**Global Warming Threats to Himalayan Kingdom**

'Five glacial lake bursts occurred in Nepal from 1977 to 1998 according to records and satellite imagery,' says Sandeep Chamling Rai, a climate change officer at the World Wildlife Fund (WWF-Nepal Program).

By Citizen Correspondent [Manish Gautam](file:///D:\ETEXTS\node\7546.htm) , Kathmandu, Nepal

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The gradual warming of the earth, mountains, rivers and domestic animals have negative impacts. Besides, crop pattern has also suffered from the annual rise of 0.003 degree Celsius in temperature in the country.

The research carried out in Kaligandaki basin in western Nepal has revealed that there is increase in precipitation events and snow and glaciers have been depleting. There will be a significant increase in floods and drought days in future adding global warming will have negative impacts on crops. Crops like maize, sugarcane, and tropical grasses will be adversely affected, the repot adds. Besides, mountain animals like yak, alpine goat and sheep habitat will be adversely affected with the rise in global temperature.

Although Nepal's share in the global emission of greenhouse gases is almost nil, the consequences of global warming and climate change - receding snowlines, lake bursts and flash floods - threaten to wash away vast areas of the country, including the region that's home to Mount Everest.

The meltdown has sent a chill across the Himalayan nation. Over the last couple of years, it has recorded a hazy winter, hotter summer months and frequent landslides, which experts attribute to climatic change.

Weathermen believe this could be the harbinger of even more miserable weather to come. "The average temperature in Nepal is rising by 0.5 degrees Celsius per decade," points out a senior official in the climate change section in the Ministry of Population and Environment, Purushottam Kunwar.

As Nepal is home to the mighty Himalayas, global warming has increased the pace of snow melting, which, in turn, has made glacial lakes swell.  
The United Nations Environment Program (UNEP) had warned five years ago that 20 big glacial lakes in the country are at risk of floods from glacial lake bursts, which could trigger huge loss of life and property.

Different reports suggest the frequency of such bursts has increased in the recent past. "Five glacial lake bursts occurred in Nepal from 1977 to 1998 according to records and satellite imagery," says Sandeep Chamling Rai, a climate change officer at the World Wildlife Fund (WWF-Nepal Program).

WWF-Nepal acts as a member secretary organization of the Climate Change Network Nepal, which includes a number of domestic and international environmental bodies keeping a watch on global warming and its impact on Nepal. One of the most startling results of climate change can be seen in the spectacular Tsho Rolpa glacial lake situated in the Rolwaling valley, north of the capital Kathmandu.

"The lake had an area of 0.23 sq kilometers in 1950. It has since swollen to 1.7 sq kilometers," says the director general of the Department of Hydrology and Meteorology, Madan Lal Shrestha.  
UNEP had in the past issued apocalyptic warnings about the likelihood of the lake bursting, triggering flash floods in rivers downstream. It was reported that if it burst, the Tsho Rolpa could affect life and property as far away as 100 kilometers downstream.

Immediately after the UNEP warning, the department started the Tsho Rolpa Risk Reduction Project, with the help of a Dutch agency. The project has siphoned a huge quantity of water and has brought down the water level by 3 meters. According to UNEP, the water level needs to be brought down by at least 20 meters to ensure safety.

As recently as August 2003, the Kawari glacier lake, situated in the foothills of the Annapurna II mountain, burst, destroying property worth US $100,000. Five people were killed and dozens rendered homeless.

Glacial lake bursts on a smaller scale have been frequently reported in the past few decades. On September 3, 1998, the Tsho lake-burst killed two persons and washed away fields and trekking trails of Solukhumbu district, which is home to Mount Everest.

Likewise, in September 1997, the Dudh Koshi burst destroyed a mini hydro plant there. On July 1991, the Chilbung lake burst, damaging houses in Beding village in Rolwaling valley.

"These are only few examples. Glacial lake bursts occurred in the past as well, but their frequency has increased of late because of rising pace of snow melting thanks to the rise in temperature," asserts Shrestha.

According to Rai, an inventory carried out by ICIMOD (International Center for Integrated Mountain Development) and UNEP has shown that there are 26 potential dangerous glacial lakes in Nepal.

Rapid melting of snow has also led to the receding of the snowline and glacial rivers. "The Rikhasambha Glacier River, located in the north-western Dhaulagiri valley, has receded 100 meters between 1974 and 1994. Such recession of glacial rivers is also seen elsewhere," points out Shrestha.

Which is why, he says, Nepal is witnessing a disturbance in mountain climate, flash floods, cloudbursts, erratic weather patterns and so on. Every year, the number of people dying in floods and landslides increases. In the year 2003, more than 300 people died of floods and landslides across the country.

Greenhouse gases could indeed create a climatic calamity, say climatologists. The spatial variability of the monsoon conditions causes floods and landslides in some regions while severe drought conditions occur in other parts.

"In Nepal's context, the rise in temperature results in enlargement of existing glacial lakes, causing frequent landslides and floods, which destroy vast acres of crops due to hot air flow," says Rai.

According to WWF, climate change is responsible for erratic weather patterns such as the thick haze that shrouds Nepal's Terai (southern plains) area in winter. "The haze destroys cash crops of this region, which is the breadbasket of the country. And due to delay in regular snowfall, people living in the western Himalayan region are suffering from outbreaks of viral influenza and other diseases," Rai told to SAMAY. WWF-Nepal will soon be making a detailed study on the impact of climate change in Nepal. "At present we don't have a comprehensive report. But we fear that even bio-diversity may have been affected by the change in climate," he says.

This could be particularly true in a country like Nepal where different species are found at different altitudes and climatic conditions. Nepal is already a party to the international convention on climate change and is working to ratify the Kyoto protocol. But despite its deep concern, Nepal might not be able to cope with the challenge thrown open by global warming on its own, say government officials.

(Mr. Gautam is Senior Correspondent of SAMAY National Weekly publishes from Kathmandu)

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