

## Workshop Proceedings

# Adaptation to Climate Change Impacts in the Gandaki River Basin

10-11 August 2016, Kathmandu, Nepal



Consortium members



## About HI-AWARE

The Himalayan Adaptation, Water and Resilience (HI-AWARE) Research Consortium conducts research and pilot interventions, capacity building and policy engagement to enhance the climate resilience and adaptive capacity of poor and vulnerable people living in the mountains, hills and flood plains of the Indus, Upper Ganga, Gandaki and Teesta river basins in Pakistan, India, Nepal and Bangladesh.

HI-AWARE aims to influence policy and practice to aid the climate resilience and adaptation of poor and vulnerable populations in the region by generating evidence-based knowledge on geophysical, socioeconomic, gender and governance drivers and conditions leading to climate vulnerability, as well as monitoring and assessing adaptation measures. It focuses on identifying 'critical moments' when communities are most vulnerable to climate risks, 'adaptation turning points' when existing adaptation strategies no longer work, and "adaptation pathways", sequences of policy actions that address both short-term responses to climate change and longer-term planning. It looks at strengthening the expertise of researchers, students and science-practice-policy networks to conduct as well as use research on climate/social vulnerabilities, resilience, and adaptation.

HI-AWARE comprises of five consortium members: The International Centre for Integrated Mountain Development (ICIMOD), the Bangladesh Centre for Advanced Studies (BCAS), Pakistan Agricultural Research Council (PARC), The Energy and Resources Institute (TERI)-India, and Alterra-Wageningen University and Research Centre (Alterra-WUR).

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HI-AWARE Internal Report

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Organised by

Himalayan Adaptation, Water and Resilience (HI-AWARE) Research  
Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA)  
Practical Action Nepal

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# Summary

The 'Adaptation to Climate Change Impacts in the Gandaki River Basin of Nepal: Putting Research into Use' workshop was held in Yak & Yeti, Kathmandu, from 10-11 August 2016. It brought together over 100 participants from ministries, local government institutions, NGOs/INGOs, and universities as well as thematic leaders of different working groups of National Adaptation Plans and student researchers.

The workshop was designed into two sessions. Session one intended to share HI-AWARE research with policymakers and practitioners, and further, to identify and prioritize suitable adaptation measures for anticipated climate change impacts in the Gandaki basin. The functionalities of TouchTable and its usage in integrating all the pieces of knowledge and co-producing information including stakeholders and community was discussed at the second session of the workshop. It also stressed the fact that this tool supports participatory decision making, creates engagement and ownership, saves time, and helps to make better informed decisions.

The programme began with welcome remarks by Eklabaya Sharma, Director Programme Operations, ICIMOD. He pointed at the need to focus on adaptation over mitigation with the idea that the impacts of climate change are unavoidable. He stressed on the need of active collaboration between government and non-government partners for adaptation efforts in the region.

The programme was followed by various presentations on HI-AWARE and its work on 12 sites in four river basins, biophysical drivers and conditions leading to vulnerability and climate change impact, issues of climate change vulnerability and situation analysis in the Gandaki River basin, and various adaptation measures there.

Distinguished guests from Ministries, departments of various governmental sectors, and INGOs on the dais appreciated ICIMOD's efforts in uplifting livelihoods in the HKH region and shared key remarks. Gopi Khanal, Joint Secretary, Ministry of Federal Affairs and Local Development, stated that the country lacks technical know-how in many areas and stressed urgent improvement. He requested ICIMOD to find causes of the recent drying up of springs.

The second session started with a presentation on Research into Use activities in the Gandaki Basin. It pointed out the need of greater engagement between researchers, development practitioners, media, and policymakers to put research effectively into use in grass-root communities. In the session it was also shared that ICIMOD, together with Practical Action, had consulted around 100 stakeholders in upstream, mid-stream, and downstream districts in the Gandaki river basin.

The following presenter introduced TouchTable functionalities and its usage in the cogeneration of knowledge. The participants were divided into two parallel groups for a hands-on session. The two themes with which exercises were to be done were: flash floods and landslides, and lack of rainfall and prevalent drought. In both sessions participants were asked to mark the areas which, to their knowledge, were directly affected by drought, floods, and landslides.

A crucial discussion was held around the use of base maps, for participants suggested that Topo maps should be used instead. Also, floods in Chitwan were discussed in detail along with a classification of these floods.

A 'future projections' scenario was a little complicated for the participants to grasp, but they did understand that climate extremes had been clearly spelt out. The session was found to be rich with continuous interaction and engagement of participants. Day one of the workshop ended with active participation of all present.

A panel discussion on 'Policies and Adaptation Practices in Nepal' was the main activity of the second day. The panel consisted of representatives from District Development Committees, Ministries, IDRC, Practical Action, and the media.

A panel member, Naresh Sharma, Under-Secretary, Ministry of Population and Environment, and NAP coordinator, expressed pride in the roles played by the country and officials in international institutions and in the consultation processes. Sharma expected ICIMOD's support in NAPs efforts by providing climatic data and scientific information. He also called for greater collaboration with ICIMOD and involvement of young graduates for knowledge generation, capacity building, and learning.

Kabindra Bikram Karki, Ministry of Water Supply and Sanitation, mentioned that their department had not yet been able to incorporate climate change into its planning and policies. He remarked it was high time to collaborate with other stakeholders to address climate change and mainstream adaptation into their plans.

Balram Luitel, disaster focal person and DDC Chitwan, stated that ICIMOD's research had been very helpful for their yearly fiscal planning. He mentioned flood, wildfire, and drought as major climate induced issues.

Pushkar Sharma, social development officer, informed that eco-friendly roads were being constructed and houses had been declared smog-free indoors in many VDCs of Nuwakot district. He updated the audience that work on an environment-friendly local governance and early warning system had already started. He informed also that an Energy and Climate Change Department had been established to monitor climate change directly. Further, a monsoon preparedness plan and rain-water harvesting programmes were being conducted at local level in collaboration with various NGOs. He pointed to the need of an action plan to raise awareness on disaster risk reduction and climate change.

Other interesting topics and ideas were brought forward by other panellists. They also mentioned they were grateful for the research ICIMOD had been doing and looked forward to greater collaboration. The media and donor perspective was different from others. The participant from the media opined that, no matter how rich the content was, the dissemination method would heavily impact the quality of the information to be sent out to the public. Therefore he stressed the need for a wider and greater dissemination of climate-change related knowledge to the public by making it simple, concise, and meaningful.

Kallur Subramanyam Murali, Senior Programme Officer IDRC, stated that research can only be successful if there is practical application of that research work. He also said policy is important to drive research and practice, as they are interlinked. Gehendra Gurung from Practical Action shared the interesting fact that poor governance is a major issue in successful adaptation at local level. He stressed the need for research in different sectors with continuous documentation of past knowledge.

Overall, the workshop was very notable in terms of content, quality of participation, and discussion. The workshop brought together participants ranging from private individuals, young research students, practitioners, activists, representatives from NGOs/INGOs, academia, and the media to high-level government functionaries like a Joint Secretary of the Government of Nepal.

## Background

“Himalayan Adaptation, Water and Resilience (HI-AWARE) Research on Glacier and Snowpack Dependent River Basins for Improving Livelihoods” is a five year study that ICIMOD is leading with its partners in four river basins namely Indus, Upper Ganga, Gandaki and Teesta in the Hindu Kush Himalayan (HKH) region. The research aims at developing climate change adaptation approaches, and increasing the resilience of the poorest and most vulnerable people in the four river basins. HI-AWARE is implementing three Work Packages-Knowledge Generation, Research into Use, and Strengthening Expertise.

As a part of HI-AWARE’s Research into Use work package, ICIMOD together with Practical Action Nepal organized a one and half day consultation titled “Adaptation to Climate Change Impacts in the Gandaki River Basin of Nepal: Putting Research into Use” on 10<sup>th</sup> and 11<sup>th</sup> August, 2016 at Dynasty Hall, Yak & Yeti Hotel. The consultation aimed to share and discuss HI-AWARE research with policymakers and practitioners, and further, to identify and prioritize suitable adaptation measures for anticipated climate change impacts in the Gandaki basin. It was in continuation of a series of local-level stakeholder engagement events held in Nuwakot, Rasuwa and Chitwan districts of Nepal earlier this year.

The overall program was divided into two distinct sessions where session one focused on climate change scenarios generated through HI-AWARE research. The second was on the potential use of the TouchTable. The technical sessions of the consultation aimed at using the TouchTable as a tool to integrate results from HI-AWARE climate models and other available data for the Gandaki study basin. A TouchTable is an interactive digital design table that can display and combine numerous climate and policy maps. It aims to help HI-AWARE researchers to customize their research outputs as per the identified adaptation needs and prioritize from the information received from this one and half day workshop.



# Day 1

## Inaugural Session

The workshop started with the introduction of dignitaries and distinguished guests on the dais. Mandira Singh Shrestha, Program Coordinator, for the HYCOS Initiative at ICIMOD gave some insights about putting research into use for adaptation and briefed about the program schedule.

## Welcome remarks by Eklabya Sharma, DPO ICIMOD

Eklabya Sharma, Director Program Operations, ICIMOD welcomed distinguished guest and all the participants to the workshop on behalf of ICIMOD. He pointed at the need to focus on adaptation over mitigation with a focus that the impacts of climate change are unavoidable. Sharma emphasized on the need of strong policies and mandates to carry out actions at national and international level as the impact of climate change is not limited within any geographical boundary. He stressed for the need of active collaboration between government and other non-government partners for adaptation efforts in the region. Sharma mentioned gender as a cross cutting issue and the need to integrate the topic in adaptation. He noted that the workshop was designed to discuss the current status and what measures could be taken for adaptation in future. At the end, Sharma identified the need for optimal use of resources to achieve maximum results with limited resources.

## About HI-AWARE- Anjal Prakash, ICIMOD

Welcome remarks were followed by a presentation from Anjal Prakash, program coordinator, HI-AWARE. Prakash introduced HI-AWARE to the participants, as led by ICIMOD and one of the four consortia members of CARIAA. He briefly mentioned about HI-AWARE's work on 12 sites in four river basins namely Indus, Upper Ganga, Gandaki and Teesta. He informed that HI-AWARE's research is focused in upstream (Rasuwa), midstream (Nuwakot) and downstream (Chitwan) of the Gandaki river basin in Nepal. Prakash highlighted HI-AWARE's objective to contribute to enhanced climate resilience and adaptive capacities of the poor and vulnerable women, men, and children living in these river basins by leveraging research and pilot outcomes to influence policy and practice to improve their livelihoods. He said that increased temperature, erratic rainfall and increase in extreme events are some already visible impacts of climate change. On HI-AWARE's collaboration with academic institutions, Prakash mentioned, "There are 9 universities working with the HI-AWARE program from Pakistan, Bangladesh, India and Nepal. In Nepal, MSc and PhD students of Tribhuvan University are working with us". Further, he highlighted on heat stress issues in the study areas and HI-AWARE's intervention to enhance adaptive capacities and building climate resilience by developing robust evidences.

## Mandira Singh Shrestha, ICIMOD

Mandira Singh Shrestha, Program coordinator, HYCOS Initiative ICIMOD delivered a presentation on Research Component 1 (RC1) giving an overview on bio-physical drivers and conditions leading to vulnerability and climate change impact. Introducing briefly about the seven components of RC1 entitled as 'Reference Climate Dataset', 'Climate Scenarios', 'Hydrological Scenarios', 'Impact Assessment', 'Flood Analysis', 'Upstream-Downstream linkages' and 'Tailoring of climate change data', she further elaborated each of them during her presentation. Shrestha gave an emphasis on the unique approach of the historical data set by availing its significance in accuracy of high altitude precipitation and water balance. She explained about the prominence of the climate scenario and gave details on how the future climate scenarios were projected by using multistep processes like climate models and statistical downscaling. She also gave a brief overview of hydrological scenarios and impact assessments by illustrating them through examples of the past work as well as a case study of Koshi sub-basins.

Shrestha discussed climate scenarios and consoling projections such as no significant change in availability of the water and hydropower potentiality in RCP 8.5. She discussed 'Upstream-Downstream' linkages through critically designed research questions considering hydrology, vegetation, soil erosion, sedimentation and socio-economic aspects as well as institutional issues. At the end of her presentation, Singh assured easy access to RC1 data for interested parties.

### Pranita Bhusan Udas, ICIMOD

Udas' presentation focused mainly on the issues of climate change vulnerability and situation analysis in Gandaki River basin. She put light on the methodology of Research Component 2 (RC2), which is inspired by participatory assessment with an anthropological influence on the research framework. She informed that the situation analysis followed the identification of socio-economic drivers and conditions of vulnerability in three different geographical set ups of upstream, midstream and downstream in the Gandaki basin. Based on climatic data such as erratic rainfall, increasing temperature and delay of winter rain, Udas focused on the major stresses of vulnerability in the region. Her study found decline in snowfall as well as in the amount of snow deposits on mountains in the upstream of Gandaki basin. She informed that climate change has led to delay in monsoon and winter rain, drought, drizzling wind, temperature rise, landslides and floods, which have further triggered the drying up of the springs and low water availability for irrigation and drinking. Udas revealed that climatic stress has affected major agricultural products such as potato, barley and karu as the communities are entirely dependent on rain fed agriculture. This has further impacted the socio-economic structure of the community. Declining agricultural yield has forced locals to quit farming and to look for newer livelihood opportunities. She added, as response to these changes locals are increasing fuel use for pump irrigation, privatizing springs and moving downstream. Outmigration has negatively impacted tourism and resulted in 50% of fallow land in many communities. Udas mentioned, downstream also faces different sets of stresses such as drought, rising river beds with silt deposition, change in river course and inundation, water quality deterioration during flood and soil erosion. She concluded by pointing out decrease in snowfall and rainfall in the upstream regions, drying up of springs in the midstream and floods in the downstream regions as major factors leading to vulnerability in the Gandaki river basin.

### Bimal Raj Regmi, ICIMOD

The speaker presented the findings of HI-AWARE Research Component 3 (RC3) which basically discussed about adaptation measures in the Gandaki river basin. He started his presentation by discussing the need of the study. Regmi explained about Multi Criteria Analysis and presented five case studies of Community Based Adaptation namely Adaptive Integrated Water Resources Management (AIWRM), Community Seed Bank, Climate Smart Farming Practices, Solar and Wind Hybrid system in the Gandaki river basin. His study has classified adaptation strategies into autonomous and planned adaptation practices. He stressed for the need of documentation and sharing of the adaptation related knowledge and practices tried out on the ground. Post presentation, Pariyar commented that the complete acceptance and adoption of adaptation practices by locals is a crucial factor for successful adaptation strategy. Similarly, Prof. Kedar Rijal, Head of Central Department of Environmental Sciences, Tribhuvan University identified the need for strong local governance for successful adaption practices.. At the end, Regmi urged for the greater collaboration between stakeholders.

## Remarks by distinguished guest

### Gehendra Kumar Upadhyaya, Director General, Department of Soil Conservation and Watershed Management (DSCWM)

Upadhyaya acknowledged ICIMOD's efforts in uplifting livelihoods in the HKH region. He appreciated the 5/5 km resolution methodology adopted for HI-AWARE as presented by Mandira Singh Shrestha in her climate modeling data. Upadhyaya found vulnerabilities related findings presented by Udas informative and suggested to focus on the

issues of 'too much' and 'too little' water. He also praised ICIMOD's studies in the mid-stream region of Gandaki basin. Upadhyaya was impressed with community based adaptation case studies presented by Regmi and stressed for the need of knowledge sharing. He urged researchers to study more on the adaptation benefits of successful 'Hariyo Ban' Program. He mentioned about NAPA, LAPA and with amusement hinted at there being a CAPA (community action plan of adaptation) and HAPA (House action plan of adaptation) in the near future. Upadhyaya reiterated the Government of Nepal's interests in learning from new research findings and to collaborate with ICIMOD and its partners.

### Gopi Khanal, Joint Secretary, Ministry of Federal Affairs and Local Development

Khanal made remarks primarily on the need of, collaboration between academic and non-academic organizations, harvesting of rainwater and identification of liquefaction zone in highly seismic regions in Nepal. He clearly stated that the country lacks technical know-how in many areas and stressed for urgent improvement. Khanal requested, ICIMOD to find reasons for recent drying up of springs. He expressed discontent over climate change being discussed only between elites within the city limits and overlooking the actual needs of most vulnerable groups in remote and rural areas. He urged researchers to work for greater dissemination of knowledge by publishing their findings in simpler-terms preferably in the local vernacular.

### Madhukar Raj Bhandari Director General, Department Water Induced Disaster Management

Bhandari acknowledged the importance of the consultation workshop for sharing knowledge on climate change adaptation practices. He pointed at the need of effective communication to communities that are vulnerable to water induced disasters. Bhandari briefed the audience on his department's role and interventions taken in high risk zones. He stressed for the need of hazard mapping and proper land use planning to reduce damages from water-induced disasters in future.

### Gehendra Gurung, Practical Action

Gehendra Gurung from Practical Action thanked ICIMOD for strategic partnership with HI-AWARE. He emphasized on the need of ground level data for successful adaptation strategies. He suggested on having a plan B for adaptation as not all adaptation plans are always successful or accepted by the communities. Gurung identified knowing historical and future climate data, observations and feedbacks from all the stakeholders as important steps in devising adaptation strategies.

### Closing Remarks by Eklabya Sharma

Sharma thanked all the speakers and distinguished guests for their time and valuable inputs. He stressed at the need for understanding upstream downstream linkages as crucial, and highly appreciated HI-AWARE's efforts in doing the same in the Gandaki basin. Sharma also pointed at the need to consider Traditional Ecological Knowledge (TEK) in adaptation planning. He reiterated ICIMOD's desire to collaborate with the Nepali government and interested parties in the HKH region. Sharma agreed to Gopi Khanal, Joint Secretary, Ministry of Federal Affairs and Local Development on the need of wider dissemination of climate change related knowledge and expressed ICIMOD's commitment in doing the same. He urged for more attention during vulnerability mapping and adaptation planning. He opined that upstream downstream linkages are very crucial while studying the river basins and congratulated HI-AWARE for its work in the Gandaki basin. He thanked IDRC, HI-AWARE consortium partners and media for their support.

Regmi thanked all the participants present at the workshop, especially the distinguished guest.

## **Research into Use (RiU) in Gandaki River Basin Presentation by Arabinda Mishra, ICIMOD**

The second session of the consultation program started with a presentation by Arabinda Mishra, head, RIU (Research into Use) component, HI-AWARE. Mishra introduced RiU to participants and shared RiU's objective as to share research outputs generated from HI-AWARE and to engage stakeholders for policy uptake. Mishra pointed at the need of greater engagement between researchers, development practitioners, media and policymakers to effectively put research into use in communities. He informed, ICIMOD together with Practical Action consulted around 100 stakeholders in upstream, mid-stream and downstream districts in Gandaki river basin. The speaker informed that the consultation workshop intends not only to share HI-AWARE's findings but also to listen to participants in what needs to be done to effectively put research into use. He stated, stakeholders' engagement, strategy for influencing policy and practice, policy uptakes and communication strategy as four pillars of the RiU package. Mishra further mentioned effective communication as an important tool in raising awareness and reaching out to grassroots stakeholders. He also spoke of the importance of consultation workshops at regular intervals. He stressed the necessity of quality research and implementation of its findings for the advantage of local communities. Mishra mentioned the TouchTable as an analytical tool that facilitates highly interactive and participatory process on a digital platform.

## **Research into Use (RiU) in Gandaki River Basin Presentation by Gehendra Gurung, Practical Action**

Gurung presented on stakeholder consultations held in Chitwan, Rasuwa and Nuwakot districts as part of RiU in HI-AWARE. He informed that around 100 stakeholders were consulted in upstream, mid-stream and downstream of the Gandaki River Basin. Gurung mentioned stakeholder consultation that included face-to-face bilateral interviews with governmental, non-governmental, private sector and academic stakeholders. He also discussed about issues and proposed action points identified in each stakeholder meeting. Gurung pointed out flash floods, soil erosion and siltation, FMIS, ground-water depletion and human-wildlife conflict as major issues identified in Chitwan. He informed the workshop participants about Climate Change Leadership Certificate Training Course (CCLCTC) in collaboration with DDC Chitwan, which is about to kick off in September, 2016. He also mentioned that the Chitwan Chamber of Commerce and Industries as well as other NGOs were interested in collaborating with HI-AWARE.

The issues in Nuwakot, as presented by Gurung, were different than that in Chitwan. Rainfall variability, drought and drying up of springs were major concerns. Heat waves were reported to have an effect on small farm holders due to loss in agricultural productivity and new crop diseases. Gurung mentioned, spring-shed management research, Training of Trainers (ToT), training and development of Local Adaptation Plans for Action (LAPA) had been proposed as action points in Nuwakot.

The concerns in context of Rasuwa, as Gurung presented, were drought, drying springs, increased forest fires, change in flowering and fruiting of plants, introduction of new diseases in livestock and impacts on tourism due to biodiversity loss. Gurung informed, booklets production on climate change in Nepali language, more research on vector-borne diseases and training of extension officials from agricultural and livestock departments were proposed as action plans in Rasuwa.

## **Introduction on TouchTables by Hasse Goosen and Arjen Koekoek (ALTERRA and Climate Adaptation Services)**

Goosen introduced the TouchTable software that can work in windows based touch devices. The software can be regarded as a 'light' form of GIS and is capable of managing large databases and visualizing knowledge for non-GIS experts. He explained that the TouchTable integrates all the pieces of knowledge and co-produces information including stakeholders and community.

Speaker mentioned benefits of the TouchTable that supports participatory decision making, creates engagement and ownership, saves time and helps in informed decision making. He stated, by engaging stakeholders, scientific information is brought to life by the help of visualization tools. He also discussed that the TouchTable works by feeding all data into the database and granting access to the database. It allows local knowledge to be added and combined with different sources of data. An example is of Bangladesh using TouchTables for getting into research was demonstrated where interaction with local community had produced ample ground level data. Arjen stressed the fact that the TouchTable is a visualization tool and not a modelling tool. He mentioned that it is capable of using existing data to develop one's own map based stories and scenarios. With the combination of available data and the knowledge of the participants, new insights and knowledge can be co-produced. He demonstrated usage through a demo of the TouchTable and explained the exercise that would follow the presentation. Arabinda Mishra then, divided the participants into two groups for parallel sessions. The two themes on which the exercise was to be done were: flash floods/landslides and lack of rainfall/ prevalence of drought. Participants raised concerns about the authenticity of data in the database would be open-access. The discussion also focused on whether the database would be real-time or previously loaded data.

## **TouchTable Session: Drought theme facilitated by Bimal Raj Regmi, ICIMOD**

Bimal Raj Regmi and Hasse Goosen facilitated the TouchTable technical session on the subject of lack of rainfall/ drought. Similarly, Arjen Koekoek and Gehendra Gurung facilitated the flood/landslides session.

Goosen started the session with a small introduction of the TouchTable as a tool that gives access to available data and that it is not a decision making tool. He mentioned that the number of data layers were prepared, partly based on HI-AWARE results, and complemented by other data sources such as the ICIMOD regional database. The validity and availability of both climatic data as well as health impact data were discussed. He also pointed out that it was possible to visualize two geographically distinct regions which have the same climatic factor.

To demonstrate how the tool can potentially be used, Regmi asked participants to mark the areas which, to their own knowledge, are directly affected by drought. While using the local knowledge, the session became more interactive and participants became more enthusiastic towards this tool. The session was found to be rich with continuous interaction and engagement of participants. At the time of interaction, one of the participants suggested that drought was not only determined by climatic and health impact data, but other aspects were also determinants. Such aspects also determine whether an area is impacted by drought like soil moisture content, availability of irrigation water, crop sensitivity and land use patterns. Also, he said that scientific data was not absolute in determining conditions, but local people's perceptions were also more effective ways to determine drought areas and conditions. At the same time, another participant added that micro-climatic condition should also be taking account during the discussion period.

While showing the function of the tool, one of the participant raised a question, "In future, will it be open access or not?" Participants' concern in this regard was focused on the the TouchTable license and user rights. Goosen responded that, ICIMOD has a license and a small sized TouchTable device. He said that the device can be used by other organizations where ICIMOD can provide support. The software can be installed on other touch devices, such as laptops and windows based tablets. However the license can only be used by one user at a same time. Therefore further coordination in regards to user rights required.

He noted, should an organization prefer to have their own license, this can be purchased through 'GEODAN' (an ICT company that developed the software). The price of the license is at 4000 euros. There is also a free demo version available (valid for 30 days). Goosen highlighted that besides the TouchTable, HI-AWARE will develop a climate atlas for the region which will contain all maps from the HI-AWARE research components. All data will be publicly available through the ICIMOD regional database.

Batu Uprety, NAP team Leader, praised this technology as an exciting knowledge generating tool and shared its importance in formulating National Adaptation Plans. He expressed the usefulness of tools in creating knowledge from both clients' and beneficiaries' perspectives.

## **TouchTable Session: Flood and Landslides group- facilitated by Gehendra Gurung**

Following the introduction, once participants were familiarized with the TouchTable, there were inputs coming from them and especially from academia and local government representatives. Various exercises such as asking the participants to point out hazards in location in the screen and later validating it with past hazard maps/ data; helped in capturing people's attention and also provided a method for updating the hazard data. A crucial discussion was conducted around the use of base maps, as participants suggested that topographical maps should be used instead. Also, the Chitwan floods were discussed in detail along with classification of these floods. The future projection scenario was a little complicated for the participants to grasp but they understood that climate extremes have been clearly spelt out.

In the second group, the discussion was more open. The local government officials highlighted various risks and adaptation needs in the areas. A further classification of landslides was made, with distinction between wet, dry and avalanche induced, including causes like new road construction. There was a discussion on the need of creating synergies between adaptation and development planning. Experts also provided caution on adaptation and said that adaptation should be sustainable and replicable. Various areas where good adaptation practices have been done were also located in the TouchTable. Starting from the 1993 flood, the probability and effects of a similar flood was discussed. The climate modelling result suggests that probability of projected extreme shower events seems to increase in the upstream, with effects on downstream areas like Chitwan.

# Day 2

## Summary of Day 1

The summary session was started by Arabinda Mishra. He invited Arjen and Hasse to summarize the TouchTable session from day one. Arjen was engaged in the 'TouchTable application' aspect of themes relating to precipitation and flood. He mentioned that by tapping into the local knowledge of participants, flood and landslide hazards could be further categorized into types. He further added, that hazards are clearly linked to heavy precipitation, which the climate modelling shows is becoming more frequent and intense. He informed that he received good suggestions from participants which helped to account contribution of GLOF to flood in lowland, early warning system arrangement etc. Hasse was engaged in the 'TouchTable application' on the theme of drought. His TouchTable session focused on input of data into the system, quality control of the data and about device and data licensing.

## Panel Discussion on 'Policies and Adaptation Practices in Nepal'

The panel consisted of representatives from District Development Committees, ministries, IDRC, Practical Action and the media. There were a total of nine participants on the panel. Giovanna Gioli moderated the discussion.

**Naresh Sharma-Undersecretary, Ministry of Population and Environment:** *"Leaving no one behind approach"*.

Sharma mentioned, "Nepal can be a center for adaptation excellence because of its innovation in NAP formulation, implementation and now its provocativeness for NAP process". He identified the need for documentation of experiences in adaptation for internal learning and leveraging of additional resources. He briefed NAP's targets as those that would reduce vulnerability and would aid in development of effective policy and plans. Sharma expressed pride in the roles played by the country and officials in the international institution and negotiation processes. He said NAP was launched on 18th Sept with support from Practical Action. Sharma expected ICIMOD's support in NAP's efforts by providing climatic data and scientific information. He mentioned NAP's successful participation in different international conventions and pointed at the need to utilize NAPA experience in NAP's formulation. He called for greater collaboration with ICIMOD and involvement of young graduates for knowledge generation, capacity building and learning. He highlighted nine pilot programs in order to address the next question and argued that the plan was efficient in comparison to development plans of other countries.

**Kabindra Bikram Karki-Under Secretary, Ministry of Water Supply and Sanitation:** Karki expressed that the Ministry of Water Supply and Sanitation has not been able to incorporate climate change into its planning and policies. He stressed that, it was high time to collaborate with other stakeholders in addressing climate change and mainstream adaptation in their plans. Karki shared that they have more than 500 water supply schemes and they are interested in designing climate resilient water supply system. He further added that his ministry has formulated 'Climate Resilient Water Supply Safety Plan' and 'Water Supply Master Plan' for effective water supply to 45,000 units. Karki was impressed with TouchTable technology. He mentioned that the technology could be a good platform for integrating and synchronizing data across different departments and ministries.

Urmila Kafle, Planning Officer, DDC Rasuwa: Kafle stated that climate change is related to our existence and how we adapt to it is either autonomous or planned. She mentioned, climate change as a threat to human existence and other living species. Kafle highlighted several challenges faced by the local government which hinder their program implementation.

**Balaram Luitel, DDC Chitwan:** Luitel, representative from Chitwan District, stated that research has been very helpful in yearly fiscal planning and highlighted flood, wildfire and drought as major climate induced issues. Chitwan is a district that suffers from many hazards (mainly floods in Narayani, Rapti and Riu Kholu) and has been ranked from high to moderate at various hazards indexes. Earthquakes haven't had much of an impact, but human wildlife conflicts are high. Forest Fires take place mostly around the park and poor vulnerable communities. Climate

change vulnerability mapping assessment has been conducted in a number of VDCs and municipalities where 4 VDCs have been implementing LAPA and CAPA. In addition to it, DDC is conducting adaptation practices which include bioengineering, construction of embankments, spur and retaining walls. He noted that EFLG framework is also being implemented there and various conservation and management efforts are underway. Similarly, Luitel said that they have many programs, campaigns and capacity building on climate change in Chitwan. Various climate smart integrated agriculture and non-agriculture related activities are underway. He mentioned that there is a lack of awareness on hazards, poverty and unmanaged settlements are major reasons behind these hazards. The presence of the park, along with various rivers and the overall geographic location make the district vulnerable. The DDC in this regard has been working on hazard mapping, disaster risk reduction and early warning system response and recovery in the district.

**Pushkar Sharma-Social Development Officer, DDC Nuwakot:** Sharma stated, two major impacts of climate change observed in Nuwakot districts were found to be decreased food production by 20% and drying up of lake and ponds. He added DRR plan has been formulated and a report on food security for the district has been prepared as a part of Climate Adaptation. Sharma further elaborated their work by adding that eco roads are being constructed and indoor smog free houses have been declared in many VDCs of Nuwakot district. He informed that works on Environment Friendly Local Governance and Early Warning System have already started. He informed, Energy and Climate Change Department has been established to monitor climate change directly and monsoon preparedness plan, rain water harvesting programs are being conducted at local level on collaboration with different NGO's. He pointed at the need of an action plan to raise awareness on disaster risk reduction and climate change. Speaker suggested the need for the formulation of DAG plans and conduction of various research with Department Agriculture Development Office.

**Madhu Ghimire-Under Secretary, Ministry of Forest and Soil Conservation:** Ghimire presented successful achievement about ecosystem based adaptation carried out under Ministry of Forest and Soil Conservation. She also mentioned about Ministry's work on water resources based adaptation practices. She informed that her ministry has been providing capacity building training for the staffs on regular basis at central and local level. The speaker noted about the Paris agreement which explicitly mentioned about EBA and that Nepal has committed to its full implementation through forestry management. She was grateful for the research ICIMOD has been doing and looked forward to greater collaboration.

**Gahendra Gurung, Practical Action:** Gurung mentioned that adaptation is crucial for continuation of better livelihoods of the poor. In this regard, he praised HI-AWARE and NAP for their contribution. The speaker noted that, poor governance was a major issue in successful adaptation at the local level. He stressed the need of research in different sectors with continuous documentation of past knowledge. He expressed sorrow over the lack of implementation of NAPA's findings. He mentioned, though there have been many studies and findings on climate adaptation, they have hardly been reflected in the sectorial policies and programs and are only limited in piloting.

**Kallur Subramanyam Murali, Senior Program Officer IDRC:** Murali noted the lack of climate change awareness in contemporary debates. He expressed willingness of UK-Aid and IDRC in conducting studies pertaining to development and climate change. He also informed of IDRC's interest in helping with capacity building. According to the speaker, research, policy and practice are three important factors essential to deal with any problems in the development. He stated that research can only be successful if there is practice of that research work and policy is important to drive the research and practice as they are interlinked to each other. He noted that deltas/river basins, Glaciers and semi-arid zones are the regions where climate change impacts are maximum. He further added that, these regions inhabit more than two billion people, of which 50% or more live under the poverty line. He therefore stressed at the urgent need of adaptation programs to cater to the most vulnerable of communities.

**Ramesh Bhusal-Environment Journalist, Mediak:** In Bhusal's opinion, no matter how rich the content is, the dissemination method heavily impacts the quality of information to be sent out to the public. Therefore, he stressed at the need of wider and greater dissemination of climate change related knowledge to public by making it simple, concise and meaningful. He also noted a good collaboration and consensus between stakeholders as a crucial factor for success.

Mishra thanked all the participants present at the conference, especially the dignitaries on the panel.



# Annex 1: Programme

## Day 1, August 10, 2016

09:00 – 09:30	Registration and Tea
09:30 – 11:15	<p><b>Inaugural Session</b></p> <p>Introduction of dignitaries on the dias (and in the audience) by ICIMOD</p> <p>Welcome remarks by Eklabya Sharma, DPO, ICIMOD</p> <p>About HI-AWARE (Anjal Prakash, ICIMOD + animation video)</p> <p>Presentation on HI-AWARE key findings</p> <p>Presentation on the science component (climate model projections) and brief discussion (Mandira Shrestha)</p> <p>Presentation on the vulnerability component (situation analysis of Gandaki Basin) and brief discussion (Pranita Udas)</p> <p>Presentation on the adaptation component (adaptation measures identified for Gandaki Basin) and brief discussion (Bimal Regmi)</p> <p>Remarks from the Distinguished Guests on dias</p> <p>Closing remarks by Chairperson</p> <p>Vote of thanks (Bimal Raj Regmi, ICIMOD)</p>
11:15 – 11:30	<i>Tea/Coffee</i>
11:30 – 12:45	<p>About the approach to RiU in HI-AWARE, stakeholders engagement process, about the workshop and its objectives; and clarificatory Q&amp;A (Arabinda Mishra, ICIMOD and Gehendra Gurung, Practical Action - Nepal)</p> <p>Presentation on TouchTable functionalities and usage for cogeneration of knowledge + clarificatory Q&amp;A (Arjen Koekoek, CAS)</p>
12:45 – 13:30	<i>Lunch</i>
13:30 – 14:45	<p><b>Technical Session 1</b></p> <p>TouchTable application on the themes of precipitation/floods and temperature/drought in Gandaki basin (2 Parallel Working Groups; Chairs – tbd)</p> <p>Facilitators – Arjen, Arabinda, Gehendra + Hasse, Vishwas, Bimal)</p>
14:45 – 15:00	<i>Tea/Coffee</i>
15:00 – 16:30	<p><b>Technical Session 2</b></p> <p>TouchTable application on the themes of precipitation/floods and temperature/drought in Gandaki basin – continued with Groups switching themes</p> <p>(2 Parallel Working Groups; Chairs – tbd)</p> <p>Facilitators – Arjen, Arabinda, Gehendra + Hasse, Vishwas, Bimal)</p>
16:30 – 17:00	<p>Plenary discussion learnings from technical sessions and feedback on the day's proceedings from participants</p> <p>Chair – tbd</p>

## Day 2, August 11, 2016

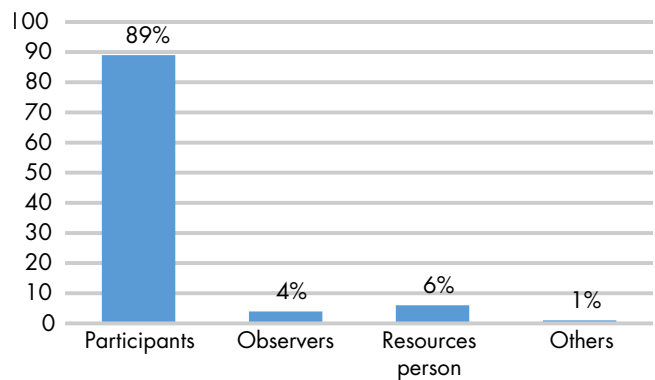
09:30 – 10:00	<b>Summary of Day 1</b> (Arabinda and Arjen)
10:00 – 11:15	<p>Policy and Practice Panel on Adaptation in Nepal (Moderator – Giovanna Gioli)</p> <p>Panelists – tbd</p>
11:00 – 11:15	<i>Tea/Coffee</i>
11:15 – 12:00	<p>Policy Panel discussion (continued)</p> <p>Moderated interactive session</p>
12:00 – 12:30	<p><b>Closing of workshop</b></p> <p>Presentation on way forward for HI-AWARE</p> <p>Vote of thanks</p>
12:30 – 13:30	<i>Lunch</i>

# Annex 2: Evaluation

A total of 150 people were present at the HI-AWARE Research into Use (RiU) Workshop, out of who only 46 submitted evaluation forms.

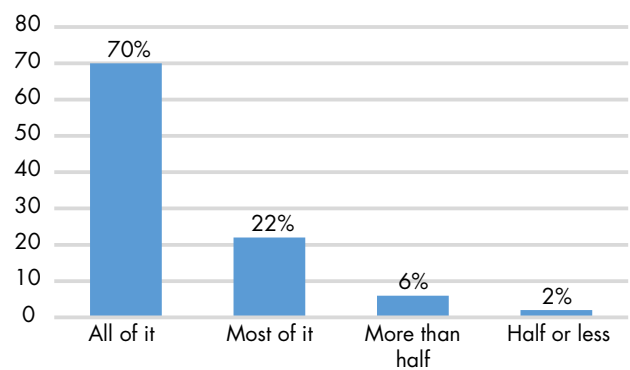
## Main role in this workshop/seminar

Almost all attendees in the workshop were active participants and very few of them were observers, resource persons, and others. The workshop intended to put research into use, which was the main reason for attracting most of the invitees as participants. Workshop attendees ranged from students to young researchers to experts from various ministries, local government officials, NGOs/INGOs, Tribhuvan University, and National Adaptation Plan formulating teams. The diversity was seen as encouraging by the organizers and very few were 'others' – researchers and local government officials.



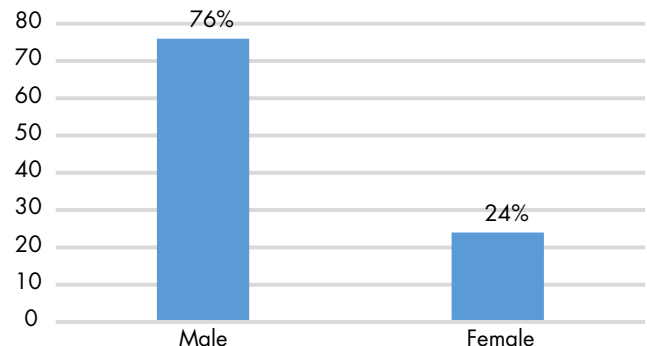
## Rate of attendance of workshop

In terms of participation, a good majority of workshop attendees (70%) were present throughout, and 22% through most of it. So, it can be concluded that there was a good level of participation, with attendees from diverse sectors. Very few (6%) of the participants attended more than half of the workshop, because they came from various I/NGOs and universities and were apparently be busy with other tasks. Only 2% attended half or less of the programme. They were higher dignitaries from Ministries, also with busy schedules and other important engagements.



## Gender participation

ICIMOD has a strong gender equity policy, which always encourages female participation in each important activity. A staggering 24% of the participants were women, which, given the context of Nepal, is highly encouraging, also because most of the officials in every sector are men. Also, we had female representation from ministries and local government officials despite their having few women staff in the government.



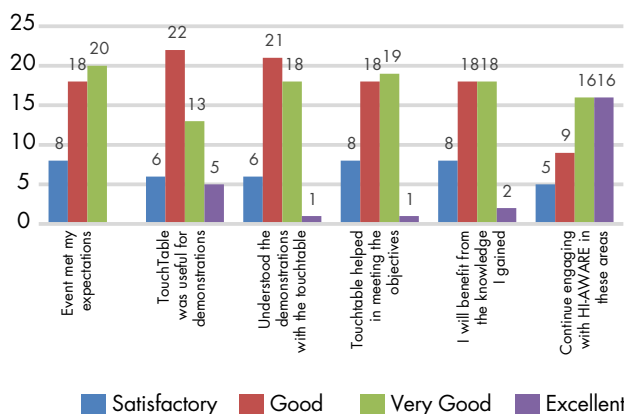
## About the event

As the figure depicts, most of the participants benefited by this workshop. Their evaluation suggested that the event had given them good understanding about TouchTable and its functionalities, and usefulness in demonstrating and visualizing data. During the TouchTable session, participants got a basic understanding, and there were inputs coming from them, especially from academic and local government representatives. Various exercises such as asking participants to point out hazards on location on the screen and later validating it with past hazard maps and data helped capture people’s attention and also provided a method for updating the hazard data.

A crucial discussion was conducted around the use of base maps, because participants suggested that Topo maps should be used instead.

Also, floods in Chitwan were discussed in detail along with classification of these floods. Interestingly, the local government officials highlighted various risks and adaptation needs in the areas. There was a discussion, too, on the need of creating synergies between adaptation and development planning. Experts cautioned on adaptation and said that adaptation should be sustainable and replicable. Various areas, where good adaptation practices had been done were located in the TouchTables.

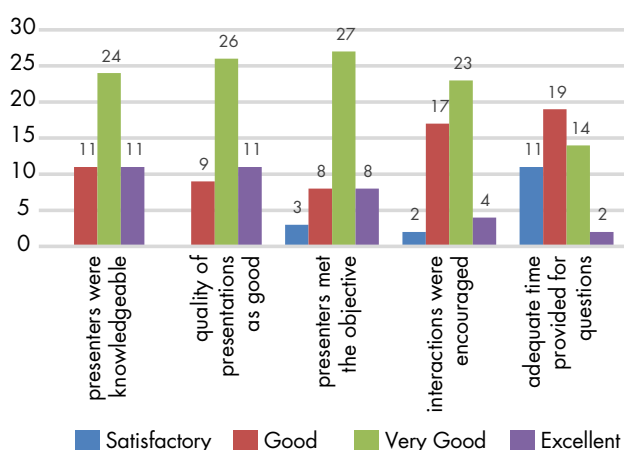
The overall discussion and active participation of stakeholders show that the TouchTable helped them meet objectives. A substantial number of participants said that they were eager to continue engaging with HI-AWARE in these areas.



## Resource persons

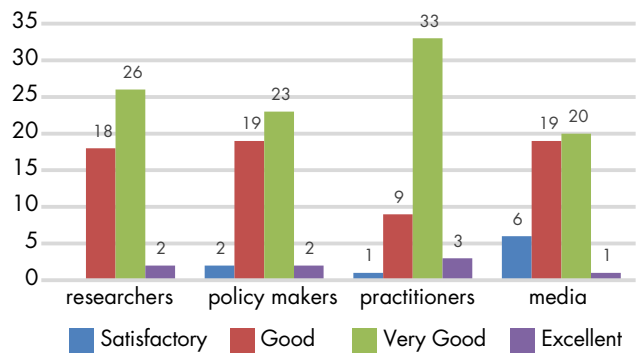
Regarding resource persons - researchers, policymakers, practitioners, and the media -, the attendees seemed quite satisfied with their level of knowledge of topics and the quality of the presentation. The programme had been designed into two session and attendees agreed that the programme objectives had been met and the level of participation in discussions was encouraging. Especially since time is always a constraint in every programme and few participants believed that adequate time had not been provided for discussion.

Overall, the participants agreed that the workshop had been organized and completed while delivering adequate information. Also government officials confirmed that the workshop had been highly meaningful.



## Appropriateness of actor engaged

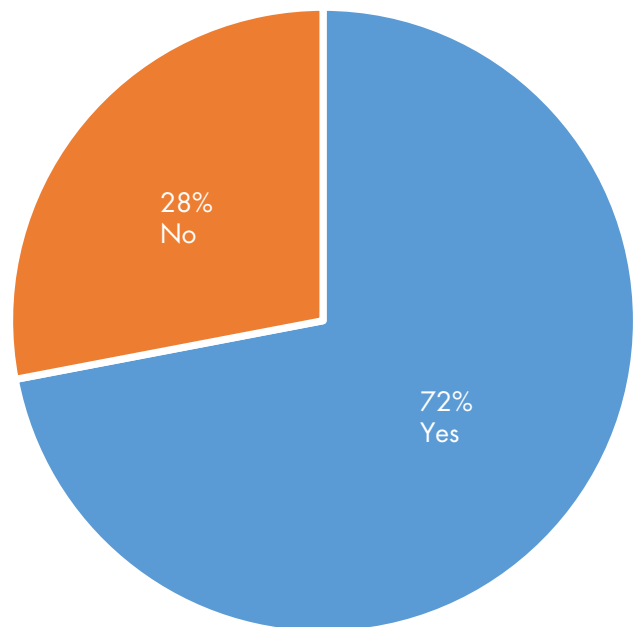
The main objective of the programme is to put research into use for which we need the involvement of all kinds of stakeholders. So we tried to analyse from the Feedback Form whether we had identified appropriate actors who could be responsible to direct the workshop. All actors present at the workshop were found to be highly appropriate judging by their resourcefulness, but practitioners were most appropriate compared to researchers, policymakers, and media persons.



## First time attending HI-AWARE programme

The expectation of new participants was quite high, since the 'Putting Research into Use' workshop was a continuation of consultations with local stakeholders and it was a first national consultation event. We had participants from National Ministries, Universities, and different NGOs/INGOs.

The workshop intended to invite also new personnel, who did not know about HI-AWARE and who were at policy making level. We had participants as well from the local government and from institutions that were already known to HI-AWARE.



## Annex 3: List of participants

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