

# Chinese lithium investments in the lithium triangle and deep waters



Jujuy salt flat, Argentina. Image: [www.elciudadanoweb.com](http://www.elciudadanoweb.com)

## New Chinese investments in lithium in Argentina, Bolivia, and Chile

Clean energy technologies, such as solar panels, wind turbines or electric vehicles (EV) demand different minerals and metals. Lithium is a critical mineral in battery storage, a technol-

ogy that is fundamental for the development of the EV industry. The rise in EV production is increasing the demand for lithium and other critical minerals. The International Energy Agency (IEA) estimates that lithium production will need to rise by one third by 2030 in order to satisfy the announced pledges and achieve net zero emissions by 2050. This goal implies a development equivalent to 50 new average-sized mines. However, very little is known about the environmental and social impacts that this industry will impose on the communities and ecosystems where the exploitation will take place.

## Role of Chinese Companies in the Lithium Chain

Over the last decade, China has become one of the largest lithium producers and consumers worldwide. In recent years, it is estimated that China [produced 13-14%](#) of lithium, and since 2019 it is estimated that it [consumes over a third](#) of lithium global demand. These two factors have given China a key position in the supply chain for energy transition aiming to lower carbon emissions in the transport sector.

Chinese demand for lithium grew has grown alongside domestic government support programs through grants and tax incentives for EV purchases. The EV industry represents the highest demand for lithium in China, and it accounts for up to [60% of global mineral demand](#) to generate the necessary supplies for the so called clean technologies (in the energy sector) over the next two decades.

China leads the global production of [lithium-ion batteries](#), is home to [76% of the global production capacity](#) and is estimated to maintain 68% of that capacity in the next decade. Battery production is [led by big Chinese companies](#) such as [CATL](#) and [BYD](#). Chinese companies have a dominant position in the lithium value chain since they participate in every stage –from its extraction to battery production– and in the automobile manufacturing sector. Furthermore, these companies extract important lithium deposits in [Africa](#) (Congo, Mali and Zimbabwe) and [Australia](#).

Latin America has about [60% of lithium worldwide](#). Most of these resources are located in the so-called “Lithium Triangle” (Argentina, Bolivia and Chile), where there are important global lithium brine deposits. Chinese companies have already secured several “strategic” projects. For example, in Argentina, they participate in the projects of Chauchari-Olaroz (Ganfeng Lithium Co. Ltd.), Centerario-Ratones (Tsingshan), Laguna Verde (Zangge Mining), Mariana (Jiangxi Ganfeng Lithium Co. Ltd.), Sal de Los Ángeles (Revotech Asia Limited, Tibet Summit Resources Co.), Tres Quebradas (Zijin Mining Group Ltd.), and at least 6 other projects under development. In Chile, Tianqi Lithium managed to acquire 25% of Sociedad Química



Lithium exploitation plant in Argentina.  
Image: brujuladigital.net

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de Chile (SQM) to participate in the largest lithium mining project in Salar de Atacama. Tianqi also controls 26% of Siete Salares-Talison Lithium. In 2022, [Tsinghan](#) announced a project to install an industrial park in Antofagasta for lithium battery production, storage cells and electric car assembly.

The production of lithium-ion batteries and the sale of EV are primarily done in China, Europe and the United States. These countries justify their large lithium acquisitions as a path towards decarbonization and significant emissions’ reduction. There are a few efforts such as those from the European Union, who last December enacted a provisional policy requiring battery-makers to meet some product [sustainability targets](#) throughout their entire value chain and the possibility of imposing

## 1. Key Chinese Policies to Promote the Lithium Industry:

- [Industrial Transformation and Modernization Program](#), 2011-2015 (State Council, 2011). It establishes the development of high performance and power batteries such as lithium batteries (Column 12).
- [Action Plan to Promote the Development of the EV Battery Industry](#) (Ministry of Industry and Information Technology, National Development and Reform Commission, among others, 2017). Its goal is to “develop and industrialize new lithium-ion batteries and implement them at a large scale in 2020” (Article 2).

## 2. To support the EV industry:

- [Plan on Adjusting and Revitalizing the Auto Industry](#) (State Council, 2009). Its main goal is to make a considerable improvement in EV research and development so that its auto production meets the requirements of developed countries in terms of safety and comfort (Article 3.7).
- [New Energy Vehicle Industry Development Plan](#), 2021-2035 (State Council, 2021). “It encourages companies to improve their ability to guarantee key resources such as lithium, nickel, cobalt, and platinum” (Chapter 4, Article 2).

## 3. To promote the energy storage industry:

- [Guiding Opinions on Accelerating the Development of New Energy Storage](#) (National Development and Reform Commission and National Energy Administration, 2021). Its main goals are to diversify energy storage technologies, promote continuous cost reductions, and implement new, relatively mature energy storage technologies at a commercial scale, such as lithium-ion batteries (Article 3.5).
- [Three-Year Action Plan for the Development New Data Centers](#), 2021-2023 (Ministry of Industry and Information Technology, 2021). It supports “the exploration and use of lithium batteries... as diversified energy storage devices” (Article 5.1).
- [Guiding opinions on “Wind, Solar, Hydro, Thermal and Storage Integration” and “Generation, Grid, Load, Storage Integration”](#) (National Development and Reform Commission and National Energy Administration, 2020). It emphasizes the development of several energy sources, improving the efficiency of clean energy and the appropriate use of energy storage facilities.
- [Action Plan for Carbon Dioxide Peaking Before 2030](#) (State Council, 2021). Its goal is to optimize the energy consumption structure so that the installed capacity of new energy storage reaches more than 30 million kilowatts by 2025 (Article 3.1.6).

special tariffs on imports of certain products (such as lithium batteries) from countries with weak regulations on greenhouse gas emissions, there is no further regulation for the extraction of these critical minerals throughout the value chain with environmental sustainability criteria. Sadly, little is said about the environmental and economic costs of lithium extraction and how these costs will be internalized by local communities and countries where lithium is extracted. Lithium is just one of the [critical minerals for energy transition](#) demanded by China. Nevertheless, China also has an important role in the [regional demand for other critical minerals](#) such as copper, zinc, silver and lead.

## Lithium Extraction: An Activity Without Environmental Regulations

Lithium exploration in brines is a relatively new and complex activity whose environmental and social impacts have been little studied. In fact, each lithium extraction process faces

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Lithium exploitation in Catamarca, Argentina.  
Image: [www.elancasti.com.ar](http://www.elancasti.com.ar)



technical challenges to develop an [appropriate method](#) for the characteristics of the chemical composition of the deposit. Therefore, each lithium extraction process demands different resources and generates different types of waste. Although some countries such as Bolivia and recently [Chile](#) have created government entities to manage certain aspects of lithium as modalities of access, exploration or tax issues, very little work has been done to establish environmental and social regulations to deal with its associated impacts.

### **Bolivia: The Lithium Agreement for the Uyuni and Coipasa Salt Flats**

To consolidate the participation of Chinese companies in the most important lithium deposits in Latin America, CATL, BRUNP & CMOC (known as the CBC consortium) signed an [Agreement](#) with the state company Yacimientos del Lito Boliviano (YLB) in January 2023. The CBC consortium is comprised by heavyweight Chinese companies in lithium battery manufacturing and recycling (CATL dominates the market with 32% of the world share of electric batteries, and BRUNP has 56% of the Chinese lithium recycling market).

Luis Arce, Bolivia's President, and Franklin Molina, Minister of Hydrocarbons, [reported](#) that the Agreement aims at developing two facili-

ties for "direct lithium extraction" (DLE), one in Salar de Uyuni, which is the largest lithium brine deposit worldwide, and another one in Coipasa salt flat. The estimated investment is USD 1 billion in the first stage, and it seeks to produce 50 thousand tons of lithium carbonate per year, just under half of what SQM (one of the largest production sites in the world) produced in Chile in 2021.

Until now, the content of the Agreement between YLB and CBC has not been made public. Key aspects of the project, such as the installation and startup stages have not been clarified by any of the parties. For example, the exact location of the plants, YLB participation and role, and the technology transfer level for local lithium battery production are unknown, with the latter apparently being the purpose the Bolivian government seeks with this project.

There is an additional issue related to the type of association between the CBC consortium and the Bolivian state company YLB. Bolivian laws on [Mining](#) (Article 26) and the [YLB incorporation law](#) (Single Article, section C) state that primary lithium extraction (such as lithium carbonate) shall be 100% state owned. This makes it difficult to enter into contracts or concessions with international companies in this stage. However, in these last few weeks, [Bolivian authorities](#) have announced that other Chinese companies, such as Citic Guaoan/Crig, Xinjiang Tbea Group and

Uyuni salt flat, Bolivia. Image: [www.unsplash.com](http://www.unsplash.com)

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Lithium exploitation plant in Salta, Argentina.  
Image: mineriyadesarrollo.com

***Tsingshan Mining Development announced a USD 120 million investment in a hydrogen chloride and caustic soda manufacturing plant in the Argentinian province of Jujuy for lithium carbonate production from the Centenario-Ratones project, where Tsingshan has 49% of the shares.***

Fusion Energetech, may also sign agreements to extract lithium in Bolivia.

The Agreement between YLB and CBC has been presented by the Bolivian authorities as a step towards the so needed energy transition to mitigate the climate crisis. However, lithium brine extraction presents several environmental and social challenges. Gonzalo Mondaca, a researcher from [CEDIB](#), an NGO specialized in the subject, questions the lack of environmental regulations for lithium brine extraction. He points out that this activity entails a technical process closer to the exploitation of liquid hydrocarbons rather than conventional rock mining, and that this has not been properly taken into account in current regulations. [He also warns](#) that brines are part of a little-known regional hydrogeological system and that there are no studies on the potential impact this type of projects may have on the entire basin and the availability of fresh water, also considering that the area has been affected by climate change with prolonged droughts and water shortage.

The endorheic basin of Bolivia, where the Uyuni and Coipasa salt flats are located, is an [extremely arid zone](#). The communities inhabiting the region suffer limited fresh water availability for human use and their daily agriculture and livestock activities. Furthermore, the inhabitants of this region have high [poverty](#) rates, which could be aggravated by the impact in water availability that large-scale lithium mining projects may bring.

### **Argentina: Tsingshan Support Plant for Lithium Carbonate Production in Jujuy**

In February this year, Tsingshan Mining Development announced a USD 120 million investment in a hydrogen chloride and caustic soda manufacturing plant in the Argentinian province of Jujuy for lithium carbonate production from the [Centenario-Ratones](#) project, where Tsingshan has 49% of the shares. The project is located in the province of Salta and will produce 24 thousand tons of battery-grade lithium carbonate per year through DLE (a technology similar to the one planned for Bolivian salt flats) starting the first quarter of 2024.

In the Memorandum of Understanding signed with the government of the province of Jujuy, Tsingshan pledged to employ between 200 to 300 people and to build the plant in 18 months. This facility is the first of its kind, built by a Chinese company in Argentina, and it will be located in the industrial park in the city of Perico, which has a population of more than 60 thousand inhabitants.

In Argentina, environmental regulation and supervision competences are deemed provincial as long as the operations are carried out in a province. Ariel Slipak, a researcher at [FARN](#), pointed out that the national government and provinces do not have a specific environmental regulatory framework for the lithium industry and its supplies. Furthermore, provincial environmental authorities in Argentina have a limited budget and weak regulatory capacity to oversee large lithium projects, and many times they prioritize project promotion over environmental protection.

## Chile: BYD Announces the Construction of a Lithium Battery Component Plant

BYD will invest USD 290 millions in a plant to produce positive electrode material of lithium iron phosphate (one of the four key components of a battery) with an annual capacity of 50.000 tons, which could begin operations by the end of 2025. The construction of this plant would ensure BYD had access to battery manufacturing materials with a discount from local suppliers, benefiting from a campaign by the Chilean Production Development Corporation (CORFO), which is the only Chilean public agency that manages state-owned lithium properties to promote investments in energy battery component factories in exchange for discounted raw materials. Chile will allow BYD to obtain 12.500 tons of lithium carbonate per year at preferential rates from SQM.

Maia Seeger, an expert in environmental issues and director of [Sustentarse](#), considers Chile's lithium policy aims to deepen the public-private associations (APP) model, where the main

stakeholders are international investors, including Chinese companies. Chile is one of the most important lithium producers in the world; however, it has not developed a specific environmental regulation for lithium. Lucio Cuenca, an environment expert and director of [OLCA](#), considers that environment supervision of lithium extraction in this country only focuses on controlling the volume of water and brines extracted, without taking into account other key components of the ecosystem in environmental impact assessments, such as microorganisms and the trophic chain.

BYD is one the largest manufacturers of electric vehicles in the world. In Latin America, BYD is one of the [main suppliers](#) of electric buses and subways in countries such as Argentina, Barbados, Brazil, Chile, Colombia and Uruguay. Furthermore, it has made important [investments in Brazil](#) in relation to the manufacture of lithium batteries and electric buses. With this plant in Chile and its participation in the CBC consortium of Bolivia, it consolidates its presence in the region.

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Lithium mining in the Atacama salt flat, Chile. Image: [www.worldenergytrade.com](http://www.worldenergytrade.com)



## The role of China in deep-sea mining

Machinery collecting minerals from the seabed. Image: worldenergytrade.com

Deep-sea mining refers to mineral extraction several kilometers below the surface of the ocean. On the seabed, there are mineral deposits known as [polymetallic nodules](#) that contain cobalt, nickel, copper, manganese, gallium, and rare-earth elements. These minerals are essential for manufacturing electric appliances and vehicles, as well as renewable energy systems. According to the [United States Geological Survey](#), deep oceans could supply up to 45% of critical metals by 2065.

The techniques to exploit the seabed are still under development and may include dredging or remote-controlled vehicles to pick up minerals, which are later transported to the surface for processing. Since 2001, the International Seabed Authority (ISA, the UN body responsible for regulating deep-sea mining since 1994) has entered into [31 contracts for the exploration of the ocean floor with views to exploitation](#). In the last three years, exploration activities have been undertaken in several islands of the Pacific and in [Mexico's western coast](#).

This type of mining is [exempt from the environmental impact assessment rules](#) established in the [Draft agreement](#) on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, which is the first international agreement of its kind. This treaty would not apply directly to activities that are already regulated by existing bodies such as international deep-sea mining, which is regulated by ISA. This organization is working on a [mining code](#) to set the standards under which companies will be allowed to extract minerals from the seabed.

Several multinational companies and [Pacific island nations](#) are sponsoring mining projects in the deep sea. China is also actively participating in the development of this mining. [China has currently 5 of the 31 exploration contracts](#) issued by the ISA, [more than any other country](#). These rights include a surface of 238,000 square kilometers of the seabed, an area almost the size of Ecuador.

China has made important investments to develop the necessary technologies and infrastructures for deep-sea mining in order to [reduce its dependency](#) on foreign suppliers. These efforts are led by public companies such as China Ocean Mineral Resources R&D Association (COMRA) and [China Minmetals Corporation](#) mining company. In addition, China has one of the largest rare-earth companies in the world, [China Rare Earth Group](#).

Deep-sea mining can cause [significant environmental problems](#), such as the alteration of sensitive deep-sea ecosystems, the release of sediments and other pollutants in the oceans, and impacts on marine biodiversity. In 2021, most of the [160 IUCN Member States](#) voted in favor of a moratorium on deep-sea mining. More than [700 scientists](#) signed a statement asking for a moratorium on deep-sea mining. [Companies that produce vehicles and cutting-edge technology](#) also joined these requests.

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Pilot tests for mineral exploitation in deep waters. Image: [www.xataka.com](http://www.xataka.com)



## Other relevant news in the energy field

### Brazil: Mauriti Photovoltaic Project

In March, Paw Tracker newsletter reported that Power Construction Corporation of China (Power China) finished delivering capital from Intrepid SA., a Brazilian company, laying the foundations for the construction of the [Mauriti photovoltaic project](#) in the northeast of Brazil. The project will generate 343 MW of power and has an estimated cost of [1.8 billion reais](#) (approximately USD 350 million). The project will become the [second largest photovoltaic project](#) of Brazil and will include transmission lines and other related works that may become operational in February 2025.

The Mauriti project is the most important solar investment of Power China in Latin America, and, once completed, it will be the largest photovoltaic investment of this company overseas. Power China seeks for Mauriti to become a benchmark project in the field of new energy investment and to provide experience for its new business development models overseas.

Power China is a state-owned company in electric power and design, engineering and equipment manufacturing. It is a global leader in dam construction. It has developed numerous projects in the photovoltaic sector [overseas](#). In Latin America, it has implemented projects like Cauchari Solar Plant I, II & III and the Cafayate Solar Plant in Argentina, and El Llano Aguascalientes Solar Park in Mexico.

Although the solar energy projects are presented as an opportunity to develop a “win-win” relationship between China and Latin America, this does not mean they are free of risk and negative social and environmental impacts. They need to





Mauriti 1 photovoltaic plant. Image: www.bnamericas.com

be assessed and managed as those observed in [Cauchari](#) and [other solar projects from Chinese companies](#) in Latin America.

### Perú: China Southern Power Grid Acquires Enel Distribución

Since January 2023, several media outlets reported about the negotiations between Southern Power Grid and Enel SpA to acquire the operations of Enel Distribución Perú for USD 3 billion. The [first news](#) reported the Chinese company had passed the second round of bidding and was carrying out a due diligence

check. This past April, media outlets reported about the [purchase for USD 2.9 billion](#). The transaction has yet to be approved by the regulatory entities of Peru and China.

The Peruvian Industry National Society of Industries of Peru has [expressed its concern](#) over the concentration of 100% of Lima's power distribution in Chinese companies. In 2020, China Three Gorges Corporation acquired [Luz del Sur](#), the other company that supplies power to the capital of Peru.

In the last few years, Southern Power Grid has increased its investments in the energy sector of the region. For example, in Chile, it has managed to control power distribution through three operations. In 2018, it [acquired 27,7% of the shares in Transelec](#), the largest electric power transmission company in Chile that has 10 thousand kilometers of transmission lines, covering 98% of the population and industries in that country. In 2020, Southern Power Grid beat Enel Chile in the acquisition of [Chilquinta Energía SA](#) for more than USD 2 billion (according to the media, the largest business acquisition that year). By the end of 2020, Southern Power Grid announced the acquisition of the largest power distribution company in Chile, [Compañía General de Electricidad S.A. CGE](#), for USD 3 billion. Just like in Peru, the acquisitions of this company raised concerns due to the high concentration of energy related companies in the hands of a foreign group. However, in March 2021, the National Economic District Attorney's Office (FNE) of Chile [unconditionally approved](#) the acquisition of CGE by the Chinese company.

Enel power line in Lima, Peru. Image: www.infobae.com

