

# Disappearance of Bolivia's No. 2 lake a harbinger

January 21 2016, by Carlos Valdez

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In this Jan. 12, 2016 photo, an abandoned boat lies on the dried up lake bed of Lake Poopo, on the outskirts of Untavi, Bolivia. Drought caused by the recurrent El Nino meteorological phenomenon is considered the main driver of the lake's demise. Along with glacial melting, authorities say another factor is the diversion of water from Poopo's tributaries, mostly for mining but also for agriculture. (AP Photo/Juan Karita)

Overtaken fishing skiffs lie abandoned on the shores of what was Bolivia's second-largest lake. Beetles dine on bird carcasses and gulls

fight for scraps under a glaring sun in what marshes remain.

Lake Poopo was officially declared evaporated last month. Hundreds, if not thousands, of people have lost their livelihoods and gone.

High on Bolivia's semi-arid Andean plains at 3,700 meters (more than 12,000 feet) and long subject to climatic whims, the shallow saline lake has essentially dried up before only to rebound to twice the area of Los Angeles.

But recovery may no longer be possible, scientists say.

"This is a picture of the future of climate change," says Dirk Hoffman, a German glaciologist who studies how rising temperatures from the burning of fossil fuels has accelerated glacial melting in Bolivia.

As Andean glaciers disappear so do the sources of Poopo's water. But other factors are in play in the demise of Bolivia's second-largest body of water behind Lake Titicaca.

Drought caused by the recurrent El Nino meteorological phenomenon is considered the main driver. Authorities say another factor is the diversion of water from Poopo's tributaries, mostly for mining but also for agriculture.

More than 100 families have sold their sheep, llamas and alpaca, set aside their fishing nets and quit the former lakeside village of Untavi over the past three years, draining it of well over half its population. Only the elderly remain.



In this Jan. 12, 2016 photo, a fisherman walks along the abandoned boats in the dried up Lake Poopo, on the outskirts of Untavi, Bolivia. As Andean glaciers disappear so do the sources of Poopo's water. But other factors are in play in the demise of Bolivia's second-largest body of water behind Lake Titicaca. (AP Photo/Juan Karita)

"There's no future here," said 29-year-old Juvenal Gutierrez, who moved to a nearby town where he ekes by as a motorcycle taxi driver.

Record-keeping on the lake's history only goes back a century, and there is no good tally of the people displaced by its disappearance. At least 3,250 people have received humanitarian aid, the governor's office says.

Poopo is now down to 2 percent of its former water level, regional Gov. Victor Hugo Vasquez calculates. Its maximum depth once reached 16 feet (5 meters). Field biologists say 75 species of birds are gone from the lake.



In this Jan. 11, 2016 photo, a boy swats away mosquitoes in Untavi, near the shores of Lake Poopo, Bolivia. Lake Poopo was officially declared evaporated in December 2015. Hundreds, if not thousands, of people have lost their livelihoods and gone. (AP Photo/Juan Karita)

While Poopo has suffered El Nino-fueled droughts for millennia, its fragile ecosystem has experienced unprecedented stress in the past three decades. Temperatures have risen by about 1 degree Celsius while mining activity has pinched the flow of tributaries, increasing sediment.

Florida Institute of Technology biologist Mark B. Bush says the long-term trend of warming and drying threatens the entire Andean highlands.

A 2010 study he co-authored for the journal *Global Change Biology* says Bolivia's capital, La Paz, could face catastrophic drought this century. It predicted "inhospitable arid climates" would lessen available food and

water this century for the more than 3 million inhabitants of Bolivia's highlands.



In this Jan. 11, 2016 photo, a fisherman walks along the abandoned boats in the dried up Lake Poopo, on the outskirts of Untavi, Bolivia. The overturned fishing skiffs lie abandoned on the dried up former shores of what was Bolivia's second-largest lake. (AP Photo/Juan Karita)

A study by the German consortium Gitec-Cobodes determined that Poopo received 161 billion fewer liters of water in 2013 than required to maintain equilibrium.

"Irreversible changes in ecosystems could occur, causing massive emigration and greater conflicts," said the study commissioned by Bolivia's government.

The head of a local citizens' group that tried to save Poopo, Angel Flores, says authorities ignored warnings.



In this Jan. 12, 2016 photo, Abraham Fulguera shows his fisherman's credential, in the dried up Lake Poopo, on the outskirts of Untavi, Bolivia. "I am the president of the September 10 Fishing Cooperative. We used to be 30 fishermen and there used to be ten or more fishing cooperatives in Lake Poopo. Now we work as construction laborers. Others have left to look for jobs. I hope we do not become a ghost town. We have faith that the lake will come back." Fulguera said. (AP Photo/Juan Karita)

"Something could have been done to prevent the disaster. Mining companies have been diverting water since 1982," he said.

President Evo Morales has sought to deflect criticism he bears some responsibility, suggesting that Poopo could come back.

"My father told me about crossing the lake on a bicycle once when it dried up," he said last month after returning from the U.N.-sponsored climate conference in Paris.



In this Jan. 12, 2016 photo, Abraham Fulguera checks his abandoned fishing net in Lake Poopo, on the outskirts of Untavi, Bolivia. Poopo is now down to 2 percent of what was normal, regional Gov. Victor Hugo Vasquez calculates. Its maximum depth once reached 16 feet. (AP Photo/Juan Karita)

Environmentalists and local activists say the government mismanaged fragile [water](#) resources and ignored rampant pollution from mining, Bolivia's second export earner after natural gas. More than 100 mines are upstream and Huanuni, Bolivia's biggest state-owned tin mine, was among those dumping untreated tailings into Poopo's tributaries.

After thousands of fish died in late 2014, the Universidad Tecnica in the nearby state capital of Oruro found Poopo had unsafe levels of heavy

metals, including cadmium and lead.

The president of Bolivia's National Chamber of Mining, Saturnino Ramos, said any blame by the industry is "insignificant compared to climate change." He said most of the sediment shallowing Poopo's tributaries was natural, not from mining.



In this Jan. 12, 2016 photo, an abandoned boat lies on the dried up lake bed of Lake Poopo, on the outskirts of Untavi, Bolivia. Environmentalists and local activists say the government mismanaged the lake's fragile water resources and ignored rampant pollution from mining, Bolivia's second export earner after natural gas. (AP Photo/Juan Karita)

In hopes of bringing it back, Morales' government has asked the European Union for \$140 million for [water treatment plants](#) for the Poopo watershed and to dredge tributaries led by the Desaguadero, which flows from Lake Titicaca.



Critics say it may be too late.

"I don't think we'll be seeing the azure mirror of Poopo again," said Milton Perez, a Universidad Tecnica researcher. "I think we've lost it."



In this Jan. 12, 2016 photo, fisherman Cirilo Choque, carries a ladder on his bicycle, as he walks to his job as bricklayer in Untavi, near the shores of Lake Poopo, Bolivia. "We are really worried because the lake dried up and that the authorities have not helped. Hopefully they will really help us. Before the lake dried up there were about 200 families living here, now only about 70 are left. Most are elderly people or children, the others left to find jobs in the city or other places." said Choque. (AP Photo/Juan Karita)



In this Jan. 12, 2016 photo, fisherman Felix Rojas, 78, speak with the Associated Press, in Untavi, near lake Poopo, Bolivia. "With a group of peasants we started fishing in Lake Poopo. With the winnings from fishing I have payed for my children's education and have been able to feed them well. Now we are very sad that the lake has dried up. I do not know what is going to happen to our children and grandchildren? How are they going to survive? But we have to come up with imaginative solutions." said Rojas. (AP Photo/Juan Karita)



In this Jan. 16, 2016 aerial photo, shows a view of Lake Poopo, Bolivia. High on Bolivia's semi-arid Andean plains at 3,700 meters (2.3 miles) and long subject to climatic whims, the shallow saline lake has dried up before, most recently in the 1940s, only to rebound to an area twice the size of Los Angeles. (AP Photo/Juan Karita)



In this Jan. 16, 2016, aerial photo, shows a flock of flamingos on the surface of Lake Poopo, Bolivia. Declared free on any birdlife since it dried up on December 2015, recent rains filled a small part of the lake, bringing back flamingos from the nearby Uru Uru lake (AP Photo/Juan Karita)



In this Jan. 16, 2016 photo, a plane flies over the dry lake bed of Lake Poopo, Bolivia. The El Nino weather phenomenon has inflicted periodic droughts on Poopo for millennia and last struck this hard in 1997-98. But over the past three decades unprecedented stress has befallen a fragile ecosystem where 83 percent of rainfall evaporates. (AP Photo/Juan Karita)



This Jan. 16, 2016, aerial photo, shows a flock of flamingos on the surface of Lake Poopo, Bolivia. Declared free on any birdlife since it dried up on December 2015, recent rains filled a small part of the lake, bringing back flamingos from the nearby Uru Uru lake (AP Photo/Juan Karita)



This photo combo of satellite images provided by the USGS shows Lake Poopo filled with water on Oct. 11, 1986, left, and almost dry on Jan. 16, 2016, right, in Bolivia. As Andean glaciers disappear so do the sources of Poopo's water. Along with glacial melting, authorities say another factor is the diversion of water from Poopo's tributaries, mostly for mining but also for agriculture. (USGS via AP)

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