

Certificate of Achievement

ICIMOD

FOR MOUNTAINS AND PEOPLE

Media Reports on Climate Change in the Himalayas

ICIMOD Competition for Journalists, 24 September – 15 December 2009

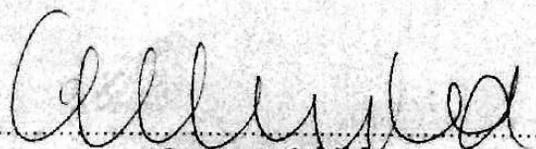
Farrukh Ahmed Chishtie, Pakistan

Winner – Regional Category

for

'Glacier flooding: A renewed threat'

published in *Subh-e-Nau* on 5 November 2009



Andreas Schild

Director General

ICIMOD

Dr. Farrukh Ahmed Chishtie

House # 330, Street # 24
Sector I-8/2,
Islamabad
Pakistan

11 March 2010

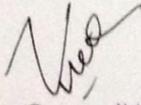
Subject: Certificate: 'Media Report on Climate Change in the Himalayas' Competition

Dear Dr. Chishtie,

Please find enclosed the Certificate of Achievement for the ICIMOD Media Competition, '**Media Report on Climate Change in the Himalayas**' held last year from 24 September – 15 December 2009. We congratulate you once again for being the Winner for the Regional Category for your story, 'Glacier flooding: A renewed threat'. An award ceremony was successfully held on 6 March at the ICIMOD Headquarters.

We look forward to similar support in the future, as well as highlighting the environmental issues, and related concerns of the Himalayan region widely through your writings.

With best regards,



Nira Gurung (Ms)
Communications Officer

Encl: a/a

ICIMOD

FOR MOUNTAINS AND PEOPLE

GPO Box 3226, Khumaltar,
Lalitpur, Kathmandu, Nepal

TEL +977-1-5003222
FAX +977-1-5003299
EMAIL info@icimod.org
WEB www.icimod.org

International Centre for Integrated Mountain Development

आन्तर्राष्ट्रिय एकीकृत पर्वतीय विकास केंद्र
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Direct Lines

Directorate: 5003318. Environmental Change and Ecosystem Services (ECES): 5003013.
Mountain Forum: 5003139. Integrated Water and Hazard Management (IWHM): 5003177
Knowledge Management Support and Development (KMSD IT+C): 5003246.
Mountain Environmental Natural Resources Information Systems (MENRIS): 5003242
Sustainable Livelihoods and Poverty Reduction (SLPR): 5003040/5003141.

Dr. Farrukh Chishtie

Glacier Flooding: A Renewed Threat

Increased glacier flooding due to deforestation and climate change, coupled with the literally changed regional geography, made its devastating mark in Hattian Bala after the 2005 Northern Kashmir earthquake. Back then, blockage of streams endangered its 12,000 population, as hills crumbled under the sheer water pressure. With recent events of the same nature, we need to act now to avert another impending crisis, as many settlements are located on dangerous locations.



Forming the lifeline to our entire populace, glaciers of the Hindu Kush Himalayan (HKH) region provide us valuable water. These glaciers as well as glacial lakes are the sources of the headwaters of the potent Indus River. The rate of glacier melting is increasing rapidly all over the world, due to global warming, and is a cause of great concern

as they are leading to widespread flooding and damming, forming artificial lakes as a result.

After the tragic October 8 2005, Northern Kashmir earthquake left a permanent scar, the increased frequency of glacier flooding, massive land sliding and artificial lakes can result making the situation ever more hazardous.

GLOFs: The case of Hattian Bala and Swat

GLOFs have been happening in the region since 1932; however, the creation of an artificial lake in river Swat between *Behrain* and *Kalam* because of a massive mudslide that covers greater part of the riverbed, at that particular place, raised alarm bells since early February 2005,

when the region was affected by floods. The artificial dam hindered the normal flow and created an artificial reservoir. After of the earthquake catastrophe, a collapse of a mountainside near the town of *Hattian Bala*, a town about 45 km south-east of Muzaffarabad, capital of Azad Kashmir Pakistan, blocked two major streams creating huge lakes that endangered up to 12,000 people. These flow out of the Jhelum River near the town. On the *Kali* stream, the lake was 337 ft wide and 80 ft deep, while that on *Tang* stream it was 200 ft wide and 50 ft deep. An expert studying glacier melting in the region, Dr. Rakshan Roohi of National Agricultural Research Center (NARC), observed huge cracks that have and are appearing in the mountain at *Hattian Bala*. These were widening by the day and further landslides could breach the sides of the formed lakes. This phenomenon, generally known as Glacier Lake Outburst Flooding (GLOF), is recognized to be a common problem often causing catastrophic effects in the Hindu Kush-Himalayan countries such as Nepal, India, Pakistan, Bhutan, and China.

GLOFs: Recent Disasters and Experts' warnings

The northern sector of Pakistan is a hilly region, where all the land is in the form of rugged terrain including mountains. The central and northern mountain sectors are steeper than the southern sector. The region is vulnerable to landslide and river erosion due to great elevation differences, steeply sloping terrain, and fragile geological conditions experts have cautioned.

In this regard, the watersheds of the region, which are covered by some major glaciers and glacial lakes are quite susceptible to disastrous hazards due to GLOFs. In general, snow clad line is found above 5,300 meters above sea level. The glaciers, some of which consist of a huge amount of perpetual snow and ice, are

found to create many glacial lakes. The glaciers and glacial lakes of the HKH region are nature's renewable storehouse of fresh water that benefits hundreds of millions of people downstream. Lakes at an elevation that is higher than 4,000 meters above sea level are considered as glacial lakes. Most of these lakes are located in the down valleys close to the glaciers. They are formed by the accumulation of vast amounts of water from the melting of snow and ice cover and by blockage of glacial mounds. The sudden break of such a dam may generate the discharge of large volumes of water and debris causing disastrous floods, adding to the list of possible and present dangers. Most recently, in the middle of 2008, five GLOF events have already occurred in



many glacial lakes on the recent glacier terminus and scientists attribute it mainly to the effect of recent global warming. Dr. Roohi was a part of a study of glaciers and glacial lakes in Nepal and Bhutan which was carried out by the International Center for Integrated Mountain Development (ICIMOD) and United Nation Environment Program/Regional Resources Center, Asia Pacific

Gojal area of the Hunza river basin. These events at Ghulkin and Passu, caused large damage however no human casualties occurred and twenty one people were directly affected by the flooding. Additionally, seventy-two canals of land, 460 fruit trees, seven houses and four cattle sheds were demolished killing 15 cattle. Further extensive damage to infrastructure was also incurred.

Glacier Retreat and Climate Change

A remarkable retreat of glaciers in the Hindu Kush-Himalayan (HKH) region has happened since the second half of 20th century, which scientist attribute to climate change (see box "Greenhouse effect and Global Warming" for details). This has contributed to the formation of

(UNEP/RRC-AP). This study was conducted from 1999 to 2001 and inventoried 3,252 glaciers and 2,323 glacial lakes in Nepal and 677 glaciers and 2,674 glacial lakes in Bhutan. The study concluded that that the reported GLOF events are highly destructive downstream and lead to long-term secondary environmental degradation in the valleys, both physically and socio-economically.

A current study also revealed that glaciers in occupied Kashmir are melting fast because of increasing temperatures, threatening the water supply of millions of people. Conducted by a group of scientists at the Kashmir University it states that the melting of glaciers had endangered the livelihoods of 10 million people. The Kolahoi glacier, the biggest glacier, had shrunk to about 4.44 square miles from about five square miles in the past 40 years. The findings also point out that climate change was affecting patterns of rain and snowfall, resulting in lower food production. The Kolahoi glacier had shrunk by 18 percent, and over the same period, other glaciers in the region had shrunk by 16 percent. The abnormal climate change has also affected Siachen Glacier and reduced it to 46 miles from 93 miles in length. The Kolahoi feeds Kashmir's lifeline Jhelum River, which is also vital for the agriculture in Pakistan particularly the Punjab province.

Pakistan: A major player in glacier dynamics

A major part of the snow and ice mass of the Pakistan Himalaya is concentrated in the watershed of the Indus basin. Dr. Roohi spearheaded the study following the methodology stated earlier in the Astor sub-basin of the Indus basin in a first phase programme implemented in collaboration with ICIMOD. This is especially relevant as there are high possibilities of the existence of potentially dangerous glacial lakes and GLOFs in the Pakistan Himalaya. Most of these potentially dangerous glacial lakes are situated at the headwater of the river basins, and settlements, agriculture fields, and infrastructure development are mostly concentrated along the river valley downstream of glaciers and glacial lakes. The main objectives, of continuing the present study is to assure that mountain inhabitants in the HKH region enjoy safe and sustainable livelihoods through a

better understanding of environmental hazards associated with Mountain Glaciers and glacial lakes, with which to address environmental policy, planning and impact/risk mitigation.

Long-term benefits of Glacier studies

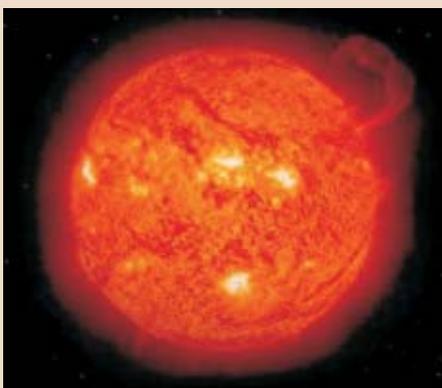
The long-term objective of the study is to establish an inventory of and digital database on Mountain Glaciers/glacial lakes and change due to global warming affecting potential glacial lake outburst floods (GLOFs) and associated hazards. The database methodologies and information will be analyzed, synthesized, and shared nationally and regionally among the collaborating national organizations and agencies to form the foundations for both policy and planning. For the general public, the long term aspect of the project will help create wider awareness, both regionally and internationally, among governments, development agencies, and the public about the dangerous GLOF phenomena.

More Studies and Action Needed

Building the case for such a critical component as glaciers in our very survival, accurate and comprehensive knowledge of glaciers and glacial lakes are of utmost importance. A digital repository of valuable knowledge on glaciers, glacial lakes, and GLOF events will enhance the ability to inform policy makers on the vulnerability, and risk mitigation and action and adaptation measures. Since the total number of glaciers and potential GLOF hazards in the region is still unknown, continuing studies in this direction will add greatly to sustainable development as well as regional and global databases. Needless to say, action is needed now so that the current communities living under this renewed threat should be moved to safer areas to avoid further loss of lives due to climate change leading to rapid glacier melting and GLOFs. ■

Greenhouse effect and Global Warming

Global warming results when heat is retained within Earth, much like a conservatory, hence the effect is known as the greenhouse effect. Radiation in the form of light when reaches the earth is absorbed by the surface as heat. Some of this radiation is reflected back toward space, but the atmosphere also absorbs a certain part of this heat energy. This is a natural and balanced process, and is indeed essential to life, as we know it. The



problem comes when changes in the atmosphere radically change the amount of absorption, and therefore excessive heat is retained as a result. This change is due to air pollutants, the main contributors being Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O), molecular Oxygen (O₂) and Ozone (O₃). Due to air pollution from fossil fuels, we have unnaturally increased these types of gases in the atmosphere, which has led to a significant degree of increases in global temperature or global warming. The effects are most noticeable in recent times where weather has changed its face completely in all parts of the world, leading to what is termed as "climate change."