

# Environmental Justice in the “Lithium Triangle”

## *The Problematic Road to Electromobility*



Salar de Uyuni, Bolivia (Author's photo)

Master Thesis

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Author: Martin Güppner (133295)

Supervisor: Dr. Jacobo Ramirez

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## **Abstract**

**Context** – Backed by global climate change mitigation efforts, the drive towards electromobility has manifested itself in a rush for lithium, a mineral crucial for battery technologies. In the so-called “Lithium Triangle” (Bolivia, Chile, Argentina), hopes of leveraging the region’s resource endowment for economic development are complicated by an increasing awareness of lithium mining’s negative ramifications, spurring protests by local Indigenous populations that are once again feeling by-passed and threatened by extractive projects.

**Purpose** – This thesis investigates the externalities of lithium mining projects in terms of environmental justice. The movement has been adapted by Latin American scholars, incorporating Indigenous struggles and decolonial thinking, and thereby constitutes a particularly insightful tool.

**Methodology** – A multiple case study including all three triangle states, both primary and secondary data collection techniques are utilized to arrive at a holistic understanding that takes into account structural and subjective factors.

**Findings** – Fundamentally, the local impacts of lithium mining are found to be four-fold, affecting environmental, economic and sociocultural aspects, while failing to uphold the special rights of Indigenous peoples. In terms of environmental justice, though not in all cases, lithium mining in the triangle states entails distributional, procedural and recognitional injustices, in addition to threatening community capabilities. From a decolonial perspective, it becomes apparent that lithium mining under the current neo-extractivist rationale is neither compatible with relational ways of life nor contributes to plurality and the construction of *otherness*.

**Implications** – The relevance of this study’s findings is highly dependent on the audience’s perspective, but overwhelmingly point to a need for action regarding extraction technologies, safeguarding human rights, and ultimately a change of course in climate strategy.

**Keywords** – *Lithium, Environmental Justice, Indigenous Peoples, Human Rights, Transition, Electromobility, Decolonization, Bolivia, Chile, Argentina*

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# **Chapter I: Introduction**

## **I.1 General Context**

The consequences of climate change arguably pose the biggest challenge of our times (McNutt, 2013). In response, governments around the world are joining forces to foster a “green transition”, aiming to decarbonize our energy and transport sectors, our cities, and our daily lives (UNFCCC, 1997). On the road to sustainable transport, passenger electric vehicles (EVs) powered by lithium-ion batteries (LIB) are a key driver, resulting in a global mining boom that has manifested lithium’s role as a strategic resource (Kavanagh et al., 2018). Likewise, global production capacity for LIBs is growing rapidly, exemplified by Tesla’s Gigafactory in Nevada (Bustos-Gallardo et al., 2021). The soft-silvery metal is predominantly found below salt lakes in what is now known as the “Lithium Triangle”, a desert area at the trijunction of Bolivia, Chile and Argentina (Barandiarán, 2019). Lithium offers a relatively clean slate, seeking to break with the region’s history of particularly polluting mining that has taken a devastating toll on both its people and its landscape (Farthing & Fabricant, 2018). In addition to the green rhetoric, the international press has painted economic development visions for the chronically underdeveloped region, with Forbes Magazine coining it the “Saudi Arabia of Lithium” (2008). Albeit relatively scarcely populated, the “triangle” is home to several Indigenous populations with ancestral ties to the territory. Contrary to the favorable image of lithium-powered EVs, local Indigenous communities have begun to mobilize against the mineral’s exploitation, lamenting environmental degradation and irresponsible conduct by mining companies with a disregard for human rights (Puente & Argento, 2015; Reuters, 2019a).

## **I.2 Problem Statement**

Due to lithium’s abundance in the area, the “triangle” has become a real-life playing field of global climate change mitigation efforts, pointing to a disconnect between sustainability strategies agreed upon by international policymakers and its ramifications *on the ground*. For one, the various consequences of lithium mining are not very well understood at this point, and unknown to a large majority that sees EVs as a holistically beneficial solution. However, growing unrest and discontent among local Indigenous communities, coupled with a forecasted steep rise in lithium demand, call for close scrutiny. Matters are complicated further by the persisting marginalization of Indigenous populations in the Latin American context, with historical roots that date back to the colonial period (Álvarez & Coolsaet, 2020).

### **I.3 What has been done?**

Research interest on lithium mining has proliferated in recent years, with a range of studies focusing on environmental (e.g. Bustos-Gallardo et al., 2021; Liu et al., 2019) and social (e.g. Agusdinata et al., 2018; Egbue, 2012) issues in the triangle region. Furthermore, the political and legal dimensions have been investigated (e.g. Abelvik-Lawson, 2019; Marchegiani et al., 2020; Rossi, 2019). These studies have pointed to environmental externalities of lithium mining, as well as a general disregard for the internationally and nationally recognized rights of local Indigenous communities by both state and firm actors. While the presence of mining projects can mean additional sources of income and improvements in local infrastructure, we have also seen social ramifications that range from community division to the loss of livelihoods and cultural heritage.

### **I.4 What is missing?**

Having gained a basic understanding of the historic circumstances and prevalent issues in each context, the environmental justice literature was identified as a particularly helpful tool for its bottom-up and people-centered approach. Publications that apply this perspective to lithium mining are extremely few (Romero et al., 2012). Moreover, Latin American scholars have advanced the concept past its initial emphasis on distribution, procedure and recognition, incorporating decolonial literature with a strong base in regional Indigenous struggles (Rodriguez, 2021). At the time of this study, there have been no decolonial perspectives on lithium mining published, to the best of my knowledge.

### **I.5 Purpose of Study & Research Questions**

As a direct outcome of the above, this study aims to address the impacts of lithium mining operations in the “triangle” in terms of environmental justice, while also attempting to offer a perspective based on decolonization and Indigenous environmental justice. Incorporating all three “triangle” states, it looks at the current state of affairs on the Bolivian *Salar de Uyuni*, Chilean *Salar de Atacama*, and Argentine *Salar de Olaroz* and *Salinas Grandes*. Based on a combination of critical realist and social constructionist philosophical assumptions, it thereby seeks to lay bare both structural factors as well as the subjective realm, which are assumed to co-contribute to the observed issues. The findings are relevant for a diverse set of audiences, such as academics, policymakers, private companies, and civil society.

Accordingly, this thesis aims to answer the following two research questions:

**RQ 1:** *What are the impacts of lithium mining operations on Indigenous communities in the “Lithium Triangle” in terms of the four tenets of Environmental Justice?*

**RQ2:** *What is the outcome of assessing lithium mining operations in the “triangle states” from an Indigenous and Decolonial Environmental Justice perspective?*

## **I.6 Overview of Thesis**

Having introduced the general topic and the research questions guiding this study, the remainder of this thesis is organized as follows. Chapter II gives a broad overview of the background conditions, starting with a brief historic account of Indigenous peoples in Latin America and the special rights protecting them today. Subsequently, lithium’s role in the low-carbon transition is addressed, and the so-called “Lithium Triangle” is presented in more depth. Finally, the problematic nature of extractivism in the region and its impact on Indigenous peoples is explained, setting the stage for the chosen theoretical model of environmental justice. Chapter III introduces the environmental justice literature, starting with its initial emphasis on distribution, procedure and recognition. It then moves on to a reimagined emphasis on community capabilities before introducing Latin American reconceptualizations of the concept, based on decolonization and Indigenous epistemologies. This chapter also features a literature review on environmental justice applications, determining the current state of research in the “Lithium Triangle”. Chapter IV presents the chosen methodology, a multiple case study, while also developing the assessment model that will guide the following chapters. Chapter V presents findings in terms of the various externalities of lithium mining in the triangle states, grouped into environmental, economic, sociocultural and human rights impacts. Chapter VI then discusses these impacts and how they relate to different understandings of environmental (in)justice (distribution, procedure, recognition, capabilities) before offering a perspective based on decolonization and Indigenous environmental justice. Chapter VII summarizes the thesis by presenting conclusions and answering the research questions. A quick note on limitations precedes a section on implications for future research, as well as recommendations for different stakeholders.

## **Chapter II: Background**

### **II.1 Indigenous peoples in Latin America**

#### **II.1.1 Definitions & Historical Struggle**

The term “Indigenous peoples” refers to a diverse group of peoples that is spread across the world, generally defined as the descendants of those who inhabited a geographical region at the time when people of different cultures or ethnic origins arrived (United Nations, n.d.-b). Other denominations include Native populations, Aboriginal people, and First Nations. Due to the vast diversity of cultures that classify as “Indigenous Peoples”, the United Nations has adopted an understanding of the term based on self-identification and a historical continuity with pre-colonial societies (ibid.). The condition as non-dominant sectors of society, determined to preserve ancestral territories and an ethnic identity as a basis of their continued existence (Daes, 2008, p. 9), is consistent across definitions, pointing to an inherent struggle that has characterized Indigenous societies since the colonial period.

In this regard, the case of Indigenous peoples in Latin America is a tale of exploitation and subordination symbolic for this struggle. Characterized by slavery, exploitative labor systems like the *encomienda*, and segregation during the colonial period, discrimination and marginalization continued throughout the continent after independence, reducing the Indigenous population to a fraction of what it was before the arrival of European settlers (Díaz Polanco, 1997). An exploitative project of this magnitude has dire consequences on many levels; a 1957 survey found that four in five Paraguayans thought that “Indians were animals”, irrespective of the fact that almost all Paraguayans are of Indigenous descent (Galeano, 1973, p. 42). While a comprehensive account of the hardships endured by the Latin American Indigenous populations would go greatly beyond the scope of this thesis as well as its purpose, it should be noted that it is argued to play a significant role to this day. In this regard, Indigenous communities have been disproportionately impacted by neoliberalism, constituting the poorest and most politically disenfranchised groups in a struggle to remain engaged in traditional productive activities (Wickstrom, 2008a). In response, the past decades have seen a proliferation of Indigenous rights movements, resulting in widespread acknowledgements of the pluralist make-up of most contemporary Latin American societies (Schlosberg & Carruthers, 2010).

Indigenous peoples exhibit a distinctive and profound relationship with their lands, territories and resources (Barelli, 2012, p. 1; see also Barros, 1997). This relationship is often seen to be at the core



of Indigenous societies, with consequences for “social, cultural, spiritual, economic and political dimensions” (Barelli, 2012, p. 1). Such Indigenous *cosmovisions* are said to be at odds with the contemporary developmental paradigm, in which nature often takes on the role of an exploitable resource in the quest for never-ending growth (ibid.). Moreover, Indigenous peoples have been identified among the most vulnerable human communities to climate change (Sandoval-Rivera, 2020). This vulnerability has been attributed to the combination of Indigenous peoples’ dependence upon and close relationship with the environment with a complex set of *background injustices*, such as colonial practices of resource exploitation, relocation, land appropriation and persistent economic exploitation (Figueroa, 2011). As a major instrument for confronting these issues, Indigenous rights play a significant role as communities strive for the recognition of their identities, ways of life and rights to traditional lands, territories and resources (United Nations, n.d.-b).

### **II.1.2 Indigenous Rights**

The special rights of Indigenous Peoples are recognized by a number of international as well as national legal standards. Fundamentally, Indigenous peoples’ right to be different is protected by the 1948 **Universal Declaration on Human Rights** (UDHR) (Coolsaet & Néron, 2021). More specifically, the two most important international legal instruments concerning the special rights of Indigenous Peoples are the **International Labor Organization’s Convention No. 169** (ILO 169) and the **UN Declaration on the Rights of Indigenous Peoples** (UNDRIP). This subsection will introduce both of these instruments before zooming in on national legislation in the triangle states. Here, the decision was made to focus on recognized international instruments, as these also form the basis of any further tools of guiding nature, such as the UN Framework, UN Guiding Principles, or OECD Guidelines.

#### **II.1.2.1 ILO 169 & UNDRIP**

ILO 169, drafted in 1989, is the only international instrument concerning Indigenous peoples that produces **legally binding** obligations and is still open to ratification (Barelli, 2012, p. 6). However, it has been argued that the contribution of ILO 169 goes well beyond the ratifications, having been highly influential in the conception of other international human rights instruments and movements (ibid.). It guarantees “Indigenous and Tribal peoples” (ILO, 1989) the right to free, prior and informed consultation “in good faith” (ibid., Art. 6). While this was an important concept at the time and still carries weight in the present, it is important to note that ILO 169 does not grant Indigenous peoples the right of refusal on projects in their communities (Farthing & Fabricant, 2018). Nevertheless, it

posits that consultations should be conducted with a view to finding appropriate solutions, and that Indigenous peoples should have a realistic chance of affecting the outcome (Barelli, 2012).

Although international human rights treaties do not explicitly refer to FPIC (free, prior and informed consent) or Indigenous rights, it has been argued that several UN bodies, namely the Committee on the Elimination of Racial Discrimination, the Committee on Economic, Social and Cultural Rights, as well as the Human Rights Committee, have continuously developed interpretations that link their generic provisions to Indigenous peoples' cultural attachment to their land (ibid.). While this can generally be seen as constructive, it also led to uncertainty about the exact legal obligations.

UNDRIP, adopted in 2007, attempts to resolve this uncertainty. Importantly, as a UN declaration, it does so **without** producing legally binding obligations, but nevertheless “represents the dynamic development of international legal norms and reflect[s] the commitment of states to move in certain directions” (United Nations, n.d.-a), carrying moral force. UNDRIP's cornerstone is Article 3, granting Indigenous peoples the right to self-determination concerning their political status as well as economic, social and cultural development (UNDRIP, 2007). Furthermore, provisions are included in regard to FPIC. However, there is still substantial discussion on whether or not UNDRIP grants Indigenous peoples a definitive right to veto developmental projects on their land. In practice, the Inter-American Court of Human Rights has adopted a flexible approach, meaning that while Indigenous communities do not have a definitive right to veto, states are obliged to obtain consent when a particular project is likely to have a serious impact on the cultures and lives of Indigenous peoples (Barelli, 2012).

#### II.1.2.2 National Legislation in Triangle States

##### *II.1.2.2.1 Bolivia*

The Andean west of Bolivia is home to the two most prevalent Indigenous ethnic groups of the country, namely the Aymara and Quechua-speaking Indigenous peoples (Abelvik-Lawson, 2019). On the national level, around half of the country's population is made up of 36 recognized Indigenous ethnicities (ibid.). Nevertheless, historically, Bolivia poses no exception to the exploitation of Indigenous peoples, who were completely excluded from decision making until after the 1952 revolution, when they were recognized simply as *campesinos* (Wickstrom, 2008a). During the 1990s, constitutional reforms included the acknowledgement of the multicultural nature of the population (ibid.). The legislative landscape in Bolivia has developed significantly in recent years and today, the

country is seen as one of the nations most engaged in protecting the rights of Indigenous peoples (Abelvik-Lawson, 2019).

Bolivia ratified ILO 169 in 1991, and incorporated UNDRIP into national legislation with the approval of Law No. 3760 in November 2007 (IWGIA, 2020). Moreover, Bolivia officially adopted the status of a *plurinational* state in its reformed constitution in 2009, acknowledging, among other rights, the territorial autonomy of Indigenous peoples (Rodríguez & Inturias, 2018). In this regard, the city of *Charagua* has become the country's first Indigenous autonomous municipality in 2015 (Postero, 2015). Importantly, resources are recognized as the property of the Bolivian people by the 2009 constitution, formally guaranteeing consultation to communities before resources are exploited in their territory (Hancock et al., 2018). Furthermore, the “sustainable use and development of natural resources” is assured, which must be used to benefit the nation as a whole (Heredia et al., 2020, p. 232; Revette, 2017). This understanding to use natural resources responsibly is argued to be the central foundation of Bolivia's neoextractivist policies, confirming the sole control of the state (Abelvik-Lawson, 2019). Bolivia also became the first nation in world history to grant rights to nature with the passing of the Law of Mother Earth in 2012. However, critics lament that a lack of quantifiable targets impede application in any substantial way (Farthing & Fabricant, 2018).

While Bolivia has arguably undertaken the most extensive measures in terms of Indigenous rights, lithium mining is also central to Bolivian development visions. The inherent conflict present in this is mirrored by the opaque legal situation. For instance, in addition to extensive legislation on Indigenous rights and consultation regarding development projects, Bolivia also passed a mining law in 2014. This law provides a framework for consultations, which are to be done in a maximum of three meetings and carried out in the place closest to the mining location. Importantly, such consultation is not granted for projects in exploration or prospecting phases. Thus, the law is in breach of Bolivia's own domestic UNDRIP law, according to which consultations require as many meetings as necessary in a location that is convenient for community members to attend (Abelvik-Lawson, 2019). Because of issues like this, experts have pointed to the populist character of the (on paper) advanced legal framework in the country, alluding to the disregard of Indigenous rights when these come into conflict with state interests (e.g. CEDLA, 2019).

#### *II.1.2.2.2 Chile*

Chile ratified ILO 169 in 2008 and voted in favor of UNDRIP in 2007. Additionally, Chile passed Law 19,253, also known as the “Indigenous Law” in 1993 for the promotion, protection and development of Indigenous peoples. However, there have been calls for amendment of the Indigenous law, as bringing it into line with the international standards mentioned above would require reform. This has not yet happened (IWGIA, 2020). Major recent developments in this regard include the constitutional reform process commenced in 2016 under then-president Michele Bachelet, of which one element was to be Indigenous peoples’ consultation. With the election of neoliberal Sebastian Piñera in 2018, this process has stalled, yielding no constitutional reform with regard to Indigenous issues (ibid.). In fact, the Piñera administration proposed a number of measures to weaken the 1993 Indigenous law, which were in clear contradiction of ILO 169 and UNDRIP, despite Chile’s respective ratification and assent. Meanwhile, there have been continuous issues surrounding consultation and consent with development projects on Indigenous territories (see chapter III). A new opportunity is provided by the forthcoming rewriting of the Constitution, in which Indigenous peoples were granted 17 out of the 155 seats (Reuters, 2020). It remains to be seen whether this will materialize in significant advancements in regard to territorial and consultation rights.

#### *II.1.2.2.3 Argentina*

In modern-day Argentina, Indigenous peoples make up about 2% of the population, but most of the Indigenous population is concentrated in the Andean north and Patagonian south (Abelvik-Lawson, 2019). Kolla, Atacama and Wichi peoples, among others, live in the province of Jujuy, which has the highest concentration of Indigenous households in the country (ibid.).

Indigenous peoples in Argentina hold a number of constitutional rights at the federal level as well as in several provincial states (IWGIA, 2020). Argentina ratified ILO 169 in 2000 and voted in favor of UNDRIP. There is some confusion in regard to land rights of Indigenous populations. While a 1994 constitutional change paved the way for the conferment of land rights, this was not fully implemented, and has been deemed of direct significance for the application of ILO 169 (more on this later) (Marchegiani et al., 2020). While the incoming administration has demonstrated a desire to grant Indigenous peoples collective property titles to their land, it has also continuously engaged in the promotion of extractive activities (IWGIA, 2020).

Meanwhile, the *International Work Group for Indigenous Affairs* has called for a need to debate the continually postponed Argentine law on Indigenous communal ownership as envisaged by Article 75 of the constitution, as a necessary step for Indigenous peoples to overcome evictions, land claims, and the advancement of neo-extractivist projects onto their territories (IWGIA, 2020). Currently, a number of draft bills through which Indigenous communal ownership could be implemented are being debated in Parliament, yet consensus is regarded as unlikely, since there is a clear conflict of interest between allocating territory to Indigenous communities and economic benefits arising from extractive projects (ibid.).

## **II.2 Lithium**

### **II.2.1 General information**

Lithium is a soft-silvery metal with a low melting point and the lowest density of all metals (United Nations, 2020). It does not occur as a metal in nature, but always bound with one or more other elements or compounds. Total world resources are estimated at 62 million tons (ibid.). The two common forms of exploitation proven economically feasible are either from hard rock or brine deposits, with hard rock mining roughly twice as expensive as mining from brine. The latter is found in interior saline drainage basins, commonly referred to as salt flats or *salars*. However, not all lithium-containing salars are economically fit for exploitation, as lithium concentration varies considerably. In an additional step, the mined concentrates are chemically treated in refineries, where they are turned into lithium hydroxide or lithium carbonate. Lithium has long found application in industries as diverse as aerospace, medicine, and ceramic manufacturing. However, demand is now mainly driven by its use in rechargeable batteries, such as consumer electronic goods, but also high-power storage applications like batteries for electric vehicles (EVs) (IEA, 2021).

### **II.2.2 Lithium's role in the Low-Carbon Transition**

The global quest for sustainability in an effort to mitigate climate change has arguably become the most ubiquitous debate of our time. It features prominently in policy priority areas across the globe, with the scientific community overwhelmingly pointing towards the need to take measures now and further strengthen political commitments (Rockström et al., 2017). At present, global efforts are governed by the 2015 Paris Agreement, a legally binding international treaty which aims to keep temperatures at a maximum of 2 degrees above pre-industrial levels (UNFCCC, 2020). Meanwhile, estimates of the weight of greenhouse gas (GHG) emissions from transport rise continuously, not

least due to increasing demand from developing and emerging economies (United Nations, 2020). At this stage, emissions from transport are to be lowered by transitioning to EVs, which are argued to have the potential to significantly reduce the carbon intensity of car transport (Agusdinata et al., 2018). In line with this, the UNFCCC has called for at least 20 per cent of all road transport vehicles globally to be electrically driven by as soon as 2030 (2015).

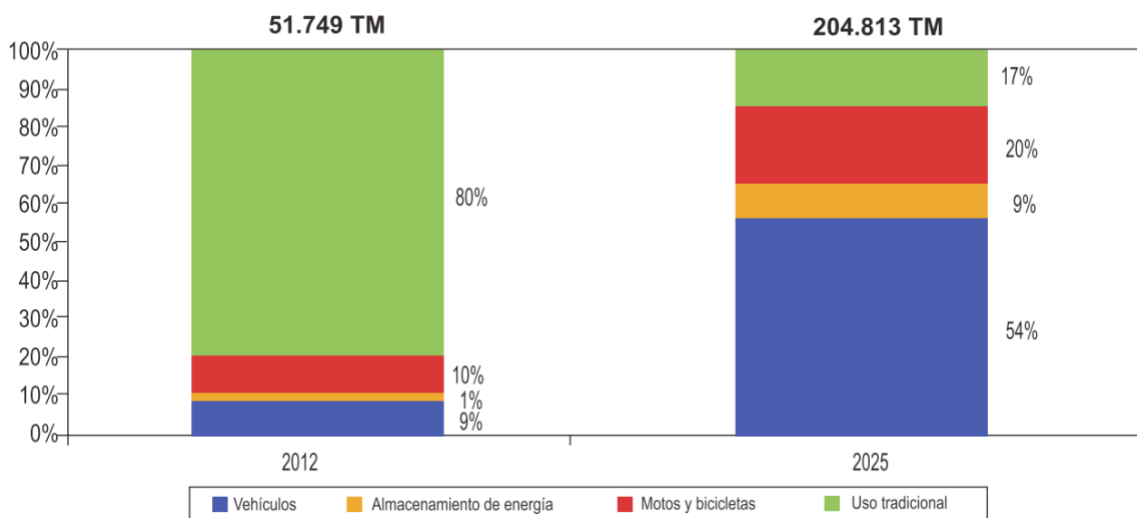


Fig. 1: Demand for lithium carbonate per subsector, comparison of 2012 to 2025 projections; the blue part concerns electric vehicles (Source: CEDLA, 2018)

Accordingly, governments around the world are deploying policies to incentivize the production and purchase of EVs, as well as the development of charging infrastructure (United Nations, 2020). EVs will become the main driver of demand for lithium, as illustrated by figure 1, with global demand increasing by over 1000% until 2050 (BHRRC, 2020). As its extraction history is unknown among a broad public, lithium offers a “clean slate” in its communication as a *green* technology (Barandiarán, 2019). As recent as 2019, three chemists were awarded the Nobel Prize in Chemistry for their contributions in developing the LIB (NobelPrize.org, 2019), further underlining the international community’s support for and hope in the technology. Although the global market is currently characterized by an oversupply, experts expect a supply crunch within the next decade due to the projected increase in demand (Riofrancos, 2020). This in turn is dependent on a number of other factors, such as whether or not lithium will be recycled from discarded batteries.

### **II.2.3 The “Lithium Triangle” – Institutional Organization**

The so-called *Lithium Triangle* is a geographical area at the trijunction of Bolivia, Chile and Argentina. Together, the three states combine for well over 50 per cent (estimates vary substantially) of global lithium reserves, representing a highly valuable resource endowment for each of the countries (United Nations, 2020). While Bolivia holds the single largest reserve of the world’s lithium resources with the Salar de Uyuni, estimates on Bolivian lithium reserves vary significantly, and have been subject to contestation because of their political weight in the country (Zuleta, 2020). Contained in the form of brine, deposits in the triangle stand out both because of the abundance of lithium and the relatively low cost of extraction (Barandiarán, 2019). Importantly, each of the three countries’ policies and idiosyncrasies towards mining, and lithium in particular, completely differs from the others (Heredia et al., 2020).

#### **II.2.3.1 Bolivia**

From a foreign investor’s point of view, Bolivia arguably exhibits the most difficult terrain for investments related to lithium mining. For one, lithium is considered a strategic resource, reserving extraction, industrialization and commercialization rights exclusively to the state (Heredia et al., 2020). Apart from this, there are several additional hurdles to Bolivian lithium extraction, ranging from a lack of infrastructure, lower concentrations of lithium and potassium in brine, heavy precipitation, weak rule of law, and a lack of legal security (CEDLA, 2018; Hancock et al., 2018; Lunde Seefeldt, 2020). The state’s reluctance to open up mining to foreign interests is arguably linked to the mining industry’s past in the country, and a desire to move away from exploitative extraction models. For example, the silver mines of Potosí, which have been exploited for over 500 years, claimed around 8 million lives since their opening by Spanish colonizers, and are regarded as one of the deadliest atrocities in human history (Hancock et al., 2018). Experiences like this contribute to a political sensitivity around lithium mining, and serve as the core of the contemporary Bolivian national imaginary, symbolized by the election of Evo Morales in 2005 (Revette, 2017). Morales is considered a revolutionary by many Bolivians, who has shifted the balance of power away from Euro-descendent elites (Abelvik-Lawson, 2019).



Figure 2: “New economic, social, communal and productive model” proposed by MAS government (Source: Poveda, 2020)

Bolivia is determined to leverage its lithium resources for domestic economic and social development, with a clear emphasis on state ownership (Barandiarán, 2019). The MAS government (*Movimiento al Socialismo*) proposed a model to supersede the historic economic model based on primary exports in favor of a “pluralization” of the economy. This model is in large parts based on the revenue from export commodities like gas, which are then used for social programs and the diversification of other sectors (see figure 2). In the long term, lithium is supposed to replace the role of gas in this model (Poveda, 2020).

Declaring resource extraction in the Salar de Uyuni a national priority in 2008, the construction of a pilot plant, as well as the establishment of what would later turn into the GNRE (*Gerencia Nacional de Recursos Evaporíticos*) was agreed upon (CEDLA, 2014). Initially a section of COMIBOL (*Corporación Minera de Bolivia*), the GNRE was superseded by YLB (*Yacimientos de Litio Bolivianos*) under the newly established Ministry of Energy in 2017 (YLB, 2020). YLB is the state corporation in charge of developing lithium operations today. The lithium project was envisioned by the Morales government to be carried out in three phases (CEDLA, 2014). Phase I concerned the production of 40 tons per month of lithium carbonate, as well as 1,000 tons per month of potassium chloride, a marketable side product in the production process. This goal was supposed to be reached by means of two pilot plants by the end of 2011. The second phase envisioned the design and construction of several industrial plants, fully financed, operated and commercialized by the state. Full operating capacity was to be attained by 2016. Finally, the third phase targeted the production of lithium batteries within Bolivia by the end of 2013 (CEDLA, 2014).



According to a 2018 report, the initial pilot phase has not concluded yet, with a total sales volume of 24 tons of lithium carbonate at the time (CEDLA, 2018). Furthermore, there have been difficulties regarding quality, as sold lithium did not reach purity standards needed for battery production (CEDLA, 2019). Consequently, it can be said that the three-phase-plan did not materialize as envisioned. Facing a lack of technological infrastructure, there have been several attempts to cooperate with foreign firms. As the state is committed to retain control of any project through a 51% stake, this has proven difficult, with “resource nationalism” posing a serious concern for foreign investors (Lunde Seefeldt, 2020). Recently, YLB entered into an agreement with German *ACI Systems* for lithium industrialization in the Salar de Uyuni, but this was finally repealed by the Bolivian government after protests sparked in the city of Potosí (Heredia et al., 2020). As political unrest led to the ousting of long-time president Evo Morales in late 2019, the future of Bolivia’s lithium became uncertain (Lunde Seefeldt, 2020). After an interim administration oversaw elections, former minister of economy and public finance Luis Arce (MAS) won the presidency in late 2020. It is expected that he will continue the industrialization strategy of seeking partnerships with foreign firms, in which the Bolivian state will hold a majority stake (Poveda, 2020). Meanwhile, as low prices put an economic model based around lithium exports in jeopardy, critics additionally point to a deepening of the primary export model over the last decade (ibid.).

#### II.2.3.2 Chile

Lithium production in Latin America began in Chile and Argentina, with mining of mineral-rich salt flats in the triangle region starting in the 1980s (Barandiarán, 2019). Chile has been dominating the South American lithium market, accounting for about 40% of global production. This is partly due to its favorable circumstances both for extraction and commercialization, a desert high up in the mountains with little rainfall and relative proximity to ports (Lunde Seefeldt, 2020). Nevertheless, another crucial factor is the country’s investment climate (Rossi, 2019).

While most resources are privately owned in Chile, lithium presents somewhat of a special case, deemed a strategic resource by a 1979 decree (Barandiarán, 2019; Lunde Seefeldt, 2020). Theoretically, this means that it is non-susceptible to mining concessions, but exceptions have been made for the Atacama region (Heredia et al., 2020). Here, Chile’s lithium model involves direct partnerships with Codelco (*Corporación Nacional del Cobre*), the state mining company, as well as Corfo (*Corporación de Fomento de la Producción de Chile*), the national economic development agency (Lunde Seefeldt, 2020). In this regard, licenses can be granted for either exploration or

extraction. For decades, the Chilean state has given such extracting licenses to two firms: SQM (*Sociedad Química y Minera de Chile*) and American firm Rockwood Lithium, which was acquired by Albemarle in 2015 (Albemarle, 2014; Lunde Seefeldt, 2020). Figure 3 shows the mining locations of both firms in the Salar de Atacama, as well as a number of nearby communities. Further exploring and extracting licenses were granted to other foreign companies (Balch, 2020), and contract extensions were given to SQM and Albemarle through 2030 and 2044, respectively, signaling a potential expansion of the lithium industry that still operates under the limits of a declared strategic resource (Lunde Seefeldt, 2020). This thesis will focus on the operations of SQM and Albemarle, the only industrial-scale exploitation projects in the country.

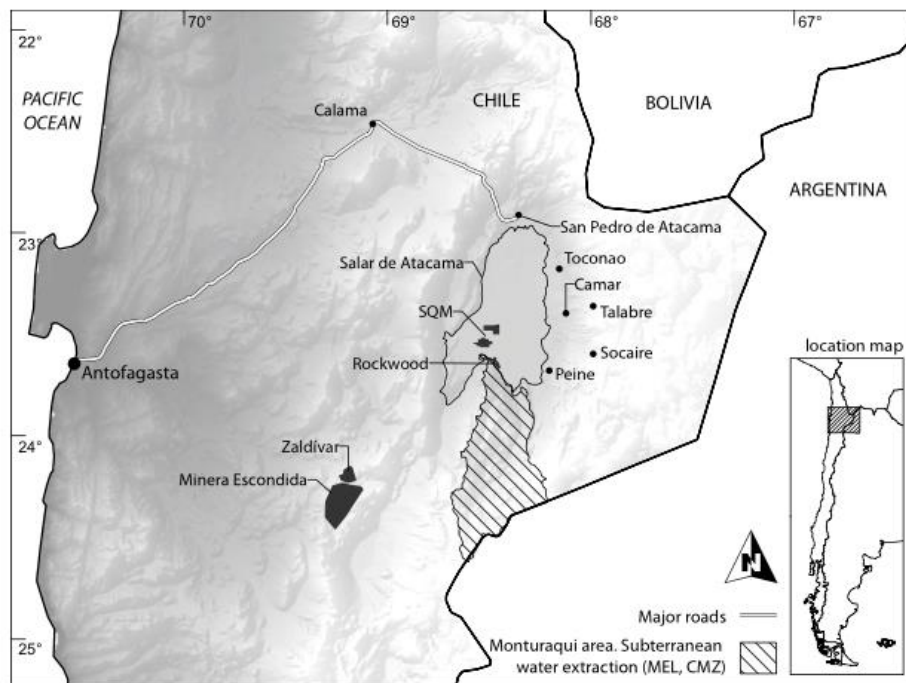


Figure 3: The Antofagasta region, showing the extraction sites of SQM and Rockwood (now Albemarle) in the Salar de Atacama (Source: Babidge & Bolados, 2018)

Chile's relatively favorable investment climate is built on several controversial policy circumstances, such as those in relation to water and land. In this regard, the country's military dictatorship under Augusto Pinochet enacted a *Water Code* in 1981, which led to the commodification and privatization of water resources in a free market without state intervention (Romero et al., 2012). Water licenses were both legally and illegally claimed by private companies, with large negative effects on landscapes and local communities (ibid.). Finally, it is important to acknowledge the role the highly

centralized organization of the Chilean state plays, as contracts are negotiated between companies and the national government, without direct involvement of regional administrations (ibid.).

### II.2.3.3 Argentina

Other salars producing battery grade lithium are located in Argentina, primarily *Hombre Muerto* and *Olaroz-Cauchari* (Heredia et al., 2020). For this thesis, I will focus on the proceedings surrounding the *Olaroz-Cauchari* and *Salinas Grandes* salt flats, as they provide especially interesting cases for analyzing participation, recognition, and Indigenous mobilization. Figure 4 shows the location of these, as well as a number of surrounding communities.

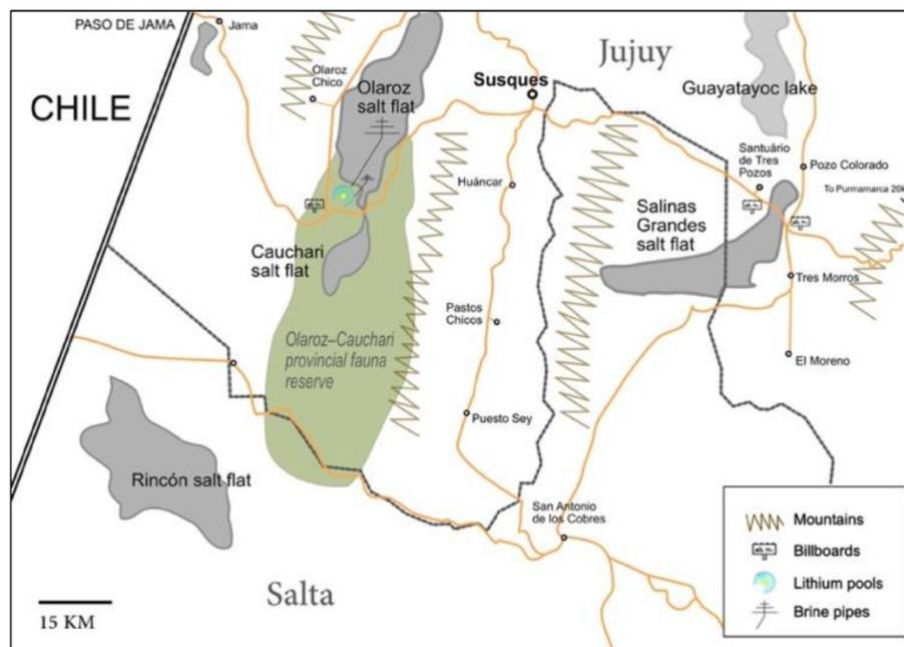


Figure 4: Map showing the Olaroz-Cauchari and Salinas Grandes salt flats in the Argentine province of Jujuy (Source: Abelvik-Lawson, 2019)

The general legal framework surrounding Argentine lithium exploitation is affected by the country's federal organization, as regulations and policies concerning mining vary between provinces (Lunde Seefeldt, 2020). For instance, significant lithium reserves are located in the provinces of Jujuy and Salta. Jujuy has declared lithium a strategic mineral, which entails special procedures like the UGAMP (*Unidad de Gestion Ambiental Mineral Provincial*), a meeting that grants participation rights to a variety of stakeholders (Heredia et al., 2020; Lunde Seefeldt, 2020). Furthermore, environmental impact assessments (EIAs) must be carried out whenever any activity may have

significant impacts on the environment or local population's quality of life, with detailed requirements found at the provincial level (Marchegiani et al., 2020).

Another important factor are national regulations regarding foreign investment, conditioned by the current government's political orientation. The Kirchner administrations, first Néstor and later his wife Cristina Fernández de Kirchner, who governed the country from 2003 to 2015, employed policies ranging from export taxes to import controls. After the election of neoliberal Macri in 2015, many of these policies were overturned, which manifested in a sixty per cent increase in lithium production and a tenfold increase in lithium investments (Lunde Seefeldt, 2020). In fact, Argentina has received more lithium-related investment than Chile or Bolivia since the election of Macri (ibid.). The strategy has been to partner with large foreign companies to boost extraction and production, leading to a proliferation of players becoming active in Argentina. On the Olaroz-Cauchari salt flat, important firms include Sales de Jujuy and Minera Exar. However, aggressive foreign investment initiatives have also led to widespread social protest throughout the country, which observers have ascribed to a persistent disconnect between the Argentine state and populi (Rossi, 2019). In October 2019, Alberto Fernández won the presidency with running mate Cristina Fernández de Kirchner (Lunde Seefeldt, 2020).

## **II.3 Extractivism and Indigenous Peoples**

### **II.3.1 Extractivism and Development in the Region**

The concept of extractivism in the region traces back to the conquest and colonization of Latin America at the dawn of European capitalism (Svampa, 2019). As described by Eduardo Galeano in his seminal book *Open Veins of Latin America* (1973), the colonies' economic structure was centralized around the export sector, where profit and power were concentrated. A region historically tied to and heavily dependent on extractive industries, the early 2000s saw a widespread rise of progressive governments throughout the continent, promising a social turn by leveraging a price spike of commodities abundant on the continent (Farthing & Fabricant, 2018). The previously mentioned Morales government in Bolivia, as well as the sequential Kirchner administrations in Argentina belong to this so-called "pink tide". In Chile, Lagos (2000-2006) and Bachelet (2006-2010; 2014-2018) can be associated with the movement. As a result of this commodity boom, pink tide governments granted state-led extractivism a central role in economic strategies. While public investment increased visibly improved standards of living, a common point of criticism is the

dependence on a few volatile commodities (Farthing & Fabricant, 2018). For instance, as gas prices fell, the repercussions were immediately felt throughout Bolivian society (Poveda, 2020).

The new wave of extractivism at the beginning of the 21<sup>st</sup> century is argued to have taken on new dimensions, both in scale and scope, as well as in terms of political and symbolic aspects, and was subsequently coined *neo-extractivism* (Svampa, 2019). In this regard, the political turn *away from* neoliberalism and *towards* neo-extractivism, based on the large-scale export of primary goods, economic growth and the expansion of consumption, signaled the passage of the Washington Consensus in favor of a “Commodities Consensus” on the continent (Svampa, 2013). Although right wing administrations have returned in full force throughout many parts of the region, it has been argued that there has actually been “very little difference between conservative and progressive governments in relation to extractivism over the past 15 years” (Farthing & Fabricant, 2018, p. 8). Accordingly, lithium extraction is envisioned as a central avenue by all three triangle states in the present, even as political orientation between them differs significantly (Rossi, 2019).

### **II.3.2 Indigenous Peoples and Lithium Mining**

Indigenous territories cover approximately 24% of the land worldwide, but contain 80% of the world’s biodiversity (Yap & Watene, 2019). The “misfortune” is that Indigenous lands also host a number of natural resources vital for the functioning of *our* contemporary societies and market systems. As a result, Indigenous communities have repeatedly had to face large-scale mining, agricultural and development projects on their territories, which has in turn led to a myriad of conflicts across the planet (Schlosberg & Carruthers, 2010). It is important to consider that in all three country contexts (pre-MAS Bolivia), government institutions and corporate actors have been dominated by criollo elites (Abelvik-Lawson, 2019). The case of lithium mining, therefore, has an all-too-familiar ring to it, in essence another conflict between Indigenous peoples and extractive industries. The paradox in this case is that mining operations can point to an international discourse of climate change mitigation, with inherent sentiments of social justice.

The “Lithium Triangle” is among the poorest regions in all three country contexts (Hancock et al., 2018; Heredia et al., 2020). As access to basic standards of living is not guaranteed throughout the rural and remote areas, human rights issues tend to become more tangible in such situations (Heredia et al., 2020). As such, the presence of mining activities in the area has raised a number of concerns ranging from the environmental to the social sphere, which are analyzed in this thesis. Consequently, the presence of lithium mining projects in Indigenous territories raises questions about their

legitimacy, environmental sustainability, inclusiveness, the distribution of benefits, and the wider patterns of marginalization that are reflected in these conflicts. Against this background, the environmental justice literature is identified as a particularly useful tool.

### **Chapter III: Theoretical Framework – Environmental Justice**

Originating from a dispute over a toxic waste landfill siting decision in an African American community in 1982, environmental justice (EJ) evolved into a larger scale movement that has found application in a wide variety of national contexts and industries, as well as strong resonance in the activist, academic and political world (Murdock, 2021). EJ grew out of an increasing awareness of the unequal distribution of environmental degradation along class, racial, cultural and gender divides (Álvarez & Coolsaet, 2020). The movement derives its potency from recognizing that social and environmental issues are inseparable, co-causally related, and always in a context that requires political interpretation (Figueroa, 2011). Simply put, the concept of EJ is able to frame social issues as environmental issues (ibid.).

In its now nearly forty years of existence, EJ has evolved significantly and has been subject to reconceptualization and ongoing development. In the following, this progress is laid out. I should note that what is provided here is a description of the chronological evolution of the concept from a theoretical stance, acknowledging calls to approach EJ not only as a concept stemming from a U.S. movement that has migrated abroad, but one that should be seen within its particular geographical, social and political context (Carruthers, 2008b). In other words, EJ “exceeds both chronologically and ideologically the timescape and temporal origin of the term itself” (Murdock, 2021, p. 6). The story that such movements originated in the industrialized North is likely to stem from who the storyteller is, disregarding that similar mobilizations have appeared in their own forms long before a particular concept was coined by academia (Carruthers, 2008b). Keeping this in mind, I will give an account of EJ’s *theoretical* origins before moving on to reconceptualized versions of the concept that are specifically relevant to Indigenous struggles in the Latin American context.

#### **III.1 Distribution, Procedure, Recognition**

At its outset in the United States, EJ focused on how harm and benefits are distributed and experienced, based on lived experience (Kaswan, 2021). In particular, race was found to be the most important variable for hazardous waste facilities and uncontrolled toxic waste sites being placed in particular communities (Murdock, 2021). These communities were disproportionately experiencing the negative externalities of such facilities, without having contributed to the caused pollution in a corresponding proportion. The resulting initial dimension of EJ, **distributive justice**, thus focuses on the fair distribution of environmental costs and benefits, the allocation of material goods, such as

resources, income, and wealth, or on the distribution of social standing (Menton et al., 2020, p. 1624). Importantly, the focus is on both costs and benefits. Distributive injustices can occur irrespective of intent (ibid.). It should further be acknowledged that the focus on *disproportionate* harms or benefits leaves room for interpretation, and therefore has provoked discussions about utilitarianism, equality, as well as deviations from strict equality (see e.g. Kaswan, 2021).

EJ thinking has since moved past its initial focus on distributional inequalities and incorporated other pillars to deliver a more holistic approach. In this regard, Schlosberg's work was particularly instrumental in developing an integrated framework. Based on different conceptualizations of justice, such as Fraser's (2007) three-dimensional approach, as well as an examination of different EJ movements throughout the world, Schlosberg (2004) established what would become the three tenets of EJ, adding concerns about procedure and recognition. Thereby, demands for the recognition of cultural identity and for full democratic rights are argued to be integral parts of justice, and cannot be separated from distributional issues (Schlosberg, 2004).

**Procedural justice**, thus, is concerned with the ability of certain groups to participate in and influence decision-making processes (Marion Suiseeya, 2021). Historically, decisions that transform the environment have most commonly been made by actors who enjoy the benefits rather than the burdens of such decisions (Menton et al., 2020). Central to the pillar of procedural justice is the conviction that impacted communities should have a say in decisions about activities with significant human welfare effects (ibid.). While in Europe, public participation in environmental decisions is regulated by the 1998 Aarhus Convention (European Commission, n.d.), Indigenous peoples in the triangle states are protected by ILO 169 and related instruments, as laid out in chapter II. It should be noted that procedural justice may not always lead to better environmental outcomes (Marion Suiseeya, 2021). Power dynamics play an essential role in procedural justice concerns, as asymmetries in power are seen to be at the root of environmental injustices (ibid.). In the case at hand, there are substantial power asymmetries between Indigenous communities and the multinational corporations and state enterprises behind lithium mining projects (chapters V & VI). Scholars have linked marginalization in decision-making processes to an underlying institutionalization of patterns of disrespect and disesteem (Menton et al., 2020). In consequence, approaches to EJ based on procedural justice aim to address the political displacement of affected communities, which can have social, economic, and environmental consequences (Marion Suiseeya, 2021).



Finally, **recognitional justice** is concerned with “the way in which we accommodate and respect different people, their cultural practices, their identities and their knowledge systems, but is also relevant to issues of self-respect and self-worth” (Coolsaet & Néron, 2021, p. 52). Recognitional justice defines the conditions of a just society in terms of recognizing the personal dignity of all individuals (Menton et al., 2020). However, recognition not only refers to individual rights to self-recognition and self-determination as protected by the UDHR, but also to the recognition of collective identities, including environmental concerns (Coolsaet & Néron, 2021; Menton et al., 2020). Environmental policies are generally driven by culturally specific ideas of what ought to be protected. In other words, meanings and values assigned to nature are always culturally defined (Coolsaet & Néron, 2021). If this is driven by dominant worldviews without taking into account the meanings assigned to the environment by local populations, recognitional injustices arise. Coolsaet & Néron (2021) have identified two opposing ways in which recognitional injustices have played out historically. For one, people who should be treated equally have been treated differently in a systemic way, resulting in the particular injustice. Secondly, the differences of some people have been rendered invisible, as supposedly universal solutions are applied in the name of the environment. As is argued later on, both of these play a role in the examined cases of lithium mining, as Indigenous communities struggle to access participation rights guaranteed by national and international legislation, with direct implications on a deeper, territorial struggle for cultural preservation.

### **III.2 Capabilities Justice**

Established shortly after and now commonly recognized as the fourth tenet of EJ, the capability-approach conceptualizes well-being in terms of people’s capabilities, and thereby provides a way of understanding harm, as well as *why* that harm is unjust (Holland, 2021). Schlosberg & Carruthers (2010) base their model on the work of Amartya Sen and Martha Nussbaum (2006), who have developed theories on the capacities necessary for people to function fully in the lives they choose for themselves. Well-being in this context has a multi-dimensional definition, encompassing “the multiple worthwhile goals and achievements a person is capable of” (Holland, 2021, p. 66). Ecosystems highly influence human capabilities, as they directly provide resources and so-called *ecosystem services*, broadly defined as the benefits that people get from the environment. Consequently, they play an important role in the realization of people’s lives, and any damage done to ecosystems will have direct repercussions on the capabilities of people that depend on them (Holland, 2021).

**Capabilities justice**, therefore, is concerned with the protection of the ecosystem services necessary for enabling people to live their lives in accordance with established capability theories. The capability approach is able to “simultaneously address a number of related and interconnected issues, such as inequality, cultural disrespect, and participatory and democratic rights” (Schlosberg & Carruthers, 2010, p. 17). Schlosberg & Carruthers have argued for application at the community level, especially for Indigenous struggles in both the Global North and South (2010). In accordance, the fight for autonomy, land, respect, or political voice by Indigenous activists can be classified as a fight for the capabilities necessary for their communities to function fully (ibid., p. 18).

### **III.3 Indigenous & Decolonial Environmental Justice**

This section concerns two closely related approaches to EJ, namely Indigenous EJ and Latin American Decolonial EJ. In Indigenous EJ, ideas like kinship and reciprocity, which constitute one facet of how some Indigenous peoples understand their connections to non-humans and the environment, play a key role (Whyte, 2021). Kinship concerns the qualities of certain relationships, among which reciprocity is one such quality (ibid.). This is fundamental in conceptualizing Indigenous peoples’ connection to the environment, understood as relationships of reciprocity with surrounding ecosystems, with consequences for what constitutes justice in this context. The so-called living world is understood primarily as a set of relationships from which certain responsibilities arise, a stark contrast to Western perceptions of seeing the environment as a collection of exploitable resources (ibid.). What follows is an understanding of environmental injustices as an “assault on kinship relations”, as reciprocal relationships with the environment are seriously disturbed (ibid., p. 270). Indigenous EJ sees capitalism, colonialism, and industrialization as facilitating disruptions of kinship, and proposes that solutions must actively support kinship relations (ibid.).

Closely related, the EJ movement in Latin America proposes that the “battle of indigenous peoples [...] is [less] for the re-distribution of harms and benefits in the use of the environment, [...] [but] [...] for the right to live well, in accordance with their own identities, cultural imaginings and ways of knowing the world” (Rodriguez, 2021, p. 87). Here, environmental concerns are embedded in social justice struggles (Carruthers, 2008b), closely aligning movements for greater EJ to decolonial thinking (Rodriguez, 2021). Decolonial theory establishes a difference between colonialism and *coloniality*, and explains social and environmental injustices as arising from the persistence of the latter (Álvarez & Coolsaet, 2020; Rodríguez & Inturias, 2018). Coloniality refers to the diversity of practices that derive from the matrix of power created by colonialism, which continue to unfold within

contemporary, post-colonial societies (Álvarez & Coolsaet, 2020; Quijano, 2000). Instead of arguing for abstract forms of marginalization that bear similarities to the colonial period, this stream of writers argues for the real presence and continuity of the “Colony in the Republic”, though with dynamism and historicity (Fernández, 2018, p. 200). The hierarchical oppression in coloniality is maintained through mechanisms operating at three levels, namely power, knowledge, and the self (or ways of being) (Rodríguez, 2021). Decoloniality, then, refers to efforts of breaking these hierarchies of difference, “re-humanizing” communities (Álvarez & Coolsaet, 2020, p. 53). Decolonial theory was first incorporated into the regional EJ literature by Escobar, Leff, and others (Rodríguez & Inturias, 2018). According to Escobar, theory is always place-bound (2008); Latin American decolonial EJ can thus be understood as a direct response to the unique conditions prevalent in the region. The resulting battle for EJ from a decolonial perspective amounts to a politics of difference, moving beyond the mere search for inclusion in dominant world systems toward a genuine construction of *otherness* (Rodríguez, 2021).

Incorporated in EJ, it has implications for the previously introduced tenets. For instance, a fair and equitable distribution of environmental benefits or harms can face two problems: (1) a misrecognition of other ways of life incompatible with capitalist modes of production and anthropogenic understandings of justice, and (2) a disregard for the fact that even the requests of minority groups may be the expression of desires captured by coloniality (Álvarez & Coolsaet, 2020). While there is a close tie between Indigenous struggles and community capabilities, the Latin American decolonial EJ movement aims to push the boundaries further, positioning the struggle within a wider context of anti-modernity and self-determination (Rodríguez & Inturias, 2018).

### **III.4 Justification**

Parallel to the substantive and theoretical development of EJ, there has been a proliferation of other concepts that focus on similar issues through different approaches, e.g. ecological justice, climate justice and energy justice. While there are clear areas of overlap, this has also led to competition among the different concepts. For instance, there have been calls to abandon environmental and climate justice in favor of energy justice, which is argued to be more strategically impactful (Jenkins, 2018). EJ, in turn, is criticized for failing to have a pervasive impact beyond the activist level, being US-centric, and due to its increasingly multi-faceted and dynamic nature, for lacking content that can be readily applied in the policy area (ibid.). Others, again, have called for the three movements to integrate in a new framework, namely that of a “just transition”, based on the three tenets of

distribution, procedure and restoration (McCauley & Heffron, 2018). While I acknowledge these criticisms, I argue that EJ still constitutes the most useful theoretical approach for the case at hand, due to the organic emergence of Latin American EJ in connection with Indigenous struggles in a postcolonial context, enabling it to capture factors that other concepts are bound to overlook. Furthermore, I argue that criticisms of EJ in regard to its potential unacceptance as a result of its “anti-establishment past” (e.g. Jenkins, 2018) are misguided. Apart from being problematic due to their resemblance to the historical exclusion of periphery voices (e.g. Tickner, 2003), they also negate the immense pool of knowledge for sustainable development found in these contexts (e.g. Sandoval-Rivera, 2020). To quote Escobar (2020, p. 45):

*[T]hose who defend place, territory, and the Earth are neither romantics nor “infantile”. They represent the cutting edge of thought, for they are attuned to the Earth and to justice, and they understand the central issue of our historical moment.*

Finally, and perhaps most convincingly, the case for EJ can be made in response to Jenkins’ (2018) criticism that the movement is concerned primarily with effects on people. While the environmental consequences of lithium mining play a major role in this thesis, and need to be explored further, the focus is unquestionably on the impacts on human lives. As such, EJ can help illustrate what is happening in affected communities *on the ground*, and therefore constitutes the most appropriate framework for the case.

### **III.5 Literature Review**

Having laid out the theoretical origins, evolution, tenets and relevant reconfigurations of EJ, this section looks at how the concept has been applied. First, I will briefly illustrate the application of EJ in Latin America, also presenting a case that exemplifies the struggle of Indigenous peoples in the region. This is by no means a complete list, as doing so would go well beyond the scope of this section and even of this thesis, but more aimed at giving the reader an idea of the multitude of situations that EJ has been applied to. Secondly, environmental injustices in the context of the low-carbon transition, the central theme of this thesis, are reviewed. Finally, I review the literature that has applied EJ to the specific case of the “Lithium Triangle”, which will ultimately shape the design of this research. Each section will present several key takeaways.

### III.5.1 Environmental Justice in Latin America

Academic applications and discussions of EJ in Latin America are extensive. In this regard, Carruthers' 2008 edited publication *Environmental Justice in Latin America – Problems, Promise, and Practice* (2008a) offers a broad collection of this work. By providing a range of examples from Mexico (Carruthers, 2008c; Moore, 2008; Wickstrom, 2008b; Zebich-Knos, 2008), Brazil (Wolford, 2008), Puerto Rico (McCaffrey, 2008), and other countries, both the prevalence of environmental injustices across the continent and the applicability of the concept across a wide range of issues are highlighted. However, the continent has also seen cases that expose the apparent limitations of EJ, as a particular context may make it difficult to adopt a discourse based on EJ. One example in this regard is given by the *Peñoles* case in Mexico. Here, mobilizations did not adopt a narrative based on EJ, as no laws had been broken, and the circumstances complicated deploying a race- or class-based discourse (Díez & Rodríguez, 2008).

Meanwhile, the triangle states have seen their own share of environmental injustices, which have in turn been studied under this concept. In Argentina, a high voltage line through the *Quebrada de Huamahuaca*, a gold mine in Patagonia, as well as a paper mill near the border with Uruguay (Reboratti, 2008) have triggered distributional and procedural concerns. In Bolivia, the 2000 “water war”, as well as the 2003 “gas war” have been studied as cases of environmental injustices, namely in relation to struggles over participation in decision-making and distribution (Perreault, 2008). The topic of water rights and water access is a common issue not only in Latin American EJ literature in general, but also highly relevant for the case of lithium. Likewise, the Mapuche of central Chile have suffered from displacement due to exploitative development projects and being stripped of their water by private corporations, backed by public authorities who disenfranchise Mapuche leaders with so-called anti-terrorism laws (Wickstrom, 2008b). These struggles have been analyzed in terms of community capabilities, finding that government actions seem to exert a clear preference for neoliberal economic development, while EJ struggles of Mapuche leaders are strongly based on a community-capabilities approach to justice and development (Schlosberg & Carruthers, 2010).

Several of the mentioned empirical cases point to disproportionate negative effects on Indigenous communities, who generally make up the poorest and most politically disenfranchised sectors of society, triggering concerns of distributional injustices in addition to underlying social marginalization. To work within the system in which decisions regarding their wellbeing are taken, they are forced to assert convincing claims based on dominant cultural values (Wickstrom, 2008b),

which in turn can be linked to issues of recognition. This is true for cases in Mexico, Bolivia, Chile, and elsewhere. Consequently, EJ has not been achieved by a mere inclusion in resource-management schemes, pointing to a need to move beyond an understanding of EJ that is based solely on redistributive measures. From an Indigenous perspective, the provided cases underline the notion that the struggle for EJ in Latin America is often also a struggle against modernity, and for a life in accordance with own values.

### **III.5.2 Environmental Justice in the Low-Carbon Transition**

Moving on to the main theme of this study, projects functioning under discourses of sustainable development take a unique place in the policy spectrum by tying local “host” communities together with global strategies for climate change mitigation (Outka, 2012). Over the past three decades, numerous studies have examined this terrain between green development and EJ (as well as related concepts). Some of the most prevalent examples in this regard are those arising in connection with renewable energy sources, which are argued to have the most ubiquitous potential for development: wind energy, photovoltaic solar energy, and biomass (ibid.). The prevalence of issues is apparent in the geographical diversity of cases, ranging from procedural injustices in Indian solar energy projects to environmental racism in connection with biomass sites in the U.S. (Outka, 2012; Yenneti & Day, 2015). Meanwhile, the construction of wind farms has triggered EJ concerns in Spain, Mexico, Sweden, Colombia, Hawaii, and elsewhere (e.g. Barney, 2021; Hassler, 2015; Lawrence, 2014; Outka, 2012; Ramirez, 2020; Zografos & Martinez-Alier, 2009).

The effects of climate change threaten the poorest members of society disproportionately (Outka, 2012). A direct consequence of this has been the implicit assumption that measures combating global warming trends must also be of social value for these sectors of society, which in turn led to social conflicts that arise from such projects often being overlooked in global political discourse (Sovacool, 2021). The research introduced above has shown that this is far from a reasonable assumption, yielding two overarching findings:

- (1) While the concepts of sustainable development and social justice are indeed closely intertwined, in practice the two objectives are not always simultaneously attainable (Okereke & Ehresman, 2015).
- (2) Even as a vast number of justice concerns have emerged from conflicts over measures implemented under the rationale of sustainable development, these have not reached the scope

to effectively challenge the neoliberal paradigm under which such approaches tend to function (ibid.).

The overall tension between neoliberalism and relational ways of living with the environment, as studied in renewable energy projects from e.g. Chile and Mexico (Ramirez, 2020; Wickstrom, 2008b), has implications for the present study. It provides an important facet of lithium extraction, which can be expected to hold up even in situations where extractivism functions under a “post-neoliberal” discourse, as in the case of Bolivia.

### **III.5.3 Environmental Justice in the “Lithium Triangle”**

With lithium taking a central role in future scenarios of sustainable development, research interest in the topic has proliferated in recent years (e.g. Dorn, 2020; Göbel, 2013; Gundermann & Göbel, 2018b; Hancock et al., 2018; Heredia et al., 2020). An important strand of research in this regard concerns the direct environmental impacts of lithium mining in the area (e.g. Agusdinata et al., 2018; Bustos-Gallardo et al., 2021). Liu et al. (2019) have provided a crucial study by analyzing spatiotemporal patterns in the Atacama Desert, establishing a connection to mining operations. These environmental impacts in turn have important consequences on a social level (Egbue, 2012; Enrriquez, 2019; Liu & Agusdinata, 2020). Nevertheless, the social dimension has been subject to far less research and is therefore also less understood (Agusdinata et al., 2018). Furthermore, the topic has been approached from a political perspective, highlighting the role of neoliberalism, neoextractivism and resource governance in relation to lithium (Komi, 2017; Lunde Seefeldt, 2020; Quinteros-Condoretty et al., 2020; Revette, 2017; Sanchez-Lopez, 2019). From a legal perspective, the difficulty of enforcing international human rights law and an apparent “deficit of legislation” is directly tied to social and environmental impacts, creating a problematic dynamic between neoliberalism and international legislation (Abelvik-Lawson, 2019; Marchegiani et al., 2020; Rossi, 2019; Salazar Bravo, 2019; Smith, 2020). Finally, historical and territorial circumstances of Indigenous communities have been tied to particular community responses (Dorn, 2021).

While all of these dimensions directly relate to EJ and its tenets and propositions, publications that explicitly establish this connection have been surprisingly few. In this regard, Romero et al. (2012) frame the socioenvironmental impacts of lithium mining in the Atacama Desert in terms of EJ, but do so without establishing a proper connection to the tenets or theoretical particularities the theory offers. Operations in Jujuy (Northern Argentina) have been related to the *initial* three tenets of distribution, procedure and recognition as part of a Master thesis (van der Veen, 2017), but this

analysis did not incorporate context-specific conceptualizations of EJ such as the Indigenous or decolonial movements introduced above. Based on Escobar's principle of place-bound theory (2008), I argue that confining EJ research within the original three tenets will overlook important subjective and structural factors. Consequently, this study synthesizes information that thus far exists in relative isolation, aiming for holistic integration with the tools of EJ. The scarcity of research that (1) takes into account operations in all three countries, as well as (2) socio-specific conceptualizations of EJ, thus sets the objective of this thesis.



## **Chapter IV: Methodology**

Having familiarized the reader both with the background context of this study, as well as the chosen theoretical framework, this chapter will present methodological considerations that guide this thesis.

### **IV.1 Philosophy of Science**

Before deciding on a paradigm, some terminology needs to be defined. Preceding any study, researchers have a number of (often implicit) assumptions about the nature of reality and science. *Ontology* reflects the first of these assumptions, the way the social world is seen to be and what can be assumed about the social phenomena that make up the world (Matthews & Ross, 2010). *Epistemology*, then, is concerned with the study of the nature of knowledge, i.e., *how* things can be known (ibid.). Different philosophies of science have different ontological and epistemological assumptions, which is in turn reflected in their methodology and methods (Scotland, 2012). Methodology is concerned with the why, what, from where, when, and how data is collected and analyzed, while methods are the specific techniques and procedures used (ibid.). Ensuring coherence between these dimensions is considered instrumental for appropriate research designs, the overall quality of research, and probability of impact (Sovacool et al., 2018).

**Positivism**'s ontological position is realism, meaning that reality exists independent of the researcher. Its epistemological assumption is that of objectivism, convinced that an absolute knowledge can be discovered (Scotland, 2012). Positivism has its origin in the natural sciences and offers descriptive and factual statements. Critics have lamented that methods developed for phenomena in the natural world are not always readily transferable to social studies (Scotland, 2012), which led to the emergence of the interpretive paradigm, the two often considered opposites. **Interpretivism** prioritizes peoples' subjective interpretations and understandings of social phenomena and their own actions; reality is subjective and multiple realities may exist (Matthews & Ross, 2010; Sovacool et al., 2018). Whereas positivism aims at generalizability, interpretivism emphasizes depth and contextual knowledge.

Departing from these fundamental opposites, **critical realism** is based on the premise that reality exists independently of one's awareness of it and is constructed in discourse (Das, 2015). Thus, critical realists' ontological assumption is that of a stratified reality, consisting of the *actual*, the *empirical*, and the *real*, wherein "the real constitutes structures, the actual is socially defined, and the

empirical is constituted by the researcher” (ibid., p.40). **Social constructionists**, in turn, are concerned with grasping how social actors construct meaning of events through shared understanding and practices, sharing the view of interpretivism that meaning is created and negotiated by human actors (Crotty, 1998). Common methods include interviews, discourse analysis, and participant observation (Martinez, 2020).

Returning to the present study, endorsing a philosophy of science has significant consequences for reaching an understanding of environmental problems (see e.g. Martinez, 2020). In EJ research, most studies do not take a clear stance on epistemological questions (Das, 2015). However, critical realist and social constructionist approaches are argued to be particularly useful in explaining environmental issues (ibid.). On the one hand, critical inquiry begins with conceptions of power, inequality and injustice, seeking to expose forms of oppression (Charmaz, 2017). It is concerned with understanding how events are caused by the underlying social forces and mechanisms (Saunders et al., 2019). Denzin has referred to critical inquiry as “ethically responsible activist research”, due to its social justice commitment that focuses inquiry on research with the potential to make a difference in the lives of socially oppressed people (2017, p. 9). Social constructionist approaches, on the other hand, focus on the meanings given to particular phenomena, and may explain environmental issues by an inherent conflict in non-compatible subjective understandings of social constructs (Martinez, 2020).

An issue arises when dealing with multidimensional phenomena like the one of this study, which can partially explain the increased popularity of pragmatic approaches (Holden & Lynch, 2004). Personally, I view both the subjective realities and non-observable underlying social mechanisms as key to understanding the issues at hand, in line with social constructionist and critical realist philosophies. While somewhat unconventional, Bogna et al. argue that an integration of these two paradigms can lead to a richer analysis and more insightful understanding of causalities (2020); Fig. 5 provides a visual model of this integration. Ontologically, this allows for further exploring ontologies of research subjects, relating them to structures and mechanisms. From an epistemic point of view, knowledge can be generated from social interactions as well as from the search for underlying structures that contribute to this observable knowledge (ibid.). Consequently, I deploy a methodology that is coherent with these philosophical stances, a case study, drawing on both dimensions in its analysis.

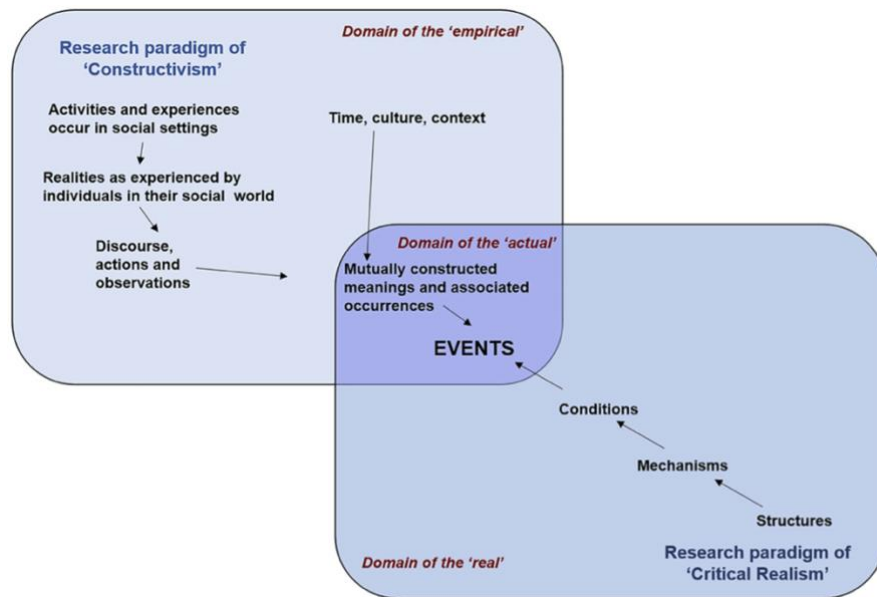


Figure 5: Linking critical realism and constructivism (Source: Bogna et al., 2020)

## IV.2 Preliminary Literature Review

I have conducted a narrative literature review in order to identify both the current state of research, as well as gaps in research on EJ in the “Lithium Triangle”. Not to be confused with narrative inquiry, narrative reviews are a type of literature review, providing an “exploratory evaluation of the literature or a subset of literature in a particular area” (Sovacool et al., 2018, p. 22). In doing so, they are particularly useful when seeking to synthesize evidence from a variety of perspectives (ibid.). This is especially relevant when the research focus is multidimensional, as questions in EJ inevitably are.

Coolsaet’s edited volume *Environmental Justice: Key Issues* (2021) served as a starting point and overview both for the history of EJ, as well as for more recent and specific conceptualizations of the concept. From there, I moved on to academic literature in the form of published articles, both to advance my understanding of EJ and to get a clearer grasp on how the concept has been applied in Latin America, other cases of transformation technologies, and the “Lithium Triangle”. Consequently, the review is structured like a funnel, providing first an overview of the subject matter before moving on to explore the specific research area in more depth (Matthews & Ross, 2010). Although this review generally followed a *convenience sample*, it was nonetheless iterative and rigorous in selecting literature. Studies could be concerned with any (or any combination) of the three countries, but research needed to be situated within this geographical context. Selected papers had to make an explicit mention of EJ, if they were to be taken into account in determining research gaps.

Reviewed articles were constantly coded in NVivo, yielding a wide input on relevant concepts across publications.

### **IV.3 Research Design**

Fundamentally, this research follows a multiple-method, qualitative approach to answer the research questions. Qualitative methods are primarily concerned with subjective understandings, and used to obtain a complex, detailed comprehension of a given issue, which may not be easily quantifiable (Creswell, 2007). My research is inductive in the sense that I observe a given case, namely that of the externalities of lithium mining operations in Bolivia, Chile and Argentina, and then move from my findings to a theoretical assessment. Creswell (2007, p. 73) defines case study research as a qualitative approach in which the investigator explores a bounded system (or multiple) over time, collecting detailed, in-depth data through multiple sources of information. The present *case* actually consists of multiple cases, involving various unconnected operations across three countries. By including several cases, the goal is usually to draw a comparison through detailed understanding of each individual case (ibid.). While comparisons between countries may be addressed throughout this paper, this is by no means the goal of the study, instead aiming to provide a holistic understanding of the ramifications of lithium mining in Latin America. Consequently, the chosen system boundaries are rather broad, encompassing proceedings in three countries. Moreover, it is not the intent of this thesis to provide a detailed account of the events surrounding individual operations, as doing so would go beyond the scope of this thesis, but to synthesize information from a number of cases into a more general idea.

Welch et al. (2011) distinguish four methods of theorizing from case studies. This thesis aims to both arrive at an understanding of affected actors' subjective experiences, as well as attempt to explain the causal mechanisms that have given rise to the issues at hand. *Interpretive sensemaking* engages in a subjective search for meaning and looks to understand actors' subjective experiences. *Contextualized explanation*, on the other hand, aims at an explanation in the form of causal mechanisms, integrating contextual structures (Welch et al., 2011). Drawing on both of these approaches is thus coherent with, and a direct consequence of, the philosophical considerations laid out above.

### **IV.4 Research Strategy**

To conduct a study of this type, research would typically draw on primary data collection methods like interviews, direct observation, and document analysis (Sovacool et al., 2018). While relying more heavily on primary data would arguably lead to a more detailed understanding, the ongoing situation

surrounding the Covid-19 pandemic at the time of writing made relying exclusively on primary data collection methods unfeasible. Due to travel restrictions, it was not possible to conduct fieldwork in the focal region. Instead, this part of the study was moved online to the extent possible. Unfortunately, obtaining contacts and conducting interviews proved difficult, especially with affected communities. Therefore, the decision was made to conduct interviews when possible, but to rely more heavily on secondary data, and to ascribe conducted interviews a supportive weight.

## **IV.5 Data collection Methods**

### **IV.5.1 Primary data**

#### **IV.5.1.1 Semi-structured Interviews**

Sovacool et al. see interviews as an appropriate method of qualitative data collection, allowing to access “individual stories, understandings, explanations and meanings” (2018, p. 29). As opposed to surveys, they allow for follow-up and probing questions. Nevertheless, interviews also come with a number of difficulties. For one, stakeholder interviews raise the challenge of assessing interviewee’s views and statements in connection with those of the organization they represent (ibid.). In the case at hand, this plays a significant role, e.g. in the interview with a public servant. Moreover, the qualitative nature of interviews makes it difficult to code answers. However, I argue that this is a general feature of qualitative data, and therefore no different from the majority of other sources taken into account. I would also like to acknowledge the risk of bias, meaning that interviewers may ask questions in a way that lean towards eliciting a desirable answer, which I have tried to avoid to the best of my abilities. Finally, there is a debate regarding sample size in qualitative interviews (ibid.). For this study, interviewee selection was purposive in nature and aimed for a variety of perspectives on the studied phenomenon. However, there is little guidance on what constitutes a “sufficient” number of interviewees. While stakeholder interviews and direct engagement with involved actors would have arguably played a much larger role in case “proper” (non-remote) fieldwork had been possible, this facet ultimately took on a lesser role. This is mostly due to the faced difficulties in obtaining contacts, especially on the community level, and a relatively low response rate to interview requests from experts (ca. 50%).

Over a five-month span, I conducted seven semi-structured interviews with experts, a government employee, and a community member. Interviews were semi-structured in the sense that a number of questions were prepared, but these questions led to discussions and follow-up questions about

particular experiences. Questions and themes discussed concerned different facets of the research topic, depending on the interviewee (e.g. current state of lithium operations, environmental impacts, social impacts, development visions, etc.). Appendix 1 provides an anonymized overview of interviewees along with background, country, date, length, and means of communication. Interviews were recorded (with prior permission) and subsequently transcribed in the *intelligent verbatim* method, meaning that although interviews were transcribed word for word, pauses, laughter, or “ums” and “ohs” were omitted (Hickley, n.d.). Six interviews were conducted and transcribed in Spanish, while one was conducted in German. The transcription was then coded in NVivo, incorporating it with the rest of obtained data. Interviews were not translated, instead opting to preserve the original version. They were carried out in an ad-hoc manner, meaning that there was no period specifically allocated for interviews *a priori*, but opportunities were taken when they arose.

On a final note, contact information of several interviewees was obtained by means of *snowball*, or chain referral sampling. Snowball sampling is a method that yields a study sample through referrals made by people who “know of others who possess some characteristics that are of research interest” (Biernacki & Waldorf, 1981, p. 141). This proved useful for the present study and difficulties faced due to the pandemic.

## **IV.5.2 Secondary data**

### **IV.5.2.1 Academic Literature**

Academic literature constitutes the main source of information for the present study. Here, I mainly relied on peer-reviewed journal articles, but also incorporated PhD theses or book chapters, where appropriate. The majority of these inputs were found through *Google Scholar* and the online catalogue of the *CBS Library*. A significant number of additional documents were identified through citations, with individual relevance assessed based on my own judgement. Importantly, the literature incorporated in this section serves a different purpose than in the preliminary literature review, the emphasis being on literature as a source of specific impacts (e.g. studies on environmental impacts of lithium mining) as opposed to identifying gaps or guiding research.

### **IV.5.2.2 Reports from Civil Society Organizations**

A number of CSOs are involved in and have been covering several aspects of lithium operations in the area. These entities are usually concerned with different aspects of the issue, apart from having a strong regional focus. After following several online events and activist discourse on social media, I

developed an understanding of the principal organizations in this regard. Since some of them are closely affiliated with regional activism, I acknowledge the risk of bias in reports. However, all data that was incorporated in the thesis that did not originate from peer-reviewed academic findings was triangulated in order to minimize this risk.

#### IV.5.2.3 Reports from Governments, IOs

Government reports on lithium operations and e.g. guidelines for community participation were incorporated for assessing both the institutional set-up of mining operations, as well as a source of empirical material in the three country contexts. Likewise, a number of international organizations have published reports covering lithium mining (e.g. UNCTAD).

#### IV.5.2.4 Webinars

In addition to the sources mentioned above, I attended several webinars. Due to the difficulties in conducting interviews, webinars provided a genuine alternative for collecting information and sentiments from various perspectives. More specifically, webinars featured speakers from academia, non-profit research foundations, community organizations, Indigenous activists, former employees of lithium firms, and others. The background of the webinar's organizing entity arguably plays a role in who will be invited to speak and how a given issue is portrayed. Therefore, when possible, data and accounts collected from webinars were triangulated with other sources.

Appendix 2 provides an overview of the attended webinars, including organizer(s), title, date, keynote speakers, and keynote speaker backgrounds. These webinars were held both in English and Spanish, depending on the webinar. While I did not transcribe the individual keynotes, I took notes mainly in the form of bullet points. Following the different keynotes, speakers usually engaged in a Q&A session with audience members. These discussions were incorporated in the data as well. Subsequently, I coded my notes in NVivo in order to add the obtained information to the rest of data for triangulation and analysis.

#### IV.5.2.5 Newspaper articles (online)

Newspaper articles were taken into account as sources for empirical data and for picking up narratives related to specific operations. Besides international news agencies or national newspapers from the area, there are smaller-scale news agencies which specialize in covering few topics, like the issues

surrounding lithium mining in their region. An example in this regard is *Chululo*, a local newspaper from San Pedro de Atacama.

#### IV.5.2.6 Company publications

Involved firms have published a number of corporate responsibility and sustainability reports, in which they address concerns regarding their mining operations, such as environmental pollution or community engagement. I have searched web presences of several companies active in the region in order to understand how the issue is portrayed from their side.

#### IV.5.2.7 Other online resources

Several other online resources were taken into account. The two most important ones that need to be mentioned in this regard are the *Environmental Justice Atlas* (Temper et al., 2015) and the *Business and Human Rights Resource Centre* (BHRRC; <https://www.business-humanrights.org/>).

### **IV.6 Analysis**

Conducting a study of this kind in the rather limited time frame of one semester, I see the processes of qualitative data collection, data analysis and report writing as interrelated and at times occurring simultaneously. For this reason, the analytical rationale for this thesis largely corresponds to Creswell's *Data Analysis Spiral*, which imagines the researcher to move in analytic circles as opposed to fixed, linear approaches (2007). This model starts with a dataset and ends with an account, with the researcher touching on several facets of analysis in between.

The first of these concerns data management, which in my case was significantly facilitated by the use of NVivo, a software program for qualitative data analysis. Next, researchers engage in what Creswell describes as “getting a sense of the whole database” (ibid., p. 150), essentially a process of repeated reading and *memoing*, which leads to an initial establishment of general circumstances and proceedings. This stage is closely intertwined with the next, namely description, classification and interpretation. During this phase, coding (reducing data into meaningful segments and categories) represents the essence of qualitative data formation. The resulting data was continuously triangulated with other sources. Here, triangulation was used both in the traditional sense, meaning that data is verified and potential biases reduced by using multiple sources, as well as in the constructivist sense, where data triangulation yields several perspectives on a given phenomenon (Salkind, 2010). While it is usual to end up with a relatively large number of codes, these are aggregated to identify major



themes that are then discussed in the study. In practice, this means repeated reviewing of codes and of potential links between codes. In my case, code names were assigned by myself, as opposed to using *in vivo codes*. A first step in this was identifying specific impacts, which are laid out in the following chapter. This stage also included developing a timeline, in order to better comprehend the political and institutional antecedents to lithium mining and the current state of operations, as well as (to a certain extent) understanding the cultural background of local Indigenous communities. Subsequently, researchers “step back” in the process of interpretation, forming larger meanings of what is observed from coded data (Creswell, 2007). In a return to the philosophical stance underpinning this study, emphasis is given to subjective meanings and perspectives, as well as structural factors (the *real*) underlying the *actual* and the *empirical*. This interpretive phase involved further coding, considering how the themes extracted from the case relate to the theoretical concepts discussed in the EJ literature. The final phase concerns presentation, which is done in text and tabular form in this thesis (see below).

## IV.7 Assessment Procedure

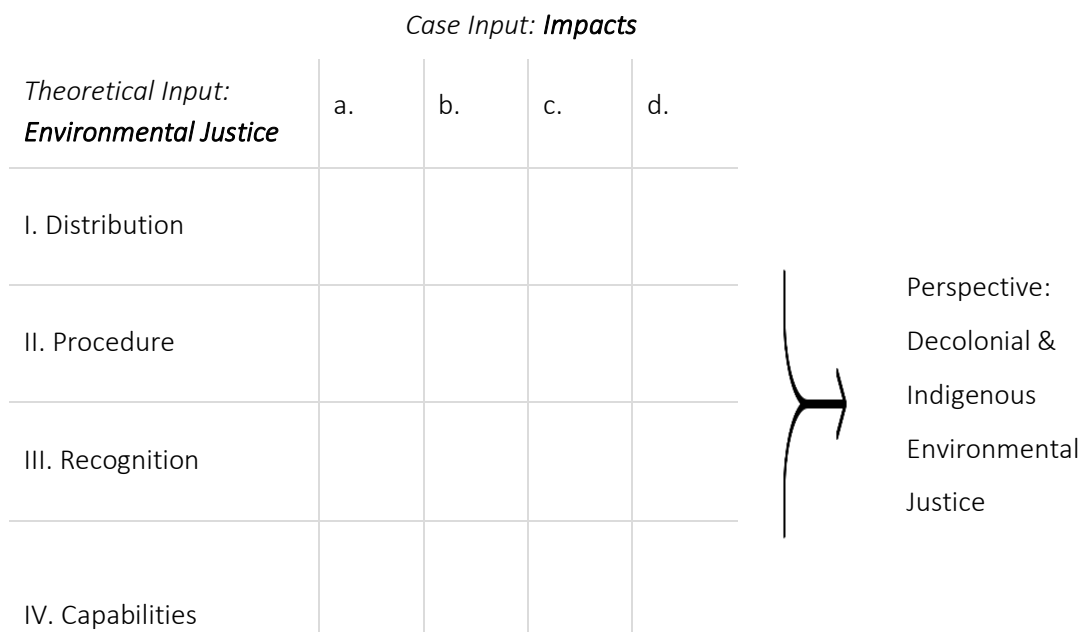


Figure 6.1: Assessment model

Figure 6.1 illustrates the assessment model designed for the present study. As such, it will guide the remainder of this thesis, serving as a basis for the coming chapters. The left column features theoretical input, namely the original three tenets of EJ, along with the added fourth tenet of

community capabilities (numbers I to IV). The top row, on the other hand, is reserved for specific impacts, determined from an in-depth study of the case(s) (see above).

The following chapter will lay out these impacts of lithium mining operations as determined by my research. Combined with the understanding of EJ as a result of the theoretical section and preliminary literature review, I will then be able to determine which specific impacts have consequences for the different tenets of EJ. For instance, economic impacts may affect distributional justice. In such cases, these fields will be marked with an “x” in the figure. Subsequently, every marked field will be discussed, justifying this assessment and explaining how the observed impact contributes to (or mitigates) a particular facet of environmental injustice. Taking into account this analysis, I will then discuss the case from a decolonial & Indigenous EJ perspective. Importantly, this model should **not** be understood as suggesting that the four tenets combined “result in” decolonial EJ; the discussion of decolonial EJ is merely based on the prior assessment of the case, which in turn *is* based on the four tenets. Finally, I will return to my research questions, and attempt to synthesize the gathered information into an overall assessment of the situation, based on the detailed descriptions of individual connections.

#### **IV.8 Note on Researcher Bias**

Finally, I find it important to point out any potential researcher bias (Creswell, 2007). While I have tried to remain as impartial as possible, I was initially drawn to this topic by reports of potential injustices in lithium battery supply chains. Thus, I also went into this research wanting to develop a better understanding of these injustices. Similarly, although I build this study from an empirical case, research was guided by a theoretical orientation. Cimini has identified (1) superficial and cursory engagements with theory, (2) fetishistic applications of theory, and (3) a “pick and mix” approach to theory application as problematic ways in which theoretical rigor can give way to empirical prioritization in case studies (2020). To avoid these pitfalls, I aim for a rigorous application of EJ through an assessment procedure specifically designed for this study, with a strong foundation in the EJ literature.

## Chapter V: Findings

This section will present findings in terms of the specific impacts of lithium mining operations in the “triangle”. The presence of lithium mining projects has consequences for “host” locations in different ways. I have grouped these impacts into four broad categories of environmental, economic, and sociocultural impacts, as well as human rights concerns.

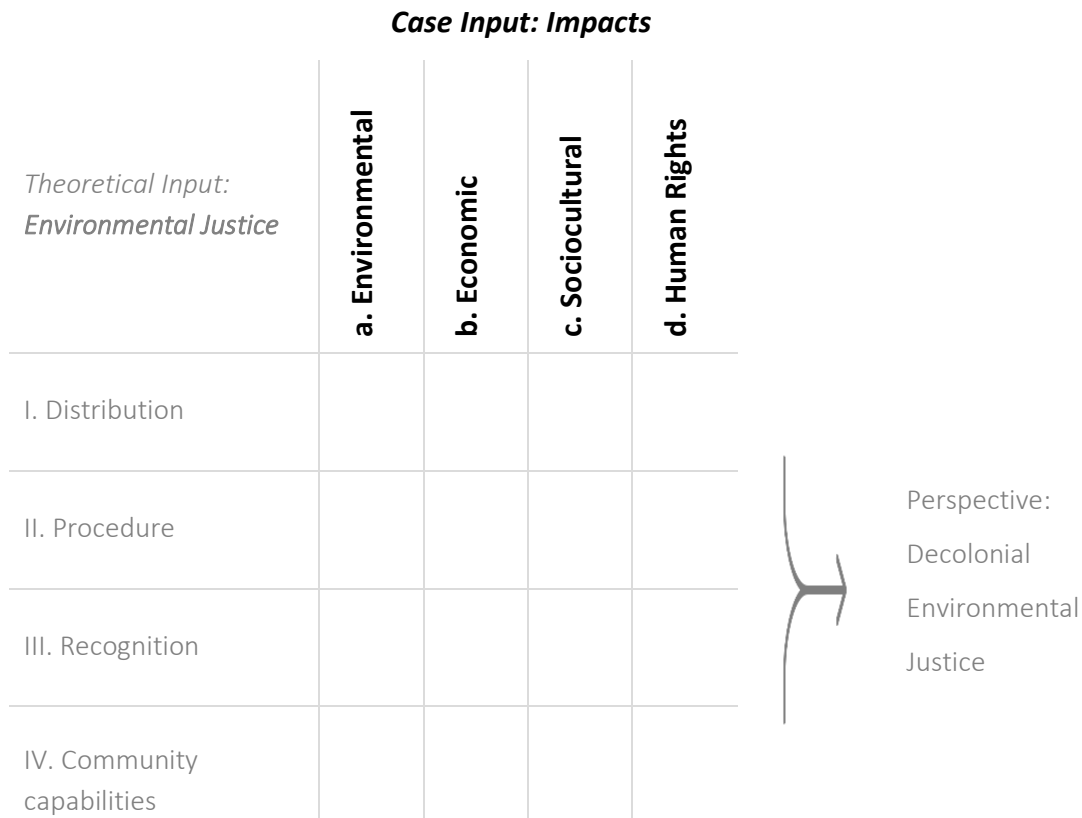


Figure 6.2: Assessment model, case input

This thesis aims to deal with lithium mining operations in three countries, which significantly complicates a definitive assessment of consequences. Impacts can vary between each of the triangle states, between each single operation, or even within the same operation. For instance, a mining firm may agree on different arrangements with two (or more) communities affected by their operations, meaning that the socioeconomic impacts differ depending on the community studied. The heterogeneous nature of cultural, social, legal, and even environmental conditions across the region adds to this complexity. As a consequence, the coming subsections will describe impacts in connection with specific cases when deemed appropriate, and when gathered data allows for this.

## V.1 Environmental impacts

While the negative impacts of resource extraction have come under increased scrutiny, lithium mining has been communicated in line with its role in the low-carbon transition, that mining was non-polluting due its “natural” extraction method of evaporation. Whereas traditional mining heavily relies on the use of explosives and cyanide, typically leading to far-reaching environmental impacts, this is not necessary in lithium extraction (CEDLA, 2014). Profiting from an apparent “clean slate”, its extraction history is largely unknown among the global public (Barandiarán, 2019). Nevertheless, local communities started voicing concerns after noticing changes in their environment following the commencement of nearby mining operations (ibid.). As a result, the environmental consequences of lithium mining have attracted more attention. While scientific studies have picked up these concerns, it should be noted that we are far from understanding the full range of environmental impacts of lithium mining, as studies are simply too few at this point in time (Enrriquez, 2019). Furthermore, a large chunk of environmental studies is done by operating firms under obligatory EIAs in Argentina or Chile, or by state agencies in the case of Bolivia, which has led to mistrust and uncertainty in regard to said studies (Barandiarán, 2019; Mortensen & Boddenberg, 2019; Perreault, 2020).

Having said this, *direct* environmental impacts of lithium mining are primarily twofold. For one, arguably the biggest environmental concern of mining from brine is its high water-intensity. It has been estimated that for each ton of lithium, roughly two million liters of water are evaporated (Ahmad, 2020; Puente & Argento, 2015). This is especially alarming when taking into account the environmental circumstances in which this evaporation takes place. The triangle region is characterized by an arid mountain desert, resulting in limited water supplies (Lunde Seefeldt, 2020). The mining industry therefore depends on groundwater resources in one of the world’s driest desert regions (United Nations, 2020). Adding to this, salars are complex ecosystems, relying on a fragile balance between salt and fresh water (Lacabana, 2018; Marchegiani et al., 2019). Changes in water dis- and recharge could throw off this equilibrium and significantly impact surrounding flora and fauna.

Arguably the most important study in this regard was done by Liu et al. (2019), analyzing satellite imagery of the Salar de Atacama region over a course of twenty years. The study found that lithium mining operations have expanded by over 7% p.a. and constitute one of the major stressors to environmental degradation, manifested by vegetation decline, elevating daytime temperatures, decreased soil moisture, and an increased drought condition. An alternative explanation for the

increasing water scarcity has been the growing tourism industry in the region. However, Liu & Agusdinata (2020) found that water consumed for mining processes was approximately 50 times the consumption of domestic use, and hundreds of times that of tourists. In the Salar de Atacama, lithium and other mining projects have consumed 65 percent of the region's water resources (Ahmad, 2020; United Nations, 2020). It is because of this that lithium mining has started to be discussed in a discourse of "water mining" (Interviewee 2; Mortensen & Boddenberg, 2019). While these findings in terms of water depletion are in line with other studies and community concerns from Argentina (e.g. Marchegiani et al., 2019), they may not be readily transferable to the case of Bolivia. For one, the difficulties in Bolivian lithium industrialization laid out above mean that the project has not reached a scale where the consequences of extensive water use are noticeable (Interviewee 5). In fact, impacts as a result of water depletion may turn out less severe on the Salar de Uyuni, due to the greater rainfall in the Potosí region, which helps recharge groundwater (Perreault, 2020).

The second direct impact concerns the use of toxic chemicals used in the refining process. Here, the production of lithium carbonate and potassium chloride (a by-product) produces 4,000 tons of chemical waste per day, often dumped on the salar itself (Perreault, 2020). As opposed to the impacts stemming from intense water use, this aspect may turn out more severe in the Salar de Uyuni, as the less favorable ratio of lithium to magnesium may necessitate more extensive refinement procedures, known as the "encalado" method (Abelvik-Lawson, 2019). However, it should be noted that assessments of the particular environmental consequences of large-scale mining in the Salar de Uyuni are largely speculative at this point.

The immediate impacts of water depletion and the dumping of toxic chemicals lead to a number of further concerns. Among these, biodiversity impacts in terms of a loss of flora and fauna have been among the most prominently discussed. A number of already endangered species, such as vicuñas, guanacos, flamingos, taguas and chinchillas, depend on regional wetlands that are now drying up as a consequence of water-intensive mining (Gundermann & Göbel, 2018a; Heredia et al., 2020; Lunde Seefeldt, 2020). Salars in the region harbor a number of lagoons, the water level in which has been shrinking, in turn leading to increased salinity. As a result, algae populations decrease, and endangered flamingo species lose their source of alimentation (Agusdinata et al., 2018; Interviewee 2; Mortensen & Boddenberg, 2019). Biologists have identified microbiological organisms as the functional and structural base of salar ecosystems, with potentially far-reaching consequences in case of further aridification (Carrere, 2020). Additionally, local farmers have pointed to mysterious

livestock deaths and a general reduction in grass coverage (Marchegiani et al., 2019). Further concerns have been raised in regard to the potential contamination of subterranean aquifers, along with concerns that barrier failures may leak toxic chemicals into the environment and cause water pollution (Agusdinata et al., 2018; Balch, 2020). Finally, evaporation ponds are exposed to the elements, which means winds may carry the highly mobile lithium into the environment and affect human health in nearby communities (Agusdinata et al., 2018). While no scientific studies have dealt with this in connection with brine, local community members have lamented the sudden occurrence of “powders” in the air after lithium extraction projects had commenced (Interviewee 1; United Nations, 2020).

## **V.2 Economic impacts**

Mining can have a significant impact on local, regional, and national economic development (World Economic Forum, 2016). Lithium is considered no different in this regard, with consequences for local expectations and development imaginaries (CEDLA, 2014). As a result, communities have found themselves in the quagmire of concerns for environmental degradation and the potential economic benefits brought about by lithium mining, leading to internal division (Interviewee 3; Marchegiani et al., 2019). This is exacerbated by the fact that the “Lithium Triangle” region constitutes a poor region relative to the national average in all three countries, and employment opportunities are scarce (Marchegiani et al., 2020). Nevertheless, there is a clear paucity in research on lithium mining’s economic impacts, which makes definitive assessments difficult (Agusdinata et al., 2018).

### **V.2.1 Bolivia**

In Bolivia especially, it is difficult to assess what impacts industrial lithium mining could have economically, given that this is still far from materializing. Potosí is a particularly poor area, with 68,5% of its population living below the poverty line in 2017 (CEDLA, 2019). Historically and currently tied to mining (the local San Cristóbal mine – extracting zinc, lead and silver – is the largest in Bolivia), other modes of income include the cultivation of quinoa, tourism, livestock, and salt production (CEDLA, 2018; Interviewee 5). It has been estimated that a realization of the first two phases of Bolivia’s three-phase plan would increase regional income by approximately 60% (ibid.). In terms of direct employment, estimates are that the first two phases would generate roughly 5,000 jobs (CEDLA, 2014). For reference, nearby communities have a total population of approx. 55,000 (CEDLA, 2018). However, a problem arises when speaking of economic benefits for the *local*

population in this regard. As of now, the pilot plant (Phase I) employs almost exclusively workers from outside areas, who commute to the site for two-week shifts at a time (Perreault, 2020). Nevertheless, this could change, as further development of the operations may have stimulating effects on other sectors and create a wider range of opportunities.

The distribution of generated income, on the other hand, has led to a lot of conflict. The Salar de Uyuni is considered a fiscal reserve by law, which means it is considered an independent area. In turn, this means that royalties are paid to the departmental government of Potosí, and not to local municipalities bordering the Salar (Sanchez-Lopez, 2019). Perceived as further contributing to the unequal development between rural and urban areas, protests sparked in response; the issue can be considered a potential source of conflict going forward (Perreault, 2020; Sanchez-Lopez, 2019). With persistent difficulties in lithium industrialization, there is growing concern that developmental imaginaries may not materialize. Due to rapid advances in technology, experts have alluded to Bolivia's "short window of opportunity", and have cast serious doubt over the mineral's potential to finally overcome the country's economic model based on primary exports (Hancock et al., 2018; Poveda, 2020). This desperation is expressed in the sentiment of lithium as "grandma's last jewel" (*la última joya de la abuela*), with a local government official insisting: "If we don't get benefits now, we won't get anything." (Sanchez-Lopez, 2019, p. 26).

### **V.2.2 Chile**

In Chile, the socio-economic impacts of lithium mining can be observed more clearly. In this regard, lithium mining has meant large economic gains for the state, as well as national and international firms in the area (Romero et al., 2012). Economic benefits for local populations can be broadly grouped into those arising from employment opportunities and those that come from arrangements that firms and local communities have come to.

Both SQM and Albemarle have a number of agreements in place, some with the *Consejo de Pueblos Atacameños* (CPA), others with individual communities. The CPA is a coalition of 18 local, primarily Indigenous communities. In 2016, Albemarle signed an agreement with the CPA, in which communities are granted 3.5 per cent of lithium sales, which are then invested by the communities themselves under a monitoring system (Albemarle, 2019). According to several interviewees that were directly involved in this process, the agreement has had significant impacts on local livelihoods, ensuring basic necessities and a higher standard of living (Interviewees 2, 4 ). While communities are relatively free in how they invest the funds, there have been cases in which funds had disappeared

after a relatively short time (Interviewee 4). Nevertheless, interviewees pointed out that it was a matter of trial and error, and that learning to manage large funds takes time. Similarly, SQM has a number of agreements of their own. Most recently, the firm arrived at an agreement with the community of Camar, worth 1700 million Chilean pesos (about two and a half million US dollars) (Carrere, 2020; Interviewee 2; Tercera, 2020). There have been several other agreements over the years, usually focused on development projects like building wells, health or educational facilities (Babidge & Bolados, 2018; Chululo, 2015a).

In terms of employment, the provision of jobs has also been stipulated in agreements between firms and individual communities or the CPA (Interviewee 4), in addition to regular employment opportunities. Furthermore, Liu & Agusdinata (2020) found that mining not only provides direct income through jobs, but also stimulates supporting industries in the area, which leads to further employment opportunities and indirect incomes from industries such as infrastructure. However, it was found that the actual share of local laborers in mining and mining-induced industries was limited, and that the presence of lithium operations mainly attracts a distant workforce. Employment in agriculture, on the other hand, reduced over a ten-year period, with a decline in in-flows and high labor move-out, primarily to the capital region of Santiago (ibid.).

Nevertheless, interviewees continuously stressed the importance and relief provided by the lithium industry during the global pandemic. While the tourism industry came to a complete standstill, local Indigenous communities could rely on funds obtained from their agreements with lithium firms (Interviewees 2, 4).

### **V.2.3 Argentina**

Finally, the economic impacts of lithium mining in Argentina can be understood in a similar way as those in Chile, meaning that they arise either from employment opportunities with mining firms or direct, monetary or material contributions by firms.

Focusing on two projects in the Olaroz-Caucharí salt flat, a 2019 study found that operating firms (Sales de Jujuy and Minera Exar) had contracts with neighboring communities stipulating employment opportunities (Marchegiani et al., 2019). Sales de Jujuy, in particular, had a workforce that consisted of 65 per cent of Indigenous peoples, paying a monthly salary of 1,000 US dollars, which is considered above average in the region (Ahmad, 2020). However, this was deemed an exception rather than a rule (ibid.). In general, employment opportunities in mining firms are highly



valued by community members, as they also represent access to other benefits like health insurance and education (Marchegiani et al., 2019).

Likewise, companies have invested direct funds in “developmental” projects, which could be seen as a form of CSR in community relations. Examples include investments in infrastructure, healthcare and education, among others (ibid.). There have also been direct payments to communities, e.g. by Minera Exar to the neighboring communities of Pastos Chicos and Huancar, at 59,000 US\$ and 25,000 US\$, respectively (ibid.). A quick comparison with the amounts paid by firms across the border in Chile puts these sums in perspective.

### **V.3 Sociocultural impacts**

The social impacts of lithium mining on local populations have been scarcely studied (Agusdinata et al., 2018), but can generally be seen as arising from the environmental and economic implications laid out above. At this point, the heterogeneity of cases in the “Lithium Triangle” should again be pointed out. Nevertheless, communities living in the area share common characteristics, and take advantage of salaries in similar ways (Quinteros-Condoretti et al., 2020). Furthermore, main economic activities are related to agriculture, tourism, handicrafts, and salt production (ibid.). These traditional forms of income have been joined by mining more or less recently, depending on the context (Liu & Agusdinata, 2020). Bolivia’s history with mining has been alluded to above, and it will arguably play a role in the social implications of lithium operations (Interviewee 5). The American anthropologist Anna Revette argues that these expectations around mining have become entrenched in Bolivian identity, with cultural significances that are part of everyday language and meaning making (2017). Due to this crucial difference, I will refer to the national context of the points laid out below.

While lithium mining was initially well-received by communities in the Atacama desert due to economic benefits (Gundermann & Göbel, 2018a), growing environmental concerns increasingly gave rise to a contrasting view. This has resulted in a division within communities between those in favor of and those against mining (Interviewees 1, 2, 3, 4; Marchegiani et al., 2019, 2020). Nearly all interviewees have pointed this out, which is consistent with primary data gathered in previous studies. Essentially, this is a struggle between immediate improvements in economic resources, and a fear of the area becoming uninhabitable due to environmental degradation (Mortensen & Boddenberg, 2019). Furthermore, there have been conflicts *between* communities affected by the same project, arising from one community entering into negotiations without informing another, in hopes of reaping

higher benefits (Interviewee 2). By actively supporting certain political factions within communities, it has been alleged that firms play an active role in creating such sociopolitical imbalances, profiting from needs that are not covered by the state and thereby looking to defuse community organizing (Carrere, 2020; Chululo, 2015a, 2015b). According to a community member, the negative vision of mining firms has thus manifested itself, regardless of financial benefits obtained (Interviewee 4).

In terms of social impacts from firm investments and initiatives, developmental impacts remained rather limited for a long time due to an uncoordinated transfer of funds, like paying for birthday parties, etc. (Interviewee 3). In addition, one interviewee criticized such investments as a way to lower tax liability (Interviewee 5). However, with funds being used more strategically over time, there have been a number of positive social impacts. For instance, community members in Argentina expressed that a local high school built by a mining firm has provided education and in turn helped reverse emigration from the community (Marchegiani et al., 2019). Likewise, an interviewee from Chile pointed out the positive impact on local education (Interviewee 4). Another interviewee indicated increased travel in communities, with growing ties between populations across the triangle states (Interviewee 2). Population growth and increased social participation have also been mentioned as a strong indicator for the improvement of the general situation (ibid.). Still, firm investments were found to be mainly aimed towards education and social development, putting less emphasis on fostering economic independence or protecting the cultural heritage of local Indigenous populations (Liu & Agusdinata, 2020).

Regardless of Bolivia's mining history, the cultural significance of the Salar de Uyuni has been pointed out as one of primary factors for opposition to lithium mining (Interviewee 1). The destruction of this cultural space is linked to losing a long history of relating to and living with the Salar (ibid.). The same is true for Atacameño communities in Chile, as put by an Indigenous activist:

*The Salar de Atacama is not just some thing. [It] is important because that's where life is, it is where life itself is born. For the Atacameño, the Salar de Atacama is very important.* (Quote from Webinar, Espíndola, 2021)

Likewise, Lacabana points out the cultural significance of water and the regional salars in local Indigenous cosmovisions (2018). In Chile, the *Algarrobo* tree, which is of spiritual value for Indigenous communities in the area, has been dying as a consequence of drying up of groundwaters (Mortensen & Boddenberg, 2019). Meanwhile, the cultural preservation of Indigenous populations

has seemingly neither been deemed a priority by operating firms, nor by state actors. According to a Bolivian economist, there is no established connection between the state's lithium strategy and the cultural issues, instead pointing out an increasing mercantilization of Indigenous lives (Interviewee 5). Gundermann & Göbel attribute a special role in this to lithium mining firms, pointing to changing consumption patterns and impacts on ways of living (2018a). Finally, forced migration and the abandonment of ancestral settlements because of water scarcity are another important factor, not least due to territorial cultural ties (Agusdinata et al., 2018; Lacabana, 2018; Romero et al., 2012). This dispossession of original land users has continuously been legitimized by the state and firms via a green discourse, combining arguments about the “sustainable” extraction method and those surrounding lithium's use in a low-carbon transition (Bustos-Gallardo et al., 2021).

The inevitable consequence of these developments has been increased social organization, especially in Chile, where lithium operations are most advanced. Here, such movements have grown from local to national scales (Liu & Agusdinata, 2020). Independent EIAs, as well as FPIC and benefit-sharing have been identified as key safeguards for self-determination in terms of social, cultural and economic development (Marchegiani et al., 2020). This is inevitably tied to the special rights of Indigenous populations, which I will turn my attention to now.

## **V.4 Human rights concerns**

While concerns regarding access to safe drinking water and a safe environment have been discussed in terms of human rights and lithium mining (e.g. Heredia et al., 2020), the overwhelming focus has been on due process and granting FPIC (free, prior, and informed consent) rights to affected populations. With the legal framework in each state laid out in chapter II, this section will illustrate some of the problems that have arisen regarding participatory rights.

### **V.4.1 Bolivia**

Starting with the case of Bolivia, the non-compliance with internationally and nationally recognized human rights instruments arguably present the most paradoxical case among the triangle states. To begin, it is important to clarify that the Salar du Uyuni is a vast area with very low population density, which means that not all communities close to it are likely to be affected by industrial scale lithium exploitation (Abelvik-Lawson, 2019; Interviewee 5). However, analyses showed that there are communities that rely on the Salar for salt gathering and other livelihood purposes, which establishes an immediate need for consultation, especially when taking into account the environmental

consequences of the *encalado* method (CEDLA, 2014). Regardless, such consultations have been sorely lacking. To recall, Bolivia is seen as a pioneering country when it comes to the rights of Indigenous peoples, having ratified and even incorporated all the relevant instruments into national legislation (see Chapter II). Besides initial “socializations” (understood as informative community meetings), which the GNRE conducted with a (selected) number of communities, *directly affected* communities have not been granted FPIC rights in accordance with legal norms by any means (Abelvik-Lawson, 2019; Interviewee 1). Likewise, no formal environmental impact analyses have been conducted prior to the construction of the pilot plant (Sanchez-Lopez, 2019).

Over the years, there have been a number of “explanations” for this lack of implementation. For one, there is internal contradiction between Bolivia’s mining law and its incorporated UNDRIP law, leaving uncertainty about community consultation (Abelvik-Lawson, 2019) (see also Chapter II). Moreover, the status of the Salar as a fiscal reserve has been used to question the need for prior consultations (Sanchez-Lopez, 2019). Finally, lithium has been argued to be a “renewable” resource, and that FPIC is only obligatory in cases of non-renewable resource extraction (Abelvik-Lawson, 2019). Perhaps unsurprisingly, UNDRIP makes no such distinction. Furthermore, Indigenous organizations have been coopted and their opposition subordinated under a strong nationalist narrative (Interviewee 1; Sanchez-Lopez, 2019). Protests sparked over a consultation that was carried out in 2018 in regard to the proposed lithium battery production plant, after already having been granted governmental approval years before (Perreault, 2020).

The Bolivian lithium project is thus alleged to be in breach of both international and domestic human rights law (Abelvik-Lawson, 2019). This has led to the general sentiment that the government feels the right to use resources without consultation, and that ratifications of international legal instruments are mere formalisms, as expressed in interviews (Interviewees 1, 5). The lithium project, on the other hand, seems more concerned with environmental licenses as a form of legal compliance as opposed to empowering communities and ensuring environmental sustainability of the Salar de Uyuni ecosystem (Sanchez-Lopez, 2019). As phrased during an interview, Bolivia is seen as a pioneering country in having regulations that are not implemented (*un pionero de tener normas que no se implementa*; Interviewee 1).

#### **V.4.2 Chile**

The situation in Chile is legally difficult in regard to FPIC rights, mainly because the country ratified ILO 169 in 2008. This means that at the time when lithium projects were in initial exploration phases,

consultations were not carried out due to a lack in regulation. For instance, SQM conducted their last environmental impact study in 2006, before the ratification of ILO 169, and communities were never consulted regarding any lithium projects involving SQM (Interviewee 2) or other firms (Balcázar, 2021). Later negotiations between firms and communities were conducted without any state involvement, as these did not present consultations but negotiations between private entities. Although FPIC rights are clearly determined to be the responsibility of the state, interviewees stressed how the state had nothing to say in such negotiations (Interviewee 4).

The general sentiment that I inferred from my four interviews with experts and community members from Chile is a degree of mistrust towards the state. Interviewees actually seemed content that state representatives had nothing to say in negotiations. Nevertheless, one interviewee did point out the power imbalances inherent in negotiations, especially when community members depended on employment provided by firms, which in turn led to them being unable to exercise their rights, e.g. expressing environmental concerns (Interviewee 4). Arguably, it is in these circumstances that state actors could play a balancing role, ensuring a level playing field and *free* interaction. In neoliberal Chile, this seems to be regarded with much skepticism.

Nevertheless, there have been concrete allegations in terms of human rights, such as in regard to water rights and access to Indigenous territory (Chululo, 2015a). In 2018, both SQM and Albemarle were granted substantial extensions of their mining permits without prior consultation with communities. The CPA brought a legal complaint against the lack of FPIC in regard to these extensions (Reuters, 2019b). To conclude, FPIC rights have not been sufficiently granted by the Chilean state, the bearer of this responsibility.

#### **V.4.3 Argentina**

There appears to be confusion as to whether Indigenous communities must be officially recognized as landowners in order to have participation rights in Argentina. According to international law, consultations are necessary when potential operations could have an impact on said communities, not whether these hold official land titles (Abelvik-Lawson, 2019). A sociolegal analysis conducted by Abelvik-Lawson pointed out that provincial law in Jujuy does not afford Indigenous communities special protection measures as laid out by ILO 169, implying a general difficulty for Indigenous peoples in Argentina to access their rights (Abelvik-Lawson, 2019).

The Olaroz salt flat hosts operations by firms Sales de Jujuy and Minera Exar. The two companies have conducted consultations with a number of communities holding land titles and being directly located within the project area, yet several other communities are also affected by operations due to their reliance on the same water basin (Marchegiani et al., 2020). Regarding FPIC, the manner in which consultations were conducted point to serious shortcomings in the terms of being *free* (F) and *informed* (I). According to community members, information was not made available early enough, which hindered communities in assessing the provided material (ibid.). Moreover, information was provided in lengthy, technical format, making it difficult to understand for non-experts (Marchegiani et al., 2019, 2020). This was allegedly also true for Q&A sessions, where community members felt unable to engage meaningfully, and answers were again given in technical form (Marchegiani et al., 2019). Crucially, studies regarding potential environmental impacts were all conducted by firms (ibid.). Based on these conditions, there is serious doubt as to whether consultations were conducted in a fully informed manner. Furthermore, there are significant power asymmetries inherent in company-community negotiations, as firms possess resources that communities lack and depend on, such as employment and monetary funds (Marchegiani et al., 2020). Companies emphasizing economic aspects during consultations could be seen as a form of bribery, aimed at coercing acceptance (Abelvik-Lawson, 2019). Consequently, such consultations could hardly be considered *free*.

At the Salinas Grandes and Lagunas de Guayatayoc salt flat, a number of projects are in initial stages (Marchegiani et al., 2020). State officials had declared the area free of communities, outright denying the existence of any populations in the region (Abelvik-Lawson, 2019). Consequently, communities took a proactive approach after being alarmed by exploration activities without any form of prior consultation. This resulted in the eventual drafting of the *Kachi Yupi* (“traces in the salt”, in Quechua), a document that outlines constitutional rights to water, Argentine mining and environmental law, as well as minimum FPIC standards (Abelvik-Lawson, 2019). Crucially, the *Kachi Yupi* provides guidance on a culturally appropriate way of conducting consultations, while establishing communities’ interest in the salt flat and surrounding watershed (Abelvik-Lawson, 2019; Marchegiani et al., 2020). In the years since, continuous unacceptance of Indigenous organization’s proposals has resulted in social mobilization, protest and the eventual halting of operations (Interviewee 7).

For both cases, the complete absence of state actors is worrisome. Again, ensuring FPIC is state responsibility, and provincial governments in Jujuy have clearly neglected this (Marchegiani et al., 2019; Puente & Argento, 2015). Especially in situations of power asymmetries, state actors can play an important role as neutral facilitators and ensure compliance with human rights (Marchegiani et al., 2020). A lack of resources presents a clear issue in this regard. According to a report conducted in 2019, state representatives would have had no baseline study to evaluate the environmental impact assessments conducted by companies (Marchegiani et al., 2019).

## **Chapter VI: Discussion**


<i>Theoretical Input: Environmental Justice</i>	<i>Case Input: Impacts</i>				
	a. Environmental	b. Economic	c. Sociocultural	d. Human Rights	
I. Distribution	x	x			 Perspective: Decolonial & Indigenous Environmental Justice
II. Procedure				x	
III. Recognition				x	
IV. Capabilities	x	x	x	x	

Figure 6.3: Assessment model, case input

Having presented the “Lithium Triangle”, the chosen theoretical framework of environmental justice as well as findings in regard to specific impacts of mining operations, I now again return to the assessment model. Fig. 6.3 shows how the knowledge generated in previous sections now allows for an assessment of how the distinct ramifications of lithium mining translate to different conceptions of environmental (in)justices, visually represented by marks in the relevant fields. This chapter will discuss each of these marks before shifting focus to decolonial and Indigenous perspectives on lithium extraction.

### **VI.1 Distributional (In)justice**

#### **VI.1.1 Environmental Impacts**

The environmental harm caused by lithium mining operations through extensive water usage and the generation of chemical waste has been laid out above. Regarding distribution, it is clear that local impacts on the environment affect those who depend on it locally, meaning foremost the communities



mentioned. As presented, environmental harms brought about by lithium operations vary by country (and salary), but this is likely attributable to the stage that a particular extraction project is in. The question now arises what can be considered *just* distribution. According to Walker & Bulkeley, an unequal distribution of environmental harms is by itself not necessarily unjust, the focus being rather on the “fairness” of the processes that gave rise to this distribution (2006). A position expressed repeatedly throughout interviews is that lithium mined in the “triangle” is used in EVs at the other end of the world (Interviewees 2, 4, 5, 6). While this argument could be countered with the usage of lithium-ion batteries in mobile phones and other personal devices that are being used by people in communities as well, EVs are the clear driver of demand. Regardless, any explanation in this line could hardly argue that the current distribution of environmental harm is anything near just.

*The Indigenous communities do not have a big responsibility for the climate crisis, this responsibility lies with large corporations and centralist governments. But the communities are paying the price.* (Quote from Webinar, Balcázar, 2021)

As mentioned earlier, the maldistribution of environmental goods or harms has sparked debate on what would constitute distributive justice. Strict *equality* is one such approach, where environmental goods and bads are distributed equally. Here, the rather abstract concern about inequality on the global scale has been linked to the colonial roots of this visible disparity (Kaswan, 2021). In turn, utilitarianism is concerned with “achieving the greatest good for the greatest number of people” (ibid., p.22), and thereby proposes to deviate from strict equality. While traditionally, utilitarian argumentation has advocated for increased spending for marginalized actors, as these would benefit more from welfare gains, lithium’s role in combating climate change complicates this discussion. Now, mining proponents may argue that relatively few people are feeling the harms associated with the extraction of a mineral considered vital for mitigating global warming. However, such arguments essentially regard certain areas or communities as “sacrificeable”, which is not only ethically highly problematic but would also imply a clear disregard for participation and self-determination rights. Fundamentally, this tension highlights the underlying quest for justice in just transition research, which, due to its emergence from diverse backgrounds, has not yielded any universally agreed-upon approaches (Henry et al., 2020). Nevertheless, based on the points presented here as well as in chapter V, I argue that the maldistribution of environmental harms caused by lithium mining constitutes a clear distributional injustice against nearby Indigenous communities, while the eventual environmental “goods” (clean air, etc.) are enjoyed by people far away.

### VI.1.2 Economic Impacts

Moving on, the assessment of economic benefits, along with what would constitute a *just* distribution, is even more complicated. As laid out in chapter V, the economic benefits vary drastically between countries and operations in terms of funds transferred from firms to communities, direct employment, or indirect stimulation of local industries. In a fundamental sense, local actors feel entitled to a certain share of economic gains derived from operations in their territory; this is apparent in the claims made by provincial governments in rural Potosí, Bolivia, to the demands expressed by Indigenous communities in Argentina and Chile. On the other hand, this attitude is not necessarily shared by firms, often feeling like they do not owe anything to communities (Interviewees 1, 3). Because of the differences between countries, an assessment of whether the economic impacts of lithium mining are justly distributed is not possible *per se*. Nevertheless, local communities in the Chilean Atacama Desert have arguably seen the most considerable economic impacts of lithium mining operations, due to agreements reached with firms SQM and Albemarle and the monetary transfers that are part of these. While they are substantial when compared to similar arrangements across the border in Argentina, it is nonetheless difficult to attach evaluative labels like *fair* or *just*. During interviews, a Chilean community member commented on the agreement between the CPA and Albemarle, expressing both the positive impact that it has had on community livelihoods, while simultaneously implying that the agreement should be seen as a point of departure, i.e. that a *just* distribution would require much more:

*...of course, conditions have improved significantly when compared to what they were before [...] This Indigenous struggle that exists in Chile, and I believe that it exists all over Latin America, if not the world, with mining firms that extract however much they want... [The agreement with Albemarle] is a starting point. And as I commented, it is something that takes time, something that is dynamic, and something that it cannot be forgotten that during this pandemic, it helped the communities a lot, especially those that depend exclusively on tourism. (Interviewee 4)*

At a different point in the interview, the same interviewee commented that local perceptions of lithium mining were still highly negative, as money cannot make up for environmental degradation. It is important to keep in mind that monetary transfers in Argentina constitute a mere fraction of this arrangement, while they are completely absent in Bolivia. Nevertheless, these sums are again put into perspective when compared with corporate profits and the rising price of lithium, underlining

community demands for a higher share of these earnings. To conclude, economic benefits vary significantly between countries, with Chilean communities in more favorable conditions, followed by those in Argentina and, lastly, Bolivia. While this pattern is somewhat congruent with the state of industrialization in the three countries, institutional and political conditions in Bolivia cast serious doubt over whether this will change with advanced industrialization. Keeping in mind the limited effect on local employment (Liu & Agusdinata, 2020), economic impacts across the triangle states remain restricted, and arguing whether current (or future) distributions are just is difficult, as this inevitably raises value-based questions, apart from the problematic conversation of putting a price tag on nature. Nevertheless, it can be said that, though not to the extent envisioned by community members, economic impacts are contributing to a more just distribution between firms and communities, when arrangements are in place, and foster positive perceptions of mining operations locally.

## **VI.2 Procedural (In)justice**

### **VI.2.1 Human Rights Concerns**

Procedural justice matters are inextricably linked to participatory rights in environmental decision-making. Here, the focus is not on causation, but on whether procedural injustices have occurred in connection with lithium exploration and exploitation. As laid out in chapter V, there are serious shortcomings in regard to FPIC rights in the triangle states. In all three countries, Indigenous communities are struggling or have struggled to access their rights as stipulated by ILO 169. In Chile, the relatively late ratification of ILO 169 complicates this assessment to some extent, but as mentioned, new allegations have surfaced after mining extensions were granted without prior consultation. Additionally, it arguably points to a reactive approach to safeguarding Indigenous rights by the Chilean state. While the exact proceedings for cases have been laid out above, it is inferred here that lithium operations in the triangle states have consistently entailed procedural injustices against Indigenous communities, in clear violation of FPIC rights. Unfortunately, this is not an issue that is specific to lithium, but a common concern regarding mining projects on Indigenous lands. As expressed by an interviewee that has worked with Indigenous rights for many years (referring to international conferences they have taken part in):

*They always ask “Can you tell us about successful cases [respect for FPIC]?” ... and to really think of a successful case in terms of proper consultation, it is very difficult.*

(Interviewee 1)

Obstacles in accessing rights have been connected to power asymmetries between involved parties (Marion Suiseeya, 2021). Procedural justice approaches thus aim to address these underlying power structures that give rise to political displacement. In this regard, the struggle between local communities and the multinational corporations undertaking mining projects has been compared to the battle between David and Goliath (Babidge & Bolados, 2018). In a way, the examined cases have illustrated this point well. While in Bolivia, the state-run lithium project has continuously disregarded FPIC rights of communities, consultation procedures in Chile and Argentina are controlled 100% by firms, and participation has not resulted in meaningful engagement of communities. Again, it is important to remember that the responsibility to ensure consultation in line with international standards lies with the state, and it is in these instances that public actors can play an important role in guaranteeing negotiations on equal footing. While power asymmetries between communities and firms have been laid out in chapter V, the Argentine case additionally highlights the power asymmetry between firm and state. After environmental reports on potential impacts of mining operations were done by company affiliates, there was considerable doubt over whether state actors would even have the resources or expertise to undertake independent impact assessments, or evaluate those done by mining firms (Marchegiani et al., 2019). This impotence of the public sector significantly complicates potential solutions, seemingly leaving communities without a clear access to remedy, and bears strong resemblance to dysfunctional institutional contexts established in other studies (Ramirez, 2019).

### **VI.3 Recognitional (In)justice**

Although important in terms of recognitional justice, a discussion on opposing worldviews and alternatives to development that fundamentally question the rationale behind lithium extraction will be featured in the section on Indigenous and decolonial environmental justice below. Consequently, this section will focus on recognition issues around participation processes. Nevertheless, I quickly want to address the inherent linguistic misrecognition in the term “Lithium Triangle”. I argue that this denomination itself deserves closer attention; a term coined by investors that contains connotations that devalue the culturally significant landscape. Taking into account Indigenous peoples’ close connection with their territory, the term reduces ancestral lands to a mere mineral reservoir. This became apparent in Indigenous representatives’ way of addressing the area, where

“lithium triangle” was usually preceded with “so-called” or “badly called” (“mal llamado”) (Interviewee 4).

### **VI.3.1 Human Rights Concerns**

Closely tied to procedural justice around consultation processes, recognition plays an important role in guaranteeing meaningful engagement of community representatives. The Argentine case in particular provides enough input to illustrate the ramifications of recognitional injustices in the case of lithium extraction in the country. For one, government officials had initially declared the *Cuenca Salinas Grandes & Laguna de Guayatayoc* free of inhabitants, denying the existence of the Kolla and Atacameño communities that do inhabit the region, and thus giving their consent to lithium operations. Abelvik-Lawson links this to the principle of “*terra nullius*”, a colonial concept used to justify invasion and resource capture by the imperial power in Australia (2019, p. 205). This idea of uninhabited land is commonly tied to ignoring Indigenous rights in terms of access to FPIC (ibid.).

The previously introduced *Kachi Yupi* (Kachi Yupi, 2015) was recognized by the National Ombudsmann in 2016, but companies ultimately decided not to follow it for allegedly not providing any consultative process (Abelvik-Lawson, 2019). Interestingly, it does provide a consultative process, albeit in graphical form that links steps in the production of salt to steps in the envisioned consultation process (Kachi Yupi, 2015, pp. 30–31). The Kachi Yupi consultation outline has been regarded as an “Indigenous form of representation”, which company officials were unable or unwilling to understand (Abelvik-Lawson, 2019). Curiously, this provokes somewhat of a reversal of roles. While it is usually companies that confront communities with reports that use technical terms difficult to understand for non-professionals, now firms were unable to identify the instructional character of the document.

Consultation and participation in decision-making processes are unlikely to produce fair outcomes in the absence of a clear commitment to cultural recognition (Coolsaet & Néron, 2021), a concern that can clearly be raised in the case of the Salinas Grandes salt flat. Nevertheless, firms seem to have followed community decision-making procedures and decision-making spaces in the case of the Olaroz salt flat (Marchegiani et al., 2019). While this can be seen as a certain degree of recognition of cultural factors, community members were never asked how they would like to receive information, etc., leaving a number of shortcomings (ibid.). However, this is still a clear improvement when compared to the (relative) absence of consultation procedures in Bolivia (and Chile).

## VI.4 Capabilities Justice

The ramifications of lithium mining operations in the triangle have important consequences for individual and community capabilities, an approach pioneered by the work of Amartya Sen and Martha Nussbaum, which has found strong resonance in the movement for environmental justice. Table 1 features a list of Nussbaum's central human capabilities, with the bold lettering indicating direct applicability to the present case. While I will establish a link between these capabilities and lithium mining projects, it should be noted that Nussbaum herself advocated the approach for individuals, and specifically objected to moving beyond individual agents to community perspectives (Schlosberg & Carruthers, 2010). Nevertheless, I argue that Schlosberg & Carruthers' (2010) observation that movement groups articulate their concerns from a community perspective holds true for Indigenous communities in the present case of lithium mining conflicts as well. This is visible in instruments like the Kachi Yupi or coalitions like the CPA. For this reason, I will move beyond a discussion of individual capabilities to incorporate the collective realm.

(1) Life	Being able to live a life of normal length.
<b>(2) Bodily health</b>	Being able to have good health.
(3) Bodily integrity	Being able to move freely; free from assault and sexual violence; sexual satisfaction; reproductive choice.
<b>(4) Senses, imagination, and thought</b>	Imagine, think, reason informed by adequate education; freedom of religion and expression; avoid non-necessary pain.
(5) Emotions	Attachments to things and people outside ourselves; experience and express emotions; avoid emotional trauma, abuse or neglect.
(6) Practical reason	Ability to form a conception of the good; critical reflection about life; liberty of conscience.
<b>(7) Affiliation</b>	(A) Live with and toward others, social interaction; empathy and compassion.
	(B) Social bases of self-respect and non-humiliation; being treated as human with equal worth; free from discrimination.
<b>(8) Other species</b>	Ability to live with concern for and in relation to animals, plants, and the world of nature.
(9) Play	Ability to laugh, play, enjoy recreational activities.
<b>(10) Control over one's environment</b>	(A) Political. Effective participation in political choices that govern one's life; free speech and association.
	(B) Material. Holding property and seeking employment on equal basis with others; freedom from unwarranted search and seizure.

Table 1: Nussbaum's list of central human capabilities; adapted from Holland (2021, p. 67), where it was adapted from Nussbaum (2006, pp. 76–78).

#### **VI.4.1 Environmental Impacts**

Beginning with Nussbaum's individual capabilities, the concerns around human health impacts (Capability 2) due to environmental contamination are largely speculative at this point, as laid out in chapter V. Nevertheless, they cannot be neglected either, as reports of the increase in pulverous particles can at least logically be connected to evaporation pools exposed to strong winds, etc. Future studies will have to investigate this connection further, as potential health effects are currently poorly understood (Agusdinata et al., 2018).

A clearer connection can be established between the environmental impacts caused by lithium mining and Nussbaum's capability 8, i.e. the ability to live with concern for and in relation to animals, plants, and the world of nature. The environmentally destructive character of lithium mining has been laid out above, posing a clear restriction to this capability. Interestingly, it bears considerable resemblance to Indigenous visions of living in harmony with the non-human world manifested by the notion of *buen vivir* (Rodriguez, 2021). Finally, the disproportionate bearing of environmental harms has direct consequences for the ecological conditions that function as a predecessor for other actors' capabilities (Holland, 2021).

#### **VI.4.2 Economic & Sociocultural Impacts**

In chapter V, the political activity of firms in communities has been addressed. This tinkering with local political organization arguably affects the equitable participation in political decisions with a direct impact on one's life, as envisioned by capability 10A. Moreover, the cultural significance of water and the respective salaries in general, threatened by the loss of both caused again by environmental destruction, infringes on the free expression of cultural beliefs (capability 4).

Nevertheless, as repeatedly stressed in interviews with community members and experts from Chile, agreements reached with companies have also had positive impacts that can be linked to Nussbaum's capabilities, and thus contribute to well-being. Education plays a central role in capability 4; educational opportunities have also featured prominently in CSR efforts by companies, both in Chile (Interviewees 2, 4) and Argentina (Marchegiani et al., 2019). Moreover, monetary funds obtained through company agreements have facilitated travel and fostered cross-border connections between triangle communities, a form of social interaction previously not feasible (capability 7A).

### **VI.4.3 Human Rights Concerns**

Procedural injustices, which I have linked to the failure to comply with international and domestic standards stipulated by a number of human rights instruments, directly affect political capabilities (Holland, 2021). Capability 10 concerns control over one's environment, which also entails the effective participation in political decisions that have a direct effect on one's life. Such participation has been at times insufficient, as in the Argentine case of Olaroz, and other times completely lacking, exemplified in the case of Salinas Grandes or the Bolivian communities. While it is not possible to make a comprehensive assessment of lithium mining operations in the triangle in this regard, the cases observed in this study have pointed to an overwhelming lack of respect for individual and group *political* capabilities, both by public and private actors.

### **VI.4.4 Discussing Community Capabilities**

Environmental injustices against Indigenous communities have been articulated as conditions that restrict or completely remove community abilities to function fully; such conditions include undermining health, destroying economic and cultural livelihoods, or present general environmental threats (Schlosberg & Carruthers, 2010, p. 18). In this way, the struggle of Indigenous communities in the lithium triangle is similar to what we have seen from Mapuche communities in central Chile (ibid.). It is less tied to the specific mineral that is being exploited, instead exposing structural factors that have occurred repeatedly in community-company conflicts throughout the Latin American continent, if not the world. The struggle against environmental destruction and access to participatory rights plays a central role, as laid out by the previous sections. Nevertheless, it is symbolic of a deeper conflict of worldviews, a conflict against the dominant rationale, which is seen as devaluing the environment. This rationale transcends political systems, exemplified by the central role of lithium mining both in neoliberal Chile and neo-socialist Bolivia. Against this backdrop, the struggle of Indigenous communities in the lithium triangle, driven by past experiences, is also a struggle for the survival of traditional economies, the preservation of language, culture, and religion, and a respect for sacred sites. Combined, these factors build the basis of community capabilities as argued by Schlosberg & Carruthers (2010), and are essential to the defense of the cultural connection that local Indigenous communities have with their territory.



## **VI.5 Decolonial & Indigenous Environmental Justice**

### **VI.5.1 Justification & Applicability**

The decolonial and Indigenous streams of EJ thinking can be regarded as a direct critical response to the conventional approaches used above. In this light, two issues need to be addressed before this section will attempt to apply a decolonial perspective to the conflicts surrounding lithium mining in the triangle states. For one, there is an inherent danger when applying Western notions of justice to cases set in the Global South (Álvarez & Coolsaet, 2020). Directly imposing a Western understanding of justice to an Indigenous context constitutes *coloniality of justice*, running danger of misrecognizing other forms of life and completely disregarding local perceptions of justice (ibid.). In consequence, scholars have pointed to the erroneous use of Schlosberg's framework to non-Western cases (ibid.). As expressed by Escobar (2020, p. 70), it is therefore instrumental to step out of the epistemic space of Western social theory and into the epistemic configurations of relational understandings in order to grasp conflicts in Indigenous contexts.

The second point extends throughout this entire thesis, namely that cases are heterogeneous, and so is the make-up of different communities, with *Indigenous peoples* from a wide variety of backgrounds like Quechua, Atacameño, Aymara, Koalla and Wichi peoples. While such “linguistic reductionism” (CEDLA, 2014, p. 41) when speaking of the diversity of Indigenous peoples is certainly not the intention of this thesis, it is argued that a Latin American decolonial EJ perspective is nonetheless applicable across examined cases. Much of decolonial argumentation is based on relational ways of living, ontologies that are in fact shared by Indigenous populations from diverse geographical backgrounds, such as Sámi, Potawatomi and Quechua peoples (Whyte, 2021). Likewise, Andean concepts like *Buen Vivir* and the *Pachamama* have been used in mobilizations across regional contexts in the triangle states, implying an “Indigenous paradigm” to lithium mining resistance (Abelvik-Lawson, 2019, p. 200). Directly tied to the issue regarding non-Western notions of justice, this Indigenous paradigm again calls for a different perspective. Consequently, environmental conflicts in the “Lithium Triangle” can be understood as ontological conflicts (Escobar, 2020).

### **VI.5.2 Opposition to dominant rationale**

In addition to the problems laid out in chapters V and VI until now, there are further issues commonly brought against lithium mining in the triangle states. The first is not confined to a decolonial perspective, but nevertheless important as it underlines the fundamental questioning of extractivism.

Here, I am referring to the serious doubts as to whether lithium mining can constitute a long-term source of income for local communities. In the spatially conceptualized understanding of time of Aymara people and other peoples in the area, a common saying proclaims that the past is in front of oneself (Núñez & Sweetser, 2006). In turn, the future is in the past, meaning that one has to look into the past to see what the future holds (Interviewee 2, 6). During a webinar I attended in late March, an Indigenous journalist from San Pedro de Atacama began his presentation by showing upwards of 15 photographs of abandoned mines in the area, a reminder of how past mining booms played out (Ramos, 2021). A telling example in this regard is that of sodium nitrate, a mineral almost exclusively mined in the Atacama Desert from around 1830 to the mid 1920s, when German chemists invented the Haber-Ostwald process, making industrial-scale synthetization possible and the Chilean mines entirely obsolete (Barnum, 2003).

Furthermore, decolonial critiques of extractivism and the green discourse of global climate change mitigation lament that green capitalism, in which the wide-scale adoption of EVs plays a central role, can only mitigate the negative environmental impacts to a certain extent, but never be fully sustainable or halt the ongoing devastation (Escobar, 2020). Consequently, a continued reliance on modernizing efforts is deemed “ecocidal” (ibid., p. 45), with decolonial EJ constituting an affront to the rationale of modernity (Rodriguez, 2021). Though functioning under a green rationale, lithium mining is based on kinship disruption, due to its environmentally destructive nature. Adopting a relational ontological perspective in which the Earth is regarded as alive and imbued with spirit (McGregor et al., 2020), a concept like environmental distribution is simply incompatible with Indigenous modes of life (Álvarez & Coolsaet, 2020). Specifically in the triangle region, Indigenous communities practice water work and ritual, expressing their rights and responsibilities to the Earth and water as beings (Babidge & Bolados, 2018). In consequence, relying on international frameworks that seek monetary compensation for environmental pollution is deemed irrational from an Indigenous perspective (ibid.).

### **VI.5.3 Coloniality of Power, Knowledge, and the Self**

Decolonial scholars argue that the persistence of *coloniality* (see chapter III) creates structural oppression over marginalized sectors of society through a matrix operating at three levels: political and economic power, knowledge, and the self (Rodriguez, 2021).

Coloniality of power can become visible in different ways, from the dominant definitions of development, as well as the use of Western institutional forms of power in non-Western contexts

(ibid.). This is evident in the case of lithium mining through the undisputed understanding of economic development based on extractivism across the political spectrum, and the normative frames in which community members seek compliance with their rights. Chile has a history of prosecuting Indigenous activists fighting for the preservation of their territories under the “Terrorism Act”, a clear misuse as these acts are not internationally considered as terrorism (Bialostozky, 2007). While this has not yet happened in the case of lithium mining, it is symbolic of the power struggle of Indigenous communities and viewed as confronting the dominant colonial logic (Interviewee 6).

The colonality of knowledges is essentially a further manifestation of power imbalances, apparent in the dominance of Western knowledge over that created by Indigenous peoples. This is visible both on the macro scale, as Indigenous voices are seldomly included in global sustainability efforts (Yap & Watene, 2019), and locally, where the spiritual value of salars in Indigenous cosmovision has been subordinated to developmental visions based around resource extraction (Interviewee 1).

Finally, the subjective dimension has been stressed by decolonial scholars, as extractivism is said to have direct impacts on the bodies and daily relations in communities (Álvarez & Coolsaet, 2020). The sociocultural impacts have been laid out in chapter V, arguably affecting the way in which Indigenous peoples think in relation to their land (ibid.). If this dimension is not considered in EJ studies in Indigenous contexts, Álvarez & Coolsaet argue that the patterns of oppression are reproduced through the desires of those who are oppressed (2020). This colonization of the self and its needs is considered a direct consequence of the sociocultural and economic impacts that extractive projects have had on the individual level (Interviewee 6). Moreover, it is argued to lead to the obliteration of local histories and identities, and ultimately to a loss of cultural diversity (Rodriguez, 2021).

#### **VI.5.4 Decolonizing Lithium?**

Against this backdrop, McGregor et al. argue that environmental injustices experienced by Indigenous peoples are inevitably tied to the ongoing process of colonialism, and for an understanding of the ecological crisis as an intensification of colonialism (2020). The territorial struggle is imagined as a struggle against ontological occupation, wherein Indigenous communities are fighting for their existence in accordance with traditional values and a relational mode of life (Escobar, 2020). Tackling environmental injustices from an Indigenous perspective must necessarily entail the reestablishment of relationships of reciprocity with the non-human world (Whyte, 2021), as the territory, a collective space for existence, becomes the subject of care as opposed to an object of development (Escobar,

2020). Speaking of decolonization in the context of lithium mining, and its interplay between state, firm, and community, is difficult to say the least.

While interviews conducted for this thesis were not as numerous as initially hoped, one question that I asked regardless of interviewee background was whether they see a possibility to take advantage of this natural resource endowment for economic development built around the preservation and empowerment of local Indigenous communities, thereby enabling a life in accordance with local values. The answers given were either in accordance with resource exploitation and the subsequent distribution of benefits (Interviewees 2, 3, 5), or that this would not be possible (Interviewees 4, 6, 7). The inherent contradiction in this question later became obvious to myself when reading Escobar (2020), who continuously stressed two quotes. The first, attributed to Albert Einstein, states that we cannot resolve the problems of one era using the same mental frame that created it. The second, by Portuguese sociologist Boaventura de Sousa Santos (2012), suggests that we have modern problems for which there are no modern solutions. Returning to the question asked, it becomes obvious that decolonial thinking requires stepping out of the epistemic space from which this question originated, and transitioning to a *nondevelopmentalist* model to enable thinking of valid alternatives that can be in tune with the Earth and cosmovisions of communities (Escobar, 2020, p. 131). One such alternative, which has gained traction among decolonial scholars, is that of degrowth.

### VI.5.5 Decolonization & Degrowth

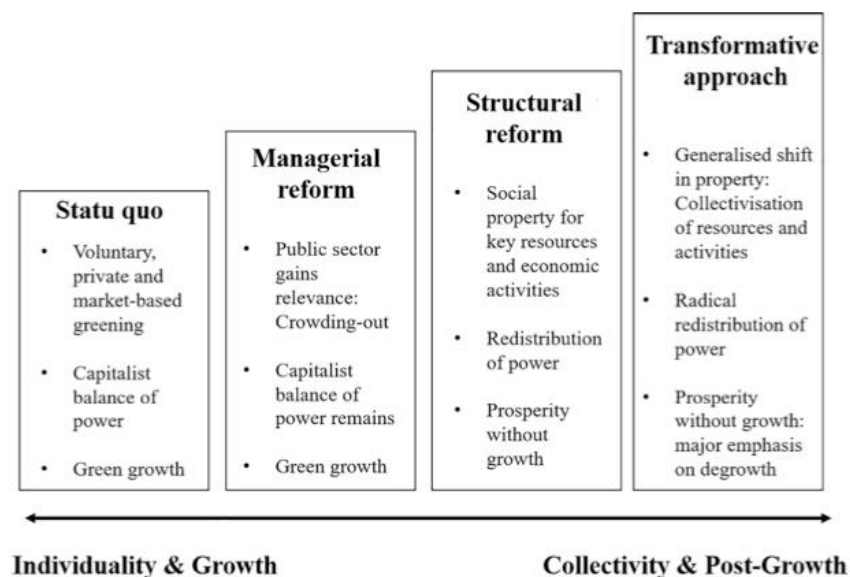


Figure 7: Different approaches to a "just transition" (Source: García-García et al., 2020)

Initially a provocative slogan, degrowth has become a concept debated in academic circles. It challenges the hegemony of growth, and calls for a redistributive downscaling of production and consumption to achieve environmental sustainability, social justice and well-being (Gerber et al., 2021). As illustrated by Fig. 7, these propositions situate the concept at the radical end of just transition approaches. Degrowth and environmental justice exhibit a number of similarities, both calling for a modification of the social metabolism (Martinez-Alier, 2016) to attain ecological sustainability. While EJ studies, like this one, have increasingly focused on conflicts in the Global South, degrowth puts the emphasis on the Global North (Gerber et al., 2021). Regarding the contemporary developmental vision based on economic growth, one interviewee expressed their doubts:

*[...] it is this equality that we need, because the equality that occidental [development] offers us will never reach us. Because the planet simply does not allow it. [...] For everyone to live like in the European Union, we would need nine planets. Therefore, what you [the Global North] have been offering us is a big lie. (Interviewee 6)*

Here, the interviewee is referring to the so-called impossibility theorem, which enunciates that a Western-style mass consumption economy for the world is neither possible nor desirable, as current technologies and institutions would not allow for an economy of current scales based on renewable energy alone (Gerber et al., 2021). It is inferred then that a low-carbon transition will inevitably have to be a degrowth transition if environmental sustainability is to be attained (ibid.). However, debates around degrowth have not been able to generate a larger-scale movement like that surrounding EJ, which can at least partly be attributed to uncertainty of how the idea would pan out in practice. For Escobar, degrowth does not mean “going back to the stone age”, but saying no for the sake of survival on a path towards ecological destruction (2020, p. 111). Cattaneo and Gavaldá have warned against a limited understanding of degrowth, focusing only on a reduction in material and energy consumption and production. Instead, they see degrowth as fundamentally a democratizing political project, a collective choice for a “good life” (2010; Gerber et al., 2021). Here, degrowth, much like decolonization, calls for autonomous decision-making on the community level. Concretely, degrowth would imply a greater emphasis on collective and communal solutions, as opposed to EVs based on an individualistic rationale. Additionally, resources need to be used more efficiently, with greater emphasis on recycling and reuse, in the development of a circular economy.

## VI.5.6 Outcome

In conclusion, the apparent incompatibility between extractivist lithium mining and decolonial, Indigenous notions of EJ offers little perspective for a scenario in which the large-scale adoption of EVs under current technological circumstances is doable if we simultaneously want to grant local epistemologies equal power. While UNDRIP and other HR instruments, which are currently guiding firm and state conduct with respect to Indigenous communities, are grounded in Western epistemological origins, Indigenous peoples have offered their vision of *Buen Vivir* as an alternative to development (McGregor et al., 2020). The concept displaces the centrality of humans with a relational perspective, and refrains from giving overriding importance to the economy (Escobar, 2020; McGregor et al., 2020). While the Bolivian case provides an example of how the idea can be coopted by a “progressive” government (Escobar, 2020), the use of *Buen Vivir* in the Kachi Yupi arguably implies an Indigenous imaginary where a coexistence between firms and communities is possible, so long as this coexistence is primarily grounded in communitarian principles compatible with *Buen Vivir*. By retelling their peoples’ history of oppression, the 33 communities express how any solution would have to break with the societal power structures in the form of persisting coloniality and grant Indigenous peoples unrestricted access to their rights. Similarly, the principle of “differentiated responsibilities” proclaims that strategies need to be constructed by and with communities most heavily bearing the environmental burdens (Álvarez & Coolsaet, 2020). It is here that this case forces us to further acknowledge the difficulty in achieving this objective under industrial, extractivist and developmentalist rationales, pointing to the need to seriously rethink how tomorrow’s societies are to be constructed. Latin American decolonial EJ argues for the idea of a “pluriverse”, in which a politics of difference goes beyond recognition or inclusion in the dominant world system, and is instead aimed at the construction of *otherness*, allowing a life in accordance with own values (Rodriguez, 2021). The case of lithium exemplifies how such a project is directly tied to the mineral reliance of societies in Europe, North America, and Asia, effectively shifting agency for enabling decolonization towards the Global North.

## **Chapter VII: Conclusions**

### **VII.1 Summary & Conclusion**

In the “Lithium Triangle”, externalities of the global low-carbon transition become tangible and visible in everyday life, felt by already marginalized sectors of society. Lithium plays a central role in current climate change mitigation efforts, with demand projected to soar in coming years. While there appears to be a strong consensus on the environmental benefits of a large-scale EV adoption in the Global North, the proceedings in the triangle states raise serious doubts about lithium mining’s environmental and social sustainability. Despite the fact that lithium is often communicated as an economic opportunity for an “underdeveloped” region, the past years have seen increasing social mobilization against mining projects by local Indigenous communities. As such, the case triggers uncomfortable memories of the historic exploitation and marginalization of Indigenous peoples in Latin America, underlining the need for close scrutiny. Against this background, this thesis set out to study the impacts of lithium mining in terms of environmental injustices, incorporating specific Latin American, Indigenous conceptualizations of the concept along with the more conventional four tenets. A case study founded on a combination of critical realist and social constructionist ontological assumptions, I examined mining projects across three countries (Bolivia, Chile & Argentina) and four salars (Uyuni, Atacama, Olaroz-Cauchari & Salinas Grandes). The particular theoretical framework and philosophical stance were chosen to gain a deeper understanding of local actors’ subjective realities as well as underlying structural mechanisms. Utilizing both primary and secondary data collection methods, lithium mining projects in the area were found to impact local Indigenous communities primarily in four ways: environmental degradation, economic effects, socio-cultural impacts and human rights concerns.

Based on a synthetization of these broad impacts by means of an assessment model specifically designed for this study, RQ1 can be answered as follows. **Distributional** injustices are triggered by lithium mining projects primarily in two ways. For one, environmental deterioration is disproportionately felt by local Indigenous communities. These impacts are generally more pressing where mining operations are more advanced, meaning the Chilean Salar de Atacama and Argentine Olaroz-Cauchari. Secondly, economic benefits affect the distributive realm through direct transfers arising from company-community agreements, employment opportunities, and the stimulation of other industries. While rather miniscule when compared to profits made in global lithium trade, the

Chilean and Argentine communities have seen the most beneficial economic benefits, albeit with large differences among cases. Regarding **procedural** and **recognitional** justice, not one case examined could be deemed satisfactory in terms of FPIC as stipulated by international as well as national legislation. In Bolivia, despite having the most progressive legal framework in terms of Indigenous rights, there have been no proper consultations about lithium exploitation. Moreover, serious shortcomings have been observed across the remainder of cases, pointing to a general difficulty of Indigenous communities to access their rights, a clear obligation of the state, in all three country contexts. Finally, the mentioned impacts were assessed in terms of their impacts on community **capabilities**, proving to restrict community abilities to function fully, threatening place-based cultural ties, and uncovering deeper conflicts of competing worldviews.

With RQ2, I set out to offer a decolonial perspective on lithium mining projects in the triangle region. The idea of decolonization is incredibly complex insofar as the level of abstraction could be chosen quite arbitrarily (Interviewee 7). For one, the environmentally polluting nature of contemporary lithium mining can be seen as incompatible with reciprocal kinship relationships as proclaimed by Indigenous EJ. Moreover, such relationships make relying on redistributive measures in the wake of environmental destruction completely irrational from an Indigenous perspective. It gets more complicated the further the concept is applied. For instance, one could consider the struggle for Indigenous rights to FPIC and land titles itself a further expansion and acceptance of Western epistemologies and notions of justice. While this is a different discussion, this study has shown that the low-carbon transition in transport as currently imagined is not compatible with a decolonial perspective, precisely because *plurality* would entail allowing for *other* rationalities, conceptions of value, and ways of living unviable in a globalized, developmentalist and modernizing economic system. As such, decolonization fundamentally criticizes the current global economic rationale. At the same time, Indigenous peoples in Latin America have offered alternatives, which in turn challenge *us* to reconsider how we envision the low-carbon transition to materialize.

In conclusion, this study has shown that mining in the “Lithium Triangle” entails environmental injustices against the Indigenous communities living in proximity to and affected by extractive projects. These injustices are directly tied to structural violence, manifested by the inability of Indigenous peoples to access their rights. While the above paints a rather bleak picture, there is also a growing dialogue about these injustices, and a dynamic debate on how to resolve them. Such solutions are inextricably tied to the subjective perspective of who proposes them, and the adopted



understanding of environmental justice. Nevertheless, I will present my personal implications further down.

## **VII.2 Limitations**

A potential weakness of this study is that by attempting to arrive at an overall assessment in terms of EJ, it is unable to provide detailed accounts of each individual case in the triangle states, opting for a certain degree of generalizability instead of depth. This is complicated by the heterogeneity of cases covered in this thesis. Furthermore, I have alluded to the difficulties in conducting fieldwork due to Covid-19 in the methodology chapter, leading to a potential weakness of obtained data, as the sample size for primary data collection remained rather small. Triangulation was used rigorously in order to combat this shortcoming in addition to attending webinars that featured local actors. A further issue regarding data quality is echoed by Carruthers' note of the relative scarcity of scientific data in Latin America (2008b). Likewise, large-scale lithium mining and the surrounding concerns are relatively recent phenomena, which means that the diverse impacts have not been studied as extensively. Here, access to a greater pool of knowledge from both environmental and ethnographic studies would have been beneficial. While I have justified my theoretical and methodological choices in the relevant chapters, a different approach could have led to different conclusions. For instance, a framework based on climate justice would have offered a further justice dimension by drawing on the concept of international and intergenerational responsibilities, both highly applicable to this case. On the other hand, a positivist methodology may offer more actionable conclusions. Finally, the current institutional circumstances, especially in the case of Chile, also pose a potential limitation in terms of future relevance. With Indigenous representatives having been granted participation rights in the rewriting of Chile's constitution, we may see swift changes in regard to Indigenous rights, consultation procedures and environmental protection.

## **VII.3 Implications & Recommendations**

This section will lay out implications for different stakeholder groups. As discussed during an interview (7), it is proposed to imagine the following as a set of in principle separate initiatives that become **complementary** when taken together.

For **researchers**, there is a clear need to further study the different impacts of lithium exploitation in the triangle region. Overarchingly, such research has to be both diverse in background and inclusive in recognizing different forms of knowledge, as demanded by cognitive justice (Visvanathan, 2009).

Liu et al. (2019) have delivered an important study on environmental impacts on the Salar de Atacama, but future research must expand to other salars as well. Unbiased environmental studies can be of great value in these contexts, potentially providing Indigenous communities outside of academia with valuable information. Mistrust between communities and firms is high, and state actors may have neither the means nor the motivation to undertake comprehensive impact assessments. Likewise, with calls for green lithium becoming louder (Barros & Grant, 2020), direct lithium extraction (DLE) technologies must be further researched and developed, so that they become viable for large-scale adoption and can successfully replace the current water-intensive evaporation method. Even more scarce, the social and cultural ramifications of mining projects need to be closely investigated. While I have tried to cover all of these elements, the number of original studies I could rely on were rather few. The main contribution of this thesis is thus an application of EJ to a novel case, that of the “Lithium Triangle”. To the best of my knowledge, this study is the first to attempt a perspective on lithium mining built specifically on decolonial EJ. While I can contribute to a growing research agenda on the social implications of lithium mining in South America, much work remains to be done. Here, I would like to put particular emphasis on research coming from the Global South. I am aware of the somewhat antithetic notion of a European graduate student offering a perspective based on decolonization and Indigenous epistemologies, and wish to invite research from Indigenous scholars as a response to my likely shortcomings.

For the **international community**, the findings of this thesis offer substantial criticism on the current approach to the mobility transition. The large-scale adoption of EVs will affect several SDGs (see e.g. Persson & Öman, 2018). Lithium mining projects, in turn, could foster economic growth, access to education, and the development of local infrastructure, (indirectly) contributing to the realization of SDGs 1, 2, 4, 8 and 9. However, the dangers of building an economy around a single resource puts the sustainability of these achievements in doubt. Furthermore, this thesis showed serious shortcomings in the compliance with and enforcement of international human rights, pointing to difficulties in reaching SDG 16 (United Nations, n.d.-c). As discussed, assessments stemming from a non-Western epistemic origin do not paint a more favorable picture. I argue that these findings urge the international community to reconsider the current consensus on the mobility transition. Much of the issues faced in the “Lithium Triangle” are due to the *extent* of lithium mining, which is currently only in a very early stage. Therefore, a mobility transition must necessarily put greater emphasis on other modes of transport, e.g. the large-scale construction of bicycle infrastructure and substantial investments to improve local public transport. As shown in this thesis, transitioning to one-passenger

EVs is neither environmentally nor socially sustainable. As public transport will also rely more heavily on electrification in the future, there is a clear need to define global sustainability standards, and develop certificates for sustainably sourced lithium. Initiatives like e.g. IRMA (IRMA, n.d.) are moving in this direction, but much work and acceptance is still needed.

To discuss implications for **practitioners** in firms, one first has to decide on a perspective. As mentioned repeatedly, the decolonial perspective questions the economic rationale behind lithium extraction, and a plurality as envisioned by the movement also questions how growth, and firms themselves, work today. Some mining firms engage extensively in fostering positive community relationships, with a strong conviction to shape mining operations in accordance with community preferences (Interviewee 7). Nevertheless, these firms still function under a logic of growth, which puts a clear limit on possible alternatives. However, decolonization is not the only perspective taken in this thesis, and it should be in firms' best interest to work to alleviate the issues brought forth by this study, as e.g. properly addressing human rights issues can prevent reputational and legal harm that almost certainly translates to financial losses (Buhmann & Wettstein, 2017). A telling example in this regard is the case of the 33 communities of *Salinas Grandes y Laguna de Guayatayoc*, and the social movement against lithium firms that emerged after a disregard for consultation rights, ultimately resulting in the halting of explorations. Even in contexts of weak enforcement, firms have to be practice leaders to avoid conflicts; the good news is that there are instruments that businesses can rely on. Besides the legal framework discussed in chapter II, guiding instruments coming out of the business and human rights regime, such as the UN Framework and Guiding Principles, can help firms in developing best practices and responsible leadership. Concretely, companies must implement proper human rights due diligence processes, as well as operational level grievance mechanisms. As expressed by principle 19 of the UNGPs, leverage should be exercised when possible (UNOHCHR, 2011). Here, one can imagine the power that a coalition of large auto manufacturers could have on industry-wide standards in the lithium supply chain (Deutschlandfunk, 2019). Finally, firms would be well-advised to collaborate with research institutions, funding the development of cleaner extraction methods like DLE, thereby taking the proactive route to preventing environmental conflicts.

Similar to firms, practitioners in the public sector must nurture this development of cleaner extraction technologies, as well as actively respond to and prevent human rights violations. Among the triangle states, Chile has published a NAP in 2017, while Argentina has committed to developing one. This

apparent commitment to promote human rights on paper must be followed up by stronger enforcement in practice. In Chile, the country's Ministry of Energy has published a guide on firm-community dialogue for energy projects, which has fostered acceptance and improved relationships (Interviewee 3; Ministerio de Energía, 2015). A similar approach may prove fruitful in the case of mining.

In terms of **civil society**, the end-consumer arguably has almost no power. The issues we are facing are of a structural nature (Interviewee 7), and a change in individual consumer behavior will neither alleviate these nor put a sizeable dent in global demand. Political activism, on the other hand, may offer genuine alternatives. In Europe, we are seeing social movements like "Fridays for Future" or "Extinction Rebellion", which fundamentally challenge the rationale that the current low-carbon transition is built on (Interviewee 6), and thereby constitute a counterpart to Indigenous mobilization in e.g. Salinas Grandes. As discussed in regard to degrowth, any potential avenue for decolonization in the Global South is inextricably tied to the Global North's mineral reliance. In this sense, we must seriously discuss and consider other alternatives in the mainstream.

For directly affected communities in the lithium triangle, the findings of this thesis provide a further way to communicate the faced injustices in terms of the internationally recognized EJ movement. For concrete actions, the most viable strategy may be continued political activism to make their voices heard. Specifically in regard to human rights violations, the 2011 annex to the OECD investment agreement aligned OECD Guidelines to the UN Guiding Principles. Consequently, OECD NCPs (National Contact Points) act as de facto accountability institutions for business conduct in regard to the UNGPs, offering state-based remedy where national judicial remedies often do not reach (Buhmann, 2020). While only Chile is a member of the OECD, both Chile and Argentina have an NCP. Thus, grievance to OECD NCPs may be a viable strategy in situations where state actors leave a vacuum, as observed in the Argentine case. The public nature of lithium mining in Bolivia, however, may seriously hamper this possibility. Another opportunity is identified in Chile's upcoming rewriting of the national constitution, simultaneously a testament to the leverage that continued political activism can have.

## **Appendices**

### **Appendix I: Overview of Interviews**

Interviewee	Background	Country	Date	Length	Method
I <sub>1</sub>	Expert and activist on Indigenous affairs	Bolivia	December 4 <sup>th</sup> , 2020	40 Minutes	Zoom
I <sub>2</sub>	Expert, litigation lawyer for affected communities	Chile	December 13 <sup>th</sup> , 2020	60 Minutes	Zoom
I <sub>3</sub>	Ministry of Energy, Community participation	Chile	December 15 <sup>th</sup> , 2020	45 Minutes	Zoom
I <sub>4</sub>	Community member	Chile	February 3 <sup>rd</sup> , 2021	15 Minutes	Phone call (WhatsApp)
I <sub>5</sub>	Economist, Mining researcher	Bolivia	February 26 <sup>th</sup> , 2021	35 Minutes	Zoom
I <sub>6</sub>	Professor, De-colonization of Knowledge	Chile	March 19 <sup>th</sup> , 2021	50 Minutes	Zoom
I <sub>7</sub>	Post-doc Researcher, Lithium Mining	Austria	April 15 <sup>th</sup> , 2021	40 Minutes	Zoom

## Appendix II: Overview of Webinars

Organizer(s)	Title	Date	Speakers	Speaker Background
<i>Mining Watch</i> <i>Canada;</i> <i>Earthworks</i>	<i>The Future of</i> <i>Bolivia's Lithium</i>	December 9 <sup>th</sup> , 2020	Thea Riofrancos Pablo Poveda Juan Carlos Zuleta	Academic, Providence College Bolivian mining economics researcher Lithium Economy Analyst, former manager of YLB
<i>OPSAL;</i> <i>Fundación</i> <i>Tanti; Heinrich</i> <i>Böll Stiftung;</i> <i>FARN;</i> <i>Earthworks;</i> <i>Mining Watch</i> <i>Canada</i>	<i>El agua vale más</i> <i>que el litio</i>	December 17 <sup>th</sup> , 2020	Ramón Balcázar Christian Espíndola Clemente Flores Elena Rivera Cardozo Evelyn Vallejos Melisa Argento Ingrid Garcés Jorge Muñoz Coca Pía Marchegiani Vivian Lagrava	Activist, OPSAL (Chile) Community member, Toconao (Chile) Community member, Salinas Grandes (Argentina) Indigenous activist (Chile) PUCARA (Argentina) Grupo Bienes Comunes (Argentina) University of Antofagasta (Chile) Community member (Chile) FARN (Argentina) HR Activist (Bolivia)
<i>Colectivo</i> <i>GeoComunes;</i> <i>REMA; Mining</i> <i>Watch Canada</i>	<i>El litio: la nueva</i> <i>disputa</i> <i>commercial</i> <i>dinamizada por</i> <i>el falso mercado</i> <i>verde</i>	February 5 <sup>th</sup> , 2021	Yannick Deniau Clemente Flores Juan Carlos Ruiz Guadalajara	Colectivo Geocomunes (Mexico) Community member, Salinas Grandes (Argentina) Professor, researcher (Mexico)
<i>Latin America is</i> <i>Moving</i> <i>Collective</i>	<i>Extractivism &amp;</i> <i>Performance</i> <i>Activism</i>	February 18 <sup>th</sup> , 2021	Tom Gatehouse Sue Branford Camila Gonzales Ortiz Louise Morris	Editor, Researcher, Latin America Bureau (LAB) (UK) LAB (UK) Academic, University of Reading LAB (UK)

<i>Movimiento Independientes del Norte</i>	<i>Desde el Salar de Atacama a una Nueva Constitución</i>	February 25 <sup>th</sup> , 2021	Cristina Dorador	Biochemist, Constitutional Candidate (Chile)
			Rudecindo Espíndola	Constitutional Candidate (Chile)
			Ramón Bálcazar	Activist, OPSAL (Chile)
			Sergio Cubillos	Atacameño community representative (Chile)
			Ingrid Garcés	Academic, University of Antofagasta (Chile)
<i>Mundos de Litio</i>	<i>Diálogos de Litio: S.O.S. tenibilidad y Extractivismo en el desierto de Atacama</i>	March 26 <sup>th</sup> , 2021	Cristina Dorador	Biochemist, Constitutional Candidate (Chile)
			Barbara Göbel	Ibero-Amerikanisches Institut (Germany)
			Hugo Romero	Academic, Department of Geography, Universidad de Chile (Chile)
			Gerardo Ramos	Journalist, Revista Chululo (Chile)

## **References**

- Abelvik-Lawson, H. (2019). *Indigenous Environmental Rights, Participation and Lithium Mining in Argentina and Bolivia: A Socio-Legal Analysis* (Issue May) [University of Essex]. <http://repository.essex.ac.uk/id/eprint/25797>
- Agusdinata, D. B., Liu, W., Eakin, H., & Romero, H. (2018). Socio-environmental impacts of lithium mineral extraction: Towards a research agenda. *Environmental Research Letters*, 13(12). <https://doi.org/10.1088/1748-9326/aae9b1>
- Ahmad, S. (2020). The Lithium Triangle: Where Chile, Argentina, and Bolivia meet. *Harvard International Review*, 3.
- Albemarle. (2014). *Albemarle Acquisition of Rockwood A Compelling Combination to Accelerate Albemarle's Growth*. [www.albemarle.com](http://www.albemarle.com),
- Albemarle. (2019). *Albemarle y Consejo de Pueblos Atacameños exponen en Sustainable Mining 2019 Global Specialty Chemicals Company*. Albemarle Chile. <http://www.albemarlelitio.cl/news/albemarle-y-consejo-de-pueblos-atacameos-exponen-en-sustainable-mining-2019>
- Álvarez, L., & Coolsaet, B. (2020). Decolonizing Environmental Justice Studies: A Latin American Perspective. *Capitalism, Nature, Socialism*, 31(2), 50–69. <https://doi.org/10.1080/10455752.2018.1558272>
- Babidge, S., & Bolados, P. (2018). Neoextractivism and Indigenous Water Ritual in Salar de Atacama, Chile. *Latin American Perspectives*, 45(5), 170–185. <https://doi.org/10.1177/0094582X18782673>
- Balcázar, R. (2021). *Desde el Salar de Atacama hacia una Nueva Constitución*. Desde El Salar de Atacama Hacia Una Nueva Constitución [Webinar]. <https://www.youtube.com/watch?v=U1C5kKu1Jmk>
- Balch, O. (2020). The curse of “white oil”: electric vehicles’ dirty secret. *The Guardian*. <https://www.theguardian.com/news/2020/dec/08/the-curse-of-white-oil-electric-vehicles-dirty-secret-lithium>
- Barandiarán, J. (2019). Lithium and development imaginaries in Chile, Argentina and Bolivia. *World Development*, 113, 381–391. <https://doi.org/10.1016/j.worlddev.2018.09.019>
- Barelli, M. (2012). Free, prior and informed consent in the aftermath of the UN declaration on the rights of indigenous peoples: Developments and challenges ahead. *International Journal of Human Rights*, 16(1), 1–24. <https://doi.org/10.1080/13642987.2011.597746>
- Barney, J. (2021). *Energías renovables en Colombia: no todo lo que brilla es oro — Debates Indígenas*. Debates Indígenas. <https://debatesindigenas.org/notas/86-energias-renovables-colombia.html>
- Barnum, D. W. (2003). Some History of Nitrates. *Journal of Chemical Education*, 80(12), 1393. <https://doi.org/10.1021/ed080p1393>
- Barros, A. (1997). Pachamama y desarrollo: paisajes conflictivos en el Desierto de Atacama. *Estudios Atacameños. Arqueología y Antropología Surandinas.*, 13, 75–94. <https://doi.org/10.22199/s07181043.1997.0013.00006>
- Barros, A., & Grant, A. (2020, December 13). The drive for greener cars must be matched by cleaner lithium. *Financial Times*, 1–4. <https://www.ft.com/content/3a63d67b-2689-4b81-9035-29ff3e75505e>



- BHRRRC. (2020). *Human Rights in the Mineral Supply Chains of Electric Vehicles*. Business & Human Rights Resource Centre. <https://dispatches.business-humanrights.org/human-rights-in-the-mineral-supply-chains-of-electric-vehicles/index.html>
- Bialostozky, N. (2007). The Misuse of Terrorism Prosecution in Chile: The Need for Discrete Consideration of Minority and Indigenous Group Treatment in Rule of Law Analyses. *Northwestern University Journal of International Human Rights*, 6(1), 81.
- Biernacki, P., & Waldorf, D. (1981). Snowball Sampling: Problems and Techniques of Chain Referral Sampling. *Sociological Methods & Research*, 10(2), 141–163. <https://doi.org/10.1016/B0-12-369398-5/00087-6>
- Bogna, F., Raineri, A., & Dell, G. (2020). Critical realism and constructivism: merging research paradigms for a deeper qualitative study. *Qualitative Research in Organizations and Management: An International Journal*, 15(4), 461–484. <https://doi.org/10.1108/QROM-06-2019-1778>
- Buhmann, K. (2020). National Contact Points under OECD's Guidelines for Multinational Enterprises: Institutional Diversity Affecting Assessments of the Delivery of Access to Remedy. In L. F. H. et al. Enneking (Ed.), *Accountability, International Business Operations and the Law: Providing Justice for Corporate Human Rights Violations in Global Value Chains*. Routledge. <http://dx.doi.org/10.1016/j.neuropsychologia.2016.03.027> <http://dx.doi.org/10.1016/j.mri.2013.04.010> [http://dx.doi.org/10.1162/jocn\\_a\\_00409](http://dx.doi.org/10.1162/jocn_a_00409) [http://www.mitpressjournals.org/doi/abs/10.1162/jocn\\_a\\_00409](http://www.mitpressjournals.org/doi/abs/10.1162/jocn_a_00409) [http://www.med-info.nl/Afwijking\\_OOGHEELKUNDE](http://www.med-info.nl/Afwijking_OOGHEELKUNDE)
- Buhmann, K., & Wettstein, F. (2017). Business and Human Rights: Not Just Another CSR Issue? In *Corporate Social Responsibility*. <https://doi.org/10.1017/9781316335529.024>
- Bustos-Gallardo, B., Bridge, G., & Prieto, M. (2021). Harvesting Lithium: water, brine and the industrial dynamics of production in the Salar de Atacama. *Geoforum*, 119(December 2020), 177–189. <https://doi.org/10.1016/j.geoforum.2021.01.001>
- Carrere, M. (2020). Chile : ¿Qué está en juego en el Salar de Atacama ? *Mongabay*.
- Carruthers, D. (2008a). Environmental Justice in Latin America. In *Environmental Justice in Latin America*. <https://doi.org/10.7551/mitpress/9780262033725.003.0004>
- Carruthers, D. (2008b). Introduction: Popular Environmentalism and Social Justice in latin America. In D. Carruthers (Ed.), *Environmental Justice in Latin America - Problems, Promise, and Practice* (pp. 1–22). The MIT Press.
- Carruthers, D. (2008c). Where Local Meets Global: Environmental Justice on the US-Mexico Border. In D. Carruthers (Ed.), *Environmental Justice in Latin America - Problems, Promise, and Practice* (pp. 137–160). <https://doi.org/10.1089/env.2012.5201>
- Cattaneo, C., & Gavaldà, M. (2010). The experience of rurban squats in Collserola, Barcelona: what kind of degrowth? *Journal of Cleaner Production*, 18(6), 581–589.
- CEDLA. (2014). *Un presente sin futuro. El proyecto de industrialización del litio en Bolivia*.
- CEDLA. (2018). Litio : Cambios en la industria y suspenso en torno a su industrialización en Bolivia. In *Plataforma Energética* (Vol. 18). [http://www.cedla.org/sites/default/files/cdc\\_18\\_esp\\_litio\\_cambios\\_en\\_la\\_industria\\_y\\_suspensio\\_en\\_torno\\_a\\_su\\_industrializacion\\_en\\_bolivia.pdf](http://www.cedla.org/sites/default/files/cdc_18_esp_litio_cambios_en_la_industria_y_suspensio_en_torno_a_su_industrializacion_en_bolivia.pdf)
- CEDLA. (2019). *El litio y la crisis política en Bolivia*.
- Charmaz, K. (2017). The Power of Constructivist Grounded Theory for Critical Inquiry. *Qualitative Inquiry*, 23(1), 34–45. <https://doi.org/10.1177/1077800416657105>

- Chululo. (2015a). SQM y la Comuna: ¿Vecinos y amigos? (III) Las comunidades, los trabajadores y la minería. *Chululo - Revista de San Pedro de Atacama*.
- Chululo. (2015b). SQM y la comuna ¿Vecinos y Amigos? (I) El origen. *Chululo - Revista de San Pedro de Atacama*.
- Cimini, N. (2020). Using theory to study empirical cases: Reflections on using habermas to study genetic and reproductive politics. *Forum: Qualitative Social Research*, 21(3), 1–20. <https://doi.org/10.17169/fqs-21.3.3366>
- Coolsaet, B. (2021). *Environmental Justice: Key Issues*. Routledge.
- Coolsaet, B., & Néron, P.-Y. (2021). Recognition and environmental justice. In B. Coolsaet (Ed.), *Environmental Justice: Key Issues* (pp. 52–63). Routledge.
- Creswell, J. W. (2007). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches* (2nd ed.). Sage Publications.
- Crotty, M. (1998). The Foundations of Social Research. In *The Foundations of Social Research*. Allen and Unwin.
- Daes, E. I. A. (2008). An overview of the history of indigenous peoples: Self-determination and the United Nations. *Cambridge Review of International Affairs*. <https://doi.org/10.1080/09557570701828386>
- Das, U. (2015). Toward methodological precision: Linking qualitative meta-theories and methods to environmental justice research design. *Environmental Justice*, 8(2), 39–46. <https://doi.org/10.1089/env.2014.0027>
- Denzin, N. K. (2017). Critical Qualitative Inquiry. *Qualitative Inquiry*, 23(1), 8–16. <https://doi.org/10.1177/1077800416681864>
- Deutschlandfunk. (2019). *Kehrseite der Energiewende: Lithium-Abbau in Südamerika*. [https://www.deutschlandfunk.de/lithium-abbau-in-suedamerika-kehrseite-der-energiewende.724.de.html?dram:article\\_id=447604](https://www.deutschlandfunk.de/lithium-abbau-in-suedamerika-kehrseite-der-energiewende.724.de.html?dram:article_id=447604)
- Díaz Polanco, H. (1997). *Indigenous Peoples in Latin America, The Quest for Self-Determination*. Westview Press.
- Díez, J., & Rodríguez, R. (2008). Environmental Justice in Mexico: The Peñoles Case. In D. Carruthers (Ed.), *Environmental Justice in Latin America - Problems, Promise, and Practice* (pp. 161–181). The MIT Press.
- Dorn, F. (2020). Electro-Movilidad Y El Triángulo Del Litio (Argentina, Bolivia, Chile): Tendencias Globales en el Marco del Cambio Climático. *Boletín de Estudios Geográficos*, 112, 115–130.
- Dorn, F. (2021). Changing territorialities in the argentine andes: Lithium mining at salar de olaroz-cauchari and salinas grandes. *Erde*, 152(1), 1–17. <https://doi.org/10.12854/erde-2021-515>
- Egbue, O. (2012). Assessment of social impacts of lithium for electric vehicle batteries. *62nd IIE Annual Conference and Expo 2012*, 1314–1320.
- Enriquez, A. D. (2019). Acciones y consecuencias de la explotación del litio en Jujuy . *Tecnología & Sociedad*, 59–76.
- Escobar, A. (2008). *Territories of difference: place, movements, life, redes*. Duke University Press.
- Escobar, A. (2020). *Pluriversal Politics: The Real and the Possible*. Duke University Press.
- Espíndola, R. (2021). *Desde el Salar de Atacama hacia una Nueva Constitución*. Desde El Salar de Atacama Hacia Una Nueva Constitución [Webinar]. <https://www.youtube.com/watch?v=U1C5kKu1Jmk>

- European Commission. (n.d.). *Aarhus Convention - Environment - European Commission*. Retrieved January 26, 2021, from <https://ec.europa.eu/environment/aarhus/>
- Farthing, L., & Fabricant, N. (2018). Introduction, Open Veins Revisited: Charting the Social, Economic, and Political Contours of the New Extractivism in Latin America. *Latin American Perspectives*, 45(5), 4–17. <https://doi.org/10.1177/0094582X18785882>
- Fernández, B. S. (2018). Indigenous Intellectuals in Contemporary Ecuador: Encounters with “Seven Erroneous Theses about Latin America.” *Latin American Perspectives*, 45(2), 190–204. <https://doi.org/10.1177/0094582X17747314>
- Figueroa, R. M. (2011). Indigenous Peoples and Cultural Losses. In J. S. Dryzek, R. B. Norgaard, & D. Schlosberg (Eds.), *The Oxford Handbook of Climate Change and Society* (pp. 232–247). <https://doi.org/10.5860/choice.49-5078>
- Forbes. (2008). *The Saudi Arabia of Lithium*. <https://www.forbes.com/forbes/2008/1124/034.html>
- Fraser, N. (2007). Reframing justice in a globalizing world. *Global Inequality: Patterns and Explanations*, 252–272.
- Galeano, E. (1973). Open Veins of Latin America. In *Monthly Review*. [https://doi.org/10.14452/mr-025-04-1973-08\\_3](https://doi.org/10.14452/mr-025-04-1973-08_3)
- García-García, P., Carpintero, Ó., & Buendía, L. (2020). Just energy transitions to low carbon economies: A review of the concept and its effects on labour and income. *Energy Research and Social Science*, 70(July). <https://doi.org/10.1016/j.erss.2020.101664>
- Gerber, J.-F., Akbulut, B., Demaria, F., & Martínez-Alier, J. (2021). Degrowth and environmental justice: An alliance between two movements? In *Environmental Justice: Key Issues* (pp. 94–106). Routledge.
- Göbel, B. (2013). La minería del litio en la Puna de Atacama: interdependencias transregionales y disputas locales. *Iberoamericana*, 13(49), 135–149. <https://doi.org/10.18441/ibam.13.2013.49.135-149>
- Gundermann, H., & Göbel, B. (2018a). Comunidades Indígenas, Empresas del Litio y sus Relaciones en el Salar de Atacama. *Chungara Revista de Antropología Chilena*, 50(3), 471–486. <https://doi.org/10.4067/S0717-73562018005001602>
- Gundermann, H., & Göbel, B. (2018b). Indigenous communities, lithium companies and their relations in the salar de Atacama. *Chungara (Arica)*, 50(3), 471–486. <https://doi.org/10.4067/S0717-73562018005001602>
- 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. <https://doi.org/10.1016/j.jclepro.2017.12.264>
- Hassler, M. (2015). *Is the tide turning? Mobilizing indigenous rights for Environmental Justice: A case study from extractive projects in La Alta Guajira, Colombia*. Lund University.
- Henry, M. S., Bazilian, M. D., & Markuson, C. (2020). Just transitions: Histories and futures in a post-COVID world. *Energy Research and Social Science*, 68(May), 1–4. <https://doi.org/10.1016/j.erss.2020.101668>
- 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 and Natural Resources Law*, 38(3), 213–236. <https://doi.org/10.1080/02646811.2020.1784565>
- Hickley, A. (n.d.). *Verbatim, intelligent verbatim or edited transcription?* Penguin Transcription. Retrieved March 5, 2021, from <http://penguin-transcription.co.uk/transcription-type-verbatim->

intelligent-verbatim-or-edited/

- Holden, M. T., & Lynch, P. (2004). Choosing the Appropriate Methodology: Understanding Research Philosophy. *The Marketing Review*, 4(4), 397–409.  
<https://doi.org/10.1362/1469347042772428>
- Holland, B. (2021). Capabilities, well-being, and environmental justice. In B. Coolsaet (Ed.), *Environmental Justice: Key Issues* (pp. 64–77). Routledge.
- IEA. (2021). *The Role of Critical Minerals in Clean Energy Transitions*. [www.iea.org](http://www.iea.org)
- ILO. (1989). ILO Convention 169 of June 27, 1989: Convention Concerning Indigenous and Tribal Peoples in Independent Countries. In *Annex I. ILO Convention*.
- IRMA. (n.d.). *IRMA - The Initiative for Responsible Mining Assurance*. Retrieved May 14, 2021, from <https://responsiblemining.net/>
- IWGIA. (2020). *The Indigenous World 2020*.
- Jenkins, K. (2018). Setting energy justice apart from the crowd: Lessons from environmental and climate justice. *Energy Research and Social Science*, 39(November 2017), 117–121.  
<https://doi.org/10.1016/j.erss.2017.11.015>
- Kachi Yupi. (2015). *Kachi Yupi, Huellas de sal: Procedimiento de consulta y consentimiento previo, libre e informado para las comunidades indígenas de la Cuenca de Salinas grandes y Laguna de Guayatayoc*. <https://naturaljustice.org/wp-content/uploads/2015/12/Kachi-Yupi-Huellas.pdf>
- Kaswan, A. (2021). Distributive environmental justice. In B. Coolsaet (Ed.), *Environmental Justice: Key Issues* (pp. 21–36). Routledge.
- Kavanagh, L., Keohane, J., Cabellos, G. G., Lloyd, A., & Cleary, J. (2018). Global lithium sources-industrial use and future in the electric vehicle industry: A review. *Resources*, 7(3).  
<https://doi.org/10.3390/resources7030057>
- Komi, S. (2017). *Contested Relations Between Resource Extraction and Alternatives to Development: The Case of Lithium Production in Bolivia*. Helsingfors Universitet.
- Lacabana, M. (2018). Introducción: litio, territorio, ambiente y globalización. *Revista de Ciencias Sociales*, 10(34), 17–47. <http://ridaa.unq.edu.ar/handle/20.500.11807/1733>
- Lawrence, R. (2014). Internal colonisation and Indigenous resource sovereignty: Wind power developments on traditional Saami lands. *Environment and Planning D: Society and Space*, 32(6), 1036–1053. <https://doi.org/10.1068/d9012>
- Liu, W., & Agusdinata, D. B. (2020). Interdependencies of lithium mining and communities sustainability in Salar de Atacama, Chile. *Journal of Cleaner Production*, 260, 120838.  
<https://doi.org/10.1016/j.jclepro.2020.120838>
- Liu, W., Agusdinata, D. B., & Myint, S. W. (2019). Spatiotemporal patterns of lithium mining and environmental degradation in the Atacama Salt Flat, Chile. *International Journal of Applied Earth Observation and Geoinformation*, 80(January), 145–156.  
<https://doi.org/10.1016/j.jag.2019.04.016>
- 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 and Policy*, 48(4), 727–765.  
<https://doi.org/10.1111/polp.12365>
- Marchegiani, P., Hellgren, J. H., & Gómez, L. (2019). *Lithium extraction in Argentina: a case study on the social and environmental impacts*. <https://farn.org.ar/>

- Marchegiani, P., Morgera, E., & Parks, L. (2020). Indigenous peoples' rights to natural resources in Argentina: the challenges of impact assessment, consent and fair and equitable benefit-sharing in cases of lithium mining. *International Journal of Human Rights*, 24(2–3), 224–240. <https://doi.org/10.1080/13642987.2019.1677617>
- Marion Suiseeya, K. R. (2021). Procedural justice matters: power, representation, and participation in environmental governance. In B. Coolsaet (Ed.), *Environmental Justice: Key Issues* (pp. 37–51). Routledge.
- Martinez-Alier, J. (2016). Global Environmental Justice and the Environmentalism of the Poor. *The Oxford Handbook of Environmental Political Theory*, March, 1–23. <https://doi.org/10.1093/oxfordhb/9780199685271.013.25>
- Martinez, N. (2020). Resisting renewables: The energy epistemics of social opposition in Mexico. *Energy Research and Social Science*, 70, 12. <https://doi.org/10.1016/j.erss.2020.101632>
- Matthews, B., & Ross, L. (2010). Research methods: a practical guide for the social sciences. In *NY Pearson Longman*.
- McCaffrey, K. T. (2008). The Struggle for Environmental Justice in Vieques, Puerto Rico. In D. Carruthers (Ed.), *Environmental Justice in Latin America - Problems, Promise, and Practice* (pp. 263–286). The MIT Press.
- McCauley, D., & Heffron, R. (2018). Just transition: Integrating climate, energy and environmental justice. *Energy Policy*, 119(April), 1–7. <https://doi.org/10.1016/j.enpol.2018.04.014>
- McGregor, D., Whitaker, S., & Sritharan, M. (2020). Indigenous environmental justice and sustainability. *Current Opinion in Environmental Sustainability*, 43, 35–40. <https://doi.org/10.1016/j.cosust.2020.01.007>
- McNutt, M. (2013). Climate Change Impacts. *Science*, 341(6145), 435 LP – 435. <https://doi.org/10.1126/science.1243256>
- Menton, M., Larrea, C., Latorre, S., Martinez-Alier, J., Peck, M., Temper, L., & Walter, M. (2020). Environmental justice and the SDGs: from synergies to gaps and contradictions. *Sustainability Science*. <https://doi.org/10.1007/s11625-020-00789-8>
- Ministerio de Energía. (2015). *Compromiso de diálogo: Guía de Estándares de Participación para el Desarrollo de Proyectos de Energía*.
- Moore, S. A. (2008). Waste Practices and Politics: The Case of Oaxaca, Mexico. In D. Carruthers (Ed.), *Environmental Justice in Latin America - Problems, Promise, and Practice* (pp. 119–136). The MIT Press.
- Mortensen, N. H., & Boddenberg, S. (2019). Our demand for electric cars and smartphones is drying up the most arid place in the world – Danwatch. *Danwatch*, 1–14. <https://danwatch.dk/en/undersogelse/our-demand-for-electric-cars-and-smartphones-is-drying-up-the-most-arid-place-in-the-world/>
- Murdock, E. G. (2021). A history of environmental justice: foundations, narratives, and perspectives. In B. Coolsaet (Ed.), *Environmental Justice: Key Issues* (pp. 6–17). Routledge.
- NobelPrize.org. (2019). *The Nobel Prize in Chemistry 2019 - Popular information*. Popular Information. <https://www.nobelprize.org/prizes/chemistry/2019/popular-information/>
- Núñez, R., & Sweetser, E. (2006). Aymara, where the future is behind you: Convergent evidence from language and gesture in the cross-linguistic comparison of spatial construals of time. *Cognitive Science*, 30, 1–49. [papers3://publication/uuid/F75326F6-08A7-47FC-84A6-524334E5893C](https://doi.org/10.1016/j.cogsci.2006.03.007)
- Nussbaum, M. (2006). *Frontiers of Justice: Disability, nationality, species membership*. Harvard

University Press.

- Okereke, C., & Ehresman, T. G. (2015). International environmental justice and the quest for a green global economy: introduction to special issue. *International Environmental Agreements: Politics, Law and Economics*, 86(1), 5–11. <https://doi.org/10.1007/s10784-014-9264-3>
- Outka, U. (2012). Environmental Justice Issues in Sustainable Development. *Journal of Environmental and Sustainability Law*, 19(1), 1–40.
- Perreault, T. (2008). Popular Protest and Unpopular Policies: State Restructuring, Resource Conflict, and Social Justice in Bolivia. In D. Carruthers (Ed.), *Environmental Justice in Latin America - Problems, Promise, and Practice* (pp. 239–262). The MIT Press.
- Perreault, T. (2020). Bolivia's High Stakes Lithium Gamble. *NACLA Report on the Americas*, 52(2), 165–172. <https://doi.org/10.1080/10714839.2020.1768739>
- Persson, A., & Öman, D. (2018). Lithium-ion Batteries in Electric Vehicles: Sustainable to what extent? *KTH Royal Institute of Technology School of Engineering Sciences*. <https://kth.diva-portal.org/smash/get/diva2:1216809/FULLTEXT01.pdf>
- Postero, N. (2015). Charagua's Struggle for Indigenous Autonomy. In *The Indigenous State: Race, Politics, and Performance in Plurinational Bolivia* (pp. 158–177).
- Poveda, P. (2020). *The Future of Bolivia's Lithium*. The Future of Bolivia's Lithium [Webinar]. <https://www.ocic.on.ca/webinar-the-future-of-bolivias-lithium/>
- Puente, A. F., & Argento, M. (2015). Nuevos extractivismos, viejos conflictos. Territorio y litio en el noroeste argentino. *Revista Economía*, 67(105), 113–128.
- Quijano, A. (2000). Coloniality of Power and Eurocentrism in Latin America. *International Sociology*, 15(2), 215–232.
- Quinteros-Condorety, A. R., Albareda, L., Barbiellini, B., & Soyer, A. (2020). A Socio-technical Transition of Sustainable Lithium Industry in Latin America. *Procedia Manufacturing*, 51, 1737–1747. <https://doi.org/10.1016/j.promfg.2020.10.242>
- Ramirez, J. (2019). Contentious Dynamics Within the Social Turbulence of Environmental (In)justice Surrounding Wind Energy Farms in Oaxaca, Mexico. *Journal of Business Ethics*, 1–18. <https://doi.org/10.1007/s10551-019-04297-3>
- Ramirez, J. (2020). Impacts of Neoliberal Wind Energy Investments on Environmental Justice and Human Rights in Mexico. In P. Lund-Thomsen, M. W. Hansen, & A. Lindgreen (Eds.), *Business and Development Studies: Issues and Perspectives* (pp. 353–377). Routledge Studies in Innovation, Organizations and Technology. <https://doi.org/https://doi.org/10.4324/9781315163338>
- Ramos, G. (2021). *Diálogos de litio. S.O.S.tenibilidad y Extractivismo en el Desierto de Atacama* [Webinar]. Diálogos de Litio. S.O.S.Tenibilidad y Extractivismo En El Desierto de Atacama [Webinar]. <https://youtu.be/ST-tk3Qz5Hw>
- Reboratti, C. (2008). Environmental Conflicts and Environmental Justice in Argentina. In D. Carruthers (Ed.), *Environmental Justice in Latin America - Problems, Promise, and Practice* (pp. 101–118). The MIT Press.
- Reuters. (2019a). *Chile protesters block access to lithium operations: local leader* / Reuters. <https://www.reuters.com/article/us-chile-protests-lithium-idUSKBN1X42B9>
- Reuters. (2019b). *Indigenous people's livelihoods at risk in scramble for lithium, the new white gold*.
- Reuters. (2020). *Chile reserves seats for indigenous as it prepares to rewrite Constitution*.

<https://www.reuters.com/article/chile-constitution-indigenous-idUSKBN28Q05J>

- Revette, A. C. (2017). This time it's different: lithium extraction, cultural politics and development in Bolivia. *Third World Quarterly*, 38(1), 149–168.  
<https://doi.org/10.1080/01436597.2015.1131118>
- Riofrancos, T. (2020). *Global Political Economy of Lithium*. The Future of Bolivia's Lithium [Webinar]. <https://www.ocic.on.ca/webinar-the-future-of-bolivias-lithium/>
- Rockström, J., Gaffney, O., Rogelj, J., Meinshausen, M., Nakicenovic, N., & Schellnhuber, H. J. (2017). A roadmap for rapid decarbonization. *Science*, 355(6331), 1269–1271.  
<https://doi.org/10.1126/science.aah3443>
- Rodriguez, I. (2021). Latin American decolonial environmental justice. In B. Coolsaet (Ed.), *Environmental Justice: Key Issues* (pp. 78–93). Routledge.
- Rodríguez, I., & Inturias, M. L. (2018). Conflict transformation in indigenous peoples' territories: doing environmental justice with a 'decolonial turn.' *Development Studies Research*, 5(1), 90–105. <https://doi.org/10.1080/21665095.2018.1486220>
- Romero, H., Méndez, M., & Smith, P. (2012). Mining development and environmental injustice in the atacama desert of Northern Chile. *Environmental Justice*, 5(2), 70–76.  
<https://doi.org/10.1089/env.2011.0017>
- Rossi, C. (2019). *Neoliberalism's Contested Encounter With International Law in the Lithium Triangle*. <https://doi.org/10.1055/a-0651-8119>
- Salazar Bravo, I. (2019). Juridización de lo indígena: Globalización desde arriba o Globalización desde abajo? El caso del extractivismo del litio en el noroeste argentino. *Espacio Abierto - Cuaderno Venezolano de Sociología*, 28(2), 145–164.  
<https://dialnet.unirioja.es/servlet/articulo?codigo=7051681>
- Salkind, N. (2010). *Encyclopedia of Research Design*. <https://doi.org/10.4135/9781412961288 NV-0>
- Sanchez-Lopez, D. (2019). Sustainable Governance of Strategic Minerals: Post-Neoliberalism and Lithium in Bolivia. *Environment*, 61(6), 18–30.  
<https://doi.org/10.1080/00139157.2019.1662659>
- Sandoval-Rivera, J. C. A. (2020). Environmental education and indigenous knowledge: Towards the connection of local wisdom with international agendas in the framework of the Sustainable Development Goals (SDGs). *Diaspora, Indigenous, and Minority Education*.  
<https://doi.org/10.1080/15595692.2019.1652588>
- Santos, B. de S. (2012). Public sphere and epistemologies of the south. *Africa Development*, 37(1), 43–67.
- Saunders, M., Thornhill, A., & Lewis, P. (2019). *Research Methods for Business Students* (8th ed.). Pearson International Content.
- Schlosberg, D. (2004). Reconceiving environmental justice: Global movements and political theories. *Environmental Politics*, 13(3), 517–540.  
<https://doi.org/10.1080/0964401042000229025>
- Schlosberg, D., & Carruthers, D. (2010). Indigenous struggles, environmental justice, and community capabilities. *Global Environmental Politics*, 10(4), 12–35.  
[https://doi.org/10.1162/GLEP\\_a\\_00029](https://doi.org/10.1162/GLEP_a_00029)
- Scotland, J. (2012). Exploring the philosophical underpinnings of research: Relating ontology and epistemology to the methodology and methods of the scientific, interpretive, and critical research paradigms. *English Language Teaching*, 5(9), 9–16.

<https://doi.org/10.5539/elt.v5n9p9>

- Smith, D. C. (2020). The importance of lithium in achieving a low-carbon future: opportunities galore, but coupled with key challenges for legal professionals. *Journal of Energy and Natural Resources Law*, 38(1), 1–4. <https://doi.org/10.1080/02646811.2020.1706821>
- Sovacool, B. K. (2021). Who are the victims of low-carbon transitions? Towards a political ecology of climate change mitigation. *Energy Research and Social Science*, 73(January), 101916. <https://doi.org/10.1016/j.erss.2021.101916>
- Sovacool, B. K., Axsen, J., & Sorrell, S. (2018). Promoting novelty, rigor, and style in energy social science: Towards codes of practice for appropriate methods and research design. *Energy Research and Social Science*, 45(October 2018), 12–42. <https://doi.org/10.1016/j.erss.2018.07.007>
- Svampa, M. (2013). Consenso de los commodities y lenguajes de valoración en América Latina. *Nueva Sociedad*.
- Svampa, M. (2019). Neo-Extractivism in Latin America. In M. Murillo, J. Luna, T. Falletti, & A. Schrank (Eds.), *Cambridge Elements: Politics and Society in Latin America*.
- Temper, L., del Bene, D., & Martinez-Alier, J. (2015). Mapping the frontiers and front lines of global environmental justice: the EJAtlas. *Journal of Political Ecology*, 22(1), 255–278. [http://jpe.library.arizona.edu/volume\\_22/Temper.pdf](http://jpe.library.arizona.edu/volume_22/Temper.pdf)
- Tercera, L. (2020). \$1.700 millones por la paz en el Salar de Atacama: SQM llega a acuerdo con comunidad indígena en proceso por uso de aguas. <https://www.latercera.com/la-tercera-pm/noticia/1700-millones-por-la-paz-en-el-salar-de-atacama-sqm-llega-a-acuerdo-con-comunidad-atacamena-en-proceso-judicial-por-uso-de-aguas/X7PD6BBCM5EBRJ654SEAB343UM/>
- Tickner, A. B. (2003). Seeing IR differently: Notes from the third world. *Millennium: Journal of International Studies*. <https://doi.org/10.1177/03058298030320020301>
- UNDRIP. (2007). UNDRIP United Nations General Assembly Declaration of the Rights of Indigenous Peoples. In *a/Res/61/295*.
- UNFCCC. (1997). *Kyoto Protocol to the United Nations Framework Convention on Climate Change*.
- UNFCCC. (2015). *Paris Declaration on Electro-Mobility and Climate Change & Call to Action*.
- UNFCCC. (2020). *The Paris Agreement*. What Is the Paris Agreement? <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>
- United Nations. (n.d.-a). *FAQS ON THE DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES*. Retrieved February 10, 2021, from <http://www.un.org/esa/socdev/unpfii/en/declaration.html>
- United Nations. (n.d.-b). Indigenous peoples, Indigenous voices - Factsheet. In *United Nations Permanent Forum on Indigenous Issues* (pp. 1–3). [http://www.un.org/esa/socdev/unpfii/documents/5session\\_factsheet1.pdf%0Awww.IndigenousPermanetForum.com](http://www.un.org/esa/socdev/unpfii/documents/5session_factsheet1.pdf%0Awww.IndigenousPermanetForum.com)
- United Nations. (n.d.-c). *THE 17 GOALS / Sustainable Development*. Retrieved December 9, 2020, from <https://sdgs.un.org/goals>
- United Nations. (2020). Commodities at a glance: Special issue on strategic battery raw materials. In *UN Conference on Trade and Development*.
- UNOHCHR. (2011). *Guiding Principles on business and human rights: Implementing the United*



- Nations “Protect, Respect and Remedy” framework. <https://doi.org/10.4324/9781351171922-3>
- van der Veen, S. (2017). *Can the “green” economy also be “fair”? Environmental justice and corporate accountability in Jujuy, Argentina*. University of Utrecht.
- Visvanathan, S. (2009). *The search for cognitive justice*. [https://www.india-seminar.com/2009/597/597\\_shiv\\_visvanathan.htm](https://www.india-seminar.com/2009/597/597_shiv_visvanathan.htm)
- Walker, G. P., & Bulkeley, H. (2006). Geographies of Environmental Justice. *Geoforum*, 37(5), 655–659. <http://dx.doi.org/10.1016/j.intell.2008.09.007>[http://dx.doi.org/10.1016/S0010-9452\(58\)80010-6](http://dx.doi.org/10.1016/S0010-9452(58)80010-6)<http://pss.sagepub.com/content/17/1/67.short><http://dx.doi.org/10.1016/j.cogdev.2013.06.002><http://www.chabris.com/Hooven2008.pdf><http://www.ncbi.nlm>
- Welch, C., Piekkari, R., Plakoyiannaki, E., & Paavilainen-Mäntymäki, E. (2011). Theorising from case studies: Towards a pluralist future for international business research. *Journal of International Business Studies*, 42(5), 740–762. <https://doi.org/10.1057/jibs.2010.55>
- Whyte, K. (2021). Indigenous environmental justice: Anti-colonial action through kinship. In B. Coolsaet (Ed.), *Environmental Justice: Key Issues* (pp. 266–278). Routledge.
- Wickstrom, S. (2008a). Cultural Politics and the Essence of Life: Who Controls the Water? In D. Carruthers (Ed.), *Environmental Justice in Latin America - Problems, Promise, and Practice* (pp. 287–319). The MIT Press.
- Wickstrom, S. (2008b). Cultural Politics and the Essence of Life: Who Controls the Water? In D. Carruthers (Ed.), *Environmental Justice in Latin America - Problems, Promise, and Practice* (pp. 287–320). The MIT Press.
- Wolford, W. (2008). Environmental Justice and Agricultural Development in the Brazilian Cerrado. In D. Carruthers (Ed.), *Environmental Justice in Latin America - Problems, Promise, and Practice* (pp. 213–238). The MIT Press.
- World Economic Forum. (2016). *Mapping Mining to the Sustainable Development Goals: An Atlas*. July, 12. [https://www.undp.org/content/dam/undp/library/Sustainable Development/Extractives/Mapping\\_Mining\\_SDGs\\_An\\_Atlas\\_Executive\\_Summary\\_FINAL.pdf](https://www.undp.org/content/dam/undp/library/Sustainable%20Development/Extractives/Mapping_Mining_SDGs_An_Atlas_Executive_Summary_FINAL.pdf)
- Yap, M. L. M., & Watene, K. (2019). The Sustainable Development Goals (SDGs) and Indigenous Peoples: Another Missed Opportunity? *Journal of Human Development and Capabilities*. <https://doi.org/10.1080/19452829.2019.1574725>
- Yenneti, K., & Day, R. (2015). Procedural (in)justice in the implementation of solar energy: The case of Charanaka solar park, Gujarat, India. *Energy Policy*, 86(2015), 664–673. <https://doi.org/10.1016/j.enpol.2015.08.019>
- YLB. (2020). *Yacimiento de Litio Bolivianos/Acerca de YLB*. [https://www.ylb.gob.bo/inicio/acerca\\_de\\_YLB](https://www.ylb.gob.bo/inicio/acerca_de_YLB)
- Zebich-Knos, M. (2008). Ecotourism, Park Systems, and Environmental Justice in Latin America. In D. Carruthers (Ed.), *Environmental Justice in Latin America - Problems, Promise, and Practice* (pp. 185–212). The MIT Press.
- Zografos, C., & Martinez-Alier, J. (2009). The politics of landscape value: A case study of wind farm conflict in rural Catalonia. *Environment and Planning A*, 41, 1726–1744. <https://doi.org/10.1068/a41208>
- Zuleta, J. C. (2020). *The Future of Bolivia’s Lithium*. The Future of Bolivia’s Lithium [Webinar]. <https://www.ocic.on.ca/webinar-the-future-of-bolivias-lithium/>