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Clémence Richeux
Head of Partnerships for Geres

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Geres : The Artificial Glacier Or The Water Issue in Ladakh



Summary

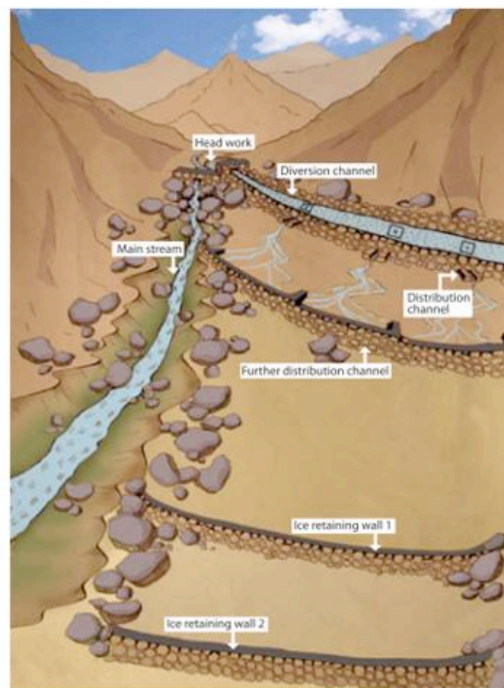
The artificial glacier is a technique that allows vulnerable populations to adapt to climate change, in particular to a decline in water resources.

The artificial glacier, laid out on shaded slopes, retains water that freezes in winter and can be liberated in March, the crucial time for crop irrigation.

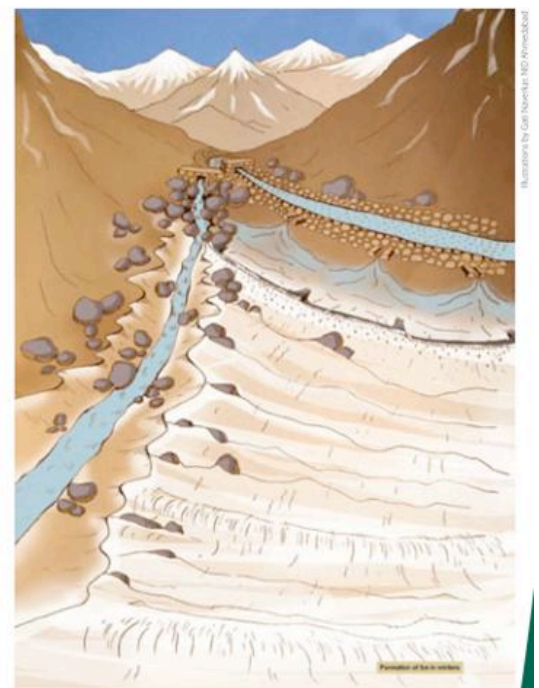
Objectives:

The region of Ladakh, in India, is a high altitude cold desert where temperatures can fall to -30 degrees C. This region is characterized by a low rate of annual rainfall (10-100mm), rare and scattered vegetation and a short frost-free period. Villages are situated mainly between 2,800 et 4,600m in altitude and are often isolated, both geographically and economically. Water comes essentially from springs and from melting glaciers. The quantity of water available for irrigation is strongly linked to the beginning of the melting period. Irrigation begins in March-April in order to allow for full ripening of crops before the first frosts. Because of climate change, there is less water available, until spring, particularly in the areas of the mountains exposed southwards. The lack of water at the beginning of the irrigation period leads to a reduction in productivity in the fields.

Methodology:



Stone structures supporting the glacier



Glacier formed in winter

The artificial glacier is a complex network of water canals and dams along the upper slope of the valley. In November and December, water is diverted towards the shaded side of the mountain where its flow can be slowed down and the water can freeze, thanks to support walls built across the terrain slopes. Water freezes in terraces in order to form an “artificial glacier”.

Thus, **the artificial glacier is a unique technique for water management.** It stores the water unused during the winter as ice, and allows this resource to be liberated into the streams and irrigation canals at the beginning of the agriculture season. No energy input, such as for the use of pumps, is required with this innovative technology.



Results:

Water is available in March, the crucial moment for planting, thus allowing 2 harvests per year. Populations are less food insecure. It should be noted that the disappearance of natural glaciers is one of the main factors for the displacement of climate refugees who, in India, are mainly small farmers.

Sources:

Artificial Glacier
2010, Publication, 4 pages, Technical Description of Project Realization
English version

Reportage on CNN, 3 June 2012, 3mn36
<http://www.geres.eu/fr/medias-revue/252-glaciers-artificiels-ladakh-cnn>