

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development & Ganga Rejuvenation
(National Water Mission)

National Water Mission (NWM) has initiated a seminar series- 'Water Talk' - to promote dialogue and information sharing among participants on variety of water related topics. The 'Water Talk' is intended to create awareness, build capacities of stakeholders and to encourage people to become active participants in conservation and saving of water. NWM had already organized five 'Water-Talks' on the topics - "Water for All", "Groundwater" "Water Conservation", "Ecology Inclusive Economy", "Agriculture, Groundwater and Energy nexus" and "Water conservation at Hiware Bazaar in Maharashtra and Dewas in Madhya Pradesh" on 22nd March 2019, 1st May 2019, 24th May 2019, 21st June 2019, 19th July 2019 and 23rd August 2019 respectively.

2. Seventh Water Talk in this series was held on 20th September, 2019. Shri Sonam Wangchuk, Founder, Himalayan Institute of Alternatives delivered the Water Talk. Shri Rajiv Ranjan Mishra, DG, NMCG; Officers from CWC, CGWB, NMCG, CSMRS, NWDA and D/o WR, RD & GR and Researchers from various institutes attended the programme.

3. Shri Sonam Wangchuk delivered the talk on '**Innovation and Water**' and discussed the need of innovative water conservation methods in the terrain of Ladakh. Shri Wangchuk started his talk by explaining the extremities of this region. Ladakh is a cold high altitude dessert. Farming and livelihood depends on the melted water of glaciers, but due to climate change the glaciers which were near to villages have receded far away. He said that most villages face acute water shortage, particularly during the two crucial months of April and May when there is little water in the streams and all the villagers compete to water their newly planted crops. By mid-June there is an excess of water and even flash flooding due to the fast melting of the snow and glaciers in the mountains. By mid-September all farming activities end, and yet a smaller stream flows throughout the winter steadily but wastefully going into the Indus river without being of use to anybody. The problem is getting worse with time as Himalayan glaciers are disappearing due to global warming and local pollution. Thus the need to adapt and innovative water conservation methods was felt to overcome this hardship.

4. Shri Wangchuk explained the idea of Ice-Stupa as one the innovative water conservation technique. He said that Ice Stupa is a form of glacier grafting technique that creates artificial glaciers, used for storing winter water (which otherwise would go unused) in the form of conical shaped ice heaps. During summer, when water is scarce, the Ice Stupa melts to increase water supply for crops.

5. Shri Wangchuk shared that, in the month of May, he noticed the ice under a bridge. Despite summer and lowest elevation in Ladakh, the ice had not melted since it was not under direct sunlight. He realized ice could last longer in Ladakh if it could be shaded from the sun.

Since providing shade to larger water bodies was not possible, he thought of freezing and storing water in the shape of a cone that offers minimum surface area to the sun whilst holding high volume of water. Thus, in October 2013, he created the first prototype of 6 meters (20 ft) Ice Stupa by freezing 150,000 liters in Leh without any shade from the sun. Shri Wangchuk added that, the water was piped from upstream using gravity. Electricity or machinery was not used for pumping water. The Ice Stupa did not melt fully till 18 May 2014, even when the temperature was above 20 °C (68 °F).

6. According to Shri Wangchuk, the ice stupas need very little effort and investment and can be used to provide water for agriculture and other uses in early summer. The ice stupas are formed using glacial stream water carried down from higher ground through buried pipes, with the final section rising vertically. Due to the difference in height, Shri Wangchuk explained, pressure builds up and the water flows up and out of the pipe into sub-zero air temperatures. The water then freezes as it falls to gradually form an ice cone or stupa. In late spring the melt water is collected in large tanks and then fed onto planted land using a drip-irrigation system.

7. Shri Wangchuk earlier explained about the Students' Educational and Cultural Movement of Ladakh (SECMOL) which is an organisation founded in 1988 aimed at reforming the educational system of Ladakh, by a group of young Ladakhis returning from university who understood the problems of the younger generation with modern education, their lack of focus and the cultural confusion. He explained that SECMOL's activities include working to reform the government school system, helping village students in their education, awakening youth to the problems stemming from inappropriate and insensitive schooling, producing related videos and radio programmes, and designing and building solar-heated eco-friendly buildings.

8. Earlier, Shri G Asok Kumar, Mission Director, NWM welcomed the Speaker, dignitaries, participants and briefly discussed the purpose and aim of Water Talk and informed that the next Water Talk in this series will be delivered on 18th October 2019.
