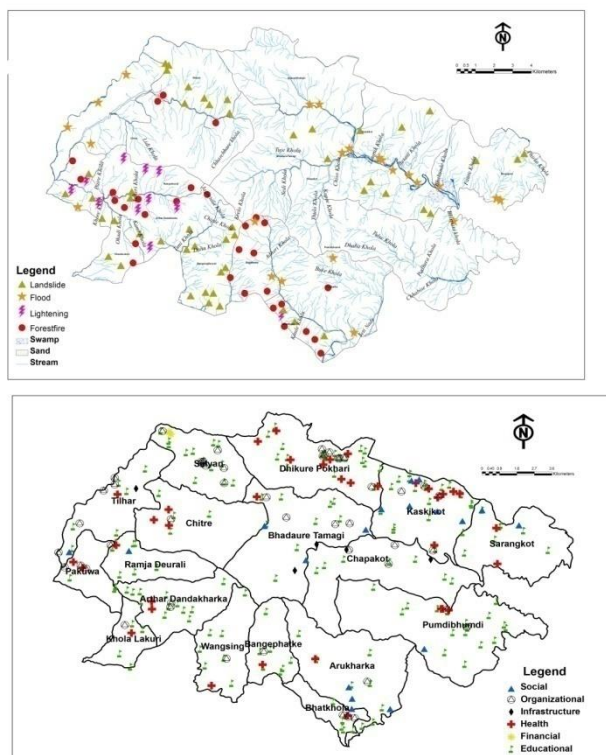
(0.61 to 1)	<i>Very high vulnerable</i>
(0.21 to 0.6)	<i>High vulnerable</i>
(0.20 to -0.19)	<i>Moderate vulnerable</i>
(-0.20 to -0.6)	<i>Low vulnerable</i>
(-0.61 to -1)	<i>Very low vulnerable</i>

**VIA Results: Thematic maps:** Based on the available data obtained from the top-down – through analysis of model projections and national trends - and bottom-up assessments – stakeholder consultation, people’s perceptions and field observation-based data - we conclude that the future climate of Panchase will be characterized by increased hazards, risks, and stress. Since there is a close match between the historical data, people’s perceptions, and future projections, we can safely conclude that in PE, the temperature increase in mid-21<sup>st</sup> century will be significantly higher. The precipitation will be more or less similar to the current level in terms of annual volume but the season and intensity will be different with a tendency to show more extremes. Based on the analysis of

recorded data, secondary information and community perceptions, the following GIS maps (Map 4 and 5) and overlays were prepared as below:

Based on the maps 4 and 5 presented below and top-down assessment of the climate change trends, we have prepared a consolidated vulnerability trends and possible impacts on the ecosystem services of the PA in Table 2 below:

### Maps 4 and 5. Hazards and institutional distribution maps of Panchase Area



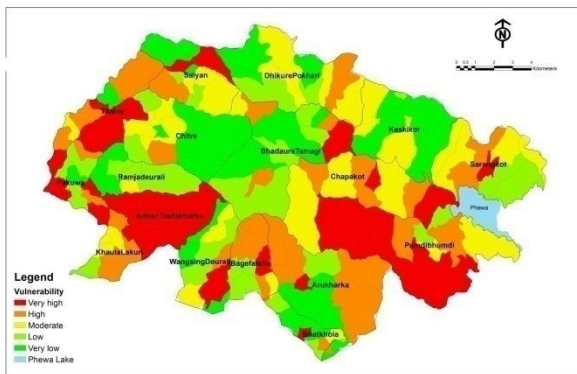
**Table 3: Consolidated Ecosystem Component Risk Assessment**

Ecosystem dependent major livelihood activities	Final risk rating of livelihood enabling ecosystems		Final risk rating of total impacts	Final accumulated risks
	Affected ecosystems	Final projected risks		
Food production	Hill farming system	High moderate	High	High
Timber, poles, fuel wood, composts, and grazing	Community forest	Moderate	Moderate high	Moderate
Livestock farming	Range and pasture land and fodder tree areas	High moderate	Moderate	Moderate high
Ecotourism	Natural landscape	Moderate	Moderate	Moderate

NTFP collection and marketing	National forests and related ecosystems	Moderate	Moderate	Moderate
Water for drinking and irrigation	Water springs, rivers and wetlands	High moderate	High	High

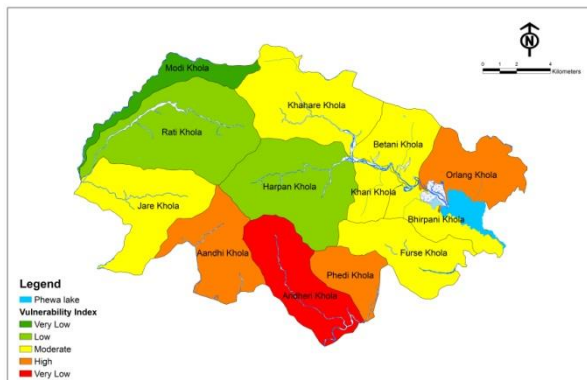
**Final Vulnerability and Impact Assessment (VIA):** In order to estimate the total vulnerability impacts due to both the climate and other drivers of changes in the PE, we used the quantitative and qualitative assessment methods and estimated Exposure, Sensitivity, and Adaptive Capacity for the human and ecological systems. Landscape based vulnerability assessment was also judged by assessing landscape exposure and sensitivity based on the historical land use land cover data and adaptation capacity based on the availability of different institutional and social services available to the people. Based on the analysis of all the data, we conclude that the Panchase ecosystem as a whole is moderately exposed, highly sensitive, and faces moderate adaptation constrained to climate and non-climate induced vulnerability and impacts. The series of maps of the ecosystem services, distribution of social and development organizations, extent of natural hazards, landlessness, eroding natural buffering features of the landscape, the PA landscape is considered to be under moderately exposed to physical hazards and risks. Regarding the adaptive constraints (inverse of adaptation capacity), our estimate is based on moderate loss of habitat, and high rate of ecosystem fragmentation due to heavy human and animal pressure. These values help us conclude that the PE has moderate (in Kaski) to high (in Parbat and Syangja) adaptive constrains or an overall medium level of adaptation capacity. Increased climatic stress due to increased historical climate variability is likely to make sectors such as biodiversity, water, eco-tourism and agriculture more vulnerable and fragile in future which together with increased frequency of extreme events are expected to aggravate vulnerability of communities. This was confirmed by the perceptions of local stakeholders consulted during the field data collection and shared learning process. Panchase is also considered highly valuable from economic and social perspectives regionally, since one of its major watersheds (Harpankhola) is the major source of water for the Phewalake on which a significant part of Nepal’s tourism industry depend. Also the protected forests in PE are experiencing increased dominance of invasive and weedy trees such as Raktchn (*Daphniphyllumhimalense*) and shrub species (e.g., Banmara or *Eupatorium adenophorum*). People consulted have also expressed increased incidence, of land/mud slides, flash floods, forest fire, drying up of natural springs –vital for both drinking and irrigation purposes-, and lightening. People have also monitored declining agricultural productivity, erratic monsoon rains and increased incidence of forests fires, decreased winter rainfall and snowfall. Based on all the information, we estimated vulnerability using the function of system exposure to changes; sensitivity to impacts; and capacity/ability to adapt or  $V = f(S_e + S_s - A_c)$ . Based on this formula, we have calculated the first order sub-watershed level vulnerability ranking as shown in Maps 6 and 7 which are themselves based on the vulnerability mapping of different wards of 17 VDCs as shown in the Table (Annex 1 Table 1) and the Maps (6) below:

**Maps 6: Maps showing ward level vulnerability ranking in Panchase**



Based on the above shown ward level VIA, we converted the ward level maps into sub-watershed level VIA since ecosystem based adaptation activities are more appropriate to be planned and implemented at the sub-watershed level that are defined by the natural catchment and ecosystem boundaries. EbA is basically a reconstruction of natural infrastructure. We also did the analysis of gateway service system concept (the three layers of service systems described above) to analyse the collected information from the stakeholders at ward level

to prepare the vulnerability maps as shown above. The process used was to define sub-watershed using natural drainage areas of secondary rivers in PE. The Map 7 below indicates the VIA map by sub-watersheds for a total of 13 watersheds which indicates Andheri Khola sub-watershed as the most vulnerable and Modi Khola SW the least vulnerable. All others fall in between.



**Maps 7: Maps showing sub-watershed level vulnerability ranking in Panchase**

The following top six EBA activities have been prioritized based on the number of adaptation options provided by local communities. The community list does not give top priority to the ecosystem restoration and biodiversity conservation perhaps due to their weak links to their perception of livelihoods. Given the status of the natural resources, especially forests and biodiversity degradation that has been

recognized by the local community, we can safely assume their critical role in support livelihoods and therefore rationale to include as an EbA priority work.

**Analysis of results:** Increasing climatic variability is affecting all aspects of the human, socio-economical, and environmental systems in Panchase. We argue that a significant source of livelihoods of the local (core system people), larger PE communities (secondary system people drawing ecosystem goods and services from core system), and the people of the three districts as well as outsiders including tourists coming to Pokhara (tertiary system people) comes from the PE. Therefore their combined activities have both negative and positive impacts on PE which can be illustrated with the diagram below:

Based on this analysis, the projected negative changes are:

- Species and population range shifts and/or changes in phenology leading to alteration of forest species composition and/or fragmentation of habitats, or loss of habitat's biotic interactions
- Changes in forest plant composition may impact on ecosystem and agriculture productivity
- Changes to hydrological regimes will alter the water availability – both in volume and timing
- Reduced stream flow will affect sustenance of services to the population altering community composition as forced migration might occur.

In order to adapt to these negative changes, commensurate EbA actions as biodiversity conservation, ecosystem-based management, and restoration of ecosystem integrity have to be planned and implemented.

**Recommended EBA Planning Approach:**

Adaptation to climate and socio-economic changes in Panchase using the EbA framework has to enhance the role of ecosystem services for generating multiple benefits since there are competing uses and users of the ecosystem services in and around PE. This has to be enabled by good ecosystem governance for inclusiveness and integrated approach. This calls for making the EbA not only human centric but also pro-poor and pro-women. The EbA in the mountain contexts as proposed by the pilot project has to improve the capacities of Nepal's institution to plan and implement adaptation activities in the long run. In order to strengthen the ecosystem resilience and to reduce the vulnerability of communities dependent on ecosystems, an integrated VIA is a prerequisite. The stakeholders' involvement for such a VIA process and collective stock taking exercise involving representatives of all stakeholders including international agencies can qualitatively improve the EbA planning and improve implementation process.

Q&A:

- Which strategic approach is better for Nepal, Adaptation or Mitigation?
- What is adaptation? What are different types of adaptation being practiced in your region?
- What is vulnerability, impact assessment and adaptation planning?

*Expert Presentation on community based vulnerability impact assessment and capacity building to respond to climate change (Climate Change Adaptation visioning and planning) – Madhav Karki*

***Group Exercise 3: Participatory Vulnerability Impact Assessment and Adaptation Planning:***

Process:

1. Ask the participants to sit quietly and spend the next five minutes imagining the future of their community. They should think about what the future might look like if nothing is done about the problems they have identified and what it would look like if each problem was addressed.
2. Divide the participants into groups. Each group should have a brown paper and make climate resilient community map. For example, if the riverine erosion and flooding due to extreme weather events are problems identified by the group, and the vision for the climate resilient future includes the community not being cut off and farmers not losing access to markets after extreme events, the group could model a solution by placing gabion baskets in those areas of the river where the flooding and erosion are worst and they could show a raised bridge across the river.
3. Once in their small groups, participants should share their vision with the group and come to a common vision for their community.
4. Each group should present their map
5. Discuss the maps. What similarities are there? What differences?

OR



### Expert Presentation

- What is Vulnerability and Resilience?
  - ✓ Climate Exposure
  - ✓ Climate Sensitivity
  - ✓ Adaptive Capacity
  - ✓ other conditions affect vulnerability

Exposure	Number of hot days, Annual rainfall, drought
Sensitivity	Drought tolerance of crops, level of flood- proofing of buildings, Diversity of crops
Capacity	level of awareness, access to communications technology

### Process:

Divide the participants into groups. Each group should have a Metacard

Ask participants,

- ✓ Which community is more vulnerable? (reason)
  - Exposure
  - Higher sensitivity
- ✓ Which community is more Resilience? ( reason)
  - Exposure
  - Higher Adaptive capacity

## Module 3: Climate Change Adaptation Scale up and Scale out

Madhav Karki, Dinesh Devkota, Lokendra Poudyal and Ngamindra Dahal

This unit focuses on an understanding CCA scale up and scale out concepts and practices. It focuses on identifying and sharing example of CCA scaling-out and scaling-up in different parts of Nepal and also know what is innovation and indigenous knowledge.

LEARNING OBJECTIVES: By the end of this unit, participants will be able to:

- Know about scale up and scale out
- Identify the indigenous knowledge
- Identify the pilot lessons learnt with neighboring community/district/country for scaling up major findings and practices.
- Describe existing community capacity to deal with climate change adaptation scale up and scale out.
- Clear a vision for CCA scale up and scale out and describe what is needed to build their community to CCA scale up and scale out

### **Scaling-up Success**

Introduction: Developing models of good adaptation practice in Nepal include innovation in three areas: technology, partnership and adaptation process which, when combined, transform people's lives. This is called transformative adaptation which is mostly either scaled-up or scaled-out. The objective is to ensure that these practices are sustainable, adaptable, and cost-effective and, importantly, do not expose local people to unreasonable risk. We know that, with appropriate support, these practices can be adopted by tens of thousands of farmers and herders, spreading good practice throughout Nepal.

### **Scaling up examples: #1 Changing policy**

In Nepal there are policy barriers that prevent good practices from moving beyond the project level. To achieve a supportive policy environment we use the evidence from successful work at the grassroots. To influence both the development of policy and the translation of that policy into sustainable adaptation practice, multi-scale, multi-stakeholder and multi-sector approaches are needed. For example, helping farmers and livestock herders engage with influential policy makers in the Ministry Of Agriculture can be at the heart of our drive to create a positive policy environment in which farmers can flourish.

### **Example2: Sharing expertise to increase impact**

To help other organizations adopt models of good practice, the Training and Advisory Service of the INGOs, NGOs and CBOs can offer a range of training, advice and post-adoption support. Experiences can be shared through workshops, developing learning materials and establishing networks for practitioners, such as the Community Adaptation Network in Agriculture (CANA)

### **Example 3: Raising awareness**

There is widespread belief that agriculture is an outmoded way of making a living which has led to declining public and media support of the agricultural sector. However, in Nepal vegetable and coffee farming experience shows that vibrant smallholder agriculture is the foundation for dynamic rural economies, driving economic growth. The A@S partners can help improve public understanding of agriculture's vital role to encourage broad public support for increased investment in agricultural development.

### **Example 4: Peer Learning**

These models of good practice in adaptation are developed by learning from peers i.e., neighboring farmers, practitioners and others: from farmers and NGOs to researchers and governments. They represent the results of the shared learning and will continue to develop as other organisations adapt them to suit their own contexts. Thousands of Nepalese farmers and forest users are improving their livelihoods learning from their peers, working, collaborating and sharing learning with other farmer and user groups, CBOs, NGOs, government offices and researchers

### **Scaling out: Community Forest Management (CFM) in Nepal**

The CFM good practices has been developed and tested in Nepal over the last 20-30 years, drawing from the experiences of our PFM project in other countries. Scaled out adaptation practices are being developed through CAPA which involves the following elements:

Technology – Sustainable methods of forest management – are established and alternative livelihoods (e.g. non timber forest products) developed.

Partnership – Communities collaborate with governments to manage and protect local forests.  
 Process – Participatory forestry management techniques are implemented where in community organize inclusive user groups, management committees and care and share larger and larger forest areas.

Success – More than one million hectares of natural and secondary growth forests in Nepal are now being managed using CFM techniques, and local and national forest policies have been modified to support the CM approach.

In Mid and Far western Nepal IDS was involved with local partners to develop a number of case studies that are of scale-out nature: Six examples are given below:

**Adaptation with potential Scaling-out Examples:**

**Case 1: LAPA implementation through climate smart rice farming in Sihasen, Dailekh**

**Case description and key issues:**

Bayaldhunga CF in Sihasen VDC, Ward No 7 in Dailekh district has a total forest area of 140 ha and 377 households. The ethno-economic composition of CFUG is presented in figure 1 and 2. There was an irrigation canal constructed by trapping the water from Adherigad River to support approximately 1000 ropani of rice field. Because of the seepage problem, the irrigation canal could not sufficiently meet the water needs for the paddy cultivation. Moreover, a landslide in 2069 BS destroyed around 600 meters of canal section that forced farmers to depend on monsoon rain for rice cultivation. An all season irrigated rice farm became rain-fed agriculture land. The CFUG put forth this problem to the IDS-ADP team for consideration to support.

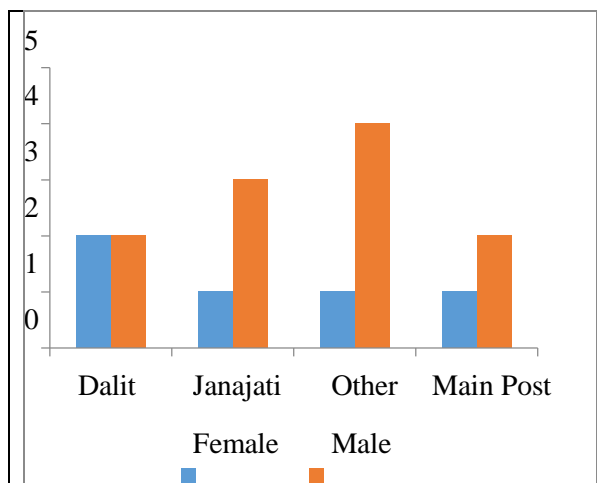


Figure 1: Socio-ethnic composition of Executive Committee

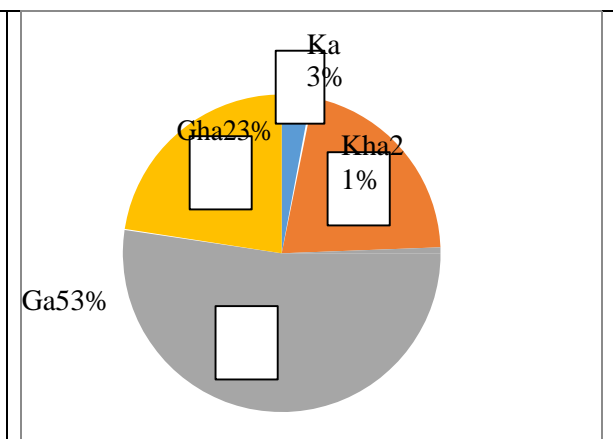


Figure 2: Wellbeing ranking of the CFUG members

**ADP Intervention:**

IDS-ADP selected Sihasen VDC for the preparation and implementation of Local Adaptation Plan of Action (LAPA). The District Support Mechanism (DSM) approved this decision. IDS-ADP then

supported the preparation of in Sihasen VDC-based LAPA. First of all, ward level climate change (CC) sensitization work was performed in all wards of the VDC. The CC affected areas and vulnerable communities were identified through VDC level interactions that had good participation of the representatives from all the wards. The participants identified the afore-mentioned agriculture land as the most affected area. They identified this area against different criteria such as frequency of hazards, coverage of the households, total number of people affected, cost effectiveness, sustainability, vulnerable area and included the most prioritized adaptation work as the irrigation canal rehabilitation and sought the support of the ADP for its implementation.

### **Case Findings:**

With the support from ADP, the farmers repaired the irrigation canal making it climate change resistant. According to Mr. Kalam Bahadur Sahi-one of the beneficiaries of the LAPA activity and the chairperson of Bayaldhunga CFUG said that they received a sum of NPR 418,504 for the implementation of LAPA activity. Mr. Sahi adds, "We repaired the canal managed to control the seepage by laying the polythene pipe in the landslide area and

Planted broom grass in the affected areas that the canal can withstand the future landslide for a long run."

Kamal further said, "We could leverage the budget received from the VDC for this work. Out of the total amount spent for the work, we received NPR 56,003 from the VDC. "He also said that they managed local labor as in-kind- contribution worth more than NPR 10,000.

The rehabilitation of irrigation canal was completed in May and the CFUG members planted the paddy in Dandakhet again using the irrigation water. Thus, they solved their long running problem of seepage in the irrigation canal. They constructed a bypass water passage line using the polythene pipes in the landslide area and also used bio-engineering means to prevent landslide from further extending and damaging the canal alignment. This they feel that they solved their climate induced problem and helped improve their vital food production. The forest users are now much happier since they have succeeded to build resilience in their rice farming system once again moving to permanent irrigation system based farming from rain-fed farming that always made them vulnerable to erratic weather.

### **Learning from the Case and Conclusion:**



Participatory and systematic preparation of LAPA can generate high synergy and multiple benefits as demonstrated by this case study. Although the problem was related to agriculture.

Figure 3: Section of the landslide damaged canal and adjusted polythene pipe solution (top), seepage control from the construction of cement irrigation canal (center), and paddy field after canal maintenance

But by intervening in water management issue, threat to forest land has been reduced, rice production enhanced and above all livelihoods improved. Also, since farmers managed irrigation system is a collective work, this has also helped built good resource governance that can benefit the CFUG management also.

## Case 2: Ecosystem Based Adaptation (EbA) in Manma, Kalikot District

### Case Description and key issues:

Manma situated at 1780 meters is the district headquarters of the Kalikot district. Manma VDC is the most populated in the district. Physiographically, the VDC faces south and has poor vegetation cover. Manma is facing unexpected climate change risks especially in Ward No 1, 2 and 3 due to deforestation and degradation of forests and the hazards created by high climate variability. Open grazing, uncontrolled forest fire, steep rocky slopes, adverse weather conditions including flash floods and droughts. There is also lack of any alternative of energy options thus forcing residents to entirely depend on firewood to meet their domestic energy needs that has resulted in indiscriminate extraction of forest products. The unsustainable harvesting of forest products is therefore perceived as the most critical factor in both the management of the forests as well as adaptation to climate

Change. The major climatic hazards aggravated due to the clearing of the vegetation in the area are: a) increased runoff and soil erosion especially from the south facing slopes of Ward nos. 1 to 5 of the VDC.

### Climatic vulnerability and impacts:

Changing pattern of rainfall is being observed in the area with the occurrence of heavy rain in short time followed by a long period of dry condition which leads to more soil erosion and landslides– coupled with small flash floods in the area. These events are clearly linked to climate variability and are likely to increase in future.

Apart from the above climate and human induced factors, the recent construction of Surkhet – Kalikot – Jumla road through Manama bazaar has also increased the frequency and quantity of soil erosion and landslides in the VDC. The Manama settlement is mostly concentrated on the top of the hilly slopes and the human settlement is considered not much safe. There is no proper drainage system in Manma. The natural drainage system has been disturbed and human-made system does not exist yet. Therefore, there is no alternative to natural drainage that gets overflowed as the waste water amount significantly increases during heavy rains. Also the rain water during the summer season is used to flood rice fields that also disrupt natural drainage. The Manma communities in general have low level of awareness about climate change impacts and therefore give less importance to forest vegetation maintenance and restoration in the area. Due to intensive agriculture farming practiced by the local communities, people of the above mentioned 1-5 wards of the VDC are exposed to two gully erosions it originating from Magar and Sunar streams in the southern slope of Manma VDC. These two

Figure 1: Climate change vulnerability risk location map in Manma, Kalikot



Gully affected areas are settled by around 3615 people belonging to 687 households covering almost five square kilometer area of ward no 1, 2 and 3 of Manma VDC. These annually growing erosion sites have damaged private farmland as well as pose risk of flash floods that affect the downstream settlements annually. Due to these ever increasing gulleys, a motorable bridge was constructed to maintain the transport but that seems redundant since just controlling the erosion could repair the damage to the road. Therefore, the bridge construction cost can be considered a waste of money because timely action was not taken to protect forest and practice controlled grazing.

### **Intervention by IDS-ADP:**

The IDS-ADP team carried out a number of interventions in the Manma VDC of Kalikot to address the issues faced by the combined human-environmental system of Manma VDC. These interventions are clubbed under the Ecosystem based Adaptation (EbA). For the last one year, the EbA activities are being carried out through a local NGO named SAADA. People of Manma VDC have become aware of the issues related to climate change vulnerability, risk, and hazards in the Manma VDC. They have already participated in the planning process of LAPA under which they have given the first priority to control the soil erosion especially the gully erosion. The success of these two activities, they believe will help replication and expansion of pilot work. IDS-ADP has so far supported planting of more than 4000 bamboo rhizomes in degraded areas. The SAADA's involvement has helped employ social mobilizers to launch awareness campaign to educate the people about climate change vulnerability reduction, community forest management and increasing forest vegetation cover in the affected area. The community members of that area are also managing the CF in Panchadev village. Nainalmandu, Kotdurbar and Mastamandu CFs are controlling open grazing and banned forest fire to increase the vegetation cover and reduce the soil erosion. Settlements of the area are raising the community issues with the concerned VDC, DDC, DFO, DOA, and other related offices to manage the landslide, control the gully erosion and manage the ecosystem better in the area. The ADP/IDS-N team is doing research and plan development through a special green Kalikot project. After the regular meeting and coordination among the district based staffs and other stakeholders. Regular interactions with the local people have been initiated to plan and run implementation activities such as landslide control, afforestation and reforestation, water management and reduction of vulnerability and prevent disasters.

### **Learning from the case:**

The recent meeting of the Kalikot District Development Council (DDC) meeting decided to continue supporting the EbA activities. That DDC meeting also decided to request IDS/ADP to establish a district technical office to maintain Water Induced Disasters and Risk Control measures at least till the case study period is over. There is not much resources found in such types of responsible office. Hence IDS-ADP decided to intervene in the area through different activities such as bamboo and broom grass plantation including plantation of other MPT and grasses at initial steps to control the gully erosion in Megar and Sunar stream in Manma VDC through the EbA project. This project has also included the bioengineering as well as gabion physical check dams and gabion walls. Development and increased use of the vegetation as a tool to control the gully especially to arrest further expansion of the gulleys and awareness creation among the beneficiaries.

### **Conclusion:**

After the successful implementation of EbA especially control of the Megar and Sunar gully erosions, climate change induced vulnerability is expected to reduce in Manma VDC. As a result, both the forest biodiversity and forest ecosystem goods and services will be enhanced and community resilience built. The demonstration effect of the EbA work on the neighboring and distant communities traveling to and from Manma is expected to be high leading to replication of the work in other VDCs of district like Bharta, Suktiya, Manma, Daha, Pankha Jubitha as well as in the basin of Tila Karnali river and Dhaulagaha, Khina,Thirpu, Rupsa, Ramnakot areas of Humla Karnali Basin.

**Case 3: Adapting to climate change through water pond rehabilitation in Kalika CFUG, Achham district**

**Case Background**

The Kalika CF covering 193 hectares of forest area in Kuntibhandali VDC (now Mangalsen Municipality-1) was registered and handed over to 73 households in 2069 BS (see Figure 1 and 2 for social-ethnic composition).

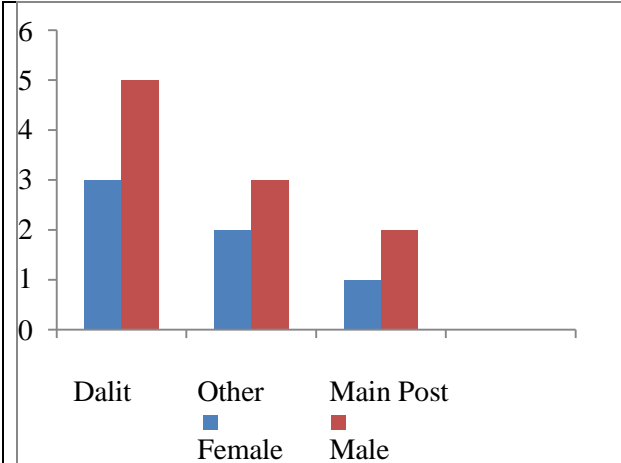


Figure1 Socio-ethnic composition of CFUG Committee

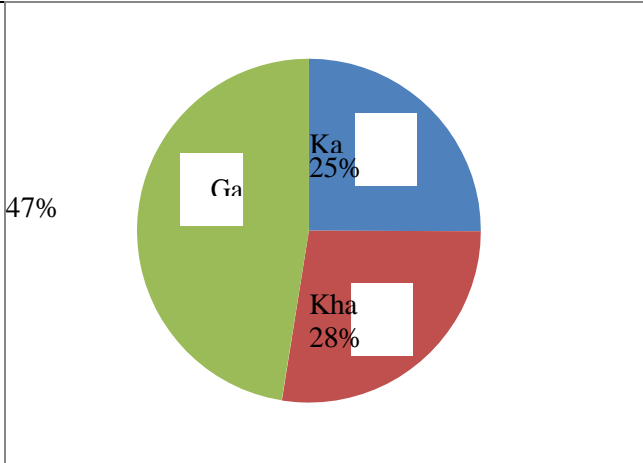


Figure2. Well-being ranking of the group members

Most of residents of this village involve in agricultural activities. However, they largely depend on rain-fed irrigation. Moreover, most of male youths move to India as seasonal migrant workers during winter season due to lack of employment opportunity locally. Agriculture is unproductive, technical skill and knowledge is lacking to engage these youths in other activities.

The low agriculture production is affected due to limited water availability, forcing the farmers to be highly monsoon rain dependent for crop sowing and planting. They are not able to cultivate any winter vegetables, legumes, green vegetables, and other seasonal crops even to meet their





household consumption needs due to chronic water and poor and leaky water distribution system of their traditional irrigation canal (Kulo). Moreover, the discharge/ volume of water in springs and stream is decreasing gradually due to climate change.

### **ADP Intervention:**

With support from ADP/IDS- Nepal, through local implementing partner-MDO Nepal, the project team decided to assist the CFUG to plan and carryout an equivalent of community adaptation plan of action (CAPA). The community members discussed in a participatory manner the water scarcity issues, identified the hazardous and vulnerable sites that the climate change related causes are believed to be creating, and prioritized them for taking actions. During the CAPA preparation, they identified the decreasing natural water flow from the traditional natural sources as the major problem. Water shortage is getting critical and major factor causing climate vulnerability. To adapt to this situation, the community with the help of technical staff of the ADP project decided to build water storage ponds which can collect the excess and used water from the drinking water tap and spring.

Moreover, they also decided to arrange and install some polythene pipes for better water distribution. The ADP provided NPR 100,000 for improving the water resources of the community based on the CAPA. The CFUG mobilized NPR 150,000 from the Kuntibhandali VDC and also provided in-kind-contribution by contributing voluntary labour worth around NPR 250,000. After implementing these measures they have been able to access more water that they can utilize to meet their small irrigation need such as watering vegetables and cash crops. The source of water tapped is from Kunti Dhara (so named after a legend *Kunti*).

### **Case Results**

More than 68 households– beyond the CFUG members-are benefiting from the implementation of the adaptation plan. The water storage system (Figure3) provides irrigation for winter crops, vegetable crops including green vegetable, and legumes providing local people not only the opportunity for earning additional income but also more nutritive diet.

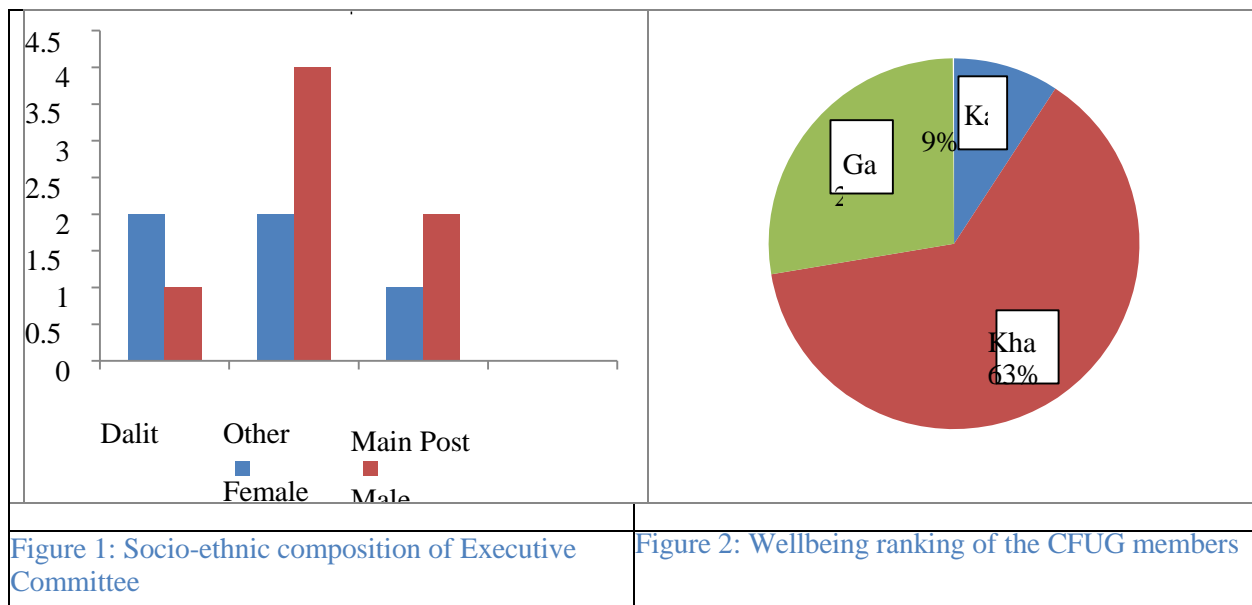
However, this single storage system is not sufficient at all to meet the huge demand of the community. Besides, the water distribution system has to be also further improved. Forest users alone cannot afford buying the additional distribution pipes. The major need is to provide permanent irrigation system for major agricultural crops such as rice and wheat that the small pond storage cannot meet. Even for vegetables and other cash crops, the water users have been managing to meet their water needs by adopting rotational system of irrigation.

### **Lessons learned and conclusion:**

Climate change is impacting water resources the most in Achham. Agriculture production is affected thus putting more pressure on forests. To conserve forests, including community forest, ADP has to invest in water resources protection and development which this case has described. Once critical water security of local community is met, ecological security and sustainable forest management will improve.

**Case 4: Climate change adaptation and increased income through plastic pond construction in Saldanda CFUG (Achham district)**

Saldanda CF was registered and handed in 2053 BS and renewed in 2067 BS. The CFUG has been located in Binayak VDC ward no. 4. 96 households have been managing this forest. Figure 1 shows the ethnic composition of the executive committee and figure 2 shows the status of the users according to the well-being ranking.



Youth male moves to India as seasonal migrant worker in very low labor salary in off-season of their farm work. Because they do not have sufficient food for their early livelihoods, they do not have high adaptive capacity to tackle with threat arise due to climate change.

A plastic pond has been constructed for livelihood improvement and to enhance the adaptive capacity of the farmer family. The financial assistance of NPR 18,000 for quick support activities (QIA) was provided by ADP and other labor was managed by beneficiaries. The cost was allocated for plastic NPR 8000, Pole and (iron wire) fencing material NPR 6000 and carpenter cost NPR4000.

Altogether 12 households have been benefited though project. The plastic coverage (pond) increases the efficiency than other traditional types of pond. Most of the farmers utilizing the pond



Figure 3: Farmers with plastic pond

Water for irrigation for their winter crops and winter vegetable, legumes, green vegetable, etc. All farmers now promoting their vegetable farming and some farmer have constructed polythene tunnel for enhance their vegetable production.

Mr. Jaga Bahadur Shahi (46) has been involving in vegetable farming since long. "This pond makes easier for winter and dry season vegetable farming. I have earned around NPR 28,000 from vegetable farming in autumn which could not been possible without the construction of the plastic pond", said Jaga Bahadur. He further added, "I have planted more area for the winter."



Ms. Santidevi Shahi also involves in vegetable farming and happy with irrigation facilities in winter and dry season. Similarly, Mr. Chatra Bahadur Shahi, Mr. Dabal Bahadur Shahi have been planted fresh vegetables like cauliflower, potatoes, tomato, legumes in their plastic tunnel. They still could not manage the sufficient pipe for water distribution. There is low market access for their production and low price. Irrigation pond with plastic coverage increases the overall performances and such scheme is useful for irrigation in winter and dry season.

**Case 5: Successful CAPA implementation in Rileti CFUG, Bajhang**

Rileti CF covers 10.25 ha of forest area in Banjh VDC ward no. 7 and 8, registered and handed over in 2053 BS. The OP was not revised before ADP intervention. The CFUG revised their OP through ADP's LRP mobilization. Figure 1 and 2 illustrate the ethnic composition of the executive committee and well-being ranking of the group.

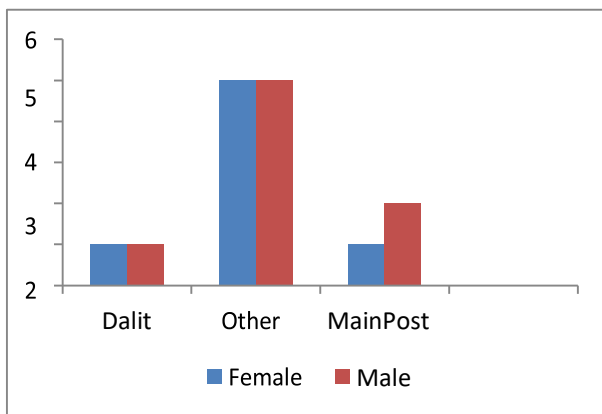


Figure1: Socio-ethnic composition of Executive Committee

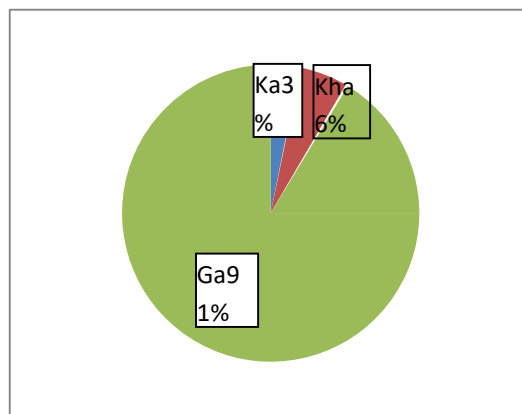


Figure2: Wellbeing ranking of the CFUG members

Banjh VDC lies in about 50 km away from Chainpur. The climate of this region is temperate. Most of people of this VDC are farmer. The youths in this area involved in agricultural activities for 6 months and migrate as seasonal worker to India for remaining six months.

Menuka Devi Malla has the experience of irregularities in rainfall pattern, increase pest incidences in agriculture and decrease overall agricultural production.

Community based Adaptation Plans (CAP) preparation and its prioritization was done in meeting in presence of CFUG's members and community leaders. They identified the lack of drinking water as a major problem creating vulnerability.

"This is because, local had to drink the open source water which is unsafe. The water for human, animal, pets and for toilets used to be brought from the same source –totally unhealthy. "Explained Kaushila Malla.

IDS-MSFC, through SDC Nepal, and DDC Bajhang financially assisted and NPR 443,876 and 75,000 respectively. Community contributed NPR 75,134 as a kind. They invested the finance for construction of a storage tanks, for distribution pipes and construction of 7 taps. Altogether 21 households (HHs), one high school and many people from one public tap benefited from this.

Kaushila said, "Now water flows every time in taps. This plan saved the time so that I can involve in other activities. Furthermore, it provides me the opportunity for vegetable farming. More importantly, I have got the healthy drinking water."



**Case 6: Implementation of safe drinking water scheme enhanced health and wealth in Bannatoli, Accham**

Ghogeran CF covers 125 hector of forest with 15 households in Bannatoli ward 8 and 9 have been registered and handed over in 2053 BS and renewed in 2065 BS. The committee composition and the well-being ranking of the group is as figure 1 and 2 respectively.

Bannatoli VDC located in about 15 km away from Mangalsen with motorable road linkage. Most of residents involved in agricultural activities and most of them do not have much economic access to other activity. Even they cannot pay any attention for more than basic need, i.e. sanitation, safety, hygiene is not their priority. Even more they had to travel a long distance for drinking water. That’s why sanitation is not only the cause of economic accessibility is also the physical accessibility to the water resource. Even they have difficulties to maintain the water for their livestock. Local says that the volume of spring water in dry season lowered and that is more severely in recent years.

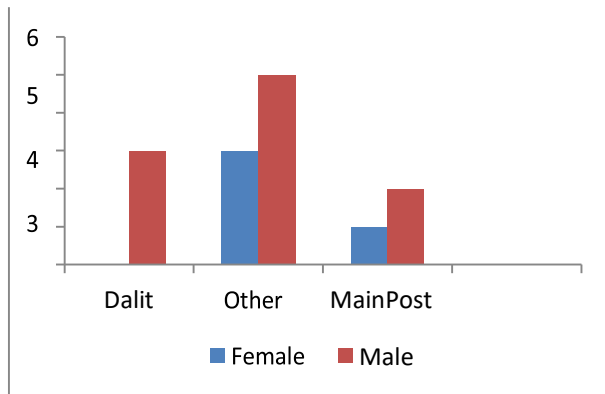


Figure1: Socio-ethnic composition of Executive Committee

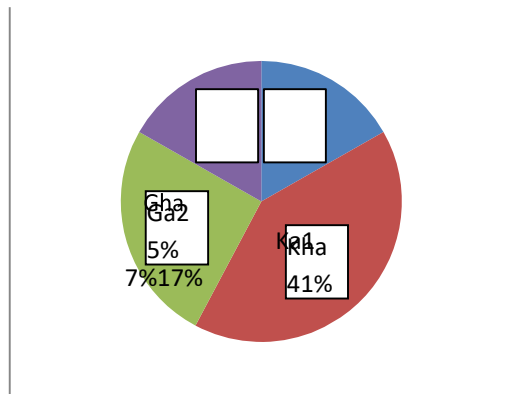


Figure2: Wellbeing ranking of the CFUG members

Bhawarthai Drinking Water Project was selected as climate adaptation plans and was implemented through LIPORUDEC Nepal. All total 3 intake and 8 taps was constructed. The cost of installation was provided by ADP NPR 9,866,540 and NPR 409,321 equivalent labor input by beneficiaries. 78 households have been benefited.



Figure 3: CFUG meeting for preparing climate adaptation plan



Figure 4: Ms. Jamara Shahi and villagers in the newly

constructed tap

Ms. Indrasara Shahi (40) is happy with this scheme, otherwise she must spend 10 to 15 minute for water collection. They have felt the numbers of incidence of disease have been reduced. Moreover, water from taps can utilized for offseason vegetable farming. Ms Jamara Shahi (55) expressed her happiness to project because it provide multiple benefits, i.e.,

Safe drinking water, less time to collect drinking water and off-season vegetable farming. Ms. Dhanasara Shahi (18) read in secondary level have more time for reading due to less attention to water collection.

Another farmer Mr. Lal Bahadur Shahi cultivated cauliflower, onion, legumes and other winter vegetable using tap water. Thus, this safe drinking water scheme is not only for purpose of safe drinking water it also provide the irrigation for offseason vegetable farming for winter and dry season.

*Exercise 4: climate change adaptation scale out and scale up*

Process: Group exercise

Purpose: To identified the best climate change adaptation practice of the community and How to scale up and scale out of the example

Materials: index cards, flip chart and markers

Process

The good adaptation practice that your group has been assigned is your starter. Write this on an index card and place it in the middle of your page.

Brainstorm the possibly of scale up and scale out of that practice. Write each possibly on a separate index card.

#### Module 4: Participatory Monitoring, Verifying, Reporting, Reflecting and Learning:

- Lokendra Poudyal, Sarba Raj Khadka, Prakash Koirala and Pawan Poudyal

#### Indicative List of Training UNITS for Adaptation Planning, Monitoring and Reporting

No. and Topic	Learning objectives	Indicative Content	Suggested Syllabus
<i>UNIT I: Adaptation Planning and Monitoring Concepts</i>	<ul style="list-style-type: none"> <li>To familiarize with the context of adaptation planning and monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Adaptation planning</li> <li>Scope and limitations of monitoring adaptation</li> </ul>	<ul style="list-style-type: none"> <li>Climate change adaptation in the development context</li> <li>Components of adaptation</li> <li>Adaptation types</li> <li>Steps of monitoring adaptation</li> <li>Monitoring system for adaptation</li> </ul>
<i>UNITIII: Project PlanningMatrix / Log Frame</i>	<ul style="list-style-type: none"> <li>To describe how a core problem leads to the design of objectives of a plan</li> </ul>	Session – I <ul style="list-style-type: none"> <li>Problem tree analysis</li> <li>Objectives tree analysis</li> <li>Planning and monitoring relations</li> </ul>	<ul style="list-style-type: none"> <li>Cause and effect analysis of a problem</li> <li>Means and end analysis of an objective</li> <li>Planning and monitoring connections (well prepared plan a basis for low monitoring complexities)</li> </ul> Session Tips: <ul style="list-style-type: none"> <li>Planning and monitoring relation - what you sow is what you reap</li> <li>Monitoring of the action points results from the problems converted into objectives</li> </ul>
	<ul style="list-style-type: none"> <li>To understand major components of Project Planning Matrix (PPM) / Log Frame (LF)</li> <li>To understand vertical and horizontal logics related to the project components.</li> </ul>	Session – II <ul style="list-style-type: none"> <li>Components of the PPM / LF</li> <li>Design and application of PPM / LF</li> </ul>	<ul style="list-style-type: none"> <li>Components of Log frame / Project Planning Matrix               <ul style="list-style-type: none"> <li>Development hypothesis</li> <li>Project reality</li> <li>Narrative summary</li> <li>Objectively verifiable indicators (OVI)</li> <li>Means of verification (MOV)</li> <li>Assumptions</li> </ul> </li> </ul> Session Tips: <ul style="list-style-type: none"> <li>Elaboration of the terms used in PPM / LF</li> <li>LF and its monitoring relevance</li> </ul>



	<ul style="list-style-type: none"> <li>To understand the process of formulating assumptions</li> </ul>	<p>Session – III</p> <ul style="list-style-type: none"> <li>Methods of setting assumptions</li> <li>Analyzing the strength of assumptions</li> </ul>	<ul style="list-style-type: none"> <li>External conditions affecting assumptions</li> <li>Risks as positive statement to overcome</li> <li>Weighing the magnitude of assumptions</li> </ul> <p>Session Tips:</p> <ul style="list-style-type: none"> <li>No selection of killer assumption</li> <li>Exclude low risk bearing/uncertain assumption</li> </ul>
	To understand the concept and structure of Objectively Verifiable Indicator (OVI)	<p>Session – IV</p> <ul style="list-style-type: none"> <li>OVI concept</li> <li>Methods of setting OVI</li> </ul>	<ul style="list-style-type: none"> <li>What is OVI?</li> <li>Importance of OVI in assessing progress</li> <li>Steps of developing OVI</li> </ul> <p>Session Tips:</p> <ul style="list-style-type: none"> <li>Pointers of progress leading towards the achievement of objective</li> <li>Focus on key characteristics covered by the objective</li> </ul>
	To understand the sources of information where the progress pointed by the indicators can be verified	<p>Session – V</p> <p>Means of Verification (MoV)</p>	<ul style="list-style-type: none"> <li>Possible sources servicing as the MoV</li> <li>Aspects to consider in determining the MOV</li> </ul> <p>Session Tips:</p> <p>OVI without accessible MoV should not be counted</p>
	To understand vertical and horizontal logics applied in the PPM / LF	<p>Session – VI</p> <p>Vertical and horizontal logics related to the PPM / LF assumptions</p>	<p>Connection of vertical logic with assumption</p> <p>Connection of horizontal logic with assumption</p>
	To illustrate an example of the PPM / LF	<p>Session – VII</p> <p>PPM / LF example</p>	<p>Task: design a PPM / LF covering all components</p> <p>Session Tips:</p> <p>Example of a horse parable</p>
	To understand design of a work plan that explains connection between the planned activities and envisaged results	<p>Session – VIII</p> <ul style="list-style-type: none"> <li>Relations between implemented activities and</li> </ul>	<ul style="list-style-type: none"> <li>Identification of activity, output and outcome of a work plan</li> <li>Starting and ending point of an activity to implement</li> </ul>

		<p>results (output and outcome)</p> <ul style="list-style-type: none"> <li>• Breakdown of activities and results targeted to achieve under different time periods</li> </ul>	<ul style="list-style-type: none"> <li>• Persons responsible for implementing the activities</li> </ul> <p>Session Tips:</p> <p>Monitoring the line of progression towards the end results envisaged</p>
<i>UNITIII: Monitoring and Evaluation</i>	<ul style="list-style-type: none"> <li>• To understand concept and tools for monitoring</li> <li>• To understand methods of designing progress reflective indicators</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring concept and tools</li> <li>• Indicators for monitoring</li> <li>• Information system</li> <li>• Information collection and analysis for monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Similarities and differences between monitoring and evaluation</li> <li>• Conventional and participatory monitoring</li> <li>• Terms used in monitoring (input, activities, output, outcome)</li> <li>• Aspects to be considered in designing indicators</li> <li>• Identifying indicators of change</li> <li>• Types of indicators</li> <li>• What to measure with indicators (delivery of inputs, implementation of planned activities, outputs generated and outcomes accomplished)</li> <li>• Selection of key indicators</li> <li>• Quality of indicators</li> <li>• Balancing accountability and learning</li> <li>• Collection and analysis of information collection for monitoring (review of secondary information, participant observation, survey, case study, semi-structured interviews, meeting, workshop, and focus group discussion)</li> <li>• Selecting appropriate information collection method</li> <li>• Baseline information</li> <li>• Information triangulation</li> <li>• General and specific information</li> <li>• Use of information in making decisions</li> <li>• Structure of the information system</li> <li>• Data universe</li> </ul>

			<ul style="list-style-type: none"> <li>• Monitoring frequency</li> <li>• Developing a monitoring and evaluation plan</li> </ul> <p>Session Tips Group exercise on sorting indicators included in the proposal</p>
<i>UNITIV: Report Writing</i>	<ul style="list-style-type: none"> <li>• To understand effective ways of reporting monitoring results</li> </ul>	<ul style="list-style-type: none"> <li>• Reports for communicating monitoring results</li> <li>• Type of reports</li> </ul>	<ul style="list-style-type: none"> <li>• Method of documenting observations</li> <li>• Information sharing environment for the use of report</li> <li>• How to write qualitative and quantitative reports</li> <li>• Importance of feedback</li> <li>• Steps to guide the preparation of report</li> <li>• Use of graph and charts (pie chart, bar chart, progress meter etc.)</li> <li>• Content of a monitoring report</li> <li>• Writing case study</li> </ul> <p>Session Tips</p> <ul style="list-style-type: none"> <li>• Make revision of report a rule than exception</li> <li>• Example: Ernest Hemingway – A Farewell to Arms</li> </ul>

## Module 5: GESI, Institutions and Good Governance

- Prabha Pokhrel and Lokendra Poudyal

Introduction: It is an established fact that all Nepalese people will not be affected by climate change in a similar fashion. Those who are already the most vulnerable and marginalized such as poor and land less farmers experience the greatest impacts. Although they face the common challenge, their capacity to react, to adapt or to change will not be the same. Therefore, the differential impact demands consideration of differentiated policy, legislation, interventions, institutional mechanisms, finance support and monitoring and reporting processes.

Learning Objective:

- i. Integrate GESI dimensions in all Scaling-up and Scaling-out practices of the A@SPP;
- ii. Enhance capacity of partners and stakeholders to enable women and socially excluded groups to claim their rights in A@S.;
- iii. Promote women's economic rights and independence, including access to employment, appropriate working conditions and control over economic resources in adaptation practices;
- iv. Increasing access to participation and leadership of women, Dalits, poor, indigenous people, climate vulnerable and marginalized groups in decision making processes specifically in CBA, EBA, DDR and livelihood diversification activities at the community level;
- v. Ensuring access to equitable benefit sharing: To monitor, inform and enable distribution of equitable benefit sharing by the target communities through generating evidence;
- vi. Increasing accountability by creating awareness and capacity among concerned stakeholders on the mainstreaming of GESI indicators in monitoring and evaluation systems, particularly with respect to policy formulation at all levels of relevant institutions.

Major lessons to be given on:

### Unit 1

- General Concepts of Gender, Inclusion, Climate Change and its nexus
- Gender Analysis: screening, Data collection, impact assessment and filling the GAP
- Integrating gender and CC in development planning;
- Gender sensitive adaptation options under the A@SPP;
- Making inclusive scaling out and scaling up CCAs (CBA, EbA, DRR, and Climate smart agriculture, water, energy, sanitation planning and management)
- GESI mainstreaming and good governance interlink ages
- Organizational structures leading to GESI empowerment

GESI Learning: Participants will be able to define GESI and climate change nexus and its importance for proper accountability, governance and the success of climate change adaptation project operations and sustainability.

Method: Expert presentation & group discussion.

Unit No. 2: Generating evidence of GESI mainstreaming in adaptations

- Enacting baselines, tracking differentiated progress and building GESI lens into reporting

### Unit 3: GESI mainstreaming in during up scaling and out scaling of A@S initiatives

Discussions on evidences of GESI mainstreaming and empowerment of each A@S initiative proposed. The participants will be divided into three groups, one working on GESI inbuilt governance, planning and structure, another on targeted resource sharing and the third on resource use leading to empowerment and adaptive practices leading to resilience. All three groups will take one model of interventions and provide evidence to present their stated mainstreaming. After presentation each group will suggest evidence based specific GESI targeted mainstreaming indicators and the facilitator will enlist them as take home messages to be followed up and acted upon during the implementation of the individual plan.

## **MODULE 6: Evidence Based Policy Interventions (KNOWLEDGE AND EVIDENCE BASED ADVOCACY, LOBBYING AND CAMPAIGNING IN CONTEXT OF CLIMATE CHANGE ADAPTATION in Nepal**

### Learning Objectives

- **Understand ; Knowledge , Evidence based advocacy , advocacy, Lobbying and campaign**
- **Understand and be able** to plan an advocacy campaign to intervene /implement policies.
- **Understand the importance to influence actions of policy makers/government at different levels, participation in Government decision making.**
- Understand the achievements of Climate Change Policies 2011, NAPA, LAPA and NAP. Further linkage in the context Restructuring and Reforming on the basis of New Constitution 2072 policy formulation at Plicas (Gaun and Municipality).
- Understand how local and national adaptation plans can contribute to the development goals in the context of Nepal,
- **Understand and apply how local CCA action can contribute to the local, national and regional environment, economic development and improve the quality of life of your community;**
- The Rights-Based Approach to development and introducing the tracking adaptation contributions and Measuring development
- Increase your knowledge in effective strategies for climate change adaptation and mitigation; (EBAs and Eos Approaches). Discuss, few Case studies for policy interventions
- Learn about opportunities and contribution for funding local climate initiatives, engagement of the private sector and CBOs.
- Familiarise yourself with the tools for facilitating stakeholder dialogues in the public and private realms for policy formulation ;

### Intended Audience

This course is intended for partners participating in A@SPP

**Introduction:** Cases of CBAs, EbAs, DRR and other forms of adaptation especially those managed by NGOs are becoming abundant. Yet, almost without exception, they are very small in scale and can be expanded only by repeating the same slow, costly, in- depth techniques in successive villages. By contrast, many government-sponsored approaches have expanded rapidly, but often lack the local ownership and group coherence necessary

for sustainable management of the adaptation in water, watersheds, agriculture, livestock, and others. If approaches to CCA are to be participatory and rapidly replicable, then the preconditions for scaling up and scaling out have to be identified and introduced into the design of projects and programmes. Such preconditions include:

- a) close engagement of stakeholders, and marshalling of political support, at international, national, state and subsequently district and local levels, and the creation of confluences of interest (and corresponding checks and balances) within and between levels;
- b) the creation of a local CCA planning methodology which is technically defensible to funding agencies including local governments yet is participatory and accessible to community-based organizations (CBOs);
- c) the provision of appropriate capacity building and technical support to these good practices;
- d) The existence of a framework for local-level collaboration among NGOs, CBOs and government departments, including the setting of preconditions for NGOs and CBOs to join the Programme; *f*
- e) The creation of mechanisms which channel funds from local government to local organizations with as few intermediate stages as possible;
- f) Some authority by these to collaborative adaptation services, especially training; and \
- f) the existence of a mechanism for promoting the approach across major political and administrative boundaries.

#### Key Learning:

- A@SPP brings an interest by local governments in the performance of the Project;
- A@SPP draws support of local community in raising the in-cash or in-kind funding support for the CCA success it has achieved in building climate adaptive watershed and water management, climate smart agriculture, water, forestry
- Help raise its long-term commitment to work with local community and local government agencies for the success and sustainability of the Project;
- Individual NGOs and Village Forest and Watershed Committees can receive government as well as foreign funds channeled through A@SPP partners without having to go through the complexities of obtaining provincial and central government clearances.
- A@SPP staffs have technical qualifications in CCA subjects broadly related to agriculture and natural resource management.
- They feel comfortable discussing technical issues with officials of the Forestry or Agriculture Departments, and, in turn, command the respect of the technical staff in these Departments;
- Become well versed with the local government procedures developed with and through A@SPP for the disbursement of donor funds thus making them more eligible and capable of receiving GoN funds.

## **Module 7: Report Writing; Learning documentation, knowledge management and communication**

- Prakash Koirala, Sarba Raj Khadka and Pawan Paudyal

### **Learning objectives:**

The Module provides communication tools, information and resources that will enable A@S partner organizations to achieve the following objectives:

- Identify collaborating and learning opportunities for forming strategic partnerships with other organizations in their community;

- Identify priority target donor agencies and partners for outreach; and
- Develop action-oriented messages tailored to specific audiences that will help engage your community in their efforts.

By achieving these objectives, the A@S partner organization will be able to attain the following long-term adaptation capacity-building goals:

- Stronger partnerships with other organizations working with vulnerable adolescents;
- Increased awareness of the services offered by your organization;
- Expanded access to a wider range of resources for adolescents and their families; and
- Enhanced support for vulnerable adolescents.

### **Introduction to effective communication**

How do you achieve effective communication?

- Effective communication happens when a complete message is sent and fully received and understood by an audience.
- Good communication is about getting the right message to the right person in the right Medium at the right time.
- Depending on the nature of the message and audience, the audience may then have the opportunity to engage in a productive discussion of the message.

### **The content and timing of effective communication**

There are several vital elements:

- KISS - keep it short and simple. The message must be clear, concise and complete. Be sure that the audience has the full message particularly as you may only have one opportunity to put over your message
- The content of the message must be factually accurate
- The message can be a mix of factual and psychological aspects to give the message its full impact; rather than just dry facts or overly emotional in style
- The message should be relevant to the concerns of the audience
- The language should be appropriate to the audience and communication medium. Avoid technical jargon unless talking to another professional
- It should be positive and focused on solutions rather than listing problems
- The language should invite participation and engagement where appropriate
- Using the right medium for the intended audience, the context and the desired response. For example when reporting to a portfolio holder would you send a formal report or a text?
- Pick the right person/stakeholder to send out the message – for example the chief executive will have more impact on trustees than a junior member of staff
- The message is sent at the right time to enable the audience to have time to understand and act on the message

Effective message writing:

## How a good communicator puts their message across

<b>Before communicating</b>	<ul style="list-style-type: none"><li>• Well prepared message and arguments</li><li>• Has full knowledge of the message</li><li>• Has full understanding of the message</li></ul>
<b>Delivering the message</b>	<ul style="list-style-type: none"><li>• Confident including positive body language and communicating with energy</li><li>• Uses facts and well founded opinion, not rumour; is honest</li><li>• Concise</li><li>• Articulate and/or uses persuasive writing skills</li><li>• Focused on solutions not problems</li></ul>
<b>Responding to the recipient</b>	<ul style="list-style-type: none"><li>• Understands the recipients' point of view</li><li>• Actively listens to the response</li><li>• Confidently defends the message</li><li>• Is prepared to ask for clarification</li><li>• Is flexible in developing a solution - collaborative, not competitive</li></ul>

## Listening is vital part of communication

### Summary of steps required to create an effective message

