

# SWP Comment

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## Raw Materials Partner Chile: More Than Just a Supplier

How the EU Should Strengthen Strategic Raw Material Partnerships and Leverage Geopolitical Dynamics

*Inga Carry*

In summer 2023, the EU entered a strategic raw materials partnership with Chile. While the EU is seeking to gain better access to critical raw materials such as lithium and copper, Chile is aiming to diversify its raw materials sector and boost local value creation. Despite progress having been made in the scientific and technological spheres, industrial cooperation has so far fallen short of expectations. To fully realise the potential of the partnership, the EU should seek to ensure that its existing initiatives with Chile are more closely aligned and should make more effective use of synergies between raw materials, renewable energy and hydrogen. This will require stronger investment incentives for European companies. Given the new US trade policy, it is especially important that the EU underpins its partnership promises through concrete actions in order to demonstrate that it is a reliable partner.

The Atacama Desert in northern Chile holds two of the most sought-after raw materials of today: copper and lithium. Copper – the “red gold” – has been mined industrially in Chile since the 19th century. Today, the country is the world’s largest producer of the metal, accounting for around 25 per cent of global production. As copper is essential for the energy, mobility and electronics sectors, demand is expected to soar in the coming decades.

Lithium – the “white gold” – is also rapidly gaining importance in the current era of decarbonisation and digitisation. As lithium is a key raw material for the twin transition, production will need to grow

four- to sevenfold compared with 2020 levels in the coming years.

Roughly half of the world’s lithium reserves are located in the so-called Lithium Triangle, comprising Chile, Bolivia and Argentina. After Australia, Chile is the world’s second-largest lithium producer.

In Chile, unlike in Australia, lithium is mined not from hard rock but from vast salt flats or salars. To extract it, brine is pumped to the surface and channelled into evaporation ponds. Solar radiation causes the brine to evaporate, leaving the dissolved lithium salts and other elements in a more concentrated form. This natural process is not only more cost-effective but also signifi-



cantly less energy- and CO<sub>2</sub>-intensive than hard rock mining.

However, lithium extraction from salars has come under criticism, not least because of the water usage in what is one of the driest regions in the world. It is important to distinguish between the extraction process itself and the potential long-term impact on the region. The lithium is extracted from a brine whose salt content is more than eight times that of seawater and which is suitable neither for human consumption nor for agriculture. During the evaporation process, only a small fraction of freshwater – around 6 per cent – is used for lithium concentration. The remainder is used for the production of other minerals as well as for sanitary and operational needs at the mine.

Nevertheless, there are concerns about the possible long-term effects of brine extraction on the region's ecosystem. Some studies suggest that brine extraction could have a negative impact on groundwater levels, vegetation and biodiversity. While a clear causal link between extraction and observed changes has not yet been definitively proved, environmental organisations and affected communities have warned against stepping up lithium extraction before sufficient knowledge about its long-term consequences is available. Meanwhile, reported violations of environmental regulations by both private and state-owned mining companies have raised doubts about compliance with sustainability standards and further eroded public trust.

### **Political and economic upheavals are shaping Chile's raw materials sector**

This lack of trust is part of a broader dissatisfaction with the country's political and economic structures, which came to a head during the *Estallido Social* (social uprising) in 2019. The protest movement targeted an economic model that generated growth but entrenched social inequalities and externalised environmental costs. Critics argue

that the wealth generated from the exploitation of resources like copper and lithium benefits mainly big corporations and the elites, while the general population is left largely empty-handed.

A particularly controversial case is that of the Chilean company SQM, whose long-time head, Julio Ponce Lerou, the former son-in-law of dictator Augusto Pinochet, profited significantly from the privatisation of state enterprises in the 1980s. For many, this interlocking of political power and economic interests symbolises the ongoing inequality and corruption in the country.

At the same time, the mining sector is a key pillar of the Chilean economy and has significantly shaped the country's growth over the decades. The nationalisation ("Chilenisation") of copper mines in the 1960s and 1970s led to the creation of the state-owned company CODELCO, which is now one of the largest copper producers in the world. Today, the mining sector contributes around 12 per cent to the country's GDP, while employment in the industry continues to increase.

Until recently, the extraction of lithium – unlike that of copper – was carried out exclusively by two private companies: the US firm Albemarle and Chile's SQM. Amid the growing demand for lithium, some left-wing parties within President Gabriel Boric's governing coalition have been calling for greater state control over lithium production so that the revenues can be used to fund social investments and stimulate the country's economic development. However, conservative parties and industry representatives have warned against the economic risks of nationalisation. With its National Lithium Strategy, introduced in 2023, the Chilean government is now seeking the middle ground by pursuing three main objectives.

First, the strategy divides Chile's salt flats into three categories: strategic, commercial and protected. The strategic salars, which hold more than 90 per cent of the country's lithium reserves, are to be developed only under majority state ownership. Through public-private partnerships (PPPs), the gov-

ernment aims to reconcile demands for social justice with the need for economic stability and international competitiveness. In 2024, state-owned CODELCO and SQM struck a partnership deal whereby the former will hold a majority stake (50 per cent plus one share) in the joint venture and eventually assume operational responsibility of its lithium production in the Atacama Desert. Under this arrangement, the state is to receive 85 per cent of the operating margin from new production beginning in 2031. At the same time, the National Lithium Strategy addresses concerns about ecological sustainability by stipulating that by 2030, at least 30 per cent of salars must be designated as protected areas, meaning that lithium extraction will be prohibited there. For the remainder of the salars, special operating concessions are to be awarded to private Chilean or foreign mining companies.

Second, the strategy aims to promote local value creation, particularly along the lithium-ion battery (LIB) supply chain. And third, a (recently established) research institute for lithium and salars is to drive forward innovation projects on and more efficient, environmentally friendly extraction methods.

The National Lithium Strategy has received mixed reactions from industry and civil society. While the expansion of local value creation enjoys broad support, the new role of state-owned CODELCO has drawn criticism. SQM's Chinese shareholder Tianqi has taken legal action against the deal, while parts of civil society are concerned owing to CODELCO's environmental record in copper mining. For their part, industry players note CODELCO's lack of expertise in lithium production and warn that Chile could lose its dominant position in the lithium sector because of overly stringent requirements and lengthy approval processes.

Once a world leader in lithium production, Chile has seen its share of global output decline significantly as a result of rapid expansion in Australia and China. At the same time, the planned increase in lithium production in Argentina, Europe and North

America is putting pressure on the country. In neighbouring Argentina, the government under President Javier Milei is vigorously promoting the expansion of the mining sector by offering attractive incentives for major investments, taxing mining companies at a lower rate compared with Chile and refraining from imposing conditions on enterprises in order to promote local value creation along the supply chain.

## More value from the chain

However, neither the current government nor the Chilean people want to perpetuate an extractivist model — one in which raw materials are merely extracted and most of the beneficiation takes place elsewhere. Rather, lithium and copper production should serve as the starting point for more local value creation and economic diversification, including through linkages with upstream and downstream sectors.

## Upstream linkages

Since the late 1990s, the Chilean development agency CORFO has been promoting the integration of the raw materials sector into upstream supply chains. Instead of focusing on local procurement requirements, Chile is using tax incentives and subsidies to support technology transfer and training within the supplier industry. This approach has led to the emergence of local suppliers offering specialised technologies and services tailored to the country's unique mining conditions, which gives them a competitive advantage. At the same time, the Chilean government is increasingly investing in research and development. CORFO recently approved funding for several research projects on more efficient lithium production, the reuse of LIBs and the secondary use of those batteries as energy storage systems. In early 2025, a National Lithium and Salt Flats Institute was founded.

## Downstream linkages

In downstream supply chains, Chile aims to put greater emphasis on the industrial processing of raw materials in future. In the copper industry, the share of processed products has declined significantly in recent years. While, in the early 2000s, most of the extracted copper was processed into cathodes, copper concentrate currently accounts for more than half of exports. By 2030, that figure could be as high as 70 per cent.

This development can be attributed to several factors. First, there is a lack of refining capacity. The shortfall has been exacerbated by the closure of outdated smelters that no longer meet environmental regulations. Second, exporting copper concentrate has become more profitable as the production of copper cathodes is associated with high investment and operating costs. Above all, the massive expansion of processing capacity in China has led to market oversaturation, which means mining companies are paying less to smelters and refineries. And third, demand for copper concentrate is growing — not only from China but also from other countries that are expanding their processing capacities in the copper supply chain.

In the lithium sector, the government intends to promote industrial processing inside the country alongside the expansion of extraction capacities. Albemarle and SQM are already processing lithium into carbonate, while SQM also produces hydroxide. However, the government wants to go one step further. Under preferential pricing agreements, certain buyers are to receive lithium mined in Chile at reduced prices and, in return, must commit to investing in local value creation. The idea is to lower the value of the raw material itself in order to increase the value along the supply chain — for example, by building a factory for cathode production. Cathodes are a central component of LIBs; their production is technically complex and globally concentrated among a handful of manufacturers. China produces some 90 per cent of

cathode active material, followed by South Korea and Japan.

The production of cathodes for LIBs is a key element of the Chilean government's strategy to expand local value creation. Thus, expectations were high when, in 2023, the Chinese companies BYD and Tsingshan won a tender for reduced-price lithium and, in turn, promised to invest in battery-grade lithium processing and cathode production in Chile. However, in May 2025, both companies announced that they were backing out of the agreement, with some sources pointing to the steep drop in lithium prices and others blaming legal and bureaucratic hurdles. Two earlier agreements on preferential prices similarly failed to lure significant investments into the country, while a fourth deal — with lithium producer Albemarle — is still being negotiated.

On the face of it, there would appear to be a logic to strengthening linkages with the downstream lithium-ion battery supply chain in Chile, given the country's large, high-quality lithium deposits and technical capacity for industrial processing. However, a yawning technical gap exists between the production of high-quality battery raw materials and the manufacturing of cathode active materials or battery cells. Moreover, while the term "lithium-ion battery" suggests otherwise, lithium makes up only about 10 per cent of the total raw materials of a battery. Right now, other elements, such as cobalt or nickel, would have to be imported.

Another factor that could hinder the development of a downstream battery supply chain is the lack of geographical proximity to the consumer market. Neither Chile nor any of its neighbouring countries currently has a large market for electric vehicles; in fact, Chile does not have its own automotive industry. This is a crucial difference between Chile and countries like Mexico or Brazil, which are not only home to some of the raw materials needed for LIBs but also have a well-developed automotive industry and geographical proximity to large markets. While the synergy potential of closer regional integration along the

LIB supply chain — for example between Chile, Argentina and Brazil — is significant, there is no political initiative for deeper regional cooperation, owing in part to ideological differences between the governments in the region.

## Horizontal linkages

In addition to linkages with upstream and downstream supply chains, Chile's raw materials sector has the potential to establish intersectoral linkages, especially in water and energy supply. Mining accounts for about one-third of the country's electricity consumption. The planned expansion of copper and lithium production will lead to a significant increase in demand for electricity. At the same time, Chile has set ambitious goals for the energy transition. By 2030, 80 per cent of the electricity mix is to come from renewable sources; in 2022, that share was already more than 50 per cent. Further, the extensive availability of renewable energy sources means that Chile is well equipped for the production of green hydrogen at comparatively low production costs. The government has drawn up a strategy to develop the hydrogen industry, although, unlike in the raw materials sector, state intervention remains somewhat limited. Currently, several hydrogen projects are in the development phase in Chile, but it will take years for commercial production of green hydrogen to begin.

The supply of renewable electricity and green hydrogen is a key component for the decarbonisation of Chile's mining sector, as copper production alone accounts for about 7 per cent of the country's emissions. However, the slow expansion of transmission grids and battery storage systems often leads to disruptions in the power supply, which also affect the mining sector.

Meanwhile, water supply presents significant challenges, especially for industry in the north of the country. Both the limited availability of freshwater and tighter environmental regulations are forcing mining companies to find other solutions. One alternative technology is seawater desali-

nation, which now accounts for a growing share of water supply in mining. However, this process is very energy-intensive, which, in turn, increases the demand for renewable energy in the industry.

## Chile's raw materials sector amid geopolitical tensions

Chile is dependent on foreign investment for the expansion of its raw materials sector. Today, China is not only its largest trading partner (followed by the US and the EU) but also the biggest buyer of its raw materials and an important player in its mining sector. Chinese companies are acquiring stakes in Chilean power suppliers, transmission lines, and solar and wind power plants. In 2018, the Chinese Tianqi Lithium Corporation purchased a 24 per cent stake in Chile's main lithium producer, SQM. In addition to the investment tenders in downstream supply chains mentioned above, several Chinese companies have applied to participate in a PPP project to mine lithium in Chile's strategic salt flats.

However, the country's economic dependence on China has come under increasing criticism, not least against the background of the current geopolitical tensions. For this reason, Chile has an interest in diversifying its investment and trade portfolio — for example, through closer industrial cooperation with the US and the EU. A significant step in this direction was the modernisation of the association agreement between the EU and Chile, which has been in place since 2003 and was later expanded to include chapters devoted to raw materials, energy and sustainability. At the same time, Chile has deepened its relations with the EU through a strategic partnership on critical raw materials. The memorandum of understanding, signed in 2023, aims to foster closer cooperation in raw materials processing, research and sustainability. It provides for the development of a competitive and sustainable raw materials industry, the promotion of intermediate and finished products, joint

research and innovation projects, as well as measures to harmonise environmental standards. The implementation of joint infrastructure and raw materials projects, including as joint ventures, is also planned. In November 2024, the two sides agreed on a roadmap that identifies projects to be realised in the fields of research, sustainability, governance and skills training.

In the fields of science and technology, a lively exchange is under way between Chile and the EU. Joint research projects are promoting innovations in sustainable mining, the circular economy and environmentally friendly processing technologies. Programmes like “Horizon Europe” support knowledge transfer and the development of new technologies to increase efficiency and reduce emissions. Additionally, there are partnerships between European and Chilean universities and research centres focused on vocational training and skills development.

But as far as industrial cooperation and the promotion of local value creation are concerned, European engagement has so far fallen short of expectations — something that is also evident in other EU raw material partnerships. Despite long-standing trade relations and Chile’s reputation for political and regulatory stability, European companies have been hesitant to invest in Chile’s raw materials sector. The main reasons are uncertainty about new regulations in the lithium sector and the implementation of the National Lithium Strategy as well as the high volatility of the battery market: if lithium-ion technology were to be replaced by other types of battery in future, investments would be at considerable risk. Furthermore, small and medium-sized enterprises complain that they are struggling to compete with established players in Chile’s mining sector as the Chilean government tends to favour larger, more experienced companies in PPPs.

In this context, it is often pointed out that Europe has limited mining expertise and few globally active mining companies. However, this argument is valid only to a certain extent for the lithium sector: unlike

traditional hard rock mining, lithium extraction from brine is a purely chemical process — a field in which Europe, with its strong chemical industry, is well positioned. Moreover, European companies are actively researching how to mine lithium through direct lithium extraction (DLE), which could provide opportunities for deeper cooperation.

What appeared to be a promising example of triangular cooperation was BASF’s participation in a Chilean lithium project with the Canadian company Wealth Minerals. While Wealth Minerals was to take over the extraction, BASF planned to invest in a cathode factory — a model that could have created synergies and benefited all parties involved. However, BASF abandoned the project before it had even started. The company gave no official reason, but it is thought that the declining lithium prices and waning demand at the time played a decisive role.

The EU’s raw materials partnership with Chile exemplifies the difficulty of aligning the political goal of diversification with the private sector’s willingness to invest. Since the implementation of the MoU depends largely on private actors, the EU has only limited influence. Thus, it is all the more important to develop targeted instruments that encourage European companies to invest in the partner country. The EU should thereby focus on three aspects in particular.

### **Creating financial incentives for raw materials partners**

The EU pursues a two-pronged approach in its raw materials strategy: on the one hand, it focuses on establishing strategic partnerships with resource-rich countries; and, on the other, it is expanding its own capacities along the entire value chain. The benchmarks for 2030 defined in the Critical Raw Materials Act require a significant increase in the extraction, processing and recycling of raw materials within the EU. The industry’s interest in developing new raw materials projects on EU territory is evident from the 47 strategic projects recently

selected by the Commission, nearly half of which are to do with lithium production. Whether projects in partner countries such as Chile will be selected in a second selection round remains to be seen.

There is also the question of whether investments in Chilean lithium mining and copper processing can be attractive for European companies as long as the focus remains on expansion within the EU. For its part, the EU argues that growing demand means that both European and external sources of raw materials will be needed in the long term. But the decisive issue is whether European actors will have been successfully integrated into global raw materials supply chains by then or whether they will once again have become dependent on China or new players such as Saudi Arabia, India and South Korea, which are also seeking access to Chile's raw materials. Indeed, geographical diversification does not automatically mean supplier diversification if the EU ultimately imports raw materials or cathodes from Chile that originate from Chinese-controlled mines, smelters or cathode factories.

For raw material partnerships to make a genuine contribution to diversification, there must be stronger incentives for European companies to invest in partner countries. The added value for these countries remains limited if the only incentive is to be able to apply for strategic projects. While the designation as a strategic project helps facilitate access to financing opportunities, projects in Europe have far more possibilities to secure funding from the EU.

The EU needs to adjust by providing more effective fiscal stimuli in the short term and more emphatically stressing both the urgent need for, and long-term benefits of, partnerships with countries like Chile. The financial instrument developed for renewable hydrogen projects in Chile could be adapted for the raw materials sector by combining low-interest EU loans with grants that specifically promote sustainable and low-emission raw materials projects in partner countries. This would encourage European companies to invest in environmen-

tally friendly raw materials extraction and processing and at the same time help partner countries make their raw materials industry greener. In the long term, both Chilean and European stakeholders would benefit: if CO<sub>2</sub> levy mechanisms like the European Carbon Border Adjustment Mechanism also covered battery raw materials such as lithium, it could be that production in Chile would be as cost-efficient as, or even cheaper than, in China — depending on the processing method.

### **Thinking local value creation along the entire chain**

The discourse on local value creation — especially in the case of lithium — often focuses on industrial raw materials processing up to the production of battery cells and complete battery systems. But the economic and technological viability of developing a downstream (battery) supply chain depends largely on what conditions are like in the country in question, as illustrated by the example of Chile. Therefore, the possibilities for local value creation in the raw materials sector must be considered more broadly and there must be more emphasis on upstream and horizontal linkages.

Focusing on driving technological innovation would open a new window of opportunity: by expanding capacities in efficient, environmentally friendly raw materials extraction and processing, Chile would not only advance the sustainable development of its own mining industry; it would also position itself on the regional and international market as a technology hub and partner for sustainable mining. This could prove especially valuable amid the growing interest in more environmentally friendly resource extraction in other countries. Through programmes for technology transfer, research cooperation and skills development, the EU could offer targeted support for the development of Chilean supplier industries — for example, in mechanical engineering, automation or recycling technologies. It would thereby strengthen local value creation while promoting the integra-



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#### SWP

Stiftung Wissenschaft und Politik  
German Institute for  
International and  
Security Affairs

Ludwigkirchplatz 3–4  
10719 Berlin  
Telephone +49 30 880 07-0  
Fax +49 30 880 07-100  
[www.swp-berlin.org](http://www.swp-berlin.org)  
[swp@swp-berlin.org](mailto:swp@swp-berlin.org)

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tion of European companies into strategic supply chains.

To achieve this, the EU must better integrate its various partnerships, in line with horizontal (sectoral) linkages, in order to create more synergies. In the case of Chile, this means closer interconnections between the raw materials, energy and hydrogen sectors. If the EU's partnerships are to achieve their full potential, they must be coherently coordinated and function as a single, strategically interconnected package rather than individual initiatives.

## Leveraging geopolitical dynamics

In the implementation of its raw materials partnerships, the EU must take current geopolitical developments more into account. Chile's interest in a closer partnership with the EU aims, among other things, at counterbalancing China's dominant role in Chile's industry and trade relations. At the same time, Chile is consciously adopting a neutral position in matters related to raw materials and, in the long term, will align itself with those actors offering concrete and sound proposals that are advantageous for the country. Thus, in order to strengthen its partnership with Chile and assert its own economic and security interests, the EU must invest more actively and strategically leverage the geopolitical room to manoeuvre.

This is all the more important against the backdrop of the new US administration's industrial and trade policies. Because of its free trade agreement with the US, Chile's battery raw materials should have qualified for tax credits for electric cars and LIBs under the Inflation Reduction Act. However, the Trump administration has ordered a funding pause for such credits and floated the idea of tariffs on copper imports. With US industrial policy currently focused on domestic processing capacities, Chile is now confronted with a dual challenge: reducing its growing dependence on

China while preparing for what is likely to be an increasingly unpredictable relationship with the US.

The EU should use this geopolitical shift to position itself as a reliable, long-term partner. It is not enough to differentiate itself rhetorically through a partnership approach; rather, it must make substantial offers in the areas of industrial development and sustainable technology cooperation before China exploits the emerging gap any further. Only in this way can it prove itself as a credible alternative and realise its declared intention to forge a raw materials partnership on an equal footing.

*Inga Carry is a researcher in the project "Research Network Sustainable Global Supply Chains", funded by the Federal Ministry for Economic Cooperation and Development.*