

UNIVERSITY OF OKLAHOMA  
GRADUATE COLLEGE

GEOGRAPHIES OF LITHIUM IN BOLIVIA: CONFLICTS OVER CONDITIONS

A THESIS  
SUBMITTED TO THE GRADUATE FACULTY  
in partial fulfillment of the requirements for the  
Degree of  
MASTER OF SCIENCE

By  
CAROLINA MARY MARCA LAZO  
Norman, Oklahoma  
2022

GEOGRAPHIES OF LITHIUM IN BOLIVIA: CONFLICTS OVER CONDITIONS

A THESIS APPROVED FOR THE  
DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL SUSTAINABILITY

BY THE COMMITTEE CONSISTING OF

Dr. Travis Gliedt, Chair

Dr. Diana Denham

Dr. Sarah Hines



## **Acknowledgments**

I would like to first thank my committee, Dr. Travis Gliedt, Dr. Sarah Hines, and Dr. Diana Denham for guiding me and supporting me along the process of writing this thesis. Thank you for your insights and encouragement. Secondly, I would like to thank the Fulbright Program, for making my dream to pursue this degree possible. Third, I would like to thank my friends from Bolivia and the friends I made in the United States. Thank you for your friendship, support, and encouragement during the last two years.

Finally, I would like to thank my family, my mother Mary, my father Ruben and my siblings Julio and Jorge, whose support was felt from the distance. I felt your love and support from Bolivia all the time. Thank you for standing by my side in this journey and believing in me. *Gracias por todo el apoyo y cariño. Los amo.*

# Table of Contents

Acknowledgments.....	iv
List of Tables .....	vii
List of Figures.....	vii
Abstract.....	viii
Introduction.....	1
Lithium and its uses .....	1
Perceptions of lithium.....	3
Why study lithium in Bolivia?.....	5
Methodology and structure of the thesis.....	5
Chapter 1: Lithium in the world context.....	9
1.1 Introduction.....	9
1.2 Energy Transition & Sustainability .....	9
1.3 Lithium Demand.....	12
1.4 Lithium Batteries .....	17
1.5 Conclusion .....	19
Chapter 2: Bolivia’s Historical Background on Natural Resources .....	21
2.1 Introduction.....	21
Natural Resources and Development.....	21
2.2 Bolivia’s Natural Resource Management History .....	24
Silver.....	24
Tin.....	25
Oil and Gas .....	28
2.3 Conclusion .....	30
Chapter 3: Conflicts, people, and lithium in Bolivia .....	32

3.1 Introduction.....	32
3.2 Overview of Bolivia’s lithium history .....	34
3.3 Failed contract with Lithium Corporation of America (LITHCO).....	43
3.4 Rejection of the Empresa Boliviana de Recursos Evaporíticos (EBRE) located in La Paz.....	47
3.5 Controversial Joint Venture with the Germany Company ACI Systems .....	50
3.6 Analysis on Stakeholders and Resource Management .....	62
3.7 Conclusion .....	66
Conclusions.....	69
Conflicts around lithium .....	69
Prospects of Bolivia’s lithium industry.....	70
Thoughts on Sustainability .....	71
Bibliography .....	74
Bolivian Legal Regulations.....	74
Institutional documents.....	74
Los Tiempos Digital Archives .....	76
El Diario Digital Archives .....	86
La Razón Digital Archives.....	87
Secondary information.....	90

## List of Tables

Table 1: Summary of lithium reserves, resources, and production [tons] .....	15
------------------------------------------------------------------------------	----

## List of Figures

Figure 1: Lithium World production [rounded metric tons].....	13
Figure 2: Location of the Uyuni salt flat map.....	35
Figure 3: Milestones of the lithium project.....	41
Figure 4: Summary of conflicts over lithium and common themes.....	63

## **Abstract**

Lithium is a metal with a rising global demand due to its applicability in batteries for electric vehicles and renewable energy storage. Bolivia holds the biggest lithium reserves in the world but has not been able to industrialize lithium to be considered a major exporter to the global market. Instead, the extraction and industrialization of lithium has been full of conflicts between government actors and some social groups of Potosí dissatisfied with their resources management decisions.

This thesis examines how social movements and the Bolivian government have had conflicts and disputes around lithium since its discovery in the 1970s, and how these conflicts have shaped the contemporary lithium scenario of the lithium industry in Bolivia. I conducted a historical overview based mainly on secondary resources, to understand the roots of Potosí's social movements demands. I used a thematic analysis over three case studies of conflicts over lithium to identify similarities between events and understand what the main themes around these conflicts are. I collected primary information from Bolivian Legal Regulations about lithium, institutional documents of the Bolivian government and its ministries, and three archives of Bolivian digital newspapers: Los Tiempos, El Diario and La Razón.

This study contributes to the socio-ecological knowledge over conflicts on lithium extraction. The key finding was that the struggles over lithium in Bolivia have unfolded due to the battle for control and participation in the process and not to the industrialization of the natural resource itself. Secondly, the collective memory of natural resource extraction, built since colonial times, has shaped the motivations, and demands of social movements from the region of Potosí.



# Introduction

## Lithium and its uses

Lithium is the lightest metal in the periodic table, and it was discovered in 1817 by Johan August Arfwedson when he was analyzing the petalite rock (Solón et al., 2021). Lithium has been widely used in different fields for a long time due to its properties and reduced costs. Lithium is lightweight, easily deformable, and has rapid oxidation and reactivity so that it can be used in phone batteries, pharmaceuticals, ceramics, different scale energy storage, and batteries (Hancock et al., 2018; Power & Cuttica, 2010). Pure lithium cannot be found on the Earth; it is obtained from the separation of other elements through chemical processes (Solón et al., 2021; Fundación Jubileo, 2021). There are three types of deposits where to find lithium: pegmatite deposits, volcanic clay deposits, and brine deposits (Bowell et al. 2020).

At the beginning of the twentieth century, the demand for lithium increased similarly to the identification of lithium deposits around the world. Fornillo (2019) explains that lithium use was widespread in the decade of the nineties due to the increased production and use of mobile electronic devices like cellphones. Since then, the demand for lithium has been increasing as well as its industrial applications. After 2015, demand for lithium, along with other natural resources, grew even more because of the global interest in Greenhouse Gasses (GHG) reduction. Mainstream efforts to combat climate change like the UN Sustainable Development Agenda for 2030, recognize the necessity to reduce GHGs as a mitigation strategy. Transitioning from fossil fuel energy systems to one based on renewable energy is one approach to fight climate change that has gained interest of the Global North industries and governments in the last two decades.

This energy transformation promotes the implementation of policies and projects to achieve energy efficiency and reach carbon neutrality.

Lithium played an important role in the communications revolution for its use in phone batteries, and now it will also be important for the electric vehicle transition (Calvo, 2019) and energy transition. There is high demand for lithium-based batteries because of their low self-discharge rate and lightweight characteristics (Gruber et al., 2011), making these batteries the preferred option to store energy. Currently, 89% of the world's lithium produced is being destined for the production of batteries (Bibienne et al., 2020). Moreover, lithium batteries now account for 56% of total battery production worldwide (Dorn & Ruiz-Peyré, 2020). Lithium-ion (Li-ion) batteries are essential for the storage of renewable energy and for producing electric or hybrid vehicles.

The region with the greatest lithium deposits in the world, named the Triangle of Lithium, formed by Argentina, Bolivia, and Chile, became of great interest to the international market (Fornillo and Gamba, 2019) and its own governments as the production of lithium batteries also increased. The Lithium Triangle holds lithium in the form of brine deposits. In order to obtain lithium from brine deposits, the process begins by drilling the surface and then pumping the brine into large evaporation pools of approximately 30 cm. deep. The next step is to separate the lithium from boron, magnesium, and calcium through a lengthy evaporation process that can take several months depending on the brine's composition and the region's weather. Later lithium chloride is obtained, which then will become lithium hydroxide or lithium carbonate used in Li-ion batteries (Ambrose & Kendall, 2020b; Heredia et al., 2020).

Throughout this thesis, lithium extraction and industrialization are mentioned by the author. The author refers to lithium extraction as the initial activity to obtain lithium in the form

of lithium hydroxide or lithium carbonate. On the other hand, she refers to the industrialization process when talking about the processes that aim to produce value-added products such as lithium-ion batteries or cathode materials.

### **Perceptions of lithium**

People can perceive lithium as more than a raw material, its meaning develops according to the possibilities of its use, its economic value, and what its value mean for each person, group, entrepreneurs, and Heads of State. To begin with, at global level, some governments and large companies consider lithium essential to achieve the energy transition towards the use of renewable energy. For instance, countries like China, Germany, and the United States have come far in the industrialization of lithium, so they have also increased their interest in obtaining and securing this resource for the future. Moreover, there is a common idea globally that suggests that the extraction of the materials necessary to promote renewable energy is by itself less harmful than the extraction of fossil fuels, reason why the energy transition is taking that approach. However, for this to be true and for a sustainable transition to be achieved globally, the full production cycle for renewable energies must consider just practices starting from the extraction of natural resources. Moving to South America, the potential for the commercialization of lithium due to the great resources found in the Lithium Triangle represents an industrialization opportunity for the region. Lastly, on a national scale, the governments since the 1970's have become interested in its extraction on the look for economic development first through its extraction and in the last two decade through its industrialization.

Lithium is a common interest for governments that want to transition to an energy system based on renewable energy, battery production, electric vehicles companies and indirectly, people with access to electronic devices. The attention over lithium connects the necessities of

wealthier countries with such industries and possibilities to support an energy transition to those with resource availability. Many countries in Europe are planning the reduction of the use of fossils while contemplating part of their planning the use of lithium from South America without fully understanding or deeply caring about the socio-environmental effects of this extractive industry (Fornillo, 2019). The reality of the effects of possible extensive exploitation of lithium is uncertain and will only be seen over time. It is already known that this industry requires water in large quantities for its operation, in addition to the fact that there are many social and political conflicts that have arisen in the Lithium Triangle to date.

The potential for the extraction of natural resources, like lithium, in Latin America is uncertain due to historical legacies in resource management that reflect a region that has been colonized and dispossessed of its natural resources for centuries. Natural resources had been exploited under colonial and neocolonial circumstances that caused inequality between and within countries (Vara, 2015). The natural resources are there, but since lithium extraction is multifaceted and can produce socio-ecological conflicts (Dorn and Ruiz-Peyré, 2020), the development of an industry that satisfies global, regional, and local needs will require arduous work and planning.

Despite efforts to diversify, Bolivia's economy has been depended on mineral exports since the 16<sup>th</sup> century (Lunde-Seefeldt, 2020). This has caused the potential to export lithium-based value-added products to become a priority within the last two decades governments. Evo Morales became the first indigenous president of Bolivia in 2006 with a great support of people who sought a change to the neoliberal model of previous governments. In the speeches of the last decades and with the entrance of Evo Morales into the government, the nationalization of natural resources became a fundamental and indispensable strategy to win the support of a large part of

the population. By 2006, Evo Morales nationalized oil and gas, and by 2009 Bolivia started to take steps toward figuring out the most appropriate approach to the extraction of lithium and its industrialization (Hopper, 2009). For instance, the strive for national production and control of natural resources is undeniable present in Bolivia and affects the current lithium scenario.

### **Why study lithium in Bolivia?**

The study of lithium allows us to have a perspective of the extractive industries and the complex scenario where they are located. This scenario contemplates technological, social, political, and environmental challenges. Lithium is also an interesting material for study due to its large number of applications, its use in energy storage, and its great availability that will keep it in global interest for a long time. In the case of Bolivia, lithium has a complex context that reflects different struggles like the social sectors' endeavor for their needs and rights, based on a collective memory of neoliberal resource extraction, and the government's challenge to develop the industry for the benefit of the country, all this in the midst of the global demand for this natural resource. Based on contemporary discourses around lithium in Bolivia, and the already made efforts to build a globally competitive industry around it, it is likely that Bolivia's current government and the ones to come will continue to work on the industrialization of lithium. The conditions under which this industry will be built by the government and the Bolivians are uncertain since in recent years there have been clashes of interest over how the lithium will be extracted, who will be in charge and how the benefits will be distributed.

### **Methodology and structure of the thesis**

The goal of this thesis is to understand how conflicts around lithium have developed over time and demonstrate that for Bolivia, most of these conflicts in the last thirty years occurred because of social sectors dissatisfaction with the conditions of the industrialization process rather

than the extraction approach itself. This study analyzes Bolivia's lithium from a geographical resource nationalism perspective, which studies how the environment and resource extraction are connected in the development of a country and how actors actively shape the political decisions over resource management (Koch & Perreault, 2019), by understanding the social relations around lithium in Bolivia, its implications on policy decisions and situating it in the global context of the energy transition towards renewable energy and Electric Vehicles transportation.

Qualitative research in human geography seeks to understand the creation of the place and human experiences, valuing the broad social context in which it is situated (Hay & Cope, 2021). This thesis considers that the lithium of the Uyuni salt flat and the different relations and interests between actors have shaped the creation of a contested region where the control, power, and participation over the management process are highly disputed, concurrently the social action has also shaped the industry development so far. In the last thirty years, the department of Potosí has been the home of strong social organizations such as COMCIPO, the civic committee of the city of Potosí, which have disagreed with the government's decisions regarding lithium extraction, profits and social participation. For the elaboration of this thesis, I first placed lithium in a global context to understand where the demand for lithium comes from in the first place and how it has been included in global trends in sustainability. Next, I studied the history of natural resources in Bolivia to understand the roots of social movements who opposed the proposals and projects of the lithium industry on multiple occasions. Lastly, taking into account both global and national context of the previous two points, I carried out a thematic analysis of three case studies of conflicts over lithium management. For this thesis I used as primary information Bolivian Legal Regulations about lithium, institutional documents of the Bolivian government and its ministries, three archives of Bolivian digital newspapers: Los Tiempos, El Diario and La Razón.

I chose the newspapers based on the availability and accessibility of the online information. These three digital archives allowed me to access newspaper articles using keywords and dates. I used Los Tiempos as the primary source because of the ease of accessing records from particular dates and using keywords in the search engine. In El Diario's case, the digital archive newspapers are available by date. La Razón, on the other hand, is only available by keywords and not by specific dates. The process of looking for articles first started with the search on Los Tiempos digital archive by using the following keywords: LITHCO, EBRE, ACI Systems, Uyuni, COMCIPO, and Potosí. Next, I filtered the information by date corresponding to the study cases. Then, I looked through El Diario digital archive on the dates before, during, and after the case study events. Lastly, I used the same keywords for Los Tiempos and looked in the search engine of La Razón's digital archive.

Los Tiempos is a newspaper from the city of Cochabamba founded in 1943. It is an independent press owned by the Canelas Tardío family that was the first newspaper in Bolivia to have its own website (Redacción Central, 2017). El Diario was founded in 1904 in the city of La Paz under the direction of Dr. José Carrasco Torrico, who was considered a politician, constitutionalist, and member of the Liberal Party of that time. This newspaper characterized itself by not maintaining any affiliation with any political party (El Diario, n.d.). La Razón was founded in 1990 and is an independent newspaper with ten investors under the management of René Ferreira. Today it is still privately held and now belongs to the Sunstripes Investments business group (Chávez, 2017).

The development of the research was limited by the information available online. Only digital archives were used because the research was conducted remotely in the United States. Further research with Bolivian archives and other sources of primary information, such as

interviews with social group leaders and members, could help to better understand the inside dynamic of Bolivian social groups and their stand on lithium industrialization. This thesis adds to the growing body of research on lithium in Latin America and contributes to the knowledge gap regarding socio-ecological conflicts of lithium extraction (Barandiarán, 2019). Moreover, this research could be further developed in the socio-environmental field, using it as a basis for an environmental focus study that results in a proposal for a lithium industrialization plan that foresees the industry's environmental impacts and connects them to the effect on people in Bolivia.

Chapter One locates lithium in the world context and presents a broad overview of why the demand for lithium is increasing and on which conditions this is happening. Chapter Two traces Bolivia's history with natural resources. This historical background permits us to comprehend how the collective memory around resource management was raised as well as the roots of the social movements that are currently active actors in the lithium dispute. Chapter Three presents the chronological journey of lithium in Bolivia and supports the argument that Bolivia's conflicts around lithium occur due to the failure to negotiate conditions between certain social groups and the government. This chapter presents on three short case studies on past conflicts around lithium. The case studies provide a broader explanation of conflicts about lithium in different scenarios and time periods. Lastly, I piece together the motivations of the lithium conflicts with the international context highlighting the final remarks of the research and prospects of the industry in Bolivia.



# **Chapter 1: Lithium in the world context**

## **1.1 Introduction**

In this chapter, I will discuss that a large part of the battery industry for the Electric Vehicle (EV) sector and for electricity storage has strong interest in lithium. Hence, the worldwide demand for lithium is increasing. Mainstream efforts in view of sustainable development and the fight against climate change from international organizations like the UN consider the energy transition as one of their strategies. The energy transition looks to increase the use of renewable energy and reduce the use of fossil fuels. A key element in the energy transition is to guarantee permanent access to electricity which can be challenging when coming from natural resources like wind, sun, and water that are intermittent. Therefore, electricity storage becomes highly important in this scenario as well as lithium due to its application in batteries. The increasing global demand of lithium, presented in this chapter, illustrates how lithium extraction is imminent and partly influenced by sustainable development efforts and climate change mitigation measures that have disparate benefits and consequences between supplier and producer countries.

## **1.2 Energy Transition & Sustainability**

The search for global objectives to achieve sustainable development and address climate change has been present in international organizations such as the United Nations (UN) since the Earth Summit in 1992 (Le Blanc, 2015). Within the achievements of this global conference were the establishment of the United Nations Framework Convention on Climate Change (UNFCCC) and the creation of the Commission for Sustainable Development (United Nations, n.d.). The energy transition is part of the UN's approach to slow global warming and fight climate change.

It looks to move away from fossil-fuel energy to low carbon emissions systems, where renewable energy is becoming the main substitute. The Paris Agreement (UN, 2015) is the reference agreement of global action over climate change, and it recognizes the climate change threat to humans and the planet. This agreement establishes that a worldwide effort must be made to prevent the temperature from reaching a 2°C (3.6°F) increase over pre-industrial levels and encourages efforts to keep temperature rise below 1.5°C (2.7°F). Additionally, the UN Climate Conference of 2015 (COP21) resolved the creation of the 2030 Agenda for Sustainable Development, which established a fifteen-year plan to achieve seventeen Sustainable Development Goals (SDGs) and also set the goal of net-zero greenhouse gas emissions by 2050. The last UN Climate Conference (COP26), held in November 2021, developed the Glasgow Climate Pact (UN, 2021a) that stresses the urgency of the mitigation and adaptation actions to address climate change and achieve the goals of the Paris Agreement. Moreover, it calls parties to accelerate the transition toward clean power generation and recognizes the need for a just energy transition. For this transition towards renewable energy to be considered sustainable it is essential that countries' leaders work on consolidating efforts that guarantee equity and justice for people and the environment at every level; local, national, regional, and global.

Sustainable Development Goal 7 aims to ensure access to affordable and clean energy for all. Energy is at the core of the Agenda for Sustainable Development because it is crucial to achieve the rest of the objectives (UN, 2021b). By 2021, the average global temperature had risen 1.2 °C from pre-industrial levels, which reflects the urgency to find effective ways to reach the climate goals by 2050. One of the primary paths of achieving a decarbonized future are through the extensive use of photovoltaic solar power, wind power, and electric vehicles (Yan, 2022, IEA, 2021). IEA's (2021b) forecast estimates that the expansion of solar PV would need to

double in the next five years to meet the 2050 goal and that Latin America's renewable capacity could increase by 34% during the next five years. Along with the change in energy production, it is also essential to develop forms of energy storage for renewable sources since some, such as solar and wind, do not have a constant supply (Del Barco & Foladori, 2020). In this context, Lithium-ion (Li-ion) batteries become essential in the energy transition towards renewables by supporting the storage technology for grid-connected systems, off-grid power supply, and the electrification of road transportation (Ghassan et al., 2018).

The UN's SDG agenda looks for economic growth, social inclusion, and environmental protection (Stafford-Smith et al., 2016). Having these global shared goals represent a challenge for global governance (Stafford-Smith et al., 2016). While many support the UN approach on Sustainable Development and more than 190 countries have signed the Paris Agreement, there is still debate among this topic. Holden et al. (2017) qualify the UN Sustainable goals as "weak" because it focuses on economic growth which is not necessarily sustainable by itself but depends on the regulations of each country, instead they propose a model based on three moral imperatives: satisfying human needs, ensuring social equity, and respecting environmental limits. There are also debates around the goals and targets effectiveness. Siciliano et al. (2016) state that the UN SDGs do not directly address equity and justice in the process of achieving the goals. Stafford-Smith et al. (2016) claim that interlinkages across sectors and actors are crucial for an effective implementation. When it comes around the energy goals although many global efforts to mitigate climate change focus on the energy system, energy and climate change do not have a strong interrelationship with all the SDGs (Le Blanc, 2015).

The actions taken to achieve an energy transition may bring different opportunities and consequences around the world. Geographical differences of the energy transition are based on

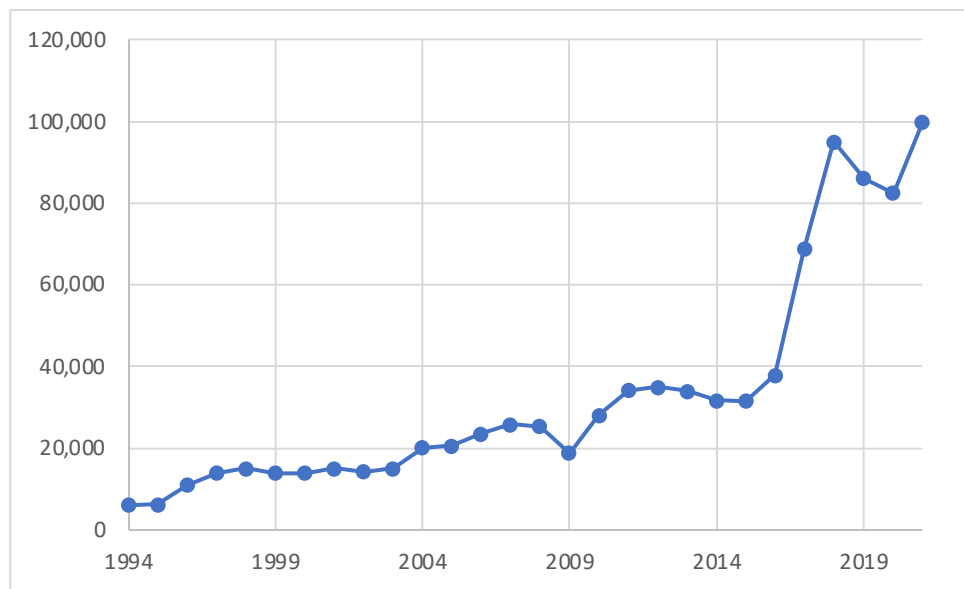
the climatic conditions and capacity for renewable energy technologies, policies, and consumption behavior (Bridge et al., 2013). Moreover, the global energy system is often influenced by elites that do not look after the welfare of the most vulnerable people and ecosystems (Healy & Barry, 2017). To get on board on the renewable energy trend, many countries of the Global South are under the necessity of seeking economic and technological support from foreign countries (Siciliano et al., 2021). There is also a differentiation in the roles that countries are undertaking in the energy transition, based on their resource availability, technology, and economic capacity. In order to achieve a just energy transition, global strategies and efforts should consider a consistent distribution of economic benefits and costs geographically (Siciliano et al., 2021).

### **1.3 Lithium Demand**

Research on lithium-ion batteries for energy storage started in 1960s and the first battery on the market was produced by Sony in 1990, since then manufacturers have extensively used lithium in batteries and researchers have continuously work on improvements from the first battery (Chen et al., 2009). Lately, the use of batteries has centered around batteries for the grid, off-grid electricity storage, and especially for electric vehicles (EVs). Some consider that the expansion of EVs is necessary to achieve global Sustainable Development because of its considerable potential to reduce GHG emissions (Ajanovic & Haas, 2018; IEA, 2021a). The use of EVs by itself cannot guarantee a global sustainable development, the impact will depend on the national and international socio-environmental policies and agreements. In the last years, there has been an increase in EV production despite the challenges of the Covid-19 pandemic on account of the rise of EVs' support policies like setting electrification sales targets, Internal Combustion Engine bans for cars, and announcing net-zero pledges. So far, the largest market

for lithium-ion batteries has been portable electric devices, yet this is rapidly shifting towards electric and hybrid vehicles (Ghassan et al., 2018). In 2020, there was a 43% global increase in electric car stock compared to 2019, and Europe and China had the biggest EV market (IEA, 2021a). According to Del Barco and Foladori (2020), approximately 9 to 15 kg of lithium are used in one electric car. As a result, the demand of lithium has increased sharply since 2015 (see Figure 1).

Figure 1: Lithium World production [rounded metric tons]



Elaborated by the author based on data of USGS Mineral Commodity Summaries from 1994 to 2022

According to the USGS (2022), global production rose by 21% from 2020 to 2021 due to the high demand from the Li-ion battery market. The estimated global consumption in 2021 was 93,000 tons, which corresponds to a 33% increase from the year before. There is a significant demand for lithium from Asia, Europe, and the United States. In 2019, lithium world consumption was distributed: China 61%, Korea 23%, Europe 10%, United States 5%, and India 1%. (Solón et.al., 2021; USGS, 2022). The main lithium-based products required are lithium carbonate and lithium hydroxide in two forms; technical grade, which means a purity percentage

of 98.5% to 99%, and battery grade, which has a purity percentage greater than or equal to 99.5% (Fundación Jubileo, 2021; Solón et al., 2021). Of these products, those in highest demand are lithium carbonate and lithium hydroxide in battery grade (Solón et al., 2021), which is consistent with China's important production capacity for value-added products from lithium hydroxide and metallic lithium (Obaya, 2019).

Lithium can be found in oceans, oil wells, geothermal fields, clays, igneous rocks, which are the result of cooled magma, and in salt lakes or brines; however, at the moment, only the last two sources (rocks and brines) are economically feasible for its extraction (Solón et al., 2021). Between these two, the cost of extraction from brines is higher than from mines because of the chemical process brines must undergo (Fundación Jubileo, 2021). However, brine extraction is expected to grow due to its great potential and advances in the production chain to reduce costs. By 2100, it is expected that brines will become the primary source of lithium, accounting for 67% of the world's production and leaving 33% to igneous sources. Ambrose and Kendall (2020a) predict that in view of the increasing demand for lithium, more resources will need to be developed.

Most of the world's lithium resources are found in the form of brines. Currently, the largest reserves are found in igneous rock mines. Reserves have an economic returnable value right now, whereas resources are the quantification over the earth that may or may not be recoverable eventually (Ambrose & Kendall, 2020a). Table 1 describes the global distribution of lithium reserves and resources, as well as the lithium production in the year 2020 according to the USGS (2022). Chile has 42% of the world's lithium reserves, followed by Australia, which has 26%, but in terms of production, Australia remained the leader in 2020, producing 48% of lithium globally. Bolivia does not figure any amount on reserves and production because its

industrialization is not yet fully developed and does not contribute significantly to the global market. However, in terms of resources, Bolivia is the country with the largest known resources in the world (24% of the total).

Table 1: Summary of lithium reserves, resources, and production [tons]

	Total	Bolivia	Chile	Argentina	Australia	China	Others
Reserves	22,000,000	-	9,200,000 42%	2,200,000 10%	5,700,000 26%	1,500,000 7%	3,400,000 15%
Resources	89 million	21 million 24%	9.8 million 11%	19 million 21%	7.3 million 8%	5.1 million 6%	26.8 million 30%
Production in 2020	82,500	-	21,500 26%	5,900 7%	39,700 48%	13,300 16%	2,100 3%

Elaborated by the author based on data of USGS Mineral Commodity Summaries 2022

Lithium from igneous rock sources is mainly available in Australia and China, whereas brines are found in Argentina, Bolivia, and Chile (Heredia et al., 2020). Around 56% of the global lithium resources are located in South America, distributed between these three countries. This region is the so-called Lithium Triangle, which comprises multiple salt flats in each country. So far, Chile has been the leader among these three and was the second global producer in 2020 after Australia. The salt flats located in the Andes mountains were bodies of water that evaporated due to lack of water and high solar radiation. They have soils with low organic matter, and abundant salts, the water in this region is mostly found in the form of wetlands in distant lower areas (Argento & Zicari, 2018). Each of the countries in the Lithium Triangle has had different political strategies for its resource management, Chile has let private companies operate and extract lithium under lease agreements. In Argentina, the purchase and mining rights in the salt flats are allowed to any individual or legal entity; lastly. In Bolivia, the government

established state control of the extraction, industrialization, and commercialization of lithium (Heredia et al., 2020).

The Uyuni salt flat is Bolivia's largest deposit of lithium. Compared to its neighboring countries, Argentina and Chile, lithium coming from the Uyuni salt flat is less competitive due to its high concentration of magnesium and the long rainy and dry seasons in the region that lengthen the process of solar evaporation necessary to extract lithium (Sanchez-Lopez, 2019b). In the last years, Bolivia has created pilot plants for the production of potassium chloride (used as fertilizer) and lithium carbonate, which is used for the production of lithium hydroxide and cathode materials. Lithium carbonate and lithium hydroxide are the lithium products with the highest demand worldwide. In 2017, the demand for lithium carbonate was about 220,000 tons, and by 2025 this demand is expected to reach 900,000 tons (Dorn & Ruiz-Peyré, 2020). The Bolivian government has shown great interest in the industrialization of lithium, considering the high global demand and the asset of having the largest known resources, but this process has been full of social, political, environmental, and technological obstacles, which is why Bolivia has not become a leader in the lithium market so far despite of its large resources.

The peak price of lithium was achieved in 2018 reaching 16,500 USD/metric ton, but the price dropped in 2019 to 13,400 USD/metric ton and has continue to decrease since then; in 2020, the price reached 6,250 USD/metric ton (Fundación Jubileo, 2021). Among the reasons for the price drop are the improvement in technology that can lead to reducing the amounts of lithium and other materials used in batteries, and the recent efforts and research on battery recycling. Therefore, it is important to consider that lithium recycling could greatly contribute to the supply of lithium in the near future. There is the possibility that future policies and technological development will support the recovery of lithium from recycled batteries and



reduce the future demand for primary lithium (Ambrose & Kendall, 2020a). Beyond recovering lithium, this shift will also seek the recovery of other materials like copper, nickel, and aluminum used in the cathode part of the batteries (Ambrose & Kendall, 2020b). Cobalt is one of the most critical to be recovered because of its low resources and its ethical and environmental problems during its extraction that affects mainly Congo and Morocco (Dühnen et al., 2020; Ghassan et al., 2018). The effort in creating batteries with a more extended lifetime and direct recycling of active battery materials is essential for the development of a greener and more sustainable battery industry (Dühnen et al., 2020), and it should be considered by the global demand and supply.

#### **1.4 Lithium Batteries**

Lithium batteries have a wide application: they can be used in small portable devices such as cell phones, but they can also support the storage of electricity connected to the grid system. Compared to other batteries of different chemistries, such as Lead-acid, NiMH, or NiCD, Lithium-ion (Li-ion) batteries have a higher potential for energy storage because of their power density, electric density, and energy efficiency (Ajanovic & Haas, 2018; Ghassan et al., 2018). Li-ion batteries have four main parts that are described below: (Ghassan et al., 2018; Solón et al., 2021)

- The cathode is the positive electrode that normally contains lithium, cobalt, nickel, and manganese.
- The anode is the negative electrode, usually made with some form of carbon to improve the stability and useful life of the battery.
- The electrolyte is the liquid through which the ions of the electrodes travel from one to another. It is often made from a mixture of organic solvents and lithium salt.

- The separator is a safety physical barrier made from a permeable material like polyethylene and polypropylene that prevents contact between the cathode and the anode.

Among lithium-ion batteries, there are different technologies depending on the materials of the cathode; some of them are Lithium nickel cobalt aluminum (NCA), Lithium nickel, Manganese cobalt (NMC), Lithium cobalt oxide (LCO), Lithium manganese Spinel (LMO), Lithium Titanate (LTO), and Lithium iron phosphate (LFP) (Ajanovic & Haas, 2018; Ghassan et al., 2018). Portable electric devices mainly use LCO, but they are starting to change to NMC and NCA technologies. On the other hand, electric and hybrid vehicles commonly use NMC and NCA (Ghassan et al., 2018). The shift from LCO to NMC and NMA occurs because of the limited availability of cobalt and its high prices, NMC and NMA have a high energy density and high capacity, and in the case of NMC, the manganese increases its stability (IEA, 2020). Hence the value chain for lithium-ion batteries requires more materials besides lithium, like nickel, cobalt, manganese, aluminum, copper, silicon, tin, titanium, and carbon (Obaya, 2019).

Regarding the manufacture of the Li-ion batteries, China is the country that has the biggest production capacity, 73% of the world's total; other countries that also produce these batteries are Japan 7%, Korea 7%, the United States 7%, and others with less participation (Solón et al., 2021). It should be noted that although South America has significant lithium resources and reserves, there are no established battery-producing industries to this date. This scenario could change in the coming years, depending on the actions taken by the countries of the Lithium Triangle and the speed to achieve it. There is also the possibility that new alternatives will eventually replace lithium; however, lithium will most likely continue to be one of the critical commodities for at least the next decade (IEA, 2020).

Lastly, although lithium batteries are portrayed as better for the environment, it must be recognized that their components can be toxic to people and the ecosystem; therefore, it will be important to plan the regulation of its waste and ensure recycling. It is also important to note that the reduction in carbon emissions that these batteries can provide is highly related to the type of energy that feeds the battery (Li et al., 2018). Lithium-ion batteries' sustainability will depend on its complete production cycle, starting from where and how the resources are taken and moving into their management at the end of their useful life cycle. In the case of lithium, which is only one of the components of the batteries, its extraction main concerns are extensive water use, water pollution and changes in the ecosystem. In Argentina, the main concerns of the extraction of lithium in the salt flats are the scarcity of water for agriculture and pasturage, and the risk of freshwater contamination (Argento & Zicari, 2018; Argento, 2020). Moreover, this industry also compromises the territory and put at risk the region's flora and fauna (Argento & Zicari, 2018).

## **1.5 Conclusion**

Energy transition as part of the Agenda for Sustainable Development has encouraged multiple efforts to fight climate change and mitigate its effects. In this regard, energy and consequently Li-ion batteries become key components of the global planning to reduce GHG emissions. Due to global warming, the change from a dependence on fossil fuels to renewable energy has become more necessary and urgent than ever. However, if the new energy system is to be truly sustainable, it will be important to ensure equity and justice practices for the complete chain process of low-carbon energy, which includes the procurement of raw materials like lithium.

Lithium's global demand and supply reflect a concentrated location of lithium resources and reserves, and its producers and consumers. On the one hand, the largest lithium resources are

found in the Lithium Triangle in the form of brines, with around 56% of the world total, followed by Australia's reserves which are much smaller compared to the South American region. On the other hand, it is possible to notice a focus on the North for the consumption and production of lithium. China, Europe, and the United States have potentially become the largest lithium consumers and the most advanced in terms of the development of the battery industry and value-added products based on lithium. This focus of resources and consumers may bring along new global disputes. Consumer countries are in constant competition to secure raw materials access and improve their technologies and production processes. However, supplier countries, like the ones in the Lithium Triangle, have different challenges. They must work on strategies that potentially allow the production of batteries and not only the extraction of raw materials and be careful that the extraction of lithium does not repeat the extractivist model of the past, which only benefits consumers, as discussed in the next chapter.

Lithium-ion batteries are only one of the many possibilities for energy storage and researchers are continuously working to develop new variants or alternatives (Gallo et al., 2016). Nevertheless, as seen in this chapter lithium is already highly demanded and will probably continue to be in the next decades. The opportunity to reach a sustainable extraction and consequently a just energy transition will depend on the socio-environmental conditions and strategies of each country and their interrelation at the global level. In this sense the extraction of lithium is not in question but the conditions under which it will be carried out are.

## **Chapter 2: Bolivia's Historical Background on Natural Resources**

### **2.1 Introduction**

Bolivia and many other countries in Latin America have been blessed with rich lands filled with uncountable natural resources. Ancient cultures have settled their empires upon the use of these resources that, with time have been transformed from local wealth to international commodities. Latin America's economic development has a complex evolution where local and international interests get intertwined in resource management decisions and strategies. Bolivia's richness in natural resources became the most important income that has nurtured the country since the arrival of the Spaniards. Minerals were the core of the country's economy up to the second half of the twentieth century when oil and natural gas took the reins of the exportations and continue to be so until today. This chapter presents the historical background of Bolivia's long history with natural resource extraction to understand Bolivia's contemporary social, environmental, political, and economic conflicts around lithium.

#### *Natural Resources and Development*

Mid-century theories like the World Systems theory, by sociologist Immanuel Wallerstein, and the Dependency theory described a division of labor where some are benefitted and other are exploited to meet the needs of the whole system (Stern, 1988). In this context countries in the periphery would be conditioned by the interrelations and dynamics of the international market and industries' demands. Dependency theory "... critiques [of] neo-classical economies and modernization theory, which shows an alternative vision of Latin America's history and reality emphasizing the external constraints and impositions of international capitalism" (Stern, 1988, p834). These theories characterize Latin America as the source of

materials for capitalism and therefore as a passive agent in international development. Thornton (2021, p196) argues that “international development apparatus at mid-century as the response to a set of sustained demands from below, rather than simply as some brilliant and nefarious imperialist imposition from above”. Latin America had an active participation on the global economic development. It had its own construction of free wage labor which was influenced by its own economic organization. Hence the evolution of labor was not the result of capitalist requirements alone, but the demands and struggle of the working force.

On the other hand, Latin American economists began to assess these neoclassical theories in the look for approaches that were better fitted to the context of the region. Latin America's social-historical critique to the dependency theory coincided with the beginning of social science critique from United Nations agency ECLAC (Economic Commission for Latin America and the Caribbean) structuralists (Stern, 1988). From the 1940s to the 1960s, ECLAC was actively collecting data across Latin America and developing theories simultaneously. Between the 1950s and the 1960s, the economic theory of import-substitution industrialization (ISI) supported by ECLAC was promoted around Latin America. This theory looked for the reduction of foreign dependency through the local production of industrialized products and became the ruling economic policy in Latin America.

Latin America’s economy relies on different export goods, and while there is a big range of possible raw materials and products to be exported, “the extraction of natural resources, and energy resources, in particular, link together local social and political changes with capitalism and the global economy” (McNeish, 2018, p5). Having vast natural resources does not necessarily mean that they will bring economic benefits to the country neither does this imply that if this was the case, there will be a fair and homogeneous distribution of the profits which

can result in social and economic inequalities. In the last two decades, many Latin American countries have been led by governments that brought back nationalism and increased the state's participation and involvement as the core of their economic agendas. Moreover, upon the commodities boom and its great profitability, a new progressive cycle began in Latin America, where extraction of natural resources became the new economic model for the governments (Svampa, 2019). For the case of Bolivia, this new neoextractivist model has been used by the government of Evo Morales and the MAS movement to justify extractives activities that feed the global demand, that has strong capitalist motivations, with the aim of an imaginary of modernity and economic development supported by a strong state control.

Upon the conquest of America during the late fifteenth century and early sixteenth century, Bolivia's mineral richness became of global interest. Since then, it has become a source of natural resources, more often raw materials, to the world, becoming a key component in the world's economy (Klein, 2011). The social scheme of colonization and the entitlement of the local resources was just the beginning of Bolivia's long relationship with the international market. The interrelation between Bolivia's natural resources and the world began with Potosí becoming the source of wealth for Spain during the Colonial period. This historical event, along with Oruro's exploitation of tin later on, shaped the livelihoods, economic activities, and urban centers of the altiplano (Perreault, 2018). To this day, Bolivia's economy continues to depend on the export of natural resources. Bolivia has had a consecutive series of resource booms. The biggest was silver, followed by tin, and later replaced by hydrocarbons.

## 2.2 Bolivia's Natural Resource Management History

### *Silver*

At the beginning of 1545, a native Andean man discovered silver in a mountain of Potosí that was later known as “Cerro Rico” (Rich Hill). Upon this discovery and in a land ruled by the Old-World foreigners, the Spanish crown ordered the exploitation of this resource for its own benefit. Between 1545 and 1560, Potosí's silver production increased rapidly, and this city became the world's primary source of this mineral. The great boom of silver occurred around 1570 and 1650, when silver exports grew enormously because of the increasing international demand (Lane, 2019).

The commodification of silver as an international good gave rise to a complex web of local changes and practices. First, silver production had considerable effects on the health of neighboring communities because of the high toxicity implications of the industry and its dangerous practices. Up to date, miners of the “Cerro Rico” are exposed to harsh working conditions and generally have a short life expectancy. Second, the mining industry also altered the landscape and caused rapid destruction of the natural environment (Lane, 2019). Third, the labor force for this industry was mainly conformed of indigenous people who had an active role in the production dynamic. In order to develop the industry that was led by foreigners, Bolivia relied on the import of science and technology. Science and technology regarding industrial development have been complemented by external methods since the times of the silver boom. Actually, the import of technology is still in force in the country. The inadequate investment in this sector had repercussions on the State resource management and on their decision to export raw materials or enable the concession of the natural resources for its industrialization.



The extraction of silver in Potosí is one of the most influential events in the collective memory of the Potosí region. On the one hand, the several decades of extraction that mainly benefited elite groups abroad created a resentment or at least the urge for social groups to have better control and participation over where the country's resources were going and who benefited from it. On the other hand, the department of Potosí has been one of the poorest in the country and with less economic investment, in spite its great mineral wealth.

Up to the nineteenth century, Bolivia's economy relied heavily on the exportation of silver, which made it highly vulnerable to international trade. During the early 1900's Bolivia's silver production decreased because of the difficulty to find silver with great quality on the upper layers of soil. Therefore, production methods had to change to recover silver from deeper places, and this had a significant effect on silver's price, which made it less attractive for the international market, where other countries' offers were more competitive. However, Bolivia's richness in natural resources permitted the transition toward the tin mining industry.

### *Tin*

During the twentieth century, tin became the new exporting good of interest, and Bolivia's elites made sure to generate profits upon this new demand. While the extraction of silver and tin had their boom seasons, they also suffered severe drops. The role of the State and the country's elites in the creation of policies and strategies that would guarantee a collective understanding where the needs of all social classes were satisfied failed, and despite having seasons with record export quantities, they were not able to create a stable economy. This unequal distribution of wealth can be registered throughout Bolivia's history and can be attributed to mismanagement on the part of the authorities.

Initially, a series of popular demands rose during the years that preceded the 1952 Revolution and when the tin exportation was at its peak. An elite group, formed by Simón Iturri Patiño, Carlos Víctor Aramayo, and Mauricio Hochschild, later known as the three “Tin Barons,” became the leaders of the tin exportation in the early twentieth century, Simón Patiño controlled forty percent of the country’s reserves by the year 1920. Once again, wealth was distributed and concentrated within an elite group.

Bolivia’s tin exportations were conditioned by the world’s market and demand. During the first half of the twentieth century, elites’ control over natural resources set a social system that did not look for indigenous people and miners’ well-being, and differentiated social classes were more evident through racist and violent practices. The tin industry dynamic in Bolivia corresponds to a backward capitalist economy model where reduced groups were obtaining wealth through the work and extraction of natural resources. While the tin industry was led by private owners, Bolivian’s government strategy was set on the development of the oil industry.

The Chaco War took place from 1932 to 1935; this was a dispute over the Chaco Boreal region between Bolivia and Paraguay and the alleged existence of oil (YPFB, 2013). This event was Bolivia’s most costly defeat because of the great land loss and the large number of lives lost in combat. The Chaco War gave rise to social movements that would lead the 1952 Revolution. These groups looked for worker's control, designation of worker’s delegates and representatives, and investment of the surplus value of the mining activity (Dunkerley, 1984). As initiative of the National Revolutionary Movement (MNR – Movimiento Nacionalista Revolucionario) in 1944 mine workers established the Federation of Bolivian Miners’ Union (FSTMB -Federacion Sindical de Trabajadores Mineros de Bolivia), that later played an active role in the national politics.

In April 1952, civilians and miners under the MNR leadership led Bolivia's Revolution which brought with it significant social and political reforms as the agrarian reform which change the Campesino landownership dynamic by taking away hacienda lands to distribute it to the peasants (Klein, 2011). Moreover, the Bolivian Worker's Central (COB- Central Obrera Boliviana) was formed. According to Dunkerley, this is "one of the most militant trade union confederations in the world." This organization had an essential role in Bolivia's political context, and it is an example of social movements' importance and how they shaped politics through resistance and struggle over social and political injustice. On the other hand, Paz Estenssoro, MNR's leader, did not nationalize the tin mines immediately, despite social movements demanding this since before the revolution. The initial deferral on the mines' nationalization corresponded with the government's awareness of Patiño's U.S. shareholders and concerns about the United States' reaction.

In order to satisfy the popular demands, MNR decided to nationalize the biggest tin mines while being careful to promise compensation and discarding the idea of nationalizing other medium-sized mines that were managed by U.S. companies (Klein, 2011). In October 1952, Bolivia expropriated the Barons' tin holding, and the Bolivian Mining Corporation (COMIBOL - Corporacion Minera de Bolivia) took control of the tin following the demands of the FSTMB and COB, reinforcing their power. Nevertheless, the tin industry was not in its best time after the revolution tin prices fell, and COMIBOL managed the industry poorly, which led to overemployment and inefficient production practices. MNR's government had lots of bureaucracy and assigned jobs for supporters of the party. In the early years of COMIBOL, the MNR's strategy focused on the oil industry and began to move away from tin.

During this time, Bolivia's economy mainly depended on tin exports. However, in the national context, agriculture was one of the most important activities in the local and national contexts, hence the importance of the agrarian reform. MNR's rule, even though coming from a social organization origin, failed to achieve economic prosperity nor become independent from international investments.

### *Oil and Gas*

From the 1950s to the 1980s, Bolivia adopted the import-substitution industrialization (ISI) model as its economic strategy. Upon the application of this model, governments have promised economic growth through the creation of added value industries moving away from raw materials' exportation. This promise has been challenged by the lack of technology and research investment in the country. Moreover, in the search for independence from imports, Bolivia has repeatedly relied on important external economic aid to overcome those technological gaps, which paradoxically maintained its dependency on international institutions such as the World Bank and the International Monetary Fund (IMF).

A military coup took the MNR government out in 1964, which then kept the country under military rule for eighteen years. Protestors against the military regimes created a social environment filled with massive popular protest and disconformity of private international investment over national resources. These military regimes were characterized by their violent and repressive behavior toward social movements, indigenous communities, and mining unions that later would become on the protests fronts to defend the national management of Bolivia's natural resources.

After the return to civilian rule in 1982, Victor Paz Estenssoro was reelected to the presidency in 1985 and served until 1989. His government implemented neoliberal economic

reforms to overcome the hyperinflation. According to Kohl and Farthing (2006), this period of global neoliberalism, involved setting privileges to the international market and concentrating on obtaining wealth. When governments apply a neoliberal economic model, they tend to look for the interest of the private sector and reduce their management participation, which affects citizens' rights and results in the loss of jobs (Kohl and Farthing, 2006). Late twentieth-century, Bolivia shifted from a dependency on mineral exports to hydrocarbons. However, the nationalization and privatization of these sectors remained waiting to be included in the political agenda.

By the beginning of the twentieth-first century, neoliberal practices provoked the uprising of resistance groups around the country that rejected the exploitation of natural resources for the benefit of the international market while ignoring local needs. This was the case of the Water War in Cochabamba, where resistance groups fought for their right to access to water. During Hugo Banzer's presidency (1997-2001), he announced the privatization of water by a North American multinational company. This event reunited rural and urban people in protests over the dispossession of this natural resource that forced the government to change the legislation (Hines, 2022; Klein, 2011) This event would only be the beginning of more uprising movements against privatization and external concessions in the coming years. In 2003, during the administration of Gonzalo Sanchez de Lozada, another resource conflict took place. This time the conflict started because of Sanchez de Lozada attempt to export gas with U.S. investment. Peasant and mestizo social movements objected against this and were part of mobilizations and violent confrontation with the national forces in Warisata and La Paz city (Klein, 2011). This tragic event is a reflection of Bolivia's social movements resistance and struggle over national resources.

After the events of 2003, Evo Morales' support to the presidency escalated because of his strong stand against neoliberalism and discourses about increasing national control over natural resources. The development plan proposed by Evo Morales reflected his proposal for a "Cultural and Democratic Revolution" that looked for a change from the previous neoliberal period. Evo Morales' National Development Plan (Plan Nacional de Desarrollo - PND, 2006) established State participation as essential for national development. Among the first actions of the government were the nationalization of hydrocarbon resources and a more participatory role in the mining sector. From the beginning, the PND 2006 highlights the need for a change from the model of exporter of raw natural resources towards the industrialization and production of value-added products.

### **2.3 Conclusion**

Bolivia's natural resources were at the center of social movements, economic strategies, and confrontations throughout its history. Bolivia's exportation of raw materials have maintained a correlation with the needs of the international market. Conversely, Bolivian authorities have not been able to manage the great abundance of natural resources for the benefit of all Bolivians. Hence, social movements have continuously voiced their demands through mobilizations that sometimes ended in conflicts to demand greater participation in natural resources decision-making and create conditions that are beneficial for their sectors and the region. Bolivians have actively participated in and shaped the economic and political scenarios since the beginning. A constant proof of this is the indigenous and popular demand, resistance, and struggle over the management of natural resources.

By looking back on Bolivia's natural resources long history, one can understand why Bolivia is a country with a strong resistance to external control and a great desire for

industrialization. The complex political scenario, bureaucracy, and self-interest decisions turned Bolivia's economy into highly dependent on natural resources exportation and also external financing for its development. Bolivia's dependency on the international market makes its economy vulnerable to demand rises and drops, which is problematic for its economic growth. Silver, tin, and hydrocarbons are fair examples of poorly managed economic strategies that result in uneven development within the country and at global scale. On the national scale, Bolivia's history reveals a very notable separation by social classes, which has not been overcome to date. The conditions for the natural resource extraction have only benefited a few. In the case of Potosí, the profits from its great natural wealth did not contribute to the economic development of the department. For many years, social movements and civic committees have demanded greater investment for public works and regional growth. At an international scale, Bolivia, like other Latin American countries, was affected by the dispossession of its natural resources to support the global capitalist system. This situation has motivated the need and desire for greater national control of natural resources among a large part of the population, which was reflected in the 2005 elections victory of Evo Morales, whose Development Plan included nationalization as its main strategy.

## **Chapter 3: Conflicts, people, and lithium in Bolivia**

### **3.1 Introduction**

For the last decade, Bolivia's government has opted to carry out the lithium project, which aims to industrialize the resource for export in the form of value-added products such as Li-ion batteries. Yet the government interest around lithium started around five decades ago. Since then, conflicts around the extraction of lithium have resulted from the conditions of who controls its extraction and industrialization, who and how benefits from it, and who gets involved in the process, rather than questioning whether the industry should or should not be carried out. It is important to recognize that lithium is more than a commodity that can be extracted and used without acknowledging its deep connection with people. The Lithium Triangle holds the biggest reserve of lithium up to the present. According to the 2022 report from the U.S. Geological Survey, Bolivia is the country with the biggest lithium resources, 21 million tons, and the following two countries in line are Argentina with 19 million tons and Chile with 9.8 million tons. These three neighboring countries have developed the lithium industry in different ways that were shaped by their political record, social struggles, and resource governance strategies.

The history of lithium extraction in Salinas Grandes, one of the salt flats of Argentina, is an example of the complexity that the lithium industry has on the socio-environmental scenario of the country, especially for local communities that live in the proximity of these flats. According to Argento and Zicari (2018), Salinas Grandes' industrialization of lithium opened the way for discussions about indigenous rights and land protection by indigenous groups. These indigenous groups demanded their land protection because they had taken care of and used it for years. They feared they would lose their jobs and their access to water for consumption and



agriculture. The extraction of lithium requires significant quantities of water, and the environmental effects can put the survival of these communities at risk (Argento, 2020). Some of the most striking problems of the industry are the use and pollution of water, construction of roads in sensitive ecosystems, damage to flora and fauna, and transformation of the economic and social dynamic (Argento & Zicari, 2018). Indigenous communities are important actors in the dynamics of lithium extraction, and it is essential to recognize their needs and expectations when planning to develop the industry.

Like the case of Salinas Grandes, Uyuni's salt flat is surrounded by indigenous communities whose main economic activities are agriculture, artisanal salt production, and tourism (Sanchez-Lopez, 2019a), which could be severely affected by a poor management of the lithium industry. Currently, communities use salt flats as direct and indirect income sources as they usually process salt and sell it or have other complementary jobs such as tourism and agriculture. The economic and sentimental connection between the salt flat and people has been the reason for different frictions over government decisions and transnational companies.

Governmental actions may look for the country's economic interest when deciding the future of natural resources. The search for the most appropriate technologies to guarantee profitability and productivity in the industry is usually at the top of decision-making influencing factors. However, to understand the value of the Uyuni's salt flat, it is crucial to recognize the actors and the actions that have shaped the current dynamic of the lithium industry in Bolivia, one where conflicts and social participation remain constant throughout its history. Uyuni's historical connection with people has deep roots in people's culture, economy, and way of living. Potosí has a strong mobilizing force often led by COMCIPO (Potosí Civic Committee) based in the urban area of Potosí whose leaders are capable of organizing regional mobilizations for their

demands (Flores-Castro, 2019). COMCIPO was founded in August 1976 by a group of left-leaning nationalists representing the middle class, in the need to demand a zinc smelting plant and improvements in transport infrastructure for Potosí (Flores-Castro, 2015). The Board of Directors of COMCIPO is selected through elections, where candidates cannot belong to any political party or non-governmental organization to hold office (ANF, 1997). The board oversees managing the requests of organizations that apply to join the civic committee. (Peñaranda, 2018).

The collective identity of Potosí called “sentimiento potosinista” is rooted in the unity during mobilizations to pressure the government for the compliance of their shared demands despite not always having sectors in agreement (Alemán-Vargas, 2013). Not all civic leaders support COMCIPO, they often question their leadership and organization abilities to organize a regional project that benefits Potosí in the long term, but historically COMCIPO has been involved in demanding better conditions for the Potosí region. Conflicts around lithium in Bolivia talkback on debates about economy, development, policy, land property, and people’s struggle to protect the earth and its resources. This chapter dives into Bolivia’s conflict over lithium, highlighting the roles and development of actors across time.

### **3.2 Overview of Bolivia’s lithium history**

The Uyuni salt flat is located in Potosí, one of the nine departments of Bolivia, situated in the southwest region of the country Fig. 2. It has a surface of 10,582 km<sup>2</sup> and an altitude of 3,653 meters above sea level (YLB, 2010). Local’s main economic activities are agriculture, camelid farming, tourism, and mining. Visitors are amazed by the unique landscapes around this white salt desert, where you can see geysers, rock formations, and volcanic wells in the surroundings. Beneath the hard salt crust of the surface, the salt flat has several layers of brines rich in lithium, potassium, boron, magnesium, and sodium (YLB, 2010). Potosí has been

historically known for being a mining region placed in the Andes mountains, where there are deposits of copper, silver, zinc, sulfur, and different evaporitic resources (Argento, 2018).

Figure 2: Location of the Uyuni salt flat map



Elaborated by the author using GeoBolivia

As discussed in the previous chapter, Bolivia has been dependent on the extraction of natural resources since colonial times (Revette, 2017; Sanchez-Lopez, 2019b). During the 1500s, silver was the primary resource taken from Potosí to Spain; later on, as the global market shifted along with the importing countries, tin became the following resource in demand, as oil did later, then gas, and now lithium. Bolivia depends economically on the export of these natural

resources, making it highly susceptible to variations in the global market. Despite Bolivia's wealth in natural resources, past governments failed to manage its economic development, which has raised doubts about the potential of yet more extractivism in doubt to improve its situation. Moreover, the mining history has created doubts about the industry's actual profits opportunity and how it will be distributed, especially for Potosí region where the lithium industrialization project takes place.

Uyuni was not of much interest to the Government up to the late 1970s, when the Universidad Mayor de San Andres (UMSA), along with the French Office of Recherche Scientifique Technique Outre Mer (ORSTOM) mission, worked on the measurement of the evaporite reserves. In 1974, employing the Supreme Decree 11614, Hugo Banzer Suarez, Bolivia's President at that time, decreed the delimitation and quantification of North and South Lipez in Potosí within other areas of the country and declared them as Fiscal Reserves for this purpose. Simultaneously, the prospected and evaluated evaporite resources, individual or group of minerals found in brines that result from a previous evaporation process (Britannica, n.d.), became the property of the Bolivian Mining Corporation COMIBOL for their exploitation and benefit. This was one of the four times where the Uyuni salt flat would be delimited as a fiscal reserve. Sanchez-Lopez (2019b, pp 24) defines a Fiscal Reserve as "a demarcated area with exclusive access reserved for the state to quantify mineral resources and define a strategy for extraction." The changes in the boundaries of space show how the political interests shifted over time and how the Uyuni salt flat became a place of dispute (Sanchez-Lopez, 2019b). The multiple changes in the delimitations of the fiscal reserve show the power of elite groups in conjunction with the government to seek their own benefit.

In 1985, then President Hernan Siles Suazo created the the board of directors of the Uyuni salt flat, Complejo Industrial de los Recursos Evaporiticos del Salar de Uyuni (CIRESU) through the Law 719 (YLB, n.d.). CIRESU became the State's authority to manage the Uyuni evaporite resources, which included lithium, boron, potassium, magnesium, carbonates, and sodium sulfates. The board of directors had representatives from the Government and the different civic committees from the department of Potosí and its provinces. Victor Paz Estenssoro (President from 1985 to 1989) proclaimed the Uyuni salt flat as a fiscal reserve in 1986. During his mandate, there were discussions about carrying out an international bidding process or making the strategic decision to send a direct invitation to a company that would work as a strategic ally for the Government in command and the people in power at that time. While this was happening, social movements and local organizations stood firm in their position against international (transnational) companies taking Uyuni's natural resources. The perception of natural resource extraction with international participation was mostly negative, especially in lands with colonization roots. It seems logical that the historical roots of extractivism repudiation would create the organization of social movements and grassroots movements that would protect their land from the hands of neoliberalism.

Upon the decision of Paz Estenssoro to begin the industrialization of lithium, and with the active concern and guard of the civilian population and organizations, in 1987, Potosí social movements met and carried out the First Seminar on the exploitation of lithium and the property rights of the Uyuni salt flat. During this Seminar, the organized groups established the National Committee for the Defense of Uyuni salt flat (Iño-Daza, 2017). In 1987, the results from UMSA-ORSTOM stated that the reserves in Uyuni's salt flat were 9 million tons of lithium, 150 million tons of potassium, and 6 million tons of boron, values that exceeded the initial findings. Upon

this event, the UMSA was authorized to build a pilot plant (Iño-Daza, 2017). Jaime Paz Zamora, president from 1989 to 1993 was looking to begin extracting lithium through an international company, but this brought a series of demands and oppositions against the Government's decision to maintain a contract with the U.S. company LITHCO. This contract brought protests and conflicts from 1987, when the first initiative for an international bidding was held, until 1993, when FMC (formerly LITHCO) left the country. The confrontation with LITHCO is further developed later in this chapter.

During the 1990s and early 2000s, Bolivia was under the command of governments that prioritized the privatization of natural resources, which generated great disagreement and conflicts in the country. The culmination of this period would bring a new setting for the country, away from neoliberalism and with Evo Morales and his Movimiento Al Socialismo – MAS (Movement Towards Socialism) political party at the front. On January 22 of 2006, Bolivia welcomed Evo Morales as the first Indigenous President with a support of 53.74% of votes in his favor during the 2015 elections. In 2006, Evo Morales announced that the lithium industrialization process would be managed by the national government (Del Barco & Foladori, 2020); later, this process began in 2008. The National Development Plan of 2006 included the strategic guidelines for the country until 2011; in this plan, the Government made official its intentions to develop the mining activity to give it added value by taking a more participant role in all the strategic projects that would be carried out. Likewise, this plan announced the bidding process for using the evaporite resources of the Uyuni salt flat.

In 2010, under the Supreme Decree 444, Morales declared the evaporative resources and lithium as strategic for the country's development. This decree proclaimed the exploration, exploitation, industrialization, and commercialization of lithium to be managed entirely by the

Plurinational State of Bolivia. Morales approved the creation of the Empresa Boliviana de Recursos Evaporíticos – EBRE (National Company of Evaporate Resources), which would be in charge of all of the processes for the industrialization of lithium and other minerals in the country. The creation of EBRE brought with it conflicts between the State and the region of Potosí, which put the State under a lot of pressure to repeal the decree. The conflict about the creation of the EBRE and the abolishment of the Supreme Decree 444 is explained later in the chapter. The cancelation of the EBRE is only one of the many times when the interests of the Government and the region of Potosí clashed each other.

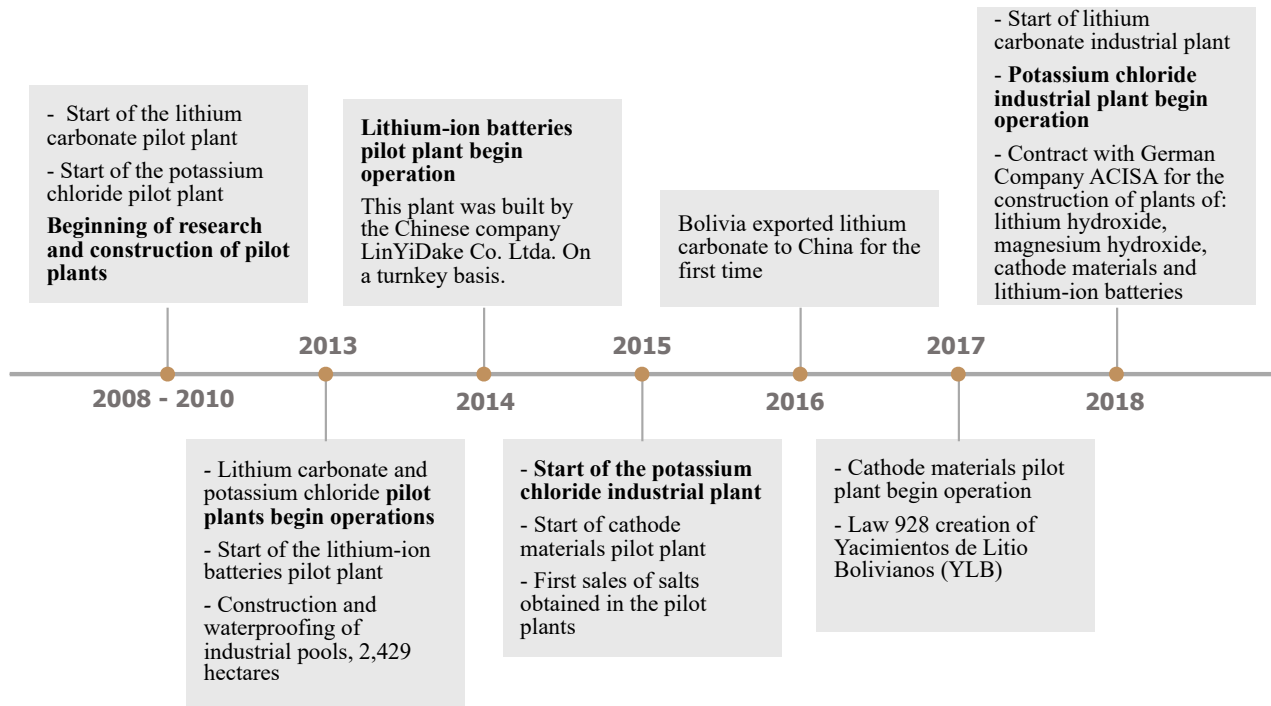
In the ensuing years, lithium became a recurrent topic in Evo Morales Government's economic development discourses that shared the dream of industrializing lithium and exporting it in the form of value-added products, moving away from the exportation of raw materials. According to Céspedes and Gorriti (2021), Morales' social transformation of Bolivia drew on previous memories from colonization, nationalism, and anti-neoliberal struggles that helped with the acceptance of the lithium project. Nonetheless, this transformation would not be free of social tension throughout. Initially, the project was accepted by a number of groups that previously rejected LITHCO but believed in the nationalization process the country was undergoing. The Federación Regional Única de Trabajadores Campesinos (FRUTCAS) was one of the groups that supported the project, and it helped the Government with the socialization of the lithium project during its early years (Sanchez-Lopez, 2019b).

At the beginning of Evo Morales' first term in office, he entrusted COMIBOL with the organization of an institution in charge of the extraction of the Evaporitic resources of the Uyuni salt flat. In 2008, COMIBOL created the DNR (Dirección Nacional de Recursos), which became the GNRE (Gerencia Nacional de Recursos Evaporíticos) in 2010 (YLB, n.d.). Up to 2017

GNRE oversaw the extraction of lithium. In 2017, the government established the creation of the public company Yacimientos de Litio Bolivianos (YLB), who continued carrying out with three phases lithium project started by GNRE. The first phase consisted in the research and creation of pilot plants that allowed the development of processes to reduce the concentration of magnesium in the brines and obtain lithium carbonate and potassium chloride. The second phase would look to achieve the construction and operation of plants for industrial production, which means providing all the adequate infrastructure for an adequate operation. The last phase seeks to obtain value-added products, such as cathode materials and lithium-ion batteries, for export to the global market. Phase one and two of the project would be managed nationally; however, phase three was expected to be supported by international investment and technological knowledge transfer. YLB and the Morales' government took the decision to search for international strategic partners given Bolivia's deficiency in infrastructure and technology knowledge (Hopper, 2009). The proposed strategy for the industrialization of lithium by the Morales Government is the first in Latin America that seeks to cover all the production chain up to the production of batteries (Montenegro-Bravo, 2018). The milestones of the lithium project under Evo Morales' term are explained in the following timeline (see Figure 3).



Figure 3: Milestones of the lithium project



Elaborated by the author based on YLB (2018); and Del Barco & Foladori (2020)

Bolivia did have the most significant advances toward the industrialization of lithium during Evo Morales' mandate. The Bolivian government sorted out the creation of four pilot plants (Potassium chloride, Lithium carbonate, Cathode materials, and Lithium batteries), one research center, twenty evaporation pool lines, one industrial plant of Potassium chloride, and the start of the construction of the industrial Lithium carbonate plant. However, the project had several delays, and up to the time of writing, there is only one potassium chloride industrial plant that works at less than its capacity when it was anticipated that the industrialization of lithium would be far advanced at this point. Former Vice president García Linera mentioned in a discourse in 2016 that Bolivia would set the price of lithium in the international market by 2019-2020 (Cuiza, 2016), a vision that seems far off. When it comes to the potassium chloride

industrial plant, its build capacity is 350.000 tons/year, but it had only produced 60,131 tons of KCL from 2018 to 2020 (Solón, 2021). The creation and operation of the mentioned facilities give a glance to the potential for the lithium industry. Still, the challenges and difficulties along the way show that there has not been adequate management to make the most out of this industrialization opportunity.

In 2018, the Government carried out an international bidding process to create a joint venture with a strategic partner that would help Bolivia in its search to produce and export lithium-ion batteries. On this occasion, the German company ACI Systems was selected, which would create a conflict between the region of Potosí, the Government, and the German company. This event is explained in greater detail later in the chapter. Moving forward, the Supreme Decree (D.S.) 3738, which approved the joint venture YLB-ACISA was annulled by the end of 2019. Moreover, after the great political conflict of the 2019 elections, Evo Morales resigned from the presidency. The future of the lithium project was left unclear upon Morales' resignation, the political crisis, and the COVID-19 pandemic. After some time on hold, in April 2020, construction of the lithium carbonate industrial plant resume, and YLB reactivated the production of Potassium Chloride (AGENCIAS, 2021). Current President Luis Arce has been working on restarting the lithium project. By June 2021, around 19 international companies showed interest and participated in the International Call for Direct Extraction of Lithium proposals. The overall industrialization process in Bolivia has been slow compared to its neighbors, Argentina and Chile (Hinojosa, 2021e). It will take time for Bolivia to establish itself in the global lithium market. Up to date, no cooperation has been specified for the industrialization of lithium (ABI and Los Tiempos, 2022).

### **3.3 Failed contract with Lithium Corporation of America (LITHCO)**

The event with the U.S. company LITHCO in 1989 was the first attempt to industrialize Bolivia's lithium with international support. This event would mark the future of lithium since it is still used as a precedent for the regional struggle on the management of evaporative resources. Many years after the event, LITHCO continues to be part of discourses to reject the control of lithium by transnationals. In 2009, when the Government of Evo Morales was working on the strategies for the lithium project, indigenous leaders sent the message that they did not want transnationals to take advantage of resources and that they would not hesitate to exert pressure to prevent it like in 1989 with LITHCO (Redacción Central, 2009). The collective memory around this event continues to shape the governance strategies and the lithium project, for which its study is essential to understanding past and contemporary conflicts around lithium in Bolivia.

Given the latest lithium reserves studies in Bolivia in the late 1980s, the Government gained interest in its extraction from the Uyuni salt flat. On January 30, 1989, LITHCO and the Bolivian Government initiated the negotiations, and this process did not have CIRESU's participation (Obaya, 2019) nor other social sectors. LITHCO, at that time, was a leader in the lithium production and market. It had the experience, knowledge, and technology to support the extraction of lithium in Bolivia; this would guarantee the access to the raw materials from the biggest known lithium resource deposits in the world (Orellana-Rocha, 1995). On November 17 of that same year, the first contract draft was signed, which would give LITHCO total control of the operation process for the extraction of lithium in Uyuni. This contract stated that the Government would not participate in the industrial process, and its main participation would rely only on obtaining royalties and taxes (Obaya, 2019). The key points of the contract were:

- The contract would have a duration of 40 years or would end when 400,000 tons of metallic lithium were obtained.
- LITHCO's role would start from the exploration and research phase up to the commercialization of the obtained materials.
- After the exploration phase, if the project was found to be viable, LITHCO would carry out the construction and commissioning of a lithium carbonate production plant.
- The Government would collect taxes on 35% of net profits and 2.5% on net sales.
- Royalties for rights granted in the Uyuni salt flat would be 2% of the gross income.
- The technology to be developed would become shared property between the Bolivian Government and LITHCO.

When negotiations between the Government and the American company became public, they described a 40 million U.S. dollars agreement intended for exploration and the creation of a 7,000 tons/year capacity lithium carbonate plant. On January 12 and 13, 1990, the contract was shared in the National Seminar Declaration of Uyuni with the participation of the CIRESU, the Ministry of Mining and Metallurgy, and the presidents of the mining commissions of the legislative chambers. COMCIPO, the department's worker union COD, Potosí's public university Universidad Autónoma Tomás Frías (UATT), and the mine workers union Federación Sindical Departamental de Trabajadores Mineros (FDTM) did not immediately reject the contract; instead, they voiced their interest in postponing the signing date to have time to evaluate the conditions carefully and propose changes to guarantee the well-being and benefit of Potosí and the country (Iño-Daza, 2017). One of the concerns was that there were no established

benefits for the Potosí region. Moreover, some participants claimed that this contract would create a monopoly that only benefited LITHCO because, according to the contract, LITHCO would have exclusivity rights for the first 17 years of the 40 years contract. After this time the Bolivian Government could establish other contracts over Uyuni's lithium (Orellana-Rocha, 1995).

Different communities and organizations from Potosí were apprehensive about this project due to the lack of communication and transparency during the contract process. Civic representatives questioned the Government's decision to issue a direct invitation and not perform an international bidding process and their willingness to let LITHCO produce value-added products outside Bolivia. Given that Bolivia would not participate in the production process management, the contract would allow the exported raw material to later be processed into lithium variants in the United States (Iño-Daza, 2017). Besides the lack of national participation in the lithium project, the social movements were also concerned about the price resolution. From the contract, the price was variable by the market demand. According to Iño-Daza (2017), LITHCO had the power to control the prices due to its high market share at that time, which could result in an unfavorable business for Bolivia. While the different social sectors had multiple concerns regarding LITHCO, they were also unsettled by the economic management of the royalties, which were centralized by the Government and did not benefit the region where the natural resources were being extracted.

The first tentative date for the official signature of the contract was established for March 1, 1990, but this date was moved to April 30 due to the social pressures from CIRESU, COMCIPO, Universidad Autónoma Tomás Frías (UATF), and the Central Obrera Departamental (Obaya, 2019). Upon meeting with the Government, the CIRESU directory approved the

contract later on April 12, for which COMCIPO led a civic strike on April 20, a march on April 23, and simultaneous hunger strikes in Potosí and La Paz against the direct invitation and demanding compliance with the international bidding process and better benefits for the region (Obaya, 2019). This was one of the country's largest protests and hunger strikes (Romero-Valenzuela, 2020). On April 16, the Consejo Nacional de Economía y Planificación (CONEPLAN) approved the contract with LITHCO, for which social movements decided to pressure the Government by increasing their measures. The National Congress would make the last instance for the approval for the contract, and social leaders fought to prevent this. Under the pressure, president Jaime Paz Zamora annulled the direct invitation and began the international bidding process on May 4 of 1990 (Iño-Daza, 2017; Céspedes & Gorriti, 2021; Obaya, 2019).

The new international bidding brought new concerns among those who had previously opposed the contract with LITHCO, especially because LITHCO participated one more time in this process, but this time as the company FMC. Through the purchasing company Crown Agents, the international public bidding was carried out, and in May 1991, they selected FMC, formerly LITHCO (Orellana-Rocha, 1995). FMC won the bidding process, but in the end, it did not carry out the project in Bolivia and left the country in 1993 (Céspedes & Gorriti, 2021). The differences between the first contract with LITHCO and the contract with FMC were, first, a bigger exploitation site (270 km<sup>2</sup> bigger), and secondly, more participation from the Bolivian Government 56.9% this time and higher taxes 30% of net profits, 2.5% of net sales, and a value-added tax of 10% (Orellana-Rocha, 1995). After signing the initial contract with FMC, the Bolivian Government decided to increase the value-added tax from 10% to 13%, something that was not appealing to FMC because it was negotiating a deal with Argentina at the same time.

Therefore, FMC ended the contract with Bolivia and moved to the Hombre Muerto salt flat in Argentina (Orellana-Rocha, 1995).

The LITHCO event displays Potosí's strong civic behavior led by COMCIPO, civic committees from Campos and Quijarro provinces, and FRUTCAS that succeeded in canceling the direct invitation. However, this would not be the only time that the Potosí region found itself in the middle of conflicts to protect its lands and demand better conditions for the department. It is important to note that the pressure over the contract with LITHCO does not mean that the region of Potosí entirely rejected the industrialization of lithium. On the contrary there were sectors that would later blame COMCIPO for taking out this opportunity away (Romero-Valenzuela, 2020). The struggle and social pressure in this event were mainly about ensuring good conditions and participation of the region of Potosí rather than canceling the lithium project altogether. Orellana-Rocha (1995) accounts the failure of LITHCO to the weak strategy of the Government to not start with an international bidding and without first establishing a clear regulation over the extraction of evaporitic resources that consider the demands of the region.

### **3.4 Rejection of the Empresa Boliviana de Recursos Evaporíticos (EBRE) located in La Paz**

As part of Evo Morales' development strategy, it was expected that the industrialization of lithium would become a national priority. The Government decided to create a company independent of COMIBOL that would oversee the entire industrial process of lithium. Thus, on March 10 of 2010, the Bolivian Evaporative Resources Company - EBRE (for its initials in Spanish) was created through Supreme Decree (D.S.) 444. This Supreme Decree also declared the importance of research, exploration, exploitation, industrialization, and commercialization of industrial minerals, especially evaporite resources. The objective of creating the EBRE was to carry out all of these activities and manage Bolivia's mineral resources. The EBRE, according to

Article 8, would be located in the city of La Paz and could create technical-administrative offices in other regions of the country. Moreover, according to Article 13, the board of directors would consist of a president and four representatives, one from each of the following ministries: Ministry of Development Planning, Ministry of Economy and Public Finance, Ministry of Mining and Metallurgy, and Ministry of Productive Development and Plural Economy. The budget for creating this company was 5 million USD, which would also be used to support the creation and operation of the pilot plants, stated in the first phase of the lithium project (Redacción Central, 2010a).

After the announcement of the Supreme Decree 444, COMCIPO declared the department of Potosí in state of emergency, showing their rejection on the creation of the EBRE. COMCIPO's leader at the time, Celestino Condori, expressed the discontent with the company's location, the centralized government control, and the lack of benefits for the Potosí region (Redacción Central, 2010b). The demands and concerns were justified by Potosí's long historical background of being the source of natural resources for the economic interest of the government and elites without obtaining adequate economic compensation nor greater investment for the region's development. Potosí has been the site for exploitation of natural resources like silver and tin in the past, but this time COMCIPO and other social organizations were determined to strengthen their regional role with lithium (Alba-Mercado, 2010). The arrival of Evo Morales to the presidency and his new Political Constitution of the State suggested that this time local control and management for natural resources would be prioritized. Bolivia's Political Constitution, issued in 2009 in its Article 371 section II, states that the legal location of mining companies will be established where the exploitation is carried out. Moreover Article 372 section IV expresses that the new self-sufficient mining companies created by the State will be



established in the departments with the highest mining production, that are Potosí and Oruro. The conflict had much to do with the fact that these articles would not be respected by the conditions stipulated in the Supreme Decree 444.

Despite the public demands of COMCIPO, the Minister of Mining and Metallurgy ratified the creation of the EBRE in the city of La Paz, explaining that the decision had been made due to economic factors and because Potosí did not have the necessary technology and infrastructure, which would only delay the lithium project (Los Tiempos Digital, 2010a; El Diario, 2010a). Later, the speech to justify the EBRE would also add that the headquarters in La Paz would only be transitory and that once the project progresses, the permanent headquarters would be defined (Los Tiempos Digital, 2010b). Nonetheless, Supreme Decree 444 did not mention a transitional office at all.

Upon the position of the Government, COMCIPO gave them an ultimatum stating they would start a hunger and civic strike if the supreme decree were not dissolved (Redacción Central, 2010c). A formal document was presented that called attention to the location of the EBRE, the abrogation of the supreme decree, and the conformation of a committee with representatives from COMCIPO, Central Obrera Departamental, the Universidad Autónoma Tomás Frías and Potosí's Parliamentary Brigade to create a new project proposal with better conditions for Potosí (El Diario, 2010b). The social movements were demanding the abrogation of Supreme Decree 444 and the creation of an independent company in the region that takes their demands into account, giving the government time until March 23 (Los Tiempos Digital, 2010d).

On March 20, the government decided to repeal the Supreme Decree 444 due to the pressure from social movements and COMCIPO's threats of even stronger pressure measures forthcoming. At the same time of communicating the abrogation to the press, Óscar Coca then

Minister of the Presidency expressed that the DS 444 did not intend to harm the Potosí region, and on the contrary, they sought to accelerate the project for the benefit of the country (Redacción Central, 2010e). The discourse managed by the Government at this time was they were looking out for the good of the lithium project and the annulment of the decree endorsed by the Potosino social movements would delay the project. Upon hearing about the abrogation and only after receiving an official statement, COMCIPO announced that the scheduled strike would be suspended (Redacción Central, 2010; El Diario, 2010c), preventing mobilizations to happen close to the date of the subnational elections (Los Tiempos Digital, 2010e), which were held on April 4.

The discourse from COMCIPO during the tense moments mentioned the possibility of exercising a “punishment vote” in Potosí due to the betrayal felt by the Government and the MAS (El Diario, 2010a). This “punishment vote” meant that COMCIPO would encourage the people of the city of Potosí to not vote for the MAS party. Additionally, COMCIPO had led social uprisings earlier that year where with a local civic strike demanded for improvements in the region’s road network and the construction of an airport in the department (Argento, 2018). Ultimately, the proximity to the subnational elections, the organized position of social movements, and their previous encounters with the Government influenced the decision to step back on the creation of the EBRE. Consequently, the GNRE remained in charge of the lithium extraction processes until 2017, when Morales’ government authorized the creation of the public company YLB.

### **3.5 Controversial Joint Venture with the Germany Company ACI Systems**

The Joint Venture between the Bolivian company YLB and the German Company ACI Systems is one of the latest events that shows the struggle and complex dynamic of the

industrialization of lithium in Bolivia. The event began when international relations were sought to achieve the production of lithium-ion batteries in Uyuni as part of the lithium industrialization project in 2017 and ended up wrapped in the middle of national mobilizations and the resignation of Evo Morales in 2019.

In 2017, a public call was made for international companies to participate in the final phase of the industrialization of lithium and support the production of batteries made in Bolivia. Later on, YLB announced that the German company ACI Systems would advance with the negotiation process and preparation of its proposal (YLB, 2017). On April 2018, YLB informed their decision to take ACI Systems as a strategic partner in the industrialization of lithium, indicating that ACI Systems would support the third phase of the lithium industrialization project in which the production of lithium-ion batteries was expected (ABI, 2018a). The decision to select ACI Systems did not seem well supported for COMCIPO and other organizations like the Departmental Government of Potosí, the Departmental Workers Center (COD), and leaders of the UATF university because there were other companies, such as the Russian company Uranium One Group (UIG), that had better proposals in terms of the production of lithium hydroxide and cathode materials. Still the Government sustained their decision stating that ACI Systems had the lowest cost for the production of lithium-ion batteries, claim that contradictorily, would not appear later in the contract (Solón, 2021).

On October 2018, ACI Systems and YLB signed the memorandum for the conformation of the joint venture (ABI, 2018b). ACISA was the name of the Bolivian subsidiary of ACI Systems, which would constitute the joint venture YLB-ACISA. The state discourse showcased this joint venture as the big step to make reality Bolivia's transition from being a raw material exporter to becoming an exporter of value-added products from lithium. Then Vice President

Álvaro García Linera explained that the joint venture would build a magnesium hydroxide plant and a lithium hydroxide plant that would later produce cathodes and batteries (ABI, 2018b). The Government of that time was trying to keep the lithium project afloat, so they were continuously making progress with the delivery of projects. On October 7, 2018, Evo Morales inaugurated the 350,000 tons/year capacity potassium chloride industrial plant, in his discourse he highlighted the transition from pilot plants to industrial plants and indicated that Bolivia was at the start of the lithium industrialization phase (ABI, 2018c).

Even though the industrialization of lithium was still in its initial stage, government authorities and YLB made speeches where they said that Bolivia would become a leader in the market very soon. Evo Morales assured that Bolivia, being the country with the largest lithium reserves, would control the lithium market throughout the world (Aguilar, 2018). After the inauguration of the potassium chloride plant, the YLB manager declared that Bolivia would enter the lithium battery market by the year 2022 (Redacción Central, 2018a). However, the future of Bolivia's lithium was in reality uncertain. Even before the official publication of the contract with ACI System, COMCIPO had doubts about the alliance. Juan Carlos Zuleta, an expert in the lithium economy, expressed his concern due to the reduced experience and capital of the German company, to which Hector Cordoba, former manager of COMIBOL, and Juan Carlos Montenegro, executive manager of YLB at that time, argued that ACI Systems had the experience on business management and mega projects to make industrialization possible (Redacción Central, 2018a).

Officially the joint venture YLB-ACISA was established with the emission of the Supreme Decree (D.S.) 3738 on December 7, 2018. This decree brought along multiple concerns from experts and the civic society, especially for the region of Potosí, a region that as discussed

before has a long history with extractivism. The main problems with this decree expressed by COMCIPO and the opponents to the Supreme Decree are listed below:

- The distribution of shares was distributed 51% for YLB (Bolivia) and 49% for ACISA (Germany). However, the shareholders' decisions would only be approved by at least 75% of affirmative votes, making YLB unable to make decisions without the acceptance of ACISA despite being the majority shareholder.
- Article 3 (DS 3738, 2018) states that YLB-ACISA's main activities are the production of lithium hydroxide, magnesium hydroxide, other salts, boric acid and metallic lithium from residual brine and the sale of these products. It is important to note that the production of batteries is not mentioned at all.
- Article 5 of the Joint Venture Statute states that the duration of the company will be 70 years. This is the longest contract in the history of lithium in South America (Villalobos, 2019a) and even longer than the contract with LITHCO, which was 40 years.
- Article 31 and 41 of the Joint Venture Statute express that the Company directory would be made up of three members from YLB and two from ACISA, and they can only make decisions when four out of the five members agree. Moreover, the Distribution of the Executive Management Office is as followed, one CEO from YLB and both CFO and COO from ACISA. The CEO would not be able to make any decision without the approval of the CFO and COO.
- Article 70 states that the Joint Venture has exclusive sales rights in Europe excluding Russia, which means that all sales would only occur through YLB-ACISA, and YLB cannot sell any lithium derivative products in Europe by itself.

- Article 79 explains that ACISA commits to giving the rights of use over its technology, specialized knowledge, and know-how to YLB. However, ACISA would keep all intellectual property. Moreover, the developed technology, knowledge, and know-how would remain for the exclusive use of the Joint-Venture.
- Annex 1.2 of the Joint Venture Statute describes the price of residual brines and their use. YLB guarantees the supply of 1.8 million tons per year of residual brines with a concentration between 0.42% to 0.45% at cost price. Moreover, any additional production would be for the exclusive use of the Joint Venture. In case of not meeting with the agreed quantity, YLB will use its private reserves to meet with the agreement.
- Annex 1.2 of the Joint Venture Statute states that YLB-ACISA is not required to pay royalties to the Bolivian State for the lithium hydroxide produced by the Joint Venture.
- Annex 1.3 of the Joint Venture Statute explains that YLB-ACISA guarantees the studies to determine the feasibility to produce magnesium hydroxide. The key point in this part is that there are no guarantees for the industrial plant of magnesium hydroxide, and it depends on the results of the feasibility study.
- Also Annex 1.3 express that “once the company is officially and legally constituted, ACISA guarantees the beginning of the preliminary activities for the creation of the joint venture for Cathodic Materials and Batteries”. In this sense, another Joint Venture must be created in order to produce batteries which creates a lot of uncertainty.

After the approval of the Supreme Decree 3738, neither YLB nor ACI Systems gave clear conclusions as to whether or not battery production would take place, and the only certain next step from the joint venture was the construction of the lithium hydroxide plant (Villalobos, 2019a), which the lithium carbonate industrial plant would supply, managed entirely by YLB. The construction of the lithium carbonate industrial plant began in 2018, in charge of the Chinese company China Beijing Maison Engineering. This plant has not been concluded up to this date (Del Barco & Foladori, 2020; AGENCIAS, 2021). The main issue with the industrial management of the plants relies on the promises of the lithium project presented by Evo Morales which proclaimed a 100% control of the initial phases (processes before the production of batteries), and that international support would only intervene in the final industrialization phase which indeed needs a higher technological and experience support. This joint venture between YLB and ACISA would not guarantee the production of batteries in Bolivia but rather the production and exportation of lithium hydroxide, maintaining Bolivia away from exporting added-value products to the global market.

The joint-venture contract had many irregularities, like the lack of environmental studies for the exploitation of lithium in Bolivia, pointed out by the Germany Government, an issue that was not addressed by ACI Systems nor YLB (ANF, 2018a). Moreover, the contract stated that Bolivia would be entering the battery market in 2021, and not in 2020 as was mentioned previously by the Government, and even more alarmingly, ACI Systems declared that they only guaranteed the hydroxide plant and not the production of batteries for which it would be necessary another joint venture in the future (ANF, 2018b). Regarding the formation of executives of the mixed company, there is also a contradiction with the Public Company Law (Law 466, 2013), in its article 42 it explains that it is a requirement for directors and managers to

be of Bolivian nationality. In order to have ACI Systems directors, the Government was considering the modification of the Law 466 (Redacción Central, 2019b). Having all of these irregularities in the contract and the issues with the Supreme Decree, 3738 made discussions and demands over the joint venture arise just after signing the agreement between Bolivia and Germany.

The beginning of the year 2019 was full of tensions regarding the management of lithium. The Civic Committee from Potosí (COMCIPO) expressed its concerns regarding the contract with ACI Systems and demanded for a more active regional participation in the conditions that YLB would decide for the lithium project. On the other hand, 2019 was also the year of the national elections and due to controversies regarding the qualifications of the candidates, there was already a tense atmosphere. The lithium project gained even more importance in the context of elections approaching and with low gas prices compared with previous years. Discourses from the Government talked about the lithium boom and how Bolivia was going to take a leadership role in it (Sagárnaga, 2018). At the beginning of the year 2019, Álvaro García Linera, then Vice president of Bolivia, shared that up to that date, the Government had invested 745 million USD in the catchment pools and the pilot plants of potassium chloride and lithium carbonate (Redacción Central, 2019a). Discourses like that were common to share and let people know that the lithium project was in progress. The Government also often shared the promise of development upon the industrialization of lithium, “Industrialization will allow the development of the departments of Potosí, Oruro, and La Paz, given that an investment of 4,400 million dollars is planned” (Hinojosa, 2019).

With the national elections scheduled for October 20, 2019, a series of social demands and mobilizations were taking place in Bolivia, not only COMCIPO, but other sectors such as



the health sector and protesters against the candidacy of Evo Morales were leading different pressure measures. The Potosí leaders decided to carry out an indefinite civic strike that would begin on October 7 to defend the lithium and the department's natural resources. At the same time Marco Antonio Pumari, the leader of COMCIPO at that time, went on a hunger strike at the doors of the headquarters of the Government (Redacción Central, 2019d; Montero, 2019a). Pumari stated that COMCIPO expressed its disagreement with the contract with ACI Systems and requested a dialogue with the Government since the beginning of 2019, such demands and the petition for a space for dialogue were not heard by the authorities (Redacción Central, 2019e). The lack of involvement and participation of Potosí's authorities and social movements leaders during the negotiation process did not allow the demands and needs of the Potosí region to be met. The exploitation of lithium foresaw a royalty of 3% of the gross sales value only for lithium carbonate and 0% for lithium hydroxide, under the conditions stipulated in the Supreme Decree 3738 and the Article 224 of the Mining and Metallurgy Law (Law 535, 2014), the Government established that only 60% of the initial royalty (3%) will be applied, leaving a total of 1.8% royalty for the production of lithium carbonate. This royalty of 1.8% was distributed as follows: 0.27% to the Municipality of Colcha "K," 1.38% to the Departmental Autonomous Government of Potosí, and 0.15 % assigned for mining exploration activities in the department (Villalobos, 2019c). However, the production of lithium hydroxide by the joint venture YLB-ACISA would not generate any royalties (Villalobos, 2019c). The reduced percentage of royalties was one of the reasons why COMCIPO, after months without accessing a dialogue with the Government, demanded the abrogation of Supreme Decree 3738.

The civic strike in the department of Potosí led by COMCIPO had an important social participation. There was massive support from the Universidad Autónoma Tomás Frías (UATF)

students, and also the urban teachers supported this pressure measure, the scenario had blockades in the metropolitan area and stopped transportation (ANF, 2019a; Ariñez, 2019c). Under the extensive pressure from social movements in Potosí, the Government decided to call for a briefing, to which COMCIPO agreed to participate, but they were far from satisfied and maintained the pressure measures (ANF, 2019b; Ariñez, 2019a). COMCIPO's petition was for dialogue to discuss better conditions on the agreement for the department of Potosí. At the same time, the briefing worked as a communication space for the Government to justify decisions it had already made. After the briefing and with the continued mobilizations, the Government decided to create an inter-institutional technical commission to work on the analysis and evaluation of the lithium project and requested COMCIPO to quit the pressure measures (Redacción Central, 2019f). Pumari publicly shared COMCIPO's disagreement with the briefing outcome, he declared that most participants were supporters of the MAS party, and there was no dialogue to reach solutions; instead, he ratified the request for the abrogation of the DS 3738 and confirmed the continuity of civic strike (Redacción Central, 2019g). The minister Juan Ramón Quintana led the briefing where representatives from the Energy Ministry and YLB participated as well as some organizations from the Southwest of Potosí.

The social pressure from Potosí days before the elections put the Government under the public eye on how they would handle this ongoing conflict. The Government decided to organize a dialogue in which President Evo Morales and COMCIPO were present, but even with this announcement, the citizens declared that the pressure measures would not be lifted (Redacción Central, 2019h). The tension at this moment was rising, as there were clashes between supporters of the MAS and supporters of COMCIPO that even led to physical attacks that caused injuries (Los Tiempos Digital, 2019b; Ariñez, 2019b). The situation was not looking promisingly, the

country was under a lot of pressure not only because of the lithium conflict in the southeast of the country but also because Evo Morales' candidacy on the presidential elections. Evo Morales's candidacy of 2019 was problematic because he was passing over the presidential term limits stated in the National Constitution and ignoring the 2016 referendum results that denied his participation in the elections (BBC, 2019). Only a couple days before the elections, Marco Antonio Pumari ordered the pause of the blockades to allow the elections to be carried out without complications, but he indicated that the civil mobilization was not over, and COMCIPO was still waiting on the dialogue with the Government and the abrogation of the supreme decree (ANF, 2019c; Redacción Central, 2019j; Montero, 2019b).

On October 20 of 2019, the presidential elections were held in a tense environment, but people went to the polls to vote. Unfortunately, Bolivia would become the scene of a protracted conflict over the results of this election. Bolivia's Plurinational Electoral Body had to ensure the continuous transmission of preliminary results, but the transmission was suddenly suspended. When it was reactivated, there were inconsistent changes in the results that indicated the victory of Evo Morales. The Organization of American States (2019) auditory report concluded that there were a series of great irregularities during the election process that were made to alter the results in favor of Evo Morales' victory in the first round. Therefore, the results of this election could not be considered valid. Before OAS's final report came around and with all of the irregularities in the election process, protests all around Bolivia started. The main civic movements that led the resistance events against the election results were the Civic Committee of Potosí and the Civic Committee of Santa Cruz led by their leaders Marco Antonio Pumari and Luis Fernando Camacho. On October 23, Marco Antonio Pumari along with civic leaders in

Santa Cruz announced the national civic strike (Los Tiempos Digital, 2019c). The national protests lasted 21 days and ended up with the resignation of Evo Morales on November 10.

In the middle of the electoral conflict, the Government sought to alleviate the situation. On November 2, they announced the abrogation of the Supreme Decree 3738, which authorized the creation of the YLB-ACISA joint venture, through the Supreme Decree 4070 (Los Tiempos y agencias, 2019). The abrogation did not change the measures of pressure in Potosí. Nevertheless, the civic leaders praise the abrogation as the persevering fruit of the struggle of the Potosinos (Redacción Central, 2019l). Deputy Gonzalo Barrientos, among other leaders of Potosí, demanded the modification of Laws 535 and Law 928 so the department of Potosí could get better conditions regarding the lithium project in the future. (Los Tiempos Digital, 2019d). Moreover, Marco Antonio Pumari stated that the pressure measures by COMCIPO and its supporters would continue despite the abrogation of DS 3738, but now the main demand was the annulment of the elections (Los Tiempos Digital, 2019d).

After the abrogation of the DS 3738 and the resignation of Evo Morales, Germany continued to be interested in lithium as the German ambassador in Bolivia expressed. However, the transitional Government of Jeanine Áñez suspended the negotiations with Germany by the end January 2020 (Los Tiempos Digital, 2020; Redacción Central, 2020a; Redacción Central, 2020b). The transitional Government was from a right-wing party, which raised concerns among nationalization supporters of the possibility of the privatization of lithium, for which FRUTCAS expressed their rejection of the privatization of the Uyuni salt flat and demanded the complete management by the Bolivian State and the creation of a permanent entity that manages the Evaporitic resources and is located in the southwest of Potosí (“Congreso de FRUTCAS”, 2020). Later, the world faced the COVID-19 pandemic while Bolivia was still trying to cope with the

great political conflict of 2019. Those were difficult times for the country, which led Áñez Government to obtain several debts from the Banco Central de Bolivia (BCB), Fondo Monetario Internacional (FMI), and the Banco Mundial (B.M.) to face the pandemic that had a strong impact on the country's economy (Hinojosa, 2020). Amidst the pandemic and political issues, lithium stopped being a priority for a while.

In October 2020, Bolivia held a new election, where Luis Arce from the MAS Party was elected president. Arce was previously the Economy Minister during Evo Morales' presidency. The new Government saw the need for international support due to technological weakness for the industrialization of lithium (Hinojosa, 2020). The new authorities of YLB and experts contemplated the possibility of recovering the alliance with ACI Systems, but they affirmed that it is necessary to better regulate the conditions of the contract, especially reducing the 70 years duration to a more reasonable period of 10 to 15 years (Hinojosa, 2021a).

Even more than two years after the political conflict of 2019, lithium is still permanent in discourses not only about economic development but as a political persuasion topic. Luis Arce, in a speech in 2021, talked about the events of 2019 and labeled it as a "coup" part of a plan to control Bolivia's lithium reserves (Brújula Digital, 2021; PÁGINA SIETE, 2021). He also talks about the "coup" being the responsible event for the cancellation of the contract with ACI Systems (Hinojosa, 2021c). On March 2021, under Luis Arce mandate, the negotiations with Germany got back on track (ABI, 2021), which brought back old concerns. COMCIPO declared that they would lead social mobilizations if better conditions for the region of Potosí are not considered again. COMCIPO claims that they do not reject the industrialization of lithium, but they demand better conditions for Potosí. They are against Arce's discourse in international media using lithium to support the MAS claim of a "coup" in 2019 (RADIO FIDES, 2021).

Indeed, social movements from the region of Potosí are willing to face the critical challenges to obtain better conditions and benefits from the extraction of lithium in the Uyuni Salt Flat.

### **3.6 Analysis on Stakeholders and Resource Management**

The case study about the three conflicts in Bolivia's lithium history in this chapter made it possible to identify the recurrent actors and the themes by which these conflicts often happen (See Figure 4). Potosí is a region with strong roots in the extraction of natural resources. Marston and Perreault (2017) hold that, especially in Oruro and Potosí, mining has been forged into people's identity and culture. Social organizations from Potosí are known for actively demanding better conditions for the region without a particular political line and often use pressure tactics to make their voices be heard. Social movements take action because of the lack of state support for the department of Potosí and the challenges that come along with being one of the poorest departments of the country. There is a recurring demand from public rural and urban actors like COMCIPO, the civic committees, FRUTCAS, Potosí's COD, and UATF against the old extractivist model that took away silver and tin in the past (Fundación Jubileo, 2021). Moreover, the uneven distribution of wealth coming from these extractive activities has created a sense of regional struggle and desire for economic development from lithium in the hopes of getting a greater participation and control on government resource management.

Figure 4: Summary of conflicts over lithium and common themes

Failed contract with LITHCO, 1990		Rejection of national company EBRE, 2010		Controversial Joint venture with ACI Systems, 2019	
<b>Actors:</b> - COMCIPO - Departmental Government of Potosi - UATF - Departmental Workers Union (COD) - Mine workers union (FDTM)	<b>Conflict:</b> Call for the annulment of the direct invitation to LITHCO  <b>Pressure measures:</b> Civic strike in Potosi, and hunger strike in La Paz and Potosi	<b>Actors:</b> - COMCIPO - Departmental Government of Potosi - Departmental Workers Union (COD) - FRUTCAS	<b>Conflict:</b> Call for the abrogation of the DS 444, and change EBRE location  <b>Pressure measures:</b> Civic strike threat	<b>Actors:</b> - COMCIPO - Departmental Government of Potosi - UATF - Departmental Workers Union (COD)	<b>Conflict:</b> Call for the abrogation of the DS 3738 and cancel joint venture  <b>Pressure measures:</b> Civic strike in Potosi, and hunger strike in La Paz and Potosi
<b>Common themes:</b> Demand of consultation and participation before and during the execution of lithium related projects Demand of regional benefits for the industrialization of lithium Positive interest on the industrialization of lithium (value added products) Rejection of the raw material exportation Imaginary of development upon the industrialization of lithium					

Elaborated by the author

The center of the conflict with LITHCO occurred during the Government of Jaime Paz Zamora, who employed the privatization of natural resources for the country's development strategy and opt for leaving the industry in the hands of a transnational company instead of administering it nationally. The event with LITHCO shows the pronounced regional disagreement with the commercialization of raw materials since the interest in exploiting lithium began and the continuous demand for better economic compensation for the resources that are extracted in the region. On the other hand, considering that LITHCO was a leader in the market at that time, having conflicts of this type could have weakened the image of the country

internationally. In the perception of transnational companies, this local population's power over governmental decisions may be perceived as an insecure investment (Ströbele-Gregor, 2012).

With the arrival of Evo Morales to the Government, the strategy changed towards the nationalization of natural resources that promised the industrialization of the lithium led by Bolivians. The focus of this strategy would lie in the Government's commitment to the transformation of raw materials (Corz, 2018). Iño-Daza (2017) describes this change as the development of two types of extractivism, the first that was led mainly by the market and more common during the '80s and '90s, and the second one, neoextractivism, one more common in contemporary times and characterized by nationalism. At last, Bolivia remained dependent on the extraction of natural resources as the core of its economy. Morales' nationalist strategy, together with the speech that Bolivia would become the world's leader in the lithium market, were better accepted than the previous trend of exporting raw materials. However, this Government failed to satisfy the region's demands of guaranteeing its representation, consultation and participation in the decisions of lithium industrialization.

On the second case, there was strong resistance from COMCIPO and the Departmental Government of Potosí for the construction of the national company EBRE located in the city of La Paz (Ströbele-Gregor, 2012). The main issue was the location of the company far away from the Uyuni's site, which is against the National Political Constitution. EBRE would have been in charge of all the industrialization of lithium from the research to its commercialization, administering everything from La Paz. Various Potosinos sectors did not like this approach, because it meant that the Government would maintain the centralization of lithium and regional regulation would remain in the background. On the other hand, some supported this decision, because it would start the lithium industrialization process. FRUTCAS for instance was



in favor of the creation of EBRE with the conditions stipulated in the DS 444. FRUTCAS wanted an independent company to control the evaporite resources (Romero-Valenzuela, 2020); therefore, they rejected the social pressure measures led by COMCIPO and wanted the project to move along (Obaya, 2019).

Not only in this event, but over the years COMCIPO has been strongly and publicly challenging the decisions over the industrialization of lithium, reason why there has been a noticeable confrontation between them and Evo Morales' Government. For example, President Evo Morales and Vice president Álvaro García did not participate in any official events in the city of Potosí from 2010 to 2014, partly due to the friction with COMCIPO (Bustillos, 2014). COMCIPO's demands not only defend lithium, but demand for the development of the region which can be difficult without the support of the Government. Evo Morales has had different confrontations with COMCIPO. In 2015 he referred as a waste of money to COMCIPO's demand for an airport in the city of Potosí (Corz, 2015). Evo Morales has also accused COMCIPO of harming the lithium project's progress (Luizaga, 2015). COMCIPO is interested in creating a federal Potosí where they can control and manage the resources. The quest for federalism stems from the desire for an autonomous and decentralized model that reflects the dissatisfaction with the government, COMCIPO leaders have been including this demand in their discourses since 2010 (Aguilar-Agramot, 2013). Due to the constant friction between their interests, COMCIPO supported the "No" vote for the constitutional referendum in 2016 which meant they were not in favor of Evo Morales candidacy habilitation for the 2019 elections (Ariñez, 2015).

The third event studied in this chapter, the joint venture YLB-ACISA, exhibits the strong and organized power of social movements to safeguard Bolivia's natural resources. While the

conflict about the DS 3738 was intertwined with the political problems of the 2019 elections, the pressure measures by the Potosí organizations were already putting the Government in a predicament before the election day. The conflict itself began with the lack of participation from the social sectors in planning the lithium project and their inclusion in the negotiation of the joint venture. Céspedes and Gorriti (2021) argue that the MAS' lithium project failed to include communities that were not linked to trade union federations or whose socioeconomic activities are not directly linked to the lithium industry. Ensuring the participation, consultation, and negotiation process with Potosí regional actors will be decisive for the success of lithium industrialization.

### **3.7 Conclusion**

For Bolivia, lithium has been in the mouth of development discourses since lithium resources were found in the Uyuni salt flat. There have been different proposals and strategies for the development of the industry, depending on the path that the exercising governments decided to take. In general, there is a positive perception of the Bolivian lithium industry imaginary built upon Bolivia having the biggest known resources in the world and the potential to build a favorable industry for the country's economy. Nonetheless, this vision has not been possible to materialize due to conflicts and tensions between the Government and the department of Potosí. There are five themes that were recognized repeated in the past conflicts from this study:

1. Disagreement by social sectors regarding access to information before the conclusion of contracts by the Government. In the three events studied, it was possible to see that the reactions of the social movements respond to a contract or supreme decree already established by the Government. For instance, the conflicts are reactionary to the conditions established without

prior participation and dialogue, which is why they do not satisfy the needs and expectations of the social sectors who demand greater regional participation.

2. Regional dissatisfaction with the benefits obtained and to be obtained from the extraction of natural resources. There is a general unconformity with the economic compensation obtained in the region for the extraction of natural resources. For the most part, the demands call for specific economic benefits for the department, because the Uyuni salt flat is located there.

3. Acceptance of the lithium industrialization project only while the transition from a model of exporting raw materials to one of value-added products is guaranteed. More acceptance is noted in the proposal and speech of the MAS that promotes the export of lithium-based products such as batteries.

4. Fear of the extraction of natural resources without proper management to guarantee social welfare, this based on the collective memory of the Potosí region influenced by the exploitation of silver and tin. The studied conflicts show that their main motivation was not the cancellation of the lithium industrialization, but rather the drive for better conditions.

5. Government's continuous discourses of a significant improvement in the country's economy from lithium. The development of the lithium industry is based on the idea that by being the country with the largest lithium resources in the world, Bolivia can become a leader in the global market. The Government often uses this discourse to justify the decisions for industrialization.

As for the Government's approach to the selection of industrialization strategies and selection of strategic partners, a change was seen after the entry of Evo Morales as president. Previous governments focused on exporting raw materials to the international market through

private transnational companies. On the other hand, the Government of Evo Morales and consequently the Government of Luis Arce propose greater participation of the State in the Lithium Project and the final objective of producing lithium-ion batteries. Although both approaches are quite different from each other, both held conflicts and confrontations that were explained throughout this chapter.

## Conclusions

### Conflicts around lithium

According to the common themes found in the case studies of the previous chapter, there are two actors who are permanently in the midst of lithium conflicts. These actors are the government, regardless of its political affinity and the social movements of the Potosí region. There is a confrontation between these sides over the management of the lithium project. However, both coincide with the desire for development from this resource. There are multiple scenarios of interests where the information is not shared properly, and worse still, there has been a lack of dialogue that allows the correct communication before and during the projects that are carried out in the Uyuni salt flat.

As for the social movements, there is a collective memory that rejects the appropriation of natural resources by transnational companies. This negative perception was formed in colonial times where in the same department of Potosí where lithium-related projects are carried out today, silver was stripped away, and it became the poorest department in the country. Consequently, a strong regional nationalism around lithium has evolved and nowadays feeds the struggle over better benefits for the region.

The Bolivian government has been trying to use lithium as a means to obtain profit from the international market, without success. Not only the government of Evo Morales but others before him have experienced social pressure when trying to establish international participation in the lithium industry. The national interest in lithium extraction arises in a global context, where other countries require this material. The lithium industry in Bolivia would not be able to grow if it were not for the increase in its demand at the international level and especially for the

energy transition that has increased its requirement for the production of batteries. Moreover, Bolivia remains dependent on international economic and technological support, which makes it difficult to develop a completely national productive industry without this support.

The increase of state participation in Bolivia's lithium industrialization process in the last decades has not really influenced a more participatory process that addresses the inevitable socio-environmental impacts of such an industry (Villalobos, 2019b). On the contrary, Potosí social movements have been more active, demanding greater participation in decision-making processes, planning, and improved benefits for the regional development growth. For instance, better collaboration between the actors is necessary to avoid future conflicts and set a strong foundation for the industrialization of lithium.

### **Prospects of Bolivia's lithium industry**

It is expected that the Bolivian government will announce the next partner for the industrialization of lithium in April 2022; however, this event is already expected to generate conflicts with the Potosí region and COMCIPO, given the previous past conflict like the one the joint venture with ACI Systems (ABI and Los Tiempos, 2022). So far, the government has not been able to adequately include the social sectors, which explains why there are already tensions, even before knowing who the next strategic partner will be. As we have seen in this thesis, projects involving lithium have a complex context where social and historical relations play an important role in the execution of any project. Therefore, strengthening local participation in all phases of the lithium project is essential.

While social demands have been more vocalized through social groups, there were no pronounced demands regarding environmental effects. Céspedes and Gorriti (2021) argue that there has not been enough progress on industrialization to determine the actual environmental damage potential in the Uyuni salt flat. Since the current environmental impacts of the lithium project have not been alarming, there have been no strong demands from the social sectors nor prominent prevention efforts from the government. This situation could rapidly change if the government's goal of turning Bolivia into a leader in the lithium market were to be achieved, which would lead to reactive rather than preventive efforts, as is often the case in the country. A reactive response to the environmental impacts is problematic because it can lead to irreparable damage to the region and its population. The region's water could be affected because brine extraction affects both salt and fresh groundwater levels; consequently, it can also affect the access of water to the people in terms of their personal use and as part of their sources of economic income, such as agriculture and cattle raising (Villalobos, 2019b; Calla et al., 2014).

Bolivia has been a source of raw materials for a long time but has no experience in industrializing them. Bolivia's scientific and technological knowledge is a challenge Bolivia's lithium industry (Del Barco & Foladori, 2020). Therefore, it is most likely that Bolivia will need the support of international partners. Additionally, worldwide technology changes at a fast pace, which means that the Bolivian industry will need to be able to develop and adapt promptly in order to not become obsolete, which means that it may require considerable economic support that could come from international investments and loans.

### **Thoughts on Sustainability**

Mainstream actions for Sustainable Development include efforts to reduce and mitigate the impacts of climate change, some of these actions include the transition towards renewable

energy and reduce the use of fossil fuels. These actions, in practice, require integral management so that there are no sacrifices for the wellbeing of others. In the name of a green energy transition, the resources of the salt flats are put in global dispute (Argento, 2020). To prevent the history of silver, oil, and gas from repeating itself, it is necessary that this transition keeps the social, economic, historical, political, and environmental dynamics of the places where natural resources are stored at hand. Fornillo et al. (2019) works reflect on the complex scenario of lithium in Argentina, Bolivia, and Chile. He states that the future of the industry will rely on the political, economic, and social schemes of each country. Moreover, the energy transition will require work on more than just the technology transition; it must instead work on the construction of a sustainable future that addresses the environmental effects and social inequalities created along the way.

The lithium industry in Bolivia will unquestionably have social and environmental impacts, but it is still uncertain to what extent it would affect local communities (Fabricant and Gustafson, 2020). Lithium's production chain uses great quantities of water, which, if not handled appropriately, could lead to water shortage and pollution. Additionally, the risk of a toxic chemical spill is present. In the social aspect, livelihoods could be affected by the changes in the ecosystems and, in consequence the economy of people who support themselves from agriculture, tourism, and artisanal mining.

Communities near the Uyuni salt flat are exposed to three main threats to the industrialization of lithium. First, the fauna threat such as the loss of pink flamingos. Second, the transformation of the scenery. These two are mainly related to the negative effect on tourism. Third, the negative effect of already limited water availability (Argento, 2018). The industrialization of lithium is an opportunity for the government and social organizations in the



Potosí region to collaborate, strengthen ties and achieve a space for dialogue where the most affected communities and all those involved participate in the development of the lithium project. What is needed is to go beyond environmental documents like licenses that are most of the time bureaucratic and take away power and participation from those affected and create new processes that look after the wellbeing of the communities and the ecosystem.

# Bibliography

## Bolivian Legal Regulations

Constitución Política del Estado (CPE), issued on February 7, 2009

Decreto Supremo (DS) 3738, issued on December 7, 2018

Decreto Supremo (DS) 444, abrogated on March 23, 2010. Downloaded from:

<https://www.lexivox.org/norms/BO-DS-N444.html>

Decreto Supremo (DS) 454, issued on March 20, 2010

Ley 466, Ley de la Empresa Pública, issued on December 26, 2013

Ley 535, Ley de Minería y Metalurgia, issued on May 28, 2014

## Institutional documents

Estado Plurinacional de Bolivia. (2015). Plan de Desarrollo Económico y Social: En el Marco del Desarrollo Integral para Vivir Bien 2016 – 2020.

GNRE. (2010). Memoria Institucional.

<http://sigec.ylb.gob.bo/download1/memorias/Memoria-GNRE-2010.pdf>

International Energy Agency (IEA). (2021a). Global EV Outlook 2021: Accelerating ambitions despite the pandemic.

International Energy Agency (IEA). (2021b). Renewables 2021: Analysis and forecast to 2026.

International Energy Agency (IEA). (2020, September). Innovation in batteries and electricity storage: A global analysis based on patent data.

Ministerio de Planificación del Desarrollo. (2006). Plan Nacional de Desarrollo: “Bolivia Digna, Soberana, Productiva y Democrática para Vivir Bien”, Lineamientos Estratégicos 2006 – 2011.

Organization of American States (OAS). (2019, December 4). Análisis de Integridad Electoral: Elecciones Generales en el Estado Plurinacional de Bolivia, 20 de octubre de 2019. Final report.

United Nations, Framework Convention on Climate Change. (2021a). Glasgow Climate Pact.

United Nations, Framework Convention on Climate Change. (2015). Adoption of the Paris Agreement.

United Nations. (2021b). Policy Briefs in Support of the High-Level Political Forum: Leveraging Energy Action for Advancing the Sustainable Development Goals.

U.S. Geological Survey (USGS). (2022). Mineral Commodity Summaries.

YLB. (2018). Memoria Institucional.

<http://sigec.ylb.gob.bo/download1/memorias/Memoria-YLB-2018.pdf>

YLB. (2019). Memoria Institucional.

<http://sigec.ylb.gob.bo/download1/memorias/Memoria-YLB-2019.pdf>

YLB. (2020). Memoria Institucional.

<http://sigec.ylb.gob.bo/download1/memorias/Memoria-YLB-2020.pdf>

## Los Tiempos Digital Archives

ABI. (2018a, April 21). Bolivia elige a la alemana ACI Systems para industrializar el litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20180421/bolivia-elige-alemana-aci-systems-industrializar-litio>

ABI. (2018b, October 6). Bolivia y Alemania se asocian para producir baterías. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20181006/bolivia-alemania-se-asocian-producir-baterias>

ABI. (2018c, October 7). Inauguran planta industrial de cloruro de potasio que producirá 350 mil toneladas al año. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20181007/inauguran-planta-industrial-cloruro-potasio-que-producira-350-mil>

ABI. (2021, March 25). Reanudan negociación con Alemania para industrializar el litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20210325/reanudan-negociacion-alemania-industrializar-litio>

ABI and Los Tiempos. (2022, January 10). Bolivia busca firma socia en litio y prevé peleas con Potosí. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20220110/bolivia-busca-firma-socia-litio-preve-peleas-potosi>

AGENCIAS. (2021, April 4). Gobierno alista plan para "reactivar" la industrialización de litio en Potosí y Oruro. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20210409/gobierno-alista-plan-reactivar-industrializacion-litio-potosi-oruro>

Aguilar, W. (2018, October 24). YLB organiza el primer foro en busca de mercados para el litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20181024/ylb-organiza-primer-foro-busca-mercados-litio>

ANF (2018a, December 10). Alemania admite no tener estudios ambientales para la industrialización del litio boliviano. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20181210/alemania-admite-no-tener-estudios-ambientales-industrializacion-del>

ANF. (2018b, December 15). En 8 años, Bolivia sigue suscribiendo contratos similares por el litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20181215/8-anos-bolivia-sigue-suscribiendo-contratos-similares-litio>

ANF. (2019a, October 8). Potosí para a medias por las regalías del litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20191008/potosi-medias-regalias-del-litio>

ANF. (2019b, October 9). Comcipo irá a la reunión informativa con el Gobierno, pero radicaliza sus medidas desde hoy. *Los Tiempos*. <https://www.lostiempos.com/actualidad/pais/20191009/comcipo-ira-reunion-informativa-gobierno-pero-radicaliza-sus-medidas-hoy>

ANF. (2019c, October 17). Comcipo ratifica el paro general indefinido y convoca marcha para hoy. *Los Tiempos*. <https://www.lostiempos.com/actualidad/pais/20191017/comcipo-ratifica-paro-general-indefinido-convoca-marcha-hoy>

ANF. (2019d, November 7). Alemania expresa su extrañeza por la cancelación unilateral de la empresa mixta para el litio. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/economia/20191107/alemania-expresa-su-extraneza-cancelacion-unilateral-empresa-mixta>

Brújula Digital. (2021, March 24). Arce en México: “El objetivo económico del golpe de Estado era el control de litio boliviano”. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/pais/20210324/arce-mexico-objetivo-economico-del-golpe-estado-era-control-litio-boliviano>

El país arde ante la sombra de un fraude electoral en Bolivia. (2019, October 22). *Los Tiempos*. <https://www.lostiempos.com/actualidad/pais/20191022/pais-arde-sombra-fraude-electoral-bolivia>

Hinojosa, J. (2019, May 6). NASA ve potencial de litio en Uyuni y muchas trabas para explotarlo. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20190506/nasa-ve-potencial-litio-uyuni-muchas-trabas-explotarlo>

Hinojosa, J. (2019, October 24). Defensa del voto: protestas y riñas en primera jornada de paro. *Los Tiempos*. <https://www.lostiempos.com/actualidad/pais/20191024/defensa-del-voto-protestas-rinas-primera-jornada-paro>

Hinojosa, J. (2020, June 15). Creciente deuda y Covid-19 traban la explotación del litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20200615/creciente-deuda-covid-19-traban-explotacion-del-litio>

Hinojosa, J. (2021a, January 24). Sugieren reajuste con ACI Systems y crear una política nacional del litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20210124/sugieren-reajuste-aci-systems-crear-politica-nacional-del-litio>

Hinojosa, J. (2021b, March 11). Expertos sugieren borrar mito de que el litio suplirá a ingresos del gas. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/economia/20210311/expertos-sugieren-borrar-mito-que-litio-suplira-ingresos-del-gas>

Hinojosa, J. (2021c, March 28). Las cinco mentiras de Luis Arce sobre el litio en su visita a México. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20210328/cinco-mentiras-luis-arce-litio-su-visita-mexico>

Hinojosa, J. (2021d, May 10). ¿La nueva estrategia del litio genera un elefante blanco de \$us 1.000 MM?. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/economia/20210510/nueva-estrategia-del-litio-genera-elefante-blanco-us-1000-mm>

Hinojosa, J. (2021e, July 8). Observan demora en proyecto del litio mientras Argentina y Chile avanzan. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/economia/20210708/observan-demora-proyecto-del-litio-mientras-argentina-chile-avanzan>

Los Tiempos Digital. (2009, October 30). Indígenas piden a Morales no entregar el litio a transnacionales. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/economia/20091030/indigenas-piden-morales-no-entregar-litio-transnacionales>

Los Tiempos Digital. (2010a, March 17). Gobierno ratifica que empresa industrializadora del litio se instalará en La Paz para abaratar costos. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/economia/20100317/gobierno-ratifica-que-empresa-industrializadora-del-litio-se-instalara>

Los Tiempos Digital. (2010b, March 18). Autoridades aclaran que funcionamiento de EBRE en La Paz es transitorio. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/economia/20100318/autoridades-aclaran-que-funcionamiento-ebre-paz-es-transitorio>

Los Tiempos Digital. (2010c, March 19). El decreto supremo 444 es "transitorio". *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20100319/decreto-supremo-444-es-transitorio>

Los Tiempos Digital. (2010d, March 19). Conflicto por el Decreto 444 recrudece en Potosí. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20100319/conflicto-decreto-444-recrudece-potosi>

Los Tiempos Digital. (2010e, March 19). Comité Cívico de Potosí recibe abrogación de Decreto 444. *Los Tiempos*. <https://www.lostiempos.com/actualidad/nacional/20100323/comite-civico-potosi-recibe-abrogacion-decreto-444>

Los Tiempos Digital. (2019a, October 11). Gobierno anuncia diálogo con Comcipo presidido por el presidente Morales. *Los Tiempos*. <https://www.lostiempos.com/actualidad/pais/20191011/gobierno-anuncia-dialogo-comcipo-presidido-presidente-morales>

Los Tiempos Digital. (2019b, October 12). Enfrentamiento entre militantes del MAS y pobladores aviva la tensión en Potosí. *Los Tiempos*.



<https://www.lostiempos.com/actualidad/pais/20191012/enfrentamiento-militantes-del-mas-pobladores-aviva-tension-potosi>

Los Tiempos Digital. (2019c, October 22). Cívicos y opositores llaman a paro indefinido nacional. *Los Tiempos*. <https://www.lostiempos.com/actualidad/pais/20191022/civicos-opositores-llaman-paro-indefinido-nacional>

Los Tiempos y agencias. (2019, November 3). Gobierno abroga el DS 3738 sobre la industrialización del litio. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/pais/20191103/gobierno-abroga-ds-3738-industrializacion-del-litio>

Los Tiempos Digital. (2019d, November 3). Comcipo decide mantener medidas de presión. *Los Tiempos*. <https://www.lostiempos.com/actualidad/pais/20191103/comcipo-decide-mantener-medidas-presion>

Los Tiempos Digital. (2020, February 3). Alemania reafirma interés por el litio de Bolivia. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20200203/alemania-reafirma-interes-litio-bolivia>

PÁGINA SIETE. (2021, March 27). Evo suspendió proyecto de litio, pero en México Arce culpó a Añez. *Los Tiempos*. <https://www.lostiempos.com/actualidad/pais/20210327/evo-suspendio-proyecto-litio-pero-mexico-arce-culpo-anez>

Peredo, N. (2019, October 17). Gobierno apunta a dos partidos y a cívicos por violencia en Santa Cruz; Fiscalía procesa a 11 jóvenes. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/pais/20191017/gobierno-apunta-dos-partidos-civicos-violencia-santa-cruz-fiscalia-procesa>

RADIO FIDES. (2021, March 25). Potosí: Advierten con movilizaciones si el Gobierno negocia industrialización del litio sin consultar a la region. *Los Tiempos*.  
<https://www.lostiempos.com/actualidad/economia/20210325/potosi-advierten-movilizaciones-si-gobierno-negocia-industrializacion>

Redacción Central. (2009, October 31). Comunarios piden resguardar el litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20091031/comunarios-piden-resguardar-litio>

Redacción Central. (2010a, March 11). \$us 5 millones para empresa de litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20100311/us-5-millones-empresa-litio>

Redacción Central. (2010b, March 17). Emergencia en Potosí por empresa de litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20100317/emergencia-potosi-empresa-litio>

Redacción Central. (2010c, March 19). Potosinos conminan al Gobierno a derogar el "decreto maldito". *Los Tiempos*.  
<https://www.lostiempos.com/actualidad/nacional/20100319/potosinos-conminan-al-gobierno-derogar-decreto-maldito>

Redacción Central. (2010d, March 20). Gobierno podría cambiar sede de empresa de litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20100320/gobierno-podria-cambiar-sede-empresa-litio>

Redacción Central. (2010e, March 21). Lito: Gobierno anuncia que abroga decreto. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20100321/litio-gobierno-anuncia-que-abroga-decreto>

Redacción Central. (2010f, March 22). Consensuarán ley para crear la EBRE. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20100322/consensuaran-ley-crear-ebre>

Redacción Central. (2010g, March 23). Gobierno abroga DS del litio y frena paro cívico. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20100323/gobierno-abroga-ds-del-litio-frena-paro-civico>

Redacción Central. (2017, September 16). Los Tiempos, 74 años junto a Cochabamba. <https://www.lostiempos.com/actualidad/local/20170916/tiempos-74-anos-junto-cochabamba>

Redacción Central. (2018a, October 29). Lito: Bolivia apunta a 5 países como mercados para fertilizante y baterías. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20181029/litio-bolivia-apunta-5-paises-como-mercados-fertilizante-baterias>

Redacción Central. (2018b, December 13). Se crea empresa mixta para producir derivados y baterías de litio en 4 años. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20181213/se-crea-empresa-mixta-producir-derivados-baterias-litio-4-anos>

Redacción Central. (2019a, January 7). Hechos y cifras rebaten los 10 logros económicos citados por el Vice. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/economia/20190107/hechos-cifras-rebaten-10-logros-economicos-citados-vice>

Redacción Central. (2019b, June 8). Buscan incluir a firma alemana en el directorio de YLB. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20190608/buscan-incluir-firma-alemana-directorio-ylb>

Redacción Central. (2019c, June 22). Tres desafíos en carrera del litio alejan industrialización. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/economia/20190622/tres-desafios-carrera-del-litio-alejan-industrializacion>

Redacción Central. (2019d, October 2). Cinco conflictos complican al MAS a pocos días de las elecciones. *Los Tiempos*. <https://www.lostiempos.com/actualidad/pais/20191002/cinco-conflictos-complican-al-mas-pocos-dias-elecciones>

Redacción Central. (2019e, October 7). Potosí inicia paro indefinido contra Evo por el litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/cochabamba/20191007/potosi-inicia-paro-indefinido-contra-evo-litio>

Redacción Central. (2019f, October 10). Gobierno conforma comisión técnica para trabajar sobre el litio. *Los Tiempos*. <https://www.lostiempos.com/actualidad/economia/20191010/gobierno-conforma-comision-tecnica-trabajar-litio>

Redacción Central. (2019g, October 10). Comcipo ratifica pedido de abrogación del decreto 3738 y critica a Quintana. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/pais/20191010/comcipo-ratifica-pedido-abrogacion-del-decreto-3738-critica-quintana>

Redacción Central. (2019h, October 12). Potosinos dialogarán con el Gobierno sin levantar paro. *Los Tiempos*. <https://www.lostiempos.com/actualidad/pais/20191012/potosinos-dialogaran-gobierno-levantar-paro>

Redacción Central. (2019i, October 16). Potosí pide Constituyente para buscar el federalismo. *Los Tiempos*. <https://www.lostiempos.com/actualidad/pais/20191016/potosi-pide-constituyente-buscar-federalismo>

Redacción Central. (2019j, October 18). Potosí y médicos suspenden los paros y garantizan elecciones. *Los Tiempos*.  
<https://www.lostiempos.com/actualidad/pais/20191018/potosi-medicos-suspenden-paros-garantizan-elecciones>

Redacción Central. (2019k, October 23). Crece tensión en Bolivia: causan destrozos en sede cocalera y del MAS. *Los Tiempos*.  
<https://www.lostiempos.com/actualidad/pais/20191023/crece-tension-bolivia-causan-destrozos-sede-cocalera-del-mas>

Redacción Central. (2019l, November 11). Gobierno da paso atrás con el litio; cívicos ratifican medidas. *Los Tiempos*.  
<https://www.lostiempos.com/actualidad/economia/20191104/gobierno-da-paso-atras-litio-civicos-ratifican-medidas>

Redacción Central. (2020a, January 23). Embajador de Alemania: Detener el proyecto del litio sería un duro revés. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/economia/20200123/embajador-alemania-detener-proyecto-del-litio-seria-duro-reves>

Redacción Central. (2020b, April 4). Alemania indica que nunca paralizó negociaciones para explotar el litio. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/economia/20200204/alemania-indica-que-nunca-paralizo-negociaciones-explotar-litio>

Rojas-Medrano, J. (2021, July 25). Stefan Duppel: El Gobierno alemán ha ofrecido proyectos de 40 millones de euros. *Los Tiempos*.

<https://www.lostiempos.com/actualidad/pais/20210725/stefan-duppel-gobierno-aleman-ha-ofrecido-proyectos-40-millones-euros>

Sagárnaga, R. (2018, December 31). Bolivia: Los nueve grandes retos para 2019. *Los Tiempos*. <https://www.lostiempos.com/oh/actualidad/20181231/bolivia-nueve-grandes-retos-2019>

## **El Diario Digital Archives**

Alba-Mercado, Wenceslao. (2010, March 21). El polémico Decreto Supremo N° 0440. El Diario. [https://www.pub.eldiario.net/noticias/2010/2010\\_03/nt100321/1\\_06opn.php](https://www.pub.eldiario.net/noticias/2010/2010_03/nt100321/1_06opn.php)

El Diario. (n.d.). Historia. <https://www.eldiario.net/diario/>

El Diario. (2010a, March 18). Potosinos reclaman más ingresos por litio. [https://www.pub.eldiario.net/noticias/2010/2010\\_03/nt100318/5\\_06nal.php](https://www.pub.eldiario.net/noticias/2010/2010_03/nt100318/5_06nal.php)

El Diario. (2010b, March 20). Conminan a cambiar sede de la empresa evaporítica. [https://www.pub.eldiario.net/noticias/2010/2010\\_03/nt100320/0\\_01ptd.php](https://www.pub.eldiario.net/noticias/2010/2010_03/nt100320/0_01ptd.php)

El Diario. (2010c, March 21). Potosí mantiene emergencia pese a anuncio de abrogación. [https://www.pub.eldiario.net/noticias/2010/2010\\_03/nt100321/0\\_01ptd.php](https://www.pub.eldiario.net/noticias/2010/2010_03/nt100321/0_01ptd.php)

El Diario. (2010d, March 22). Cívicos y campesinos potosinos enfrentados por empresa de litio. [https://www.pub.eldiario.net/noticias/2010/2010\\_03/nt100322/0\\_01ptd.php](https://www.pub.eldiario.net/noticias/2010/2010_03/nt100322/0_01ptd.php)

El Diario. (2010e, March 24). Cívicos suspenden medidas de presión. [https://www.pub.eldiario.net/noticias/2010/2010\\_03/nt100324/5\\_06nal.php](https://www.pub.eldiario.net/noticias/2010/2010_03/nt100324/5_06nal.php)

### **La Razón Digital Archives**

Aguilar-Agramot, R. (2013, November 10). ‘¡Potosí federal!’, síntoma de decepción por las autonomías. *La Razón*. <https://www.la-razon.com/lr-article/potosi-federal-sintoma-de-decepcion-por-las-autonomias/>

Ariñez, R. (2015, September 10). Comcipo marcha por el No y Gobierno refuerza campaña. *La Razón*. <https://www.la-razon.com/nacional/2015/09/10/comcipo-marcha-por-el-no-y-gobierno-refuerza-campana/>

Ariñez, R. (2018, November 9). Evo y Álvaro cancelan asistencia a la sesión de honor en Potosí para evitar a grupos que ‘insultan’. *La Razón*. <https://www.la-razon.com/nacional/2018/11/09/evo-y-alvaro-cancelan-asistencia-a-la-sesion-de-honor-en-potosi-para-evitar-a-grupos-que-insultan/>

Ariñez, R. (2019a, October 8). Gobierno convoca a Comcipo a reunión informativa sobre el litio; cívicos analizan asistencia. *La Razón*. <https://www.la-razon.com/economia/2019/10/08/gobierno-convoca-a-comcipo-a-reunion-informativa-sobre-el-litio-civicos-analizan-asistencia/>

Ariñez, R. (2019b, October 16). La recta final de la campaña electoral se mancha con violencia; misión de la OEA pide paz. *La Razón*. <https://www.la-razon.com/nacional/2019/10/16/la-recta-final-de-la-campana-electoral-se-mancha-con-violencia-mision-de-la-oea-pide-paz/>

Ariñez, R. (2019c, October 16). Persiste el paro en Potosí a la espera de la respuesta del Gobierno sobre el litio. *La Razón*. <https://www.la-razon.com/economia/2019/10/16/persiste-el-paro-en-potosi-a-la-espera-de-la-respuesta-del-gobierno-sobre-el-litio/>

Bustillos, I. (2014, November 10). Evo participa de festejo potosino luego de 4 años. *La Razón*. <https://www.la-razon.com/nacional/2014/11/10/evo-participa-de-festejo-potosino-luego-de-4-anos/>

Calle, G. (2019, October 21). El MAS gana con 48,6% en Potosí, pese al conflicto. *La Razón*. <https://www.la-razon.com/nacional/2019/10/21/el-mas-gana-con-486-en-potosi-pese-al-conflicto/>

Chávez, E. (2017, June 7). *La Razón*, 27 años de compromiso. <https://www.la-razon.com/sociedad/2017/06/07/la-razon-27-anos-de-compromiso/>

Corz, C. (2015, May 17). Evo: Aeropuerto en Potosí sería ‘malgastar’ dinero. *La Razón*. <https://www.la-razon.com/nacional/2015/05/17/evo-aeropuerto-en-potosi-seria-malgastar-dinero/>

Corz, C. (2018, January 22). García asegura que se recuperó una década perdida y traza el desafío de hacer una Bolivia industrial. *La Razón*. <https://www.la-razon.com/nacional/2018/01/22/garcia-asegura-que-se-recupero-una-decada-perdida-y-traza-el-desafio-de-hacer-una-bolivia-industrial/>



Cuiza, P. (2016, January 25). García: El país definirá el precio del litio en 2019. *La Razón*. <https://www.la-razon.com/nacional/2016/01/25/garcia-el-pais-definira-el-precio-del-litio-en-2019/>

Cuiza, P. (2019a, October 7). COB descarta que sus afiliados acaten el paro indefinido convocado por Comcipo. *La Razón*. <https://www.la-razon.com/economia/2019/10/07/cob-descarta-que-sus-afiliados-acaten-el-paro-indefinido-convocado-por-comcipo/>

Cuiza, P. (2019b, October 15). Cabildo en Potosí decide voto castigo para Morales y avanzar al federalism. *La Razón*. <https://www.la-razon.com/nacional/2019/10/15/cabildo-en-potosi-decide-voto-castigo-para-morales-y-avanzar-al-federalismo/>

Cuiza, P. (2019c, November 12). Camacho y Pumari festejan desde el balcón de Palacio Quemado la presidencia de Áñez. *La Razón*. <https://www.la-razon.com/nacional/2019/11/12/camacho-y-pumari-festejan-desde-el-balcon-de-palacio-quemado-la-presidencia-de-anez/>

Luizaga, D. (2015, August 17). Evo se disculpa de Comcipo por su pliego. *La Razón*. <https://www.la-razon.com/nacional/2015/08/17/evo-se-disculpa-de-comcipo-por-su-pliego/>

Montero, B. (2019a, October 2). Comcipo inicia huelga de hambre en La Paz y alista paro indefinido. *La Razón*. <https://www.la-razon.com/sociedad/2019/10/02/comcipo-inicia-huelga-de-hambre-en-la-paz-y-alista-paro-indefinido/>

Montero, B. (2019b, October 17). Comcipo suspende el paro hasta después de las elecciones. *La Razón*. <https://www.la-razon.com/nacional/2019/10/17/comcipo-suspende-el-paro-hasta-despues-de-las-elecciones/>

## Secondary information

Ajanovic, A., & Haas, R. (2018). Electric vehicles: solution or new problem?. *Springer Nature B.V*, *Environ Dev Sustain*, 20, 7–22.

Ambrose, H., & Kendall, A. (2020a). Understanding the future of lithium: Part 1, resource model. *Journal of Industrial Ecology*, 24(1), 80-89.

Ambrose, H., & Kendall, A. (2020b). Understanding the future of lithium: Part 2, temporally and spatially resolved life-cycle assessment modeling. *Journal of Industrial Ecology*, 24(1), 90-100.

ANF. (1997). Directorio del Comité Cívico Potosinista (COMCIPO).  
<https://www.noticiasfides.com/nacional/politica/directorio-del-comite-civico-potosinista-comcipo-tendran-3508>

Alemán-Vargas, L. V. (2013). La movilización de los diecinueve días: La identidad colectiva potosina y su re-significación. *TEMAS SOCIALES*, 33, 57-77.

Argento, M. (2018). Espejo de sal: Estructuras de la acción colectiva e integración territorial del proyecto de extracción e industrialización del litio en Bolivia. *Estado & comunes*, revista de políticas y problemas públicos, 7, Vol. 2, 227-248.

Argento, M. (2020). Sentidos políticos y construcción de lo común en los territorios de resistencias a la minería del litio de Salinas Grandes y Laguna Guayatayoc. *DOSSIER*. Cartografías Del Sur, 12.

Argento, M., & Zicari, J. (2018). Políticas públicas y conflictos territoriales en torno a la explotación del litio en Salta: el caso de Salinas Grandes. *Andes*, Antropología e Historia. Vol.1, 29, 1-36.

Barandiarán, J. (2019). Lithium and development imaginaries in Chile, Argentina and Bolivia. *World Development*, 113, 381–391

BBC. (2019). Bolivia election: Protests as Evo Morales officially declared winner. <https://www.bbc.com/news/world-latin-america-50178188>

Bibienne, T., Magnan, J.-F., Rupp A., & Laroche, N. (2020). From Mine to Mind and Mobiles: Society's Increasing Dependence on Lithium. *Elements*, Vol.16, 4, 265–270.

Bowell, R. J., Lagos, L., de los Hoyos, C. R., & Declercq, J. (2020). Classification and Characteristics of Natural Lithium Resources. *Elements*, Vol.16, 4, 259–264.

Bridge, G., Bouzarovski, S., Bradshaw, M., Eyre, N. (2013). Geographies of energy transition: Space, place and the low-carbon economy. *Energy Policy*, 53, 331-340.

Britannica. (n.d.). Evaporite definition. <https://www.britannica.com/science/evaporite>

Calla-Ortega, R., Montenegro-Bravo, J. C., Montenegro-Pinto, Y., & Poveda-Ávila, P. (2014). *Un Presente sin Futuro: El proyecto de industrialización del litio en Bolivia* (1<sup>st</sup> ed.). CEDLA.

Calvo, E. J. (2019). Litio, un recurso estratégico para el mundo actual. *Asociación Civil Ciencia Hoy; Ciencia Hoy*, Vol.28, 164, 17-23.

Céspedes, L., & Gorriti, J. (2021). Neoextractivismo y neodesarrollismo. Actores y disputas en torno a la extracción del litio en Bolivia. *Revista NuestrAmérica*, Vol. 9, 18.

Chen, H., Cong, T. N., Yang, W., Tan, C., Li, Y., Ding, Y. (2009). Progress in electrical energy storage system: A critical review. *Progress in Natural Science*, Vol. 19, 3, 291-312.

Cheng, X., Liu, H., Yuan, H., Peng, H., Tang, C., Huang, J., & Zhang, Q. (2021). A perspective on sustainable energy materials for lithium batteries. *SusMat (Online)*, 1:1, 38-50.

Coatsworth, J. H. (2005). Structures, Endowments, and Institutions in the Economic History of Latin America. *LARR*, 40: 3, 126-144.

Congreso de FRUTCAS exige toda la información y 100% de participación estatal en industrialización del litio. (2020, January 8). *Fundación Solón*.

<https://fundacionsolon.org/2020/01/08/congreso-de-frutcas-exige-toda-la-informacion-y-100-de-participacion-estatal-en-industrializacion-del-litio/>

Cote, S. C. (2016). *Oil and Nation: A History of Bolivia's Petroleum Sector*. Morgantown: West Virginia University Press.

Del Barco, R., & Foladori, G. (2020). Expectativas y desafíos de la industrialización del litio en Bolivia (2006-2019). *Americanía*, 11, 123-159.

Di Lecce, D., Verrelli, R., & Hassoun, J. (2017). Lithium-ion batteries for sustainable energy storage: Recent advances towards new cell configurations. *Green Chemistry: An International Journal and Green Chemistry Resource : GC*, 19:15, 3442-3467.

Dorn, F. M., & Ruiz-Peyré, F. (2020). Lithium as a Strategic Resource: Geopolitics, Industrialization, and Mining in Argentina. *Journal of Latin American Geography*, Vol.19, 4, 68–90.

Dunkerley, J. (1984). *Rebellion in the Veins: Political Struggle in Bolivia, 1952-82*. Verso London.

Dühhnen, S., Betz, J., Kolek, M., Schmuch, R., Winter, M., & Placke, T. (2020). Toward Green Battery Cells: Perspective on Materials and Technologies. *WILEY-VCH Verlag GmbH & Co. KGaA*, Small Methods, 4.

Engerman, S. L., & Sokoloff, K. L. (1997). *Factor Endowments, Institutions, and Differential Paths of Growth Among New World Economies: A view from Economic Historians from the United States*. In Haber, S. Stanford University Press. How Latin America Fell Behind: Essays on the Economic Histories of Brazil and Mexico, 1800-1914. Pp. 260-304.

Fabricant, N., & Gustafson, B. (2020). The Political Economy of Gas, Soy and Lithium in Morales's Bolivia. *Bolivian Studies Journal*, Vol. 25, 45-59.

Farthing, L., & Kohl, B. H. (2014). *Evo's Bolivia: Continuity and change*. University of Texas Press.

Flores-Castro, F. (2015). ¿Qué es COMCIPO?. Blog de análisis político de Franz Flores Castro. <http://cazadecitas.blogspot.com/2015/07/que-es-comcipo.html>

Flores-Castro, F. (2019). Para entender el Movimiento Cívico Potosinista. Blog de análisis político de Franz Flores Castro. <http://cazadecitas.blogspot.com/2019/10/para-entender-el-movimiento-civico.html>

Fornillo, B., Argento, M., Gamba, M., Kazimierski, M., Puente, F., Romeo, G., Santos, E., Slipak, A., Urrutia, S., & Zicari, J. (2019). *Litio en Sudamérica. Geopolítica, energía y territorios* (1<sup>st</sup> ed.). El Colectivo; CLACSO; IEALC - Instituto de Estudios de América Latina y el Caribe.

Fundación Jubileo, (2021), Gobernanza y cadena de suministros del litio: Estudio de Caso Uyuni-Bolivia.

Gallo, A., Simões-Moreira, J., Costa, H., Santos, M., & Moutinho dos Santos, E. (2016). Energy storage in the energy transition context: A technology review. *Renewable & Sustainable Energy Reviews*, 65, 800-822.

Ghassan, Z., Dufo-López, R., Carvalho, M., Pasaoglu, G. (2018). The lithium-ion battery: State of the art and future perspectives. *Renewable and Sustainable Energy Reviews*, Vol.89, 292-308.

Gruber, P. W., Medina P. A., Keoleian G. A., Kesler S. E., Everson, M. P., & Wallington, T. J. (2011). Global Lithium Availability: A Constraint for Electric Vehicles?. *Journal of Industrial Ecology*, Vol.15, 5, 760–775.

Haber, S. H. (1997). *How Latin America Fell Behind: Essays on the Economic Histories of Brazil and Mexico, 1800-1914*. Stanford University Press.

Hancock, L., Ralph, N., & Ali, S. H. (2018). Bolivia's lithium frontier: Can public private partnerships deliver a minerals boom for sustainable development?. *Journal of Cleaner Production*, 178, 551–560

Hay, I., & Cope, M. (2021). *Qualitative Research Methods in Human Geography*. Fifth edition. Oxford University Press Canada.

Healy, N., & Barry, J. (2017). Politicizing energy justice and energy system transitions: Fossil fuel divestment and a “just transition”. *Energy Policy*, 108, 451-459.

Heredia, F., Martinez, A. L., & Surraco-Urtubey, V. 2020. The importance of lithium for achieving a low-carbon future: Overview of the lithium extraction in the ‘Lithium Triangle.’ *Journal of Energy & Natural Resources Law*, 38:3, 213–236.

Hines, S.T., (2022). *Water For All: Community, Property, and Revolution in Modern Bolivia*. 1st ed., University of California Press.

Holden, E., Linnerud, K., & Banister, D. (2017). The Imperatives of Sustainable Development. *Sustainable Development*, Vol. 25, 213-226

Hopper, A. (2009). Recharging Bolivia: Evo Morales' Lithium Dilemma. *Harvard International Review*, 31:2, 9-10.

Iño-Daza, W. G. (2017). Historia del extractivismo del litio en Bolivia. El movimiento cívico de Potosí y la defensa de los recursos evaporíticos del Salar de Uyuni (1987-1990). *RevIISE*, Vol.10, 10, 173-188.

Kaunda, R. B. (2020). Potential environmental impacts of lithium mining. *Journal of Energy & Natural Resources Law*, 38:3, 237–244.

Klein, H. S. (2011). *A Concise History of Bolivia*. 2nd ed., *Cambridge concise histories*, Cambridge University Press.

Kohl, B. H., & Farthing, L. C. (2006). *Impasse in Bolivia: Neoliberal Hegemony and Popular Resistance*. Zed Books.

Koch, N., & Perreault, T. (2019). Resource nationalism. *Progress in Human Geography*, Vol.43, 4, 611-631.

Lane, K. (2019). *Potosí: The Silver City that Changed the World*. University of California Press.

Le Blanc, D. (2015). Towards Integration at Last? The Sustainable Development Goals as a Network of Targets. *Sustainable Development*, 23:3, 176-187.

- Li, M., Lu, J., Chen, Z., & Amine, K. (2018). 30 Years of Lithium-Ion Batteries. *Advanced Materials (Weinheim)*, 30:33, E1800561-N/a.
- Lunde-Seefeldt, J. (2020). Lessons from the Lithium Triangle: Considering Policy Explanations for the Variation in Lithium Industry Development in the “Lithium Triangle” Countries of Chile, Argentina, and Bolivia. *Politics & Policy*, Vol.48, 4, 727–765.
- Marston, A., & Perreault, T. (2017). Consent, coercion and cooperativismo: Mining cooperatives and resource regimes in Bolivia. *Environment and Planning A*, 49:2, 252-272.
- McNeish, J. (2018). Resource Extraction and Conflict in Latin America. *Colombia Internacional*, (93), 3-16.
- Montenegro-Bravo, J. C. (2018). El modelo de industrialización del litio en Bolivia. *Revista de ciencias sociales*, segunda época, 34, 69-82.
- Obaya, M. (2019). Estudio de caso sobre la gobernanza del litio en el Estado Plurinacional de Bolivia. *Comisión Económica para América Latina y el Caribe (CEPAL)*, Documentos de Proyectos (LC/TS.2019/49)
- Orellana-Rocha, W. (1995). El Litio: Una Perspectiva Fallida Para Bolivia. Univeridad de Chile, Facultad de Ciencias Físicas y Matemáticas.
- Peñaranda, G. (2018). Conforman Comité Electoral para renovar el directorio de Comcipo. El Potosí. [https://elpotosi.net/local/20180602\\_conforman-comite-electoral-para-renovar-el-directorio-de-comcipo.html](https://elpotosi.net/local/20180602_conforman-comite-electoral-para-renovar-el-directorio-de-comcipo.html)
- Perreault, T. (2013). Dispossession by Accumulation? Mining, Water and the Nature of Enclosure on the Bolivian Altiplano. *Antipode*, Vol. 45, 5, 1050-1069.



Perreault, T. (2018). Mining, meaning and memory in the Andes. *The Geographical Journal*, 184, 229-241.

Power, M., & Cuttica, F. (2010). THE SOLUTION: Bolivia's Lithium Dreams. *The Virginia Quarterly Review*, Vol. 86, 4, 4-23.

Revette, A. (2017). This time it's different: Lithium extraction, cultural politics and development in Bolivia. *Third World Quarterly*, Vol. 38, 1, 149-168.

Romero-Valenzuela, J. (2020). *Natural Resource Governance, Grievances and Conflict: The Case of the Bolivian Lithium Program* (1<sup>st</sup> ed.). Springer VS.

Sanchez-Lopez, M. D. (2019a). From a White Desert to the Largest World Deposit of Lithium: Symbolic Meanings and Materialities of the Uyuni Salt Flat in Bolivia. *Antipode*, Vol. 51, 4, 1318-1339.

Sanchez-Lopez, D. (2019b). Sustainable Governance of Strategic Minerals: Post-Neoliberalism and Lithium in Bolivia. *Environment: Science and Policy for Sustainable Development*, 61:6, 18-30.

Sanchez-Lopez, M. D. (2021). Territory Lithium Extraction: The Great Land of Lipez and the Uyuni Salt Flat in Bolivia. *Political Geography*. 90, 102456.

Siciliano, G., Wallbott, L., Urban, F., Dang, A., & Lederer, M. (2021). Low-carbon energy, sustainable development, and justice. *Sustainable Development*, 29:1049–1061.

Solón, J. C. (2021, December). ¿Qué pasó con la industrialización del litio?. (2021, December). *TUNUPA*, 119. <https://fundacionsolon.org/2022/03/09/tunupa-119-que-paso-con-la-industrializacion-del-litio/>

Solón, J.C. (2022, February 10). Endeudados hasta el litio. *Fundación Solón*.

<https://fundacionsolon.org/2022/02/10/endeudados-hasta-el-litio/>

Solón, J. C., Montaña-Sandoval, X., & Solón P. (2021, June). El ABC del Litio. Ströbele-Gregor, J. (2012). Litio en Bolivia. El plan gubernamental de producción e industrialización del litio, escenarios de conflictos sociales y ecológicos, y dimensiones de desigualdad social. *desiguALdades.net Working Paper Series*, 14.

Stafford-Smith, M., Griggs, D., Gaffney, O., Ullah, F., Reyers, B., Kanie, N., Stigson, B., Shrivastava, P., Leach, M., & O'Connell, D. (2016). Integration: The key to implementing the Sustainable Development Goals. *Sustainability Science*, 12:6, 911-919.

Stern, Steve J. (1988). Feudalism, Capitalism, and the World-System in the Perspective of Latin America and the Caribbean. *The American Historical Review*, Vol. 93, 4.

Ströbele-Gregor, J. (2013). El proyecto estatal del litio en Bolivia. *Nueva Sociedad*, 244.

Svampa, M. (2015). Commodities Consensus: Neoextractivism and Enclosure of the Commons in Latin America. *The South Atlantic Quarterly*, 114:1, 65-82.

Svampa, M. (2019). *Las fronteras del neoextractivismo en América Latina. Conflictos socioambientales, giro ecoterritorial y nuevas dependencias*. Bielefeld: Centro Maria Sibylla Merian de Estudios Latinoamericanos Avanzados en Humanidades y Ciencias Sociales (CALAS).

Thornton, C. (2021). *Revolution in Development: Mexico and the Governance of the Global Economy*. University of California Press.

TUNUPA, 116. <https://fundacionsolon.org/2021/08/11/tunupa-116-el-abc-del-litio/>

Tribunal Internacional de los Derechos de la Naturaleza dictamina moratoria para la minería del litio en Atacama. (2020, January 14). *Fundación Solón*.

<https://fundacionsolon.org/2020/01/14/tribunal-internacional-de-los-derechos-de-la-naturaleza-dictamina-moratoria-para-la-mineria-del-litio-en-atacama/>

United Nations. (n.d.). *United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, 3-14 June 1992*. <https://www.un.org/en/conferences/environment/rio1992>

Valle, V., & Holmes, H. (2013). Bolivia's Energy and Mineral Resources Trade and Investments with China: Potential Socioeconomic and Environmental Effects of Lithium Extraction. *Latin American Policy*, 4:1, 93-122.

Vara, A. M. (2015). A South American approach to metamorphosis as a horizon of equality: Focusing on controversies over lithium. *Current Sociology*, Vol.63, 1, 100–104.

Villalobos, G. (2019a, May) Litio Boliviano ¿Industrialización o extractivismo? Análisis de la Asociación Estratégica Boliviana-Alemana. *TUNUPA*, 108

Villalobos, G. (2019b, July 2). ¿Cuáles serán los impactos socio ambientales de la explotación del litio en el salar de Uyuni?. *Fundación Solón*.

<https://fundacionsolon.org/2019/07/02/cuales-seran-los-impactos-socio-ambientales-de-la-explotacion-del-litio-en-el-salar-de-uyuni/>

Villalobos, G. (2019c, August 9). 0% de regalías para el hidróxido de litio. *Fundación Solón*. <https://fundacionsolon.org/2019/08/09/0-de-regalias-para-el-hidroxido-de-litio/>

Yan, J. (2022). Energy transition: Time matters. *Advances in Applied Energy*, 5, 100082.

YLB. (n.d.). Breve reseña histórica. [https://www.ylb.gob.bo/inicio/acerca\\_de\\_YLB](https://www.ylb.gob.bo/inicio/acerca_de_YLB)

YPFB. (2013). Contexto Histórico de YPFB. <https://www.ypfb.gob.bo/es/informacion-institucional/contexto-historico.html>

Young, K. A. (2017). *Blood of the Earth: Resource Nationalism, and Empire in Bolivia*. University of Texas Press.

¿Qué pasa con la industrialización del litio en Bolivia?. (2019, May 27). *Fundación Solón*. <https://fundacionsolon.org/2019/05/27/con-menos-us1-millon-firma-alemana-logro-contrato-de-litio/>