ENVIRONMENT

Lithium extraction for e-mobility robs Chilean communities of water

Global demand for lithium is expected to triple in six years. But mining companies are increasingly coming into conflict with indigenous communities who are worried about the future of their ecosystems.

In the middle of the world's driest desert is a vast expanse of turquoise basins, each one like a colossal swimming pool, up to 20 times the size of a football field.

The pools are filled with a salty brine pumped up from ancient reservoirs under the desert. It also contains lithium carbonate, the raw material for a light, silvery metal that happens to be a component of the batteries now used by virtually all computers, phones and electric cars.

At first glance, Chile's Atacama Desert looks a barren, inhospitable place. Yet indigenous people and animals have long thrived there. Now locals says they're having to compete with the lithium industry for the desert's limited water resources.

Coyo is one of dozens of Likan-antai communities that live in the desert's small oases. The community takes turns to tap the San Pedro River water and after waiting for two weeks, today, Hugo Diaz can finally water his crops.

The 58-year-old farmer points to markings above the water's surface in the irrigation canal that bear witness to past times' higher water levels. "Today, very few farmers can make a living," he said.

For the Likan-antai, water has not only material but also cultural and spiritual value. "We don't just need water to maintain our customs and agriculture, water is life," said Vladimir Reyes, one of the oldest members of the Coyo community.

Most parts of the Atacama are covered by sand, salt crust and lava rock from the desert's many volcanoes

Over the past two decades, lithium mining operations quadrupled from 20 to 80 square kilometers in the Atacama Desert, according to a study from Arizona State University. A single pond is roughly the size of 20 football fields.

"At the moment, the young people have been trying to learn about agriculture, but they face the obstacle that water is getting less. That is the damage that mining companies are doing to us," Reyes said.

The Saudi Arabia of lithium

With the world's largest reserves of the valuable metal, Chile has been called "the Saudi Arabia of lithium." Over the last 20 years, 40% of the global lithium supply has come from Chile. And global demand is expected to triple within the next six years.

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The two mining companies operating in the Atacama, Chilean SQM and American Albemarle, pump up nearly 2,000 liters (530 gallons) of brine every second, and more than 63 billion liters in a year. They also use a fair amount of freshwater.

According to figures from the Chilean government's Committee on Non-Metallic Mining, between 2000 and 2015, 21% more water was extracted from the Atacama than naturally flowed into the area in the form of rain or meltwater.

The companies say extracting brine has no impact on the area's fresh water supply. "The salty, mineral-rich brine is not suitable for agricultural or potable use, and we work very closely with the communities to ensure that we operate in a sustainable way," Hailey Quinn, communications manager for Albemarle, told DW.

Undermining ecosystems

There are few independent scientific studies on either the amount of water used during the evaporation process or about the impact of brine extraction on the ecosystem. One of the few experts in the field is microbiologist Cristina Dorador. She has been studying microorganisms in salt lakes, such as the Atacama Salt Flat.

"Microorganisms are the base of everything," Dorador said. "The amount of brine that has been extracted during the last 10 to 20 years is affecting the ecosystem."

Dorador explains that microbes living in the water provide food for plankton and crustaceans that are in turn eaten by bigger animals, including the Atacama's "most charismatic species" — the salt flat's brightly plumed flamingos. The extraction of brine would reduce the amount of microorganisams, thus has an impact on the whole ecosystem.

Families are leaving the Atacama region because of water scarcity. "We are not against progress", says local farmer Vladimir Jorge Reyes. “But we think the companies should exploit the resources - our resources - in a more responsible way"

Several hundred kilometers south of the Atacama Salt Flat, and only a twentieth of its size, the Maricunga Salt Flat is also being explored for lithium extraction. Almost all Chile's lithium extraction currently takes place at the Atacama, but the Maricunga is expected to hold the country's next biggest lithium reserves.

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Besides SQM, Australian-Canadian Salar Blanco is developing a joint lithium project at Maricunga with Chilean state-owned copper miner Codelco. Construction is expected to begin in 2020 or early 2021 according to Codelco.

The prospect of lithium mining worries the members of the Maricunga's indigenous Colla community of Pai-Ote. Chile's indigenous communities have very few formal property rights to their ancestral lands. But Ariel Leon, a lawyer advising the Pai-Ote, says Chile is violating the Indigenous and Tribal Peoples Convention, which obliges governments to consult indigenous peoples when major projects interfere with their environment.

"No one asked the Colla people if they wanted mining in their territory," Leon told DW. "No one talked to the Colla people about the impact that mining could have on the water sources in the Maricunga Salt Flat."

The Pai-Ote community has already had problems related to their water use, having been investigated for "water robbery" when locals were suspected of tapping water from reservoirs that did not belong to them.

Chile is one of the few countries in the world where water resources and water management are close to 100% privatized. This and the weak protections on indigenous rights go back to the military dictatorship of Augusto Pinochet, and the 1980 constitution that is still effective today — a constitution that is one of the targets of the popular uprising that has swept the country since October.

'Electric cars are no salvation'

Many of Atacama's indigenous people recognize that climate change is accelerating the water scarcity in the desert. But they say the problems began with the lithium and copper extraction in the area.

"We want people to know that electric cars are not the salvation for the planet," Jorge Alvarez Sandon of the Coyo community in the Atacama Desert told DW. "The salvation is the conscience of every human being to respect the earth like we do. If everyone would be aware of that, we wouldn't need electric cars to save the planet."

This article was produced in cooperation with the investigative research team Danwatch.

DW RECOMMENDS

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Author Sophia Boddenberg, Nikolaj Houmann Mortensen

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