Forum: Environmental Commission

Issue: Addressing the impact of South American lithium mining

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Position: Deputy president

Introduction

South American lithium mining is one of the major problems recognized by the South America's governments. Countries around the world are fighting for lithium, the people need lithium and so do their countries. It has become one of the most important elements in the periodic table. Lithium has a wide range of uses that can be used for a variety of purposes, such as metallurgy, aircraft, air purification systems, pyrotechnics, treatment, of mental disorders, manufacturing, of glassware, and even nuclear weapons, etc.

South America, specifically Argentina, Bolivia, and Chile making up the "lithium triangle" which is an area located in the Andes that borders the three countries rich in lithium reserves is the home to an estimate of 60% of identified lithium globally, according to the United Nations Development Programme (UNDP). Bolivia, Argentina, and Chile are ranked as the top 3 countries that export the most of lithium in today's time.

However, meanwhile lithium is being used everywhere, there are also some concerns shown about the sustainability of water-intensive lithium mining in South America. Much of the lithium produced today are collected by salars. Salars are located in high-elevation areas of Bolivia, Argentina, and Chile. To extract lithium from brines, the salt-rich waters must first be pumped to the surface into a series of large evaporation ponds where solar evaporation occurs over several months. This also causes people to be worrying about one of the biggest environmental concerns as of today.

Some recent events in South America regarding Lithium mining would be when Argentina's lithium mining exports to nearly USD 4.5 bn in 2023 amid lithium booms.

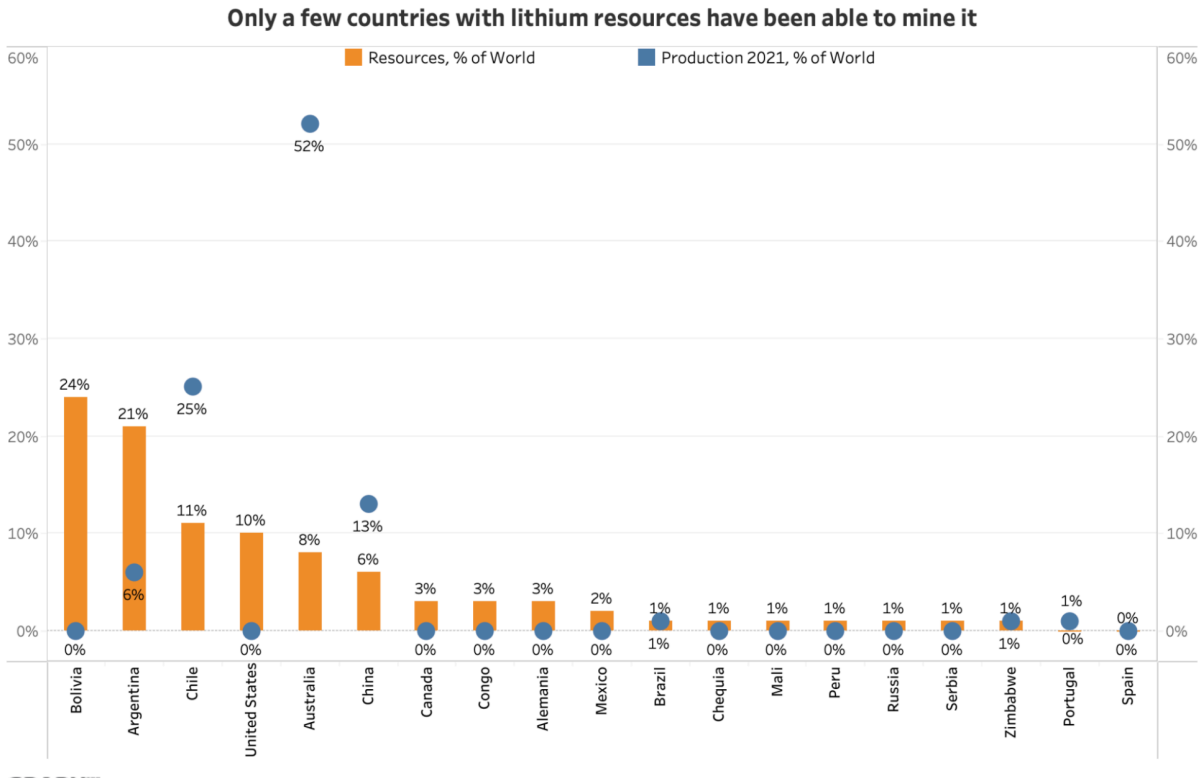

Figure 1: Chart of the countries with the most lithium resources. Source: 1. weforum.org

Key Terminology

Lithium

Lithium is a soft, silver-white metal within the alkali metal group on the periodic table. In nature, lithium occurs only in compounds due to its high reactivity

Salars

Lithium obtained from salars is then recovered in the form of lithium carbonate. Brine extraction in salars is normally a very long cumbersome process that can take from eight months to three years.

Lithium Trangle

The lithium triangle is located in the Andes of South America, bordering and connecting the three big countries rich in lithium resources, Argentina, Chile, and Bolivia.

salt-rich waters

Water that's rich in salt, mostly located in downstream of mining areas such as the Norther Great Plains.

water stress

a situation where a region's water resources are not enough to meet its needs.

Background information

Brief information

The US Geological Survey (USGS) estimates that out of a global total of 86 million tons of identified lithium, Bolivia is home to 21 million tons, Argentina 19.3 million and Chile 9.6 million. However, Chile is leading the way in utilizing these reserves into commercial production, according to the Center for Strategic & International Studies. It says Argentina and Bolivia are lagging behind due to investment challenges and more difficult geographic conditions.

The UNDP says making money out of lithium production is also very difficult because most of the profits from the industry came from a chain that creates batteries. However, the top 10 battery manufacturers by market share are all based in Asian countries. It therefore says

South American countries will need to make bigger investments to localize more of the value chain in order to derive significant profits.

Sustainability Challenges around lithium mining

Lithium requires using very high volumes of water, around 2.2 million litres per ton of lithium. This has led to serious challenges and issues around water stress. Bolivia's San Cristóbal mine reportedly uses 50,000 litres of water a day. In Chile, lithium mining companies have been accused of depleting vital water supplies, up to 65% in the "Salar de Atacama" region, according to reports. Most of the lithium production in South America comes from salt flats with fragile ecosystems. The UNDP says mining operations are also associated with a risk of damaging local water basins.

Indigenous communities also rely on water supplies for their livelihoods. Indigenous Argentinian activist Román Guitian told Time Magazine he grew up near the country's oldest lithium mine at Hombre Muerto, and his family used to raise llamas, goats and sheep. However, the diversion of fresh water from the Trapiche River used in lithium production has now dried up the valley. "It was beautiful. But today there are no animals because it's all dry," Guitian said. "In the future, we'll have lithium, we'll have electric cars, but we won't have water. "Time tells US-based lithium manufacturer Livent, which operates the mine, has launched a programme to restore the valley through replanting and new irrigation systems. But it also plans to double the plant's lithium production capacity by the end of 2023 and is busy digging a pipeline to another nearby river.

Major Parties Involved

Argentina

The region is estimated to hold more than half of global lithium reserves, mainly located in Argentina (21%). At present, Argentina has two lithium extraction projects, one in the northern province of Catamarca and another in neighboring Salta.

Chile

Chile is currently the world's second-largest producer of lithium, a critical mineral that is used in electric car batteries and key to the global green energy transition.

Bolivia

Bolivia has the richest known lithium deposits in the world, with an estimated 21 million tones, or 23.6% of the total in 2021, according to the U.S. Geological Survey. The survey also noted that Bolivia produced 543 tones of lithium carbonate, a tiny fraction of top producer Australia's 550,000 tones.

Goals and Accomplishments achieved in a timeline

Date	What
2022	- Complete NAL restart plan & Abitibi hub - Expand moblan as northern hub

	- WA gold/lithium exploration
2023-2024	- Abitibi hub production - Develop Abitibi downstream refinery plans for production - Complete northern hub and commence Moblan production
2025-2026	- Being refinery operations at Abitibi - Expand Moblan production capacity - Develop refinery operation to support lithium production from northern hub
2027+	- Targeting capacity of Québec hubs to produce <55kt LCE p.a. - Further investment in Québec battery metals to increase supplies.

Previous Attempts/ Solution

The mining of lithium is a contentious issue due to its potential impacts on the environment. Lithium mining can have a significant impact on the environment, including air and water pollution, land degradation, and soil contamination. In addition, the demand for lithium is increasing, creating a need for more efficient and sustainable mining processes.

Lithium is a naturally occurring element found in certain rocks, soil, and water. It is used in a variety of products, including batteries, chemicals, glass, and electronics. The lithium mining process involves extracting the element from its natural deposits, which can be difficult and hazardous. The process can cause air, water, and land pollution, as well as soil contamination. In addition, it can lead to deforestation and habitat loss. As a result, it is important to be mindful of the environmental impacts of lithium mining.

In order to overcome the challenges of lithium mining and reduce its impact on the environment, it is important to consider a variety of strategies. These include improving sustainability, reducing the amount of energy and water used in the extraction process, and minimizing the amount of waste generated. In addition, it is important to consider the potential for long-term environmental damage, as well as the impact of the mining process on local communities and ecosystems.

By implementing these strategies, it is possible to reduce the environmental impact of lithium mining, while still meeting the growing demand for the element. By doing so, it is possible to

ensure that the environment is protected and that local communities are not adversely affected by the mining process.

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