



# World Mountain Forum 2016

*Mountains for our future*

Uganda, Mbale on 17-20 October 2016

## Theme 1: Mountains and Climate Change

### Objective

This session aims at devising/discussing options for actionable policy instruments and concrete measures to address climate change impacts in mountainous regions of the world. The discussions are expected to highlight some critical knowledge gaps and priority research areas, options for disaster risk reductions in mountain environments, integration of local and indigenous knowledge, transboundary and international cooperation, and the mountain agenda in the global discourse.

### 1. Mountains as a key context for Sustainable Development in a changing climate



Myitkyina area, Myanmar. Photo credit: Alex Treadway

Mountains cover around one-quarter of the earth's land surface and are homes to 800 million people worldwide. In addition, several billions of people living downstream also benefit from mountains, which provide about 70% of ecosystem services in the form of freshwater, energy, food, biodiversity, and medicinal products. These resources are often very sensitive to climatic changes.

Mountains also play an extremely important role in influencing both regional and global climatic and weather conditions. Mountain regions show large climate gradients within small spatial scales and host diverse micro- and macroclimates. This is due to their altitudinal extent, topography and their effect on atmospheric flow. For instance, differences in solar insolation due to mountain

topography and forelands produce characteristic wind systems. Therefore, understanding the interactions between mountains and climate and assessing future changes is critical for sustainable development.

Moreover, most mountain regions are characterized by inaccessibility, fragility, marginality. Consequently, people in most of the mountain region often face poverty and lack access to basic services such as health and education.

Mountains are, thus, key context in need of sustainable development and we need to find sustainable solutions to the drivers such as climate change which affects the provision for essential ecosystem services key to sustainable development.

## 2. Mountain ecosystems under threat



*Glaciers on top of African mountains are rapidly melting due to rise in temperature. Photo: Top of Mt Kilimanjaro.*

*Courtesy: Sam Kanyamibwa/ARCOS*

Despite the valuable services provided by mountains, they are under increasing threat. Along with a rapidly increasing population, which is placing great demands on water resources, climate change is affecting water availability throughout mountainous regions. Mountains are very prone to climate change, land degradation, deforestation and natural disasters. They have been found to be more sensitive to climate change and higher altitude regions have experienced more rapid warming in past decades.

For example, the Hindu Kush Himalaya (HKH) region is warming about three times faster than the global average. Research indicates that global warming will hit the mountains harder than other ecosystems and this is already perceptible in the numerous glaciers, which are continuously receding.

Due to the rise in temperature, the glaciers on top of African mountains are rapidly melting and the remaining glaciers are found in only three areas of the Rift valley in eastern Africa on mount Kenya, Kilimanjaro and Ruwenzori. Many human activities, most notably agriculture, are timed with the seasonal flows of water and predictable cycles of precipitation. For example, many Andean valleys are seasonally dry and mountain glacier runoff plays a crucial regulatory role to maintain constant flow of freshwater throughout the year.

As regions warm and precipitation pattern change, the hydrological cycle becomes more unpredictable, at times with too much or too little water. The effects on people, communities and ecosystems can be devastating with the most visible impacts including catastrophic floods, droughts and landslides. Frequent records of the latter have e.g. been reported from Mont Elgon in eastern Uganda, where such events destroy community farms and houses with a number

of people killed or displaced.

For example, in June 2010, landslides killed around 100 people. The recent earthquake in Nepal and the ensued landslides across the country, which claimed countless lives and damaged millions worth of property attest to the mountains' fragility to natural disasters and the predicted increased extreme weather-related events such as floods, landslides and storms are going to put mountain communities and their livelihoods under an ever increasing pressure.

Altogether, the impacts of climate change will have a devastating effect not just for the upstream mountain communities, but also for downstream communities due to the services they provide.

Evidently, mountain regions worldwide face disproportionate challenges of climate change and climate change is thus a major externality associated with growing costs.

To combat the impacts of climate change, the development of new and dissemination of best available scientific knowledge is paramount. The development of a global action, together with specific local-level policy and governance practices can help foster wider adoption of more sustainable management in mountain regions.

## 3. Mountains in the global agenda

Many international environmental agreements acknowledge the importance and relevance of ecosystems to economies and the daily lives of communities globally. Scientific evidence already demonstrates the pivotal role mountain ecosystems have played in provisioning of ecosystem services and regulation of climate among others. Well over 24 years ago at the Rio Earth Summit in 1992, a call for Sustainable Mountain Development (SDM) was clearly articulated in Chapter 13 of the Agenda 21. A subsequent action plan was endorsed more recently at Rio+20 in the outcome document "The Future We Want" with mountain issues proposed and covered under SDGs. Hence these fragile ecosystems have to an extent received some attention, with limited mention however, in subsequent international agreements such as the Paris Climate Agreement, 2030 Agenda for Sustainable Development and the Sendai Framework for Disaster Risk Reduction, to cite a few. While some mention of mountains in these agreements/frameworks clearly is indicative of the progress that has been made in their recognition, more needs to be done as these ecosystems are critical for both mankind

and biodiversity and are most sensitive to the effects of climate change. The engagement of various thought leaders, scientists, policy makers, practitioners, communities and many other actors at the World

Mountain Forum (WMF) provides an opportunity to move beyond the rhetoric to concrete action and firm actionable commitments on the ground.

#### 4. Need for action



*Yala Glaciers, Langtang Valley, Nepal. Photo credit: Udayan Mishra*

Given the importance of mountains both in terms of the services they provide and threats climate change is posing, it is urgent to bring mountains in the forefront of global discourses. It is urgent also to develop policy instruments to take actions on climate change specific to mountains under the sustainable development agenda. The needs for actions include:

- (i) commitment by national governments to take a leading role for their own countries and raise the voice of the mountains on a global level;**
- (ii) support and commitment from the countries themselves in terms of climate financing (GCF, AF, etc.) with the view of using these funds more for strengthened action on mountains and climate change adaptation;**
- (iii) regional cooperation and dialogue processes and mechanisms such as the Andean Community, East African Community (EAC) or respective mountain conventions which can provide useful and important tools to support implementation of global targets and indicators at regional and mountain ecosystem-based level, promoting a coherent approach to climate change action.**

As a result, integrating climate risks and adaptation into sustainable development and poverty reductions actions are of utmost importance. It is equally important to continue to develop our understanding of climate change, its impacts in the mountains and possible adaptation measures.

## 5. Key questions to address

What are the critical knowledge gaps and priority research areas in the context of climate change and related impacts on mountain ecosystems and the related services?

1

What are concrete needs and gaps (capacity building etc) for strengthened gender sensitive climate change adaptation actions and resilience in the country, looking at the Uganda example can the EBA approach serve as a useful tool for your country?

2

What are the options for disaster risk reduction in mountain areas in relation to climate induced changes of risks affecting these areas? What are the success stories, and what are the challenges to success?

3

What measures and approaches should be taken into consideration to ensure the involvement of local population and integration of local and indigenous knowledge in national strategies to maintain critical services of mountain ecosystems?

4

Are the existing transboundary and international cooperation adequately addressing the concerns of the mountain communities? What further mechanisms or approaches could be introduced to strengthen the cooperation, and to bring actionable solutions to the ground? Are there interesting case examples to draw from?

5

How do we bring the mountain agenda in the global discourse and agreements, and make sure that the relevant information has reached to all concerned? Are we communicating enough?

Glacier, Arial shot. Photo credit: Karen Konniff

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