

Lithium policies in Latin America: old wine in new bottles?

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IN SHORT

EN

- Argentina, Bolivia, Brazil, Chile, and Mexico hold a considerable share of lithium reserves globally.
- These countries developed specific policies to increase the contribution of lithium rents to national economic growth.
- Lithium policy in Latin America presents operative differences related to the state's protagonism in promoting extraction.
- The weakness of these policies is prioritizing rent capture instead of the development of technology-based competitive advantages and neglecting collaborative regional potentialities.

DE

- Argentinien, Bolivien, Brasilien, Chile und Mexiko verfügen über einen beträchtlichen Anteil an den weltweiten Lithiumreserven.
- Mit ihrer Rohstoffpolitik wollen diese Länder die Gewinne aus der Lithiumförderung in Wirtschaftswachstum und Entwicklung lenken.
- Rohstoffpolitik für Lithiumabbau in Lateinamerika kann anhand der Rolle des Staates unterschieden werden.
- Eine Schwachstelle dieser Rohstoffpolitik ist bisher, dass technologisches Lernen und gemeinsame regionale Anstrengungen ausgeblendet werden.

FR

- L'Argentine, la Bolivie, le Brésil, le Chili et le Mexique détiennent une part considérable des réserves mondiales de lithium.
- Ces pays ont développé des politiques spécifiques pour augmenter la contribution des revenus du lithium à la croissance économique nationale.
- La politique du lithium en Amérique latine présente des différences opérationnelles liées au rôle de l'État dans la promotion de l'extraction.
- La faiblesse de ces politiques réside dans la priorité accordée à la capture des revenus au détriment du développement des avantages compétitifs basés sur la technologie et en négligeant les potentialités régionales collaboratives.

ES

- Argentina, Bolivia, Brasil, Chile y México poseen una porción considerable de las reservas de litio a nivel mundial.
- Estos países desarrollaron políticas específicas para aumentar la contribución de las rentas del litio al crecimiento económico nacional.
- La política del litio en América Latina presenta algunas diferencias operativas relacionadas con el protagonismo del Estado en la promoción de la extracción.
- La debilidad de estas políticas radica en priorizar la captura de rentas en lugar del desarrollo de ventajas competitivas basadas en tecnología y en descuidar las potencialidades regionales colaborativas.

Introduction

Greenhouse Gas (GHG) emissions are the main driver of climate change. Globally, energy consumption associated with fossil fuels (oil, coal, and natural gas) is responsible for 73 percent of the emissions (Ritchie, 2020). Therefore, reducing consumption and dependence on such fuels has become the core of climate change mitigation policies (Fekete et al., 2021).

Decarbonization implies the substitution of one technology with another. The installation of electric power systems based on renewable energies, particularly wind and solar, depends on specific infrastructures that require large amounts of particular minerals. Therefore, there is a technological shift going on, which, in turn, is instigating a new rush for so-called 'critical minerals' used in batteries, solar panels, and wind farms (IEA, 2021). Among these minerals, lithium plays an essential role due to its importance in manufacturing batteries for storage systems and electric vehicles (Hund et al., 2020). Against this background, Latin America is central to the lithium global production network as it holds 56 percent of identified lithium resources worldwide (USGS, 2024).¹

In this Policy Brief, the mining institutional context in the five countries in the region that have proven lithium resources, Argentina, Bolivia, Brazil, Chile and Mexico (see Figure 1), is first described, and their adaptation in dealing with the increasing global demand for lithium is explained. Then, these policies are compared and it is argued that, although they might present some operative differences, they have some similar features and share common weaknesses. These policies are mainly based on the countries' comparative advantages and do not prioritize the development of technology-based competitive advantages. Besides, they also have an individual or national perspective that downplay collaborative regional potentialities. Along the text, the focus is specifically on national governments and public policies, keeping private actors out of the research scope, regardless of their relevance. Also, the emphasis is placed on the economic aspects of lithium extraction and processing, while aspects related to their social and environmental impacts are set aside.

Latin America's lithium policies

In Latin America, there are proven reserves of lithium in Brazil, Argentina, Bolivia, Chile and Mexico, as Figure 1 shows. The following pages explore the context and particularities of lithium exploration in these five

countries. The idea is to present a mapping of current variant policies as well as to detect similarities and differences among them.

Argentina: the neoliberal model

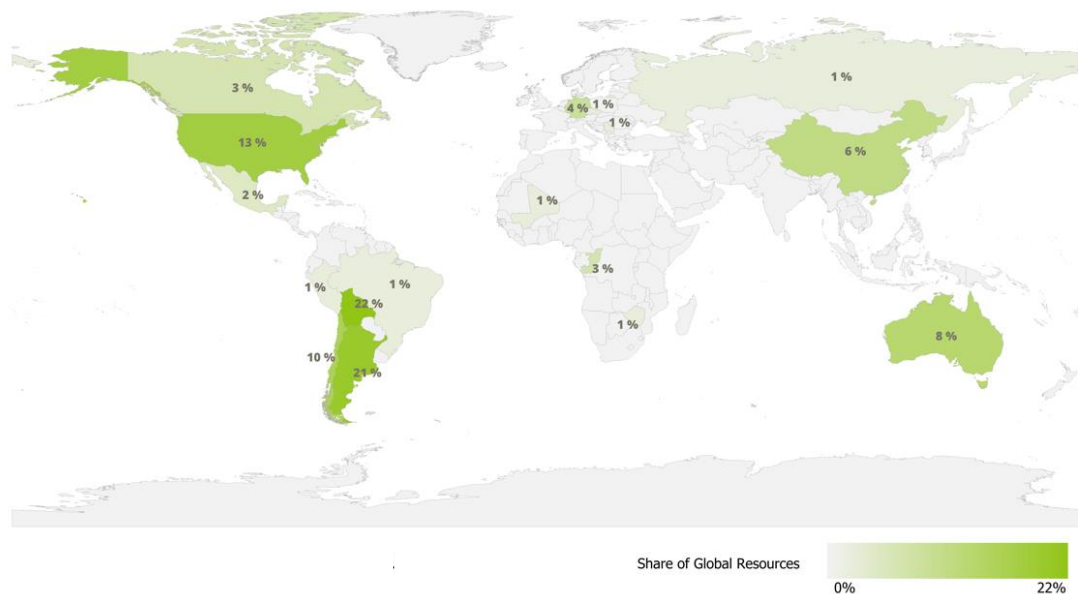
Argentina's neoliberal mining legislation is a legacy of the 1990s sector reform shaped by the so-called Washington Consensus. It is fundamentally based on three pillars: first, the Mining Investment Law 24.196 of 1993 guarantees operating companies enormous tax advantages, 30 years of fiscal stability, and mining fees

of a maximum of 3 percent. Second, as per Article 124 of the 1994 constitutional reform, the provincial governments administer mining resources. Third, the Argentine Mining Code, enacted in 1887 and reformed in 1997, empowers the private ownership and exploitation of mines.²

¹ Mineral resource is the concentration of a material in an amount that is currently or potentially feasible. It is classified as original, identified and demonstrated (measured, indicated, inferred). Mineral reserve base is part of the resource that meets minimum criteria (grade, quality, depth) related to current mining practices; it usually relates to measured and indicated resources. Mineral reserves are the portion of the reserve base that can be extracted at the time of the measurement (USGS, 2024).

² For a detailed outline, see Nacif (2019), and Obaya and Pascuini (2020).

FIGURE 1: SHARE (%) OF LITHIUM GLOBAL RESOURCES)³



Argentina holds 22 percent of global lithium resources (USGS, 2024). Lithium mining is embedded in the overall mining legislation, making the sector wide open to private investments. Since mines are the property of the provinces, the governments of the Jujuy, Salta and Catamarca provinces are legally responsible for and regulate lithium exploitation in their territories. Mining rights are granted in perpetuity to companies as long as the annual royalties are paid, and companies invest in extraction and do not speculate on concessions alone. At the provincial level, mining companies have to pay royalties, equivalent to 3 percent of the pit-head value, i.e., the product value, after deducting the production costs declared by the company.⁴ While royalties are set at the national level, they are levied by the provinces (CEPAL, 2023).

When the province grants a mining concession to a third party, it maintains the original ownership. However, third parties can sell the right to mine a concessioned area. In Jujuy, the provincial government’s public mining and energy company, Jujuy Energy and Mining State Society (JEMSE), also sells concessions by means of tenders for the province of Jujuy (decree 7180/2018). That is because selling concessions, obtaining

investments, and benefitting from royalties present a huge opportunity for the provincial government to increase its revenues, create employment, and increase political independence from the national government.

In 1997, the FMC Corporation (now Livent) opened the Fenix lithium mining project at Salar del Hombre Muerto in the north of the province of Catamarca. Since then, Argentina’s lithium bonanza has attracted a host of international investors. There are numerous lithium mining projects in the exploration phase. Depending on the referenced source, the number of lithium mining projects varies from 40 to 60. According to Argentina’s Mining Secretary, there are a total of 18 projects at an advanced stage. In 2014, Sales de Jujuy (joint venture of Australian and Japanese capitals) inaugurated a second lithium mining project at Salar de Olaroz-Cauchari. At the same salt flat, in June 2023, with Minera Exar (joint venture of Chinese and Canadian capitals), the country’s third project moved into the commercial phase (Mining Secretary, 2020). Besides those, there were also investments by mining companies from Australia (8), China (5), Canada (3), France (1), Korea (1), Japan (1),

³ Source: USGS (2024). Mineral commodity summaries 2024. Reston: U.S. Geological Survey.

⁴ Discussing the tax regime of each country is beyond the scope of this text. Although royalties are only a small part of the mining rent that is transferred to the state, we mention these values as a proxy to the relative monetary importance that different states give to lithium.

United Kingdom (1) and the United States (1) (CEPAL, 2023).

Compared with Salta and Catamarca, Jujuy's government has taken a more active role in managing lithium mining operations. In 2011, it declared lithium a strategic mineral that should generate revenue through value-added processes and create local jobs. Aiming for sustainable growth and socioeconomic development, the government and the National University of Jujuy have participated in several research and development initiatives in collaboration with other national universities and the National Council of Scientific and Technical Research (CONICET). All salt flats in the provinces of Jujuy, Salta, and Catamarca are covered by mining licenses (Dorn, 2021).

Since 2010, the increase in international investments and lithium production has been accompanied by a social, scientific and political debate on the geostrategic and industrialization potential associated with the country's lithium deposits. There have been many

political initiatives and legislative proposals aimed at claiming a greater share of the value chain. The debate is wide-ranging, including the socialization of the means of production and the development of a national battery production industry (Fornillo, 2015; Nacif, 2015). Nevertheless, such initiatives have produced meagre results so far. Limited resources have been directed through CONICET, producing mainly small-scale projects without significant impact at the national level (CEPAL, 2023). There are some private initiatives to develop the assembly of electric cars domestically (e.g., Sero Electric and Volt Motors), but they depend on the imports of Chinese components (Obaya and Céspedes, 2021).

In summary, far-reaching neoliberal reforms in Argentina in the 1990s had a significant impact on the mining sector. As a result, lithium policies are taking place in a fragmented and unregulated context, and the federal government has little control over operation regulations. Moreover, the country's historical political and economic instability notably weakens its capacity to invest and negotiate with foreign investors.

Bolivia: a nationalist strategy

Bolivia has a very long-standing mining tradition. While the silver mines of Cerro Rico close to Potosí became famous during Spanish colonization, Bolivia experienced a tin boom in the nineteenth century and a gas boom at the beginning of the twentieth century. In this context, Bolivia became a prominent example of the resource curse thesis, defined by centuries of resource plunder (Guzmán Prudencio, 2024). However, Bolivia did not manage to grasp long-term enrichment out of its extractivism model, remaining one of the poorest countries in South America.

This recurring pattern can occur once more – or be finally broken – through the lithium cycle. Bolivia has the largest lithium deposits in the world, around 23 percent of total resources (USGS, 2024). When elected into office in 2006, the leftist president Evo Morales made lithium a central pillar of his policy agenda. He advocated for a nationalist turn within the resource

extraction and processing policy, outlining it in Bolivia's National Development Plan of 2006. This plan portrayed lithium as an engine of profound structural change for Bolivia (Obaya, 2021). His first step was to re-nationalize the Bolivian Mining Corporation (COMIBOL) in 2007. In the following year, COMIBOL opened an additional division for lithium extraction in the Salar de Uyuni.⁵

In October 2010, Morales launched the National Strategy for the Industrialization of Evaporite Resources, which was intended to cover the entire lithium battery value chain in three phases (Ströbele-Gregor, 2013): phase one aims at the extraction of lithium carbonate, phase two at industrialization and phase three at commercialization. All these phases should be carried out under state management. Given the strong influence of grassroots movements, phases one and two should remain entirely in the hands of the state, while private companies are allowed to participate as part of

⁵ On 1 April 2008, Evo Morales passed the Supreme Decree N° 29.496, which established a pillar of the new lithium policy scheme in Bolivia. This piece of legislation established the industrialization of the resources of the Salar de Uyuni as a national priority to foster the economic and social development of the Department of Potosí (Obaya and Céspedes, 2021).

a joint venture (max. 49 percent) with a state-owned company in phase three.

However, while the country established institutional infrastructure and enhanced some technical capabilities, it has not yet managed to extract lithium on an industrial scale. A lack of know-how, insufficient budget and a deficient infrastructure delayed the project (Dorn and Peyré, 2020). Therefore, the strategy has been changing, seeking a more cooperative path with international capital (Obaya, 2021). In 2017, the state-owned company Yacimientos de Litio Bolivianos (YLB) was founded with the objective of transitioning from the pilot extraction phase to the commercial phase. However, the public-private association has been difficult and highly contested by social movements (Obaya, 2021). In 2018, YLB entered into a joint venture with the German company ACI Systems, but by November 2019 it was dissolved due to local protests.

After severe political upheaval, Luis Arce was elected as president in 2020. He has advocated the path of international cooperation to develop the sector and address the technical challenges of the Salar de Uyuni that Bolivia cannot solve alone. Against this background, YLB invited foreign companies to submit proposals employing a new technology to extract lithium directly

from brine (Graham, 2023). The Chinese consortium CBC, including the world's largest battery manufacturer, CATL, secured the contract. However, Bolivia concluded further contracts in 2023, including with the Russian company Uranium One Group and the Chinese company Citic Guoan (Graham, 2023; Kandt, 2024).

Bolivia has also faced challenges in the downstream stages of the lithium production network. In theory, YLB was supposed to invest in all the stages of the supply chain, from extraction to battery manufacturing, which proved to be difficult due to technical challenges, necessary know-how and financial resources. In 2019, YLB signed an agreement with the local electric vehicle manufacturer Quantum, which, until then, used only Chinese batteries. After four years, the project between YLB and Quantum was still at its pilot stage (ABI, 2023; Obaya, 2021).

Bolivia presents the most centralized case of lithium policies in the region. The national government has attempted to control all the stages of the lithium supply chain. However, political instability, market dynamics, and technological challenges have created significant barriers and produced, to a large extent, unsatisfying outcomes.

Brazil: a model of downsizing the state

In the international context, Brazil is mostly considered a prominent exporter of agricultural commodities and a regional supplier of some industrialized goods. However, the Brazilian economy also depends on mineral exports (Cerioli, 2022); in 2023, ores represented 10.3 percent of the country's exports, raking third position, after mineral fuels (16.2 percent) and oil seed (15.9 percent) (ITC, 2024). A prime example of the relevance of mining in Brazil is the mining corporation Vale, created as a state-owned company in the 1940s. Iron ore exports increased steadily until the 1990s and now account for 30 percent of global exports. Since then, Brazil has been the world's second-largest iron ore exporter, following Australia (ITC, 2024; Triner, 2011). Despite the centrality of the state for most of the twentieth century, after the privatization of Vale in 1997, there was a considerable shift towards neoliberalist strategies of mining operations (Milanez et al., 2018).

From an institutional point of view, the federal government controls access to mineral resources, and state agencies issue environmental licenses for exploitation. There is, nevertheless, a broad fiscal encouragement for international trade: minerals are exempt from various federal and state taxes when exported without processing. At the same time, there are tax incentives for extractive projects in the Amazon region, where the richest mineral reserves are located. As a result, royalty payments from mining are one of the smallest income transfers to the state today (INESC, 2023). The government charges 3.5 percent of gross revenue for iron ore and only 2 percent for lithium (Government of Brazil, 2017).

Despite its small share of only 1 percent of global lithium resources (USGS, 2024), Brazil was the fifth largest lithium producer in 2023 (MME, 2023). While it has imposed several policies to foster lithium extraction and

processing, the resource has played a marginal role in the Brazilian mineral sector. The first attempts at extraction began in the 1950s by the Brazilian private company Orquima. The federal government acquired the lithium carbonate project in 1960. Due to its potential use in the nuclear sector, the military government tried to engage directly with lithium production until the 1980s. In the 1990s, in the context of neoliberal policy reforms, federal norms turned to stimulating the creation of a private lithium industry. Nevertheless, Federal Decree 2.413/1997 restricted lithium exports and obliged companies to invest in technological development within the country (Marques, 1996), resulting in the emergence of industrial sectors that produce lithium greases and lubricants (Santos, 2022).

The government of President Jair Bolsonaro (2018-2022) further reduced the role of the public sector. Federal Decree 10.657/2021 obliged federal agencies to facilitate and accelerate the issuing of licenses for the extraction of 'strategic minerals' (see Milanez, Wanderley and Magno, 2022). In addition, Federal Decree 11.120/2022 ended mandatory investment in the national supply chain and enhanced the export of raw lithium (Government of Brazil, 2022). After the election of President Luiz Inácio Lula da Silva in 2022, the government did not review both decrees. Furthermore, the National Mining Plan 2050, prepared in 2022, did not include a specific proposal for lithium, leaving an obvious loophole that many actors could take advantage of. Despite mentioning lithium as a strategic mineral, recommendations remained vague and indicated the need to advance exploration, expand projects, and foster the image of a "green" lithium extraction to increase competitiveness in the global market (MME, 2022).

In 2023, existing lithium projects were concentrated in the hands of three companies: the Dutch AMG Brasil (67 percent), the Brazilian *Companhia Brasileira de Lítio* (22 percent), and the Canadian *Sigma Mineração* (10 percent) (ANM, 2023a; Santos, 2022). Nonetheless, after 2020, numerous firms became involved in the lithium business, particularly in the exploration of new

reserves. In December 2023, 470 companies held approximately 3,700 mining claims for lithium, the largest one holding 27 percent of all requests (ANM, 2023b).

Brazil lacks well-defined nationwide policies to promote lithium industrialization. Existing policies are instead fragmented and short-sighted. For example, in Minas Gerais state, where the main lithium reserves are located, the governor travelled to the USA in 2023 to promote the 'Lithium Valley' and attract international mining investments (Agência Minas, 2023). In 2024, the federal government announced the creation of the "New Industry" program (NIB) to stimulate the country's industrial sector, with a focus on innovation, sustainability, decarbonization and digitalization. The NIB has a special investment line for a "less pollutant car industry". However, there is no specific destination for electric vehicles. Moreover, it creates a specific fund for investments in the extraction of critical minerals, but without a clear orientation to stimulate the development of lithium processing capacity (Chiappini, 2024).

Despite the late national policies for downstream manufacturing, there have been some private initiatives in the electric vehicles sector. For example, the Chinese company BYD installed an electric bus assembly unit in 2015 and started operating a lithium iron phosphate battery plant in 2020. It also began building an electric vehicle factory in 2023 and plans to set up a private research center in the country (BYD, 2023).

In summary, Brazil has gradually moved from a state-centric approach to lithium towards a private governance model. As a result, recent dynamics suggest a possible 'lithium rush' in the country, although it is not clear if all the companies intend to extract the mineral or only speculate in the market of mining rights (Leão and Aguiar, 2024). This way, South America's once 'developmentalist power' seems to underestimate the industrializing opportunities created by its lithium reserves, despite its alleged goals of returning to the industrialization development path.

Chile: a strategy to capitalise on change

Chile detains 11 percent of global lithium resources (USGS, 2024). It defined lithium as a strategic resource in 1979 (Law Decree 2886), based on its potential use for nuclear weapons as part of the US Cold War policy. Since the 1980s, the Chilean company SQM and the American firm Albemarle have been the only two companies authorized for lithium mining. Although lithium has been regulated as a mineral not subject to exploitation concessions, presidential decrees have granted private companies permits of operation. That made Chile the world's largest exporter of lithium and the second-largest producer behind Australia (USGS, 2022). With growing global demand since 2010, President Sebastián Piñera has made efforts to increase production rates via the National Production Development Corporation (CORFO) (Obaya and Pascuini, 2020).

Subsequently, President Michelle Bachelet (2014-2018) created the National Commission of Lithium to assess the economic benefits of increasing lithium production, envisioning greater industrialization and market regulation (Carrasco, Hernández and Cariaga, 2023). For the first time, she proposed a state lithium mining company (Barandiarán, 2019). The National Minister of Mining held the commission and invited national and international experts, researchers, authorities, directors of public agencies, as well as the president of the Committee of Atacama Peoples (CPA) and a workers' union representative. The commission's final report was published in early 2015. Its recommendations have become the roadmap for public policy on lithium, resulting in a comprehensive national position on salt flat mining for the first time.

The report highlighted the lack of sufficient control and regulation by the state. It stressed the fragile, complex, and dynamic character of salt-flat ecosystems and the need for a paradigmatic change regarding the relationship between companies and communities with

respect to their territory and water resources. It proposed the notion of shared values and emphasized that the state is the owner of natural resources, reaffirming the state's essential role in mining, income generation, and sustainability. It pointed out the need to strengthen the public institutions involved in the administration of salt flats and proposed the establishment of a state-owned company for salt flat mining. Finally, it suggested public-private alliances to enhance state control over all salt flat projects in the country (Dorn and Gundermann, 2022). By 2017, the recommendations were increasingly put into practice.

In May 2023, President Gabriel Boric (since 2022) revealed the national lithium strategy, which established a dynamic royalty system that charges ad valorem rates between 6.8 and 40 percent, depending on the price of lithium products. This strategy focused on mobilizing resources, technology, sustainability, and enhancing value in the lithium sector. It also promised the creation of a national lithium corporation and a technological institute, both that should promote up-scaling the mining sector towards electromobility and advanced processing of lithium (CEPAL, 2023). On that, the country has also set an audacious electric vehicle policy that set all public transport to be electric by 2035. In 2021, a local company, Reborn Electric Motors, was created to convert diesel buses into electric vehicles.

Therefore, Chile seems to be taking a gradual approach to lithium policy. It first focused on defining how to capture rent from lithium extraction and, in the second phase, moved its attention to downstream activities. However, in Latin American history, the shift from extraction to industry has traditionally been troublesome. As the Chilean initiatives are still too recent, new assessments might be necessary in the future to evaluate their level of success.

Mexico: a 'selective' nationalist policy

Although Mexico is an important supplier of minerals such as gold, silver, copper, zinc and lead, the sector accounts for less than 1 percent of the country's GDP (Azamar Alonso, 2021). Mexican mining regulation results from neoliberal changes that took place in the

1990s, which included a free-trade agreement with the USA and Canada. In this context, the mining sector moved from a mixed economy with state-owned and private companies to a structure with a strong presence of national private companies and the participation of

foreign corporations (Téllez Ramírez and Azamar Alonso, 2021).

In short, minerals are the property of the state, which has the power to lease exploration or exploitation rights to private actors. The country does not have a specific federal mining agency, and policies depend mainly on presidential decisions. While lacking a particular organization might create difficulties in coordinating legislation and management, the existing technocratic structure has a general pro-mining approach, promoting the further expansion of extractivist activities (Azamar Alonso, 2018, 2019).

During the government of Carlos Salinas (1988-1994), many reforms in the mineral legislation were implemented, including the National Program for Mining Modernization 1990-1994 (1990), the Mining Act (1992), and the Foreign Investment Act (1993). All of them aimed to reduce companies' costs and increase foreign investment. A key aspect was to limit mining taxes, meaning that, despite the growing mining activity in the 2000s, state revenue remained considerably low. This situation only changed in 2014, when new legislation allowed the state to collect royalties, equivalent to 7.5 percent of the companies' net income (Azamar Alonso, 2018; Tetreault, 2023).

Another important aspect is the privatization of state-owned companies. For the last 30 years, five corporate groups were responsible for 80 percent of national production (Azamar Alonso, 2019). At the same time, Canadian companies dominated mineral exploration activities, particularly gold and silver (Tetreault, 2023). Canadian mining companies are also present in the lithium segment. Between 2006 and 2018, the Mexican government issued 31 concessions for lithium exploration, 26 of which went to Canadian corporations or joint ventures involving Canadian capital. Some of these rights were later sold to Chinese companies, such as Ganfeng Lithium (Cervantes and Garduño-Rivera, 2022).

While Mexico has only 1.7 percent of the global lithium resources (USGS, 2024), it aspires to become a relevant player in the lithium sector. More than 60 known lithium deposits are distributed all over Mexico, but most have low ore concentrations (Azamar Alonso, 2023b). The state of Sonora shows the highest potential for lithium extraction, with at least nine exploration projects ongoing. However, different to the other countries analyzed here, lithium in Sonora is found in clays,

creating particular extractive technology challenges and delaying the beginning of the extracting projects.

In 2018, President Andrés Manuel López Obrador (AMLO) started to question the dominance of foreign companies and proposed nationalizing the country's lithium reserves (Azamar Alonso, 2019). The debate on the nationalization was inspired by the experience of the national oil company *Petróleos Mexicanos* (Pemex). In 2019, while the Secretary for the Environment and Natural Resources proposed to create a national electric vehicle company, AMLO suggested a public agency to manage lithium. In this process, the state nationalized four deposits, arguing for the need to evaluate exploration and exploitation processes. In 2021, the debate to create a National Lithium Commission and restrict extraction to the State moved to Congress. At the same time, AMLO proposed a modification of the national constitution to limit the issuing of mining rights (Azamar Alonso, 2023b). In 2022, the government finally passed the Mining Law Reform, which determined that the company *Litio para México* (*LitioMx*) would control any new lithium exploration and exploitation permits (CEPAL, 2023).

LitioMx is part of Plan Sonora, an audacious development project which includes exploiting lithium reserves, producing electric vehicles and exporting electricity to the USA (Godoy, 2022). The company should be involved in all the activities of the lithium supply chain, from exploitation to end-use product manufacturing. Thus, the nationalization of the reserves could, in theory, increase Mexico's leverage when negotiating with consumers, such as the USA and China, and lead to stricter mining regulations (Vivoda et al., 2024). On the other hand, challenges concerning the development of the required technology and the risks of discouraging foreign investment cannot be overlooked. So far, the creation of *LitioMx* has not appealed to electric vehicle manufacturers (González Ormerod, 2023). Nevertheless, the rising production costs in China, the increasing demand from the USA, and its cheap labor make the country a potential future hub for electric vehicle production. BMW, General Motors, Ford and Tesla have been investing in the country; in 2024, BYD announced the installation of a new electric car plant (Solomon, 2024).

Mexico seems to have adopted a 'selective' nationalist policy towards lithium. On the one hand, general mining regulations follow liberal policies, limiting Mexico to the role of a raw material supplier to the international

market (Télez Ramírez and Azamar Alonso, 2021). On the other hand, the Mexican State has become a relevant agent in coordinating initiatives towards

lithium. From the point of view of downstream policies, LitoMx is still being structured, and some time might be necessary before presenting any concrete result.

Lithium policies in Latin America: different but also similar

In this section, the lithium policies that have been adopted in Argentina, Bolivia, Brazil, Chile and Mexico are discussed. As described above, these policies might

differ in specific aspects from an operative point of view. However, it is argued that they also present similar features.

TABLE 1: SUMMARY OF LITHIUM POLICIES IN LATIN AMERICA (SELECTED COUNTRIES)⁶

Countries	Share of lithium global resources	Mineral property rights	State-owned company	Royalties	Explicit policy for lithium industrial transformation	Level of central government involvement ⁷	Main foreign mining investors
Argentina	22%	Provincial	No	3% (net revenue)	Yes (provincial)	Very low	Australia, China, Canada, France, Korea, Japan, UK, USA
Bolivia	23%	National	Yes	3% (value of exports)	Yes	Very high	China, Russia
Brazil	1%	National	No	2% (gross revenue)	No	Low	Canada, the Netherlands
Chile	11%	National	Yes	6.8 – 40% (<i>ad valorem</i>)	Yes	Middle	Australia, China, USA
Mexico	1,7%	National	Yes	7.5% (net revenue)	Yes	High	China

During a long period in the twentieth century, the Latin American mining sector was guided by a resource nationalistic approach, which could be defined as coordinated national policies to ensure state economic or political control over natural resources in order to promote economic growth (Childs, 2016). These policies comprised initiatives such as maximizing public revenue, asserting strategic control over resource sectors, and enhancing developmental spillovers from extractive projects (Haslam and Heidrich, 2016). At the same time, all countries in the region went through the neoliberal transformation of the 1990s. The tension between these two development models, influenced by diverse local

contexts, resulted in different designs of policies for lithium extraction and industrialization.

Fehler! Verweisquelle konnte nicht gefunden werden. shows that the state’s role in lithium mining regulation differs from country to country. Along these lines, it is acknowledged that there are significant variations of resource nationalism within the region, as noted by Obaya and Céspedes (2021). On the one hand, Argentina and Brazil adopted a liberal guidebook, while, on the other hand, Bolivia, Chile and Mexico promoted governmental protagonism in decision-making. Nevertheless, even within these subgroups, variations can be noticed. When comparing Chile, Bolivia and Mexico, the first focuses more on increasing rent

⁶ Source: own elaboration based on Azamar Alonso (2023a); CEPAL (2023); Jiménez and Sáez (2022); Obaya and Pascuini (2020); Santos (2022); USGS (2024).

⁷ Level of central government involvement is a qualitative variable that summarizes the following indicators: mineral property rights, state-owned company, and explicit policy for lithium industrial transformation.

capture from partnerships with private companies. In contrast, the others are more concerned with governmental control of economic activities. At the same time, in spite of their liberal approach, Brazil concentrates mineral policies at the federal level, whilst Argentina adopts a decentralized strategy.

Despite these differences, important commonalities can be identified. Here, (1) the dependence on comparative advantages (natural resources endowment and low-cost labor), (2) the lack/backwardness of development of competitive advantages, and (3) the self-centeredness/singleness of these policies are stressed.

First, looking at the comparative advantages, the five countries have developed policies that reinforce their role as global suppliers of raw materials. In all cases, countries aim to attract foreign companies to invest in extractive projects to provide lithium to large consumers, such as China, European countries, and the USA. As an example of such an extractivist inclination, Brazil abolished the obligation of lithium-exporting companies to invest in domestic research and innovation.⁸ To some extent, this behavior might be a consequence of their long-standing experience with the extractivist development myth, which has already produced frustrating socioeconomic results in the recent past (Warnecke-Berger, Burchardt and Dietz, 2023).

To some extent, the convergence of these pro-extractive policies might be against the best interest of these countries. As all of them attempt to maximize lithium extraction and export, they might increase global supply, reduce the price of lithium components, and decrease their individual revenue, repeating the experience of the commodity super cycle of the 2000s (see Humphreys, 2015). Also, as they compete for foreign investment, they reduce their own bargaining power when negotiating with mining companies. For instance, if a corporation has various investment alternatives, in the event that a specific country approves stricter environmental legislation, the company might turn down a project and move to a country with less stringent regulations (see Jenkins, 2003). Similar rationale might also apply, for example, to tax and labor-related policies.

Based on the analysis performed, electric vehicle assembly seems to be the only segment that received some

government support within the lithium production chain so far. There has been some government assistance, though less structured, to the installation of domestic (Argentina, Bolivia and Chile) or foreign (Brazil and Mexico) electric vehicle factories, including cars and buses. In this sense, the low cost of Latin American labor and the existing low-technology assembly infrastructure might explain these investments.

At the same time, policies to develop new competitive capabilities based on technological development, for example, proved to be meagre or insufficient. Bolivia seems to be the pioneer in this area, but its weak technological base proved to be a barrier to reaching significant results. Chile and Mexico have proposed some policies in this direction. Argentina and Brazil, on their turn, do not seem to have cohesive national policies on this front. Still, previous research indicates that feeble industrializing policies are unlikely to revert extractivist inertia in Latin America (Milanez and Santos, 2015).

Policies focusing solely on mineral extraction and consumer goods assembly might reinforce the current disarticulated regional network, where Latin American countries export raw materials and import semi-finished products to perform the final manufacturing. The risk behind such positioning is that they miss the opportunity to promote lithium-related technological development and industrialization collectively. Also, they might end up concentrating their role on activities with lower added value (cf. Jiménez and Sáez, 2022).

A third common aspect of these policies is their reliance on isolated national capacity without considering regional collaboration. In 2014, the Argentine government suggested the creation of a 'lithium OPEC' (La Nación, 2014), and similar claims have been made by Bolivia (Ramos, 2023) and Mexico (Reuters, 2022). However, none of these countries have translated the discourse into actual cooperative policies. Such an approach is problematic, particularly if Latin American countries intend to 'fill in the gap' between lithium extraction and final product consumption. China controls most of the global battery production network, including material processing (52 percent), component manufacturing (52 percent), and assembly (66 percent) (Nakano, 2021); therefore, reducing this imbalance is a difficult task. Given this context, it is less likely that Latin American countries will, individually, have enough

⁸ On this issue, Chile contrasts from the others, as it was the only one that created a preferential quota for domestic use in order to stimulate local industrialization.

leverage to negotiate successful technology transfer policies.

In this scenario, coordinated initiatives or cooperative policies could be an alternative, as proposed by Obaya and Céspedes (2021). However, collaboration in the region faces many obstacles, such as the rent-seeking behavior of its elites (Palma, 2023), divergent

development strategies (Birle, 2018) and insufficient regional communication, research, and logistical infrastructure (Baumann, 2015), to mention a few. Nevertheless, if countries expect to reduce their economic and technological dependence on large lithium consumers, the existence of barriers should not be seen as a justification for the maintenance of the current policy disunion.

Conclusion: can old dogs learn new tricks?

The climate crisis has triggered various emission-related policies for large energy consumers such as China, Europe and the USA. As a result, significant investment has been directed to electrifying power systems, considerably expanding the demand for critical minerals.

This market shift impacted lithium-rich countries, including those located in Latin America. In this context, there has been some debate about whether lithium could promote a new development opportunity in the region (cf. Barandiarán, 2019), and the study of individual national policies suggests diverse initiatives to reach this end. This variety of policies resulted from the different national contexts and the interaction between state-centered nationalist traditions and neoliberal institutional frameworks.

Nevertheless, it is possible to identify some common features when these initiatives are evaluated together. As discussed in this text, they are mainly based on comparative capabilities and downplay the importance

of collaborative regional potentialities. They generally prioritize short-term rent capture based on foreign investment and increasing lithium export. At the same time, they promise the creation of an eventual lithium industrialization structure guided by sector-specific programs. However, they fail to include in such plans strategies to overcome historical pitfalls, such as unskilled labor, limited research and innovation capacity, and outdated industrial structure. Also, these initiatives solely consider national capabilities, ignoring the possibility of collaborative regional initiatives. These common aspects resemble, to some extent, policies adopted during the last commodity boom, which produced frustrating outcomes.

These challenges have been identified at different intensities in all five countries described in this text. Overcoming such obstacles is not easy; however, failing to do so might only repeat the past. Therefore, it seems imperative to consider more creative policies and alternative initiatives. Learning from each other's experiences could be a first step in this direction.

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EXTRACTIVISM

| The Project

The collaborative research project ***extractivism.de*** links the Universities of Kassel and Marburg. The project scrutinizes the extractivist development model and proposes new economic, political, and sociological conceptions of extractivism. It preliminarily focuses on Latin America and the Maghreb patterns. The project researches the conditions under which these patterns affect the persistence and transformative capacity of extractivism and its respective institutional settings. Finally, it explores how extractivism affects cultural processes and habitual routines and questions under what conditions and how far the development model extends into institution-building and social practice, i.e., everyday life.

The project aims to understand extractive societies not as deviants from the Western trajectory of development but in their own logic and their own particularities. The project, therefore, combines a strong empirical focus with theoretical work. It links both broad field research and data gathering of primary data and the qualitative and quantitative analysis of available secondary sources with a stringent transregional comparison. It develops methods in cross-area studies and investigates whether and why similar patterns of social change emerge in different areas and world regions despite significant cultural, social, or religious differences. Finally, the project intends to translate the findings for politics, society, and development cooperation.

Please visit www.extractivism.de for further information.

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