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Wednesday 9 December 2009

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Artificial glaciers feed crops here

glacial melt *The Khardung La glacier, a mountain pass in the Ladakh region, has now receded. Meanwhile, what has given a ray of hope to people in the region is a pioneering 'artificial glacier' system that has given local communities enough water for their crops, reports Keya Acharya*



A recent report released by the Ministry of Environment and Forests stating that India's Himalayan glaciers were not receding due to rising temperatures created a stir, contradicting as it did the findings of the IPCC's 2007 Working Group II report.

But in the stark, desolate beauty of the Ladakh mountains, Environment Minister Jairam Ramesh's views on the glaciers seems a whole reality away, both visibly for the area's biodiversity and for the local Ladakhi communities who depend on glacier melt in spring for their water supply. With rainfall being a meagre 22- 50 mm yearly, over 70 per cent of the water supply comes from glaciers.

In recent years, that water supply from melting glaciers has been steadily decreasing due to rising temperatures that have lessened snowfall in the higher reaches. The changing culture of Leh as it opens up to increasing numbers of tourists is also putting pressure on an already scarce resource. Borewells being dug without regulatory monitoring at the mouth of these springs of glacier-waters has sent groundwater spiralling downwards as well as lessened the flow in channels and rivulets.

The changing climate is now affecting both biodiversity and traditional communities of Ladakh. Nisa Khatoon, project officer at Worldwide Fund for Nature (WWF) at Leh, says her study of Ladakh's high-altitude wetlands has shown that breeding habits at sites such as Tsomoriri lake, the only breeding ground for the bar-headed goose has altered due to changing weather patterns. Khatoon says that the black-necked Siberian crane, once a familiar sight in India during winter, is not coming anymore to breed in these lake sites.

Impact on wildlife, endemic flora

What effect it will have on wildlife and endemic flora almost eighty per cent of the latter being medicinal plants, is still not known. For Ladakh's impoverished and struggling communities like those near the Tsokar lake, weavers of the famous pashmina shawls, dependent on glacier water for their livestock and agriculture, the lessening water has dried out their agricultural and pasture-lands.

"I have found in my six years of working in Ladakh that migration routes for the Tsokar community have become increasingly frequent due to decreasing pasturelands," says Nisa Khatoon, project officer of WWF at Leh.

Khatoon says a WWF survey of villagers' perceptions on the changing climate has recorded an almost unanimous agreement that the pattern of precipitation (both rain and snow) has changed in recent decades.

In another community survey of 20 villages and 211 people over 65 years of age, done by the French award-winning NGO Groupe Energies Renouvelables, Environnement et Solidarités GERES), showed over 90 per cent of them saying that winters were now warmer. Meteorological data analysed from 1973 by GERES (Committee for the Environment and Sustainable Development) shows a rise of one degree centigrade in the winter at Ladakh, coupled with a sharp decline in snowfall and an equally sharp rise in mean summer temperatures in July, August and September.

"Glacier retreat is now happening in every part of Ladakh," says Tundup Angmo of GERES India, in Leh. But the Ministry of Environment and Forests recently publicised a report by retired deputy director-general of the Geological Survey of India V K Raina, whose statement that the Himalayan glaciers are not receding due to global warming, has drawn criticism for being neither scientific nor peer-reviewed.

In Leh, 74-year-old Chewang Norphel, a retired J&K rural development engineer who

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has pioneered a high-altitude water-conservation system from iced water that he calls 'artificial glaciers', quietly refutes the Ministry's and Raina's claim. "I am the scientific data," quips Norphel. "I have seen, for instance, the size of the Khardung La glacier, a high mountain pass in the Ladakh region, with an elevation of 5,359 metres above sea level-since I was a child: it was solid ice then," he explains. The glacier is barely recognisable now. Norphel says there were numerous small glaciers visible from Leh till three or four decades ago. "Now you can't even see any small ones anymore," he says.

Artificial glacier system

Meanwhile, Norphel's system of artificial glaciers has given local communities, dependent on glacier melt for their crops, enough water to start sowing in April. Villagers now grow two or more crops because of access to this iced water system. In November, trickling glacial streams are diverted and made to flow down nearby slopes through channels and outlets with 1.5-inch diameter pipes installed every five feet. Stone embankments built at regular intervals impede the flow of this water, making shallow pools down the mountain slope, which fill up gradually and freeze instantly in winter, forming a thick glacier-like sheet of ice over the slope that Norphel calls "artificial glacier." Meetings are arranged in the village to discuss their history of water, its availability in a nearby stream during the peak of winter and the location of shade along the stream's course, where pools can be constructed to help freeze the water faster in the absence of direct winter sunlight. Since the water is equally distributed to all in the village, sustainability of water-harvesting structures is ensured, says Norphel.

Norphel has built ten such glacier-systems so far, the last with help from the Indian Army and the Department of Science & Technology. He has planned five more in villages in Ladakh, but needs funds for that. "I can do so much better if I have the funds," he says quietly.

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