Ladakh is a high-elevation landscape in northern India, in the rain shadow of the Himalayas. Much of the region lies above 3,000 m but receives less than 100 mm of rainfall a year. This is a highland desert where communities have traditionally relied on meltwater from glaciers to irrigate crops and water livestock. Meltwater supplies are becoming increasingly erratic, however, as the region’s glaciers shrink.

One strategy to increase water security in the Ladakh region involves creating large artificial ice masses to store water for the summer growing season. Plastic pipes bring meltwater down to the villages where gravity pressure is harnessed to spray water high into the air during the bitter winter nights. It freezes into a conical shape as it falls — an ‘ice stupa’. The largest ice stupas are 30–50 metres high.

These ice mounds are the brainchild of local engineer and award-winning sustainability champion Wangchuck Sonam. The costs are minimal and the technology is simple. Their shape resembles the Buddhist temple or stupa — a distinctive feature of this region. The form of these ice stupas helps to maximise the area of ice in shade and prolong their life. Some last well into July and the largest may contribute 5,000 litres of water per day to irrigation projects. They represent an elegant and ingenious strategy to help tackle a growing water-resource problem faced by many rural communities in high mountains.

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