



# Stabilizing Climate Change in the Himalayas

## WORKSHOP PROCEEDINGS

### 1. AGENDA

IUCN Nepal held a workshop titled 'Stabilizing Climate Change in the Himalayas' in IUCN Nepal Country Office, Kopundole, Lalitpur on 04 August 2009. The main objectives of this workshop included:

- To discuss and better understand the current status of climate change in the Himalayan region, and its impacts
- To discuss and better understand the role of non-CO<sub>2</sub> climate forcing agents in the Himalayan region, such as aerosols, and in particular, black carbon
- To discuss how to foster collaborative linkage between organizations and countries working actively on practical measures to mitigate and stabilize climate change in the Himalayan region, at both national and regional level

### 2. PRESENTATION SUMMARIES

2.1 Stabilization of Climate Change in the Himalayas: Col. C.P. Muthana, Environment and Health

Foundation, India; *presented by* Ram Chandra Khanal, IUCN Nepal

This presentation introduced the participants to the existing and emerging climate change issues in the Himalayas and associated problems, and laid out the potential approach for seeking sustainable solutions to the problems, thereby setting the context of the workshop.

The Himalayas, which spans the length of 2,500 kms and an average width of 300 kms, is home to millions of people. The major river systems originating in the Himalayas sustain livelihoods of over a fifth of the population across South Asia, South-East Asia and China. Therefore, the established observations that the Himalayan region is under serious threat due to regional climate change impacts, acting synergistically with global warming to force greater temperature increase than the global average is a matter of serious concern. There is no other alternative than to start acting now to slow down the rate of temperature rise in the Himalayas, if we are to protect the Himalayan ecosystems and the livelihoods of the million of people depending on these ecosystems.

Regional climate change in the Himalayas is because of several reasons, and in particular:

- i) The Atmospheric Brown Cloud and Black Carbon
- ii) Concentration of greenhouse gases at the source of emissions
- iii) Urban heat islands
- iv) Pressure of tourists and pilgrims
- v) Military presence

To mitigate and stabilize climate change in the Himalayas, emissions of non-CO<sub>2</sub> greenhouse gases, aerosols and black carbon need to be reduced, which could provide relatively immediate returns. Such overarching goal at the regional level may be best achieved through the formation of alliance between the five Himalayan nations, which include Bhutan, China, India, Nepal and Pakistan, which can then formulate a joint strategy for implementation to achieve shared goals.

2.2 Black Carbon Pollution, and Climate Implications in the Himalayas: Keshab Parajuli, IUCN Nepal

As recent studies increasingly point out Black Carbon as potentially second largest contributor to global warming after carbon dioxide, the importance of Black Carbon as a potent climate forcing agent can't be neglected, especially in the Himalayas. In the Himalayas, Black Carbon can exert climate effects through multiple pathways, including atmospheric solar heating and albedo reduction, which in combination with the global warming effects of carbon dioxide can accelerate the deglaciation of the Himalayan glaciers. Black Carbon, after mixing up in the atmosphere with other aerosols, form Atmospheric Brown Clouds that is circulated and transported locally and regionally, covering areas up to the scale of sub-continent in a mere 2-7 days, and this is alarming in the context of Himalayas, when India and China are argued to be among the world's largest emitters of Black Carbon, contributing 25-35% of the global emissions. However, there is a tremendous potential in delaying the tipping point of major climatic disasters in the Himalayas by effectively reducing Black Carbon emissions in the region, as this form of carbon has excessively short atmospheric lifetime—in the order of days to weeks, and will respond to the mitigation measures quickly and effectively.

This presentation focused on the science of Black Carbon radiative forcing, and provided a perspective on how unabated emissions of Black Carbon in the region might turn out to be detrimental to the Himalayan region.

### 2.3 Climate Change and its Impacts in Nepal: Dr. Arun Bhakta Shrestha, ICIMOD

Driven from data-based findings, this presentation introduced the participants to the trends of climate change and its impacts in the Himalayan region of Nepal, with particular emphasis on water resources.

Although the rate of warming in Nepal (based on temperature records from 1977-2000) is observed to be 0.06 degrees per year, the temperature trend in the Himalayan and trans-Himalayan regions is higher than the national average. Although precipitation exhibits cyclic variability in the total amount of rainfall throughout the year, the number of rainy days has distinctly decreased while the number of days with intense rainfall has increased. This suggests that warming in the Himalayas is likely to be above the global or regional mean, and that extreme rainfall and drought events are on the rise. This could have tremendous impacts on fragile Himalayan landscapes and geology, which could range from deglaciation, glacial lake formation, Glacial Lakes Outburst Flood (GLOF), permafrost and snow cover decline, changes in hydrological regime etc., thus effecting water availability, agriculture, biodiversity and environmental services, human health, and the overall community well being. Moreover, how, where, when, and how much change will likely occur is highly uncertain, and is compounded even more by the limited availability of baseline information and data on major climatic variables, low financial and human capacity, low awareness of the real biophysical changes that are happening in the region, and the challenging environment in the Himalayas. Filling these gaps, minimizing the risks of excessive deterioration of the Himalayas, and sustaining the livelihoods of millions of people dependent on Himalayan ecosystems need effective regional partnership and commitment for collective actions.

### 3. OUTCOMES

The discussion session after the presentations yielded the following major points:

- Identify root causes of the problems, linking them with the underpinning socio-economic reasons
- Climate change impacts assessment should also focus on the impacts at secondary and tertiary levels, which are more linked to the poor communities' livelihoods
- Much importance has been received by Glacial Lakes Outburst Flood (GLOF) when it comes to climate change impacts on the Himalayas (in particular, Nepal), but in addition to GLOF, climate change impacts at the scale of watershed should also be addressed

- Black Carbon emissions in the Himalayan region should be reduced, but caution must be undertaken in international forums so that the burden of the emissions reduction doesn't shift drastically to developing nations
- Need more ground-level scientific and socio-economic data driving the climate change in the Himalayas
- Local communities, government and civil society leaders, members of NGOs are already aware about the impacts of climate change and the ways to mitigate and/or adapt to the impacts to higher degree compared to couple of years back, and therefore, focus must also shift in immediate ground level implementation of what has been already learnt
- Government's level of awareness and policy position on climate change mitigation should be known clearly before program of actions to address changing climate in the Himalayas are formulated
- Establishing a separate structure to address these issues at the regional level might be difficult, therefore, a mechanism should be developed to mobilize and involve already existing institutions in the region alongside concerned ministries and departments, civil societies, and the SAARC secretariat; a two-tier (steering and implementation) committee can be envisioned to this end, which are at constant dialogue with each other
- Possibility and identification of such a mechanism must also be discussed in the high level SAARC meeting to be held in New Delhi, India in September 2009
- IUCN can help prepare a Strategy for Stabilizing Climate Change in the Himalayas along these lines, and take the issue forward in the days ahead

#### **4. WAY FORWARD**

The outcomes from the workshop will be shared with IUCN Regional Office in Bangkok, Thailand, and IUCN country offices (China, India, Pakistan) and Bhutan. In consultation with regional level organizations, holding meetings in these countries in next couple of months might be a possibility, using IUCN as a neutral body to explore opportunities for involving interested parties. This might also lead to a regional meeting of the five countries in an effort to form a regional alliance to stabilize the climate change in the Himalayas, especially by tackling the regional problems of non-CO<sub>2</sub> greenhouse gases, aerosols, and black carbon emissions.

Workshop on “Stabilizing Climate Change in the Himalayas”  
held on 04 August 2009 at IUCN Nepal Country Office, Kopundole, Lalitpur

List of Participants

S. No.	Name of Participant	Designation/Organization	Contact Details
1	Dr. Maksha Ram Maharjan	Natural Resources and Climate Change Advisor CARE Nepal Patan, Lalitpur	Tel: +977 1 552 2800 Mobile: +977 985 106 4352 Email: maksha@carenepal.org
2	Mr. Tara Lama	Program Director Local Initiatives for Biodiversity, Research and Development (LI-BIRD) Pokhara, Kaski	Tel: +977 61 535 357 Mobile: +977 985 602 7734 Email: tlama@libird.org
3	Dr. Rijan Bhakta Kayastha	Assistant Professor Kathmandu University Dhulikhel, Kavre	Tel: +977 11 661 399 Mobile: +977 984 147 7184 Email: rijan@ku.edu.np
4	Mr. Manjeet Dhakal	Program Officer Clean Energy Nepal Kamaladi, Kathmandu	Tel: +977 1 425 7481 Mobile: +977 984 154 0860 Email: manjeet@cen.org.np
5	Mr. Laxmi Krishna Amatya	Project Coordinator HKKH Partnership Project IUCN Nepal Kopundole, Lalitpur	Tel: +977 1 552 8781 Mobile: +977 985 105 6395 Email: amatya@iucn.org.np
6	Mr. Prabin Man Singh	Oxfam Nepal Jawalakhel, Lalitpur	Mobile: +977 984 117 1461 Email: pmsingh@oxfam.org.uk
7	Mr. Gopal Raj Joshi	Research Officer Winrock International Baneshwor, Kathmandu	Tel: +977 1 446 7087 Mobile: +977 984 125 9930 Email: gjoshi@winrock.org.np
8	Mr. Keshav Kumar Sharma	Policy Advocacy Officer Practical Action Nepal Lazimpat, Kathmandu	Tel: +977 1 444 6015 Mobile: +977 985 111 2129 Email: keshav.sharma@practicalaction.org.np
9	Dr. Prahlad Thapa	Project Team Leader SAHAKARYA Project/Center for International Studies and Cooperation (CECI), Nepal Baluwatar, Kathmandu	Tel: +977 1 441 9412 Mobile: +977 985 110 5441 Email: prahladt@ceci.org.np
10	Mr. Yogendra Chitrakar	Director Environmental Camps for Conservation Awareness (ECCA) Nepal Kopundole, Lalitpur	Tel: +977 1 555 0452 Mobile: +977 985 106 9348 Email: yogendra@ecca.org.np
11	Dr. Arun Bhakta Shrestha	Climate Change Specialist International Center for Integrated Mountain Development Khumaltar, Lalitpur	Tel: +977 1 500 3222 Email: abshrestha@icimod.org
12	Mr. Ram Chandra Khanal	Senior Program Officer IUCN Nepal Kopundole, Lalitpur	Tel: +977 1 552 8781 Email: khanal@iucn.org.np
13	Hon'ble Ms. Ang Dawa Sherpa	Member Constituent Assembly Singha Durbar, Kathmandu	Mobile: +977 984 139 5294 Email: ang_media@yahoo.com

14	Hon'ble Mr. Sunil Babu Pant	Member Constituent Assembly Singha Durbar, Kathmandu	Mobile: +977 985 106 7959 Email: pantsunil@gmail.com
15	Mr. Nogendra Sapkota	Social and Environmental Officer Asian Development Bank, Nepal Resident Mission Kathmandu, Nepal	Mobile: +977 1 422 7779 Email: nsapkota@adb.org
16	Mr. Bechu Kumar Yadav	Forest Ranger REDD, Forestry and Climate Change Cell Department of Forests Babarmahal, Kathmandu	Mobile: +977 984 921 8021 Email: bechuyadav@gmail.com
17	Ms. Anu Adhikari	Program Officer IUCN Nepal Kopundole, Lalitpur	Tel: +977 1 552 8781 Email: anu@iucn.org.np
18	Mr. Keshab Parajuli	Consultant IUCN Nepal Kopundole, Lalitpur	Tel: +977 1 552 8781 Email: keshab@iucn.org.np