

Why Bolivia's second largest lake disappeared – and how to bring it back

January 12 2021, by Juan Torres-Batló and Belen Marti-Cardona



Lake Poopó at a low point in early 2016. Credit: Chiligranica / flickr, [CC BY-SA](#)

A huge lake in Bolivia has almost entirely disappeared. Lake Poopó used to be the country's second largest, after Lake Titicaca, and just a few decades ago in its wet season peak it would stretch almost 70km end to end and cover an area of [3,000 sq km](#) – the size of a small country like Luxembourg. Today, the lake is largely a flat expanse of salty mud.

What happened? We've looked into this in various scientific studies over

the past few years, and the answer is a mix of both climate factors and more direct human factors such as too much irrigation. This does at least provide some hope: Bolivians cannot reverse [climate change](#) themselves, but they can do a better job managing their [water](#).

Lake Poopó, is found at nearly 3,700 meters above sea level in the "Altiplano", a large plateau in the center of the Andes mountains. It is an [endorheic basin](#): nothing flows out, and water is lost only through evaporation. Since dissolved minerals stick around when water is evaporated, the lake is as salty as the ocean—in some places considerably saltier.

Nonetheless, some decades ago Poopó was home to large communities of plants and animals and was a source of resources for the region's inhabitants. Nowadays, the situation is drastically different. Water levels have declined over the past two decades, and eventually the lake [dried out entirely](#) at the end of 2015 after the extreme weather phenomenon of El Niño.



Bolivia is largely divided between the high altitude Altiplano (grey) and the Amazon basin (green). Lake Popoó is in the centre of the picture, south of Oruro. Credit: [Google Maps](https://www.google.com/maps)

This was ecological devastation. Many of the lake's 200 or so animal species disappeared, including reptiles, mammals, birds—it hosts a huge community of flamingos—and of course fish. There was also an exodus of rural people to the nearest big cities. Worst affected of all are the [Urus-Muratos](#), an indigenous community whose entire way of life was based around fishing Lake Poopó.

Throughout Lake Poopó's history, there have been several [periods when water levels were very low](#) but the lake used to recover by itself thanks to the rainy season and water from its main tributary the Desaguadero River, which itself drains Lake Titicaca and flows into the slightly lower altitude Poopó.

But during the past few decades, much of the Desaguadero was diverted for irrigation, so there was less water left to top up the lake. As Poopó is [unusually shallow](#), mostly just a few metres deep, relatively small changes in overall water volume make a big difference to its [surface area](#). Though the lake has partially recovered due to above-average precipitation in the years since 2015, the situation is still dire.



The disappearance of Lake Poopó.



Credit: AI-generated image ([disclaimer](#))



Fishing boats on Lake Poopó back in 2006. Credit: Lovisa Selander / wiki

In our [most recent study](#), we analyzed [satellite data](#) from the Lake Poopó catchment area over the past two decades and found that more water has been gained through precipitation than has been lost through evaporation. This points to poor management of the water resources in the area, rather than climatic variability, as the principle cause of the lake drying up.

This is not to minimize the role of climate variability. In a [separate study](#), we looked at changes in rainfall patterns and how they affected Lake

Poopó. We found that, as time goes by, the rainy season is getting shorter but more intense. This will be amplifying the cycle of water storage in the lake, with the lake holding less water at the end of the dry season and more at the end of the wet one. It will become even more necessary to regulate resources, for instance by storing water during the wet season to use when it is dry.

We found the highest increases in water losses took place in the area around the city of Oruro, which lies to the north of the [lake](#). This is an area with lots of human activity, urban growth, new highways, and where river water has been used for mining and agriculture. Bolivia is the biggest producer of quinoa in the world and the crop increased by 45.5% from 1980 to 2011. As quinoa became more popular around the world over the past decade, production increased a further [60% in just five years](#) to meet global demand.

This all highlights how vulnerable a place such as Lake Poopó can be when relationships between land, human politics and cycles of water and people [break apart](#). The ecological disaster is a consequence of not only natural factors but also human activities—but at least this is one reason there is still hope we can reverse the problem.

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