



Aymaran rainwater harvesting

The Aymaran indigenous people of Bolivia have adopted traditional practices to collect water in the mountains and pampas by way of constructing qhuthañas.

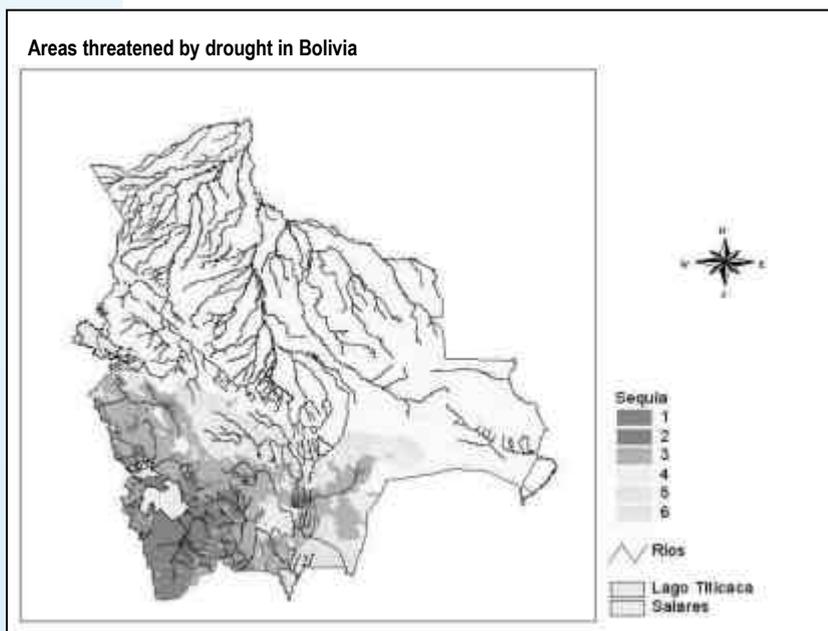
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The Aymaran indigenous peoples of Bolivia live at 4,000 metres above sea level. Our subsistence is guided by our ancestral knowledge and agricultural production highly depends on rainfall. Fifty years ago, rainfall reached some 400 millimetres, but currently it only reaches between 250 and 300 millimetres. This is mainly due to deforestation caused by population growth, and has led to the loss of many species of flora and fauna and contributed to the process of desertification that is progressively developing in the country.

To prevent and mitigate disasters caused by droughts, the Aymaras build small dams which in our native language are called *qhuthañas*. These dams collect and store rain water from various places such as mountains and pampas. Water stored in qhuthañas represents a valuable resource for both people and domestic and wild animals, because it allows them to drink water during periods of

drought. In addition, these "mirrors" or "bodies of water" will serve as thermoregulators of the humidity related to the environment, in order to diffuse the damaging rays of sunlight which cause skin cancer.

To avoid the loss of our knowledge and traditional methods, and to promote broad-based participation of our communities, we often hold regular lectures, as well as providing the new generation with education and training. This contributes to keeping our ancestral practices alive, building upon them to develop 'new' customs and traditions.



In order to build qhuthañas, it is necessary to have a number of tools and resources for their construction. Channels and pipelines must be built to bring the collected water to our homes. It is essential to have tankers to store water under hygienic conditions for human consumption, which reduces the hardship as a result of the lack of water. For example, when water is scarce, children and women have to walk long distances to obtain fresh water, especially during the months of low water level, while our animals such as rabbits, wildcats, birds and ducks die due to the lack of water.

In Bolivia, droughts affect - at varying levels - at least 40 per cent of its territory. Among the most affected departments (provinces) are Potosí, Oruro, La Paz, Cochabamba, Tarija and Chuquisaca. Sixty-five per cent of the total population reside in these affected departments (8,274,325 inhabitants).

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During the last 20 years, the fiercest droughts were registered in 1982, 1983 and 1984. This led to the total loss of crop germplasm, with some species unable to recover since, and more than 60 per cent of both domestic and wild animals have died due to the lack of water and pasture.

Since 1983, the impact of droughts has led to a decrease in agricultural production of up to 30 per cent, as well as in terms of annual meat, milk and wool production. It is also due to these droughts that fresh water provision for both people and animals can only be ensured by building qhuthañas and small wells.

Aymaran indigenous culture

Each year, the Aymara *yatiris* (wise men or advisors) predict the intensity of future droughts by observing nature. Every morning, they watch the dawns from 21 June (which commemorates the Aymaran new year), through 1 August. They also observe clouds, fog, mist, wind and the sounds of nature, and examine the frost found on rocks and the soil to determine the humidity level of the land. Through these simple observations, the *yatiris* are able to predict how the year will develop in terms of drought, and spread the word throughout communities through interpersonal communications with *yatiris* from other regions. The messages they convey allow the population to take measures for mitigating the effects of the upcoming drought.

For the agricultural year 2003/2004, the *yatiris* anticipate that rainfall will not be normal during the months of low water level. This will cause the appearance of various diseases, such as skin cancer and blindness of sheep, and some native plant species will disappear due to the lack of humidity. In addition, wild seeds will dry more than usual due to excessive sunlight.

Building qhuthañas

Before starting to build qhuthañas it is important to find appropriate and deep places, such as hollows in mountains and pampas, so that rain water is drained in different directions, similar to a trough. To a large extent, the size of qhuthañas depends on how accessible we want them to be to both people and animals, especially taking into consideration the rotation of pasture-related activities and the work to be done in crop fields during the months of low water level.

Some tools are required to build a qhuthaña. These may include wheelbarrows, shovels and other digging tools. Labor is also needed to dig a large hole. The base of this hole must be waterproofed with clayish soil, in order to avoid filtration. Currently, people with economic resources make holes with tractors, excavators and other machinery, while people with fewer resources still dig holes by hand.

The size of these qhuthañas will also determine their capacity to store rain water, which may vary from 50 to 10,000 cubic meters.