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Glacier threat to Bolivia capital

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Vanishing glaciers imperil La Paz

Fears are growing for the future of water supplies in one of Latin America's fastest-growing urban areas - Bolivia's sprawling capital of La Paz and its twin El Alto.

Scientists monitoring the glaciers high in the Andes mountains - a key source of water - say the ice is showing signs of shrinking faster than previously forecast.

Faced with a booming population and a combination of glacial retreat and reduced rainfall, the governor of the La Paz region is even contemplating moving people to other parts of Bolivia.



Water is already in short supply among the poorest communities and has become a cause of tension.

“ It's a problem that begins now but will become more serious as other, much larger glaciers melt as well ”

Dr Edson Ramirez

[In pictures: Bolivia glaciers](#)

In El Alto's District 8, I watched 13-year-old Christian Muraga fill a bucket from a communal tap shared with 80 families.

I asked if the tap always produces water.

"No, there isn't water every day from this tap, sometimes nothing."

The nearest alternative is nearly one kilometre away. Campaign groups say as many as one quarter of the city's population do not have ready access to water.

Sergio Criales of Oxfam told me: "The problem is getting worse because of climate change and because they don't have enough water to cover all their demands."

Water battle

The tap was established illegally and draws water from the scarce mains supply running in a neighbouring district.

Christian's father Macario said that there are often disputes over access to water and that fights occasionally break out.

Water has become so precious that we even found a group of women cleaning plastic bags in a heavily contaminated stream that stank of raw sewage.

When I asked why they were doing this, one replied that she had no alternative.



Much of the city's water supply comes from glaciers

"There is no other water to use. I know it is dirty and I am worried about my children. But what can I do?"

The shortage of fresh water is partly the result of the influx of tens of thousands of people to El Alto every year leaving the authorities unable to cope.

But another factor is a rise in temperature that's faster than the global average and its effect on the snow-capped peaks that dominate the skyline.

Researchers say that the glaciers are in dramatic retreat across the tropical regions of the Andes.

When the rate of melting is faster than the accumulation of snow, the glaciers lose mass and no longer produce a steady flow of water.

We made the steep journey up to the site of one glacier on the mountain Chacaltaya. At an altitude of 5,300 metres, it used to be the world's highest ski resort.

All that's left of the glacier now is a tiny patch of white amid a vast sweep of bare grey rock.

High impact

Back in 2005, glaciologist Edson Ramirez, from the University of San Andres in La Paz, predicted that the Chacaltaya glacier would vanish by 2015.

In fact it's happened several years sooner.

Dr Ramirez told me that the rate and scale of melting of the Andean glaciers at this altitude was an indicator of climate change.

"This is really a problem. It's a problem that begins now but will become more serious as other, much larger glaciers melt as well."

And the impact is highly visible. Visiting a reservoir fed by one glacier, we saw large areas of cracked mud around its edges as its level was far lower than normal.

Particularly vital to the water supply is the fate of the ice hugging the multiple peaks of Illimani, towering above La Paz. The glaciers there have also been recorded as shrinking.



Local people need to obtain water where they can

A twisting trail cut through canyons and along cliff-faces took us to the slopes of this vast mountain and the village of Khapi.

In the dazzling sunshine and thin air, the scene looked idyllic with glacial streams watering tiny plots of vegetables.

But the village elders say the lower edge of the glacier they depend on has been advancing up the mountain.

They've noticed how the flow sometimes surges with dirty yellow water unsuitable for irrigation but is generally reduced.

As Lucia Quispe tended one of her fields, she said: "Twenty years ago there was a lot more water. We want to plant potatoes, maize and beans but we don't have enough water.

"We are fighting between ourselves near the channel because one person wants to send the stream one way, and another the other way. We just don't have enough water."

City limits

One fundamental question is whether this will become another reason for people to head for the cities.

In the last 10 years, 15 families have left Khapi - leaving just 45 families - and one reason mentioned is the falling supply of water.

And this drift from the countryside to the urban areas seems likely to accelerate if the forecasts about the glaciers are accurate in coming years - adding to the already creaking water infrastructure of El Alto and La Paz.

I asked the governor of the La Paz region, Pablo Ramos, how he was responding to the latest

studies into the future of water supplies.

One answer is that new reservoirs may be built and underground sources tapped.

But it's clear that these solutions may not be enough and Mr Ramos is starting to consider a far more radical solution - trying to move people away.

He told BBC news: "We are thinking about a planned programme of migration, mainly to the north of the region."

On a large map in his office, he pointed to an area of well-watered rainforest and explained his plans for new settlements.

"For sure there's going to be a huge movement of people - planned and unplanned."

La Paz already has one global claim to fame: as the world's highest capital.

If the most extreme climate predictions are right, and water shortages become severe, it may acquire another claim in coming decades: as the world's first capital to run so dry that it has to turn people away.