Original article

Mining indigenous territories: Consensus, tensions and ambivalences in the Salar de Atacama

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ABSTRACT

Lithium mining in Chile's Salar de Atacama (SdA) has a relatively long and controversial history, especially when it comes to the local Indigenous peoples. In this context, this paper looks at the ways mining activities, and different visions of territory and indigeneity co-produce each other in the particular context of the SdA. For this, we use historical and ethnographic methods and draw on studies in anthropology and geography. We aim to escape simplistic images of Indigenous peoples' reactions to mining as reflecting victimhood, resistance, or strategic pragmatism, and show instead how individuals and groups organize and express themselves in ambivalent ways, maintaining complex relationships with both mining and the territory. According to our local interlocutors, struggles around territory in the SdA mainly concern water scarcity, the survival of this unique ecosystem's biological diversity, as well as continuity and change in local lifeways. While recent agreements between mining companies and local communities may benefit some individuals, they are also generating inter- and intra- community tensions over these issues. We find that mining shapes what 'indigenous' means and who can claim this identity, while Indigenous mobilization in turn shapes how mining is perceived and carried out. Together, mining and Indigenous mobilization produce a particular kind of territory, pervaded by diverse lines of both consensus and tension. Rather than contradictions, the ambivalent positions Indigenous peoples maintain become comprehensible when considering, ethnographically and historically, the particular places and life-worlds they inhabit, and the asymmetrical patterns of constraint and opportunity they face. More broadly, the paper raises questions about the implications of a global transition to renewable energy based on lithium battery technologies, and ethical responses to the climate crisis.

1. Introduction

As the climate crisis lends urgency to a global transition to renewable energy, governments and industries, primarily of China, Europe, and North America, are competing to secure reliable lithium supply for energy storage technologies. Some of the world's major lithium resources are located in the borderlands between Argentina, Bolivia, and Chile, where companies extract the metal by pumping brine from underneath the region's salt flats and letting the water evaporate in huge ponds. The Atacama Salt Flat, or Salar de Atacama (henceforward SdA), in Chile,

has been of particular importance, currently supplying 40% of USA's and 84% of Europe's lithium (USGS, 2020; WITS, 2021). For over two decades, it has been the site of lithium mining by two companies, SQM (Sociedad Química y Minera de Chile) and Albemarle Corporation. Extraction has rapidly expanded recently due to surging global demand.

While the popular conception of mining lithium from salt flats is that it is relatively 'clean' compared to more visually-shocking open-pit mining, short-term and especially longer-term impacts are in fact less well-known. One key issue is how pumping brine in one of the driest places on earth has affected the area's water table, local climate, and

vegetation (Babidge et al., 2019; Liu and Agusdinata, 2020; Liu et al., 2019; Marazuela et al., 2019). Because of these impacts, lithium mining is increasingly criticized locally. A protest movement has emerged around the SdA, seeking to halt lithium mining expansion, decrying the injustice of sacrificing marginal, 'forgotten corners' of the world to power a transition to 'green' forms of energy in the global North (Jerez et al., 2021; OPSAL, 2021; Romero et al., 2019).

Indigenous peoples have played an important role in the mounting opposition against lithium mining in the SdA. Local activist Sonia Ramos exemplifies this in a report in the Guardian (Greenwood, 2020): "The countries that buy lithium [should] understand that they are destroying a place far more valuable […] than all the lithium they could extract." She has been fighting against the views prevailing in mining firms and state bureaucracies, who see the salt flat as nothing more than an economic opportunity. "They think they are doing the right thing, and that green globalization is correct, but there is more than energy here; we are fighting for our life."

However, Indigenous peoples' engagements with lithium mining projects in the SdA have been more diverse than often showcased by international media. Since Chile implemented its Indigenous Law N° 19.253 in 1993 and ratified ILO Convention 169 in 2008, Indigenous communities have been negotiating with the lithium industry. Besides outright opposition, such negotiations have also encompassed diverse forms of participation, such as environmental monitoring, or benefit sharing in the form of jobs or compensatory payments. Atacameño communities have managed to negotiate agreements granting them a significant share of companies' sales as direct payments. These developments have reshaped the social fabric in the area (Gundermann and Göbel, 2018; Jerez et al., 2021).

We take these observations as a starting point to raise broader questions about the relationship between Indigenous peoples and resource extraction, particularly in the light of community-firm agreements. We also take note that in South America, Indigenous peoples have become unavoidable actors in controversies and socio-environmental conflicts around mining (Bebbington et al., 2008; Conde, 2017). Increasingly, these are framed around the rights of Indigenous peoples, who, despite facing continued socio-cultural and political marginalization, acquired crucial legal recognition on national and international levels (Hufty, 2021). The rights to collective tenure of ancestral lands and prior informed consultation have positioned Indigenous peoples as key stakeholders for mining projects (Vela-Almeida and LeónLewinsohn, 2021).

As such, any complete academic or policy-oriented discussion related to lithium extraction in the region cannot avoid grappling with the ways Indigenous peoples are implicated. Nevertheless, academics, policymakers, and practitioners with an interest in lithium, risk overlooking important questions raised in anthropology and human geography. How do we conceptually grasp the role of Indigenous peoples in relation to mining? What is at stake in conflicts between Indigenous peoples and mining projects? How are Indigenous organizations, and Indigenous identity itself, mobilized and reshaped in encounters with extractive industries? To address these questions, we draw on the growing literature that suggests not to conceive 'Indigenous peoples' as uniform and unified actors, but to leave room for ambivalence. Based on ethnographic methods and a brief historical review, we examine how mining, territory, and indigeneity are co-produced and experienced in this particular place. The unique history of mining in the Antofagasta Region where the SdA is located, is examined, before unpacking how territorial claims manifest themselves in the form of contestation over environmental change, in particular water. We finally address how the political mobilization of Indigenous peoples and indigeneity itself have evolved through their historical and current relationships with both mining and the territory.

We explore how Indigenous political mobilization has come to be characterized by consensus, tensions and ambivalences. While the increasing water scarcity in the area is a point of general consensus,

ambivalences persist about the benefits of agreements with mining companies, and their implications for protecting the territory and its Indigenous culture. Different actors claim and mobilize indigeneity to advance different positions. However, it is difficult to find a unified political stance for the 'Atacameño' people in the face of lithium mining, and indeed a singular, unambiguous meaning of 'Indigenous' identity itself. The paper shows how the concepts of indigeneity and territoriality, and the use of historical and ethnographic methods, allow us to bring empirically grounded attention to how mining, territory and indigeneity are co-produced in the particular context of the SdA. Throughout, we argue that Indigenous peoples organize and express themselves in ways that reflect not contradictions, but ambivalences that become comprehensible when apprehended ethnographically and historically. More broadly, the paper raises questions about the implications of a global transition to renewable energy based on lithium, and ethical responses to the climate crisis.

2. Conceptual framework

2.1. Indigeneity as a relational category

In the literature on extractive industries, there have been different ways to make sense of Indigenous peoples' discourses and actions. Indigenous peoples have commonly been portrayed as either victims of extraction or resistors to extractive industries (McNeish, 2012). That is, they are represented as essentially passive or at most reactive. In response to these framings, the conception of Indigenous peoples as 'strategic pragmatists' has also been advanced, according them a greater degree of agency, by recognizing their proactive engagement with 'exogenous' forces to obtain specific benefits and further their own goals (Bebbington et al., 2008; Hudayana et al., 2020; Maclean et al., 2015; Wanvik and Caine, 2017). These accounts highlight the ways Indigenous peoples juggle both the benefits and risks of extractive industries in their negotiations with states and companies.

Yet, framing Indigenous peoples within any of these categories poses analytical and practical limits. They are certainly impacted by mining, often in disproportionate and unjust ways, and they often mount resistance in defense of their livelihoods and landscapes, pursuing both strategic and pragmatic goals. However, these images of Indigenous peoples as victims, resistors, or strategic pragmatists, as nuanced as they may be, risk nevertheless essentializing what 'Indigenous' means. They leave little room for the actual ambivalences observed at the local level. We argue that we need to unpack 'indigeneity', that is, how this identity comes into being and takes on meaning through negotiation and struggle, in specific historical and geographical contexts.

On some level, indigeneity refers to prior presence in a particular place. The term is thus fundamentally temporal, spatial and relational and cannot be disentangled from the (neo)colonial 'encounters,' in which it is produced and reproduced until the present day (Radcliffe, 2017). What it means to be indigenous, who has the power to define its meaning in legal and cultural terms, who can legitimately occupy this position, and to what effect, change over time and are part of political dynamics and strategies (Carter and Hollinsworth, 2009; Hufty and Bottazzi, 2006; Valdivia, 2007). For example, Indigenous peoples are often required to perform a particular state-legitimated conception of being indigenous in order to access rights. Thus, the meaning of 'indigenous' is part of what is at stake (Burman, 2015). It carries a historical load and is constantly reshaped through encounters between those who claim the identity as their own, and development, conservation, and extractivist projects, producing "shifting regimes of recognition" (Sawyer and Gomez, 2012: 9).

2.2. Mining and indigenous territories

If indigeneity is socially constructed and negotiated as we have just argued, nevertheless it cannot be understood in isolation from the

territory it is embedded in. Because it heavily restructures the places where it operates, mining is a particularly consequential activity for Indigenous peoples, and their territorial claims often overlap. How to think about the diverse struggles and claims that occur when mining and Indigenous territories intersect?

The social and environmental impacts of mining projects have been amply researched and debated (Baker and Westman, 2018; Campero et al., 2021; Spiegel, 2017). Concepts such as 'mining territories' have provided holistic views on how mining transforms territories – understood as complex socio-ecological systems, including social imaginaries and politico-cultural identities (Erb et al., 2021; Mendez, 2021; Rossi et al., 2021; Vela-Almeida, 2018). Explicitly or implicitly, these approaches have been directed at avoiding conflicts with local communities. The 'social license to operate,' in particular, has emerged as the main concept for practitioners and scholars of extractive industry to understand and govern community relations (Hitch and Barakos, 2021; Santiago et al., 2021). It has provided insights into the ways the impacts of mining projects are, and can be, negotiated in acceptable agreements between diverse actors. While this literature has provided important empirical evidence on the risks and opportunities of mining projects in Indigenous territories (Horowitz et al., 2018), it has arguably failed to grasp the particularities of Indigenous mobilization. By reducing territorial conflicts to mere issues of resource governance, it arguably disregards the scope and scale of Indigenous political claims (Acuña, 2015; Savino, 2016).

In contrast, some scholars have argued that there is more at stake in mining conflicts than competition over resources. These studies highlight that Indigenous movements are not only motivated by immediate concerns, but by broader issues of recognition and, in many cases, resistance to extractivism (Conde, 2017; Coombes et al., 2012). Proponents of the 'ontological turn' have claimed that Indigenous peoples relate to territories in ways that are radically different from modern projects, giving rise to radical alternatives that clash with Western worldviews (e.g. Holbraad and Pedersen, 2017; Blaser, 2009; de la Cadena, 2010). From a different theoretical angle, scholars of the 'territorial turn' have shown how Indigenous peoples "spatialise and promote another type of territory" in their struggles (Halvorsen et al., 2019: 4), making room for alternative political projects (Bryan, 2012). From either perspective, what is at stake are not just the resources these territories 'contain,' but (also) the worldviews that define what kinds of entities and relationships are considered to exist and hold meaning and value.

As such, these scholars have advanced an understanding of territories not as fixed objects, but as dynamic and open-ended processes that produce multiple and conflicting ways of conceiving of a particular space, and exercising diverse claims over it (Betancourt, 2017; Haesbaert, 2011; Porto-Gonçalves, 2009). These aspects had largely been ignored. Legal frameworks, for instance, recognize only certain kinds of territorial rights, sanctioned by the institutions of the modern nation state. Indigenous claims that exceed these conceptions – e.g. that mountains, rivers, or salt flats are living, sentient parts of the community – have been framed in culturalist and ethnic terms, or relegated to categories such as 'land' or 'water' to make them legible within frameworks of state governance (de la Cadena, 2015; Scott, 1998). As a consequence, core Indigenous claims have not been taken seriously.

The territoriality and ontology debates have raised some important political and ethical questions when particular ways of inhabiting this world came to be dominated or even erased for the benefit of others. As such, Indigenous struggles and refusals can be understood not as mere obstacles to resource development, but reminders of fundamental contradictions and inequalities in global political economy and political ecology. While debating these issues is crucial in times of global mining expansion and the rapid loss of cultural diversity, it also involves the risk of turning Indigenous peoples into ideal, 'radical' political subjects. Thereby, it risks misrepresenting actually existing people, when they take a more ambivalent stance towards mining and other territorial

projects (Bessire and Bond, 2014; Cepek, 2016; Neale and Vincent, 2017; Sundberg, 2014; Todd, 2016).

To navigate the opportunities and pitfalls of these different approaches, we draw on studies in anthropology and geography that pay ethnographic attention to particular encounters between Indigenous peoples and mining projects (e.g. Anthias, 2018; Babidge, 2016; Cepek, 2012; Larsen, 2015; Li, 2015). This body of work points out that Indigenous mobilization is usually more ambivalent than portrayed in academic debates or activist campaigns, and that a reductionist portrayal can constrain actually existing people and their relationship to territory (Cepek, 2016; Kirsch, 2007). A key question is how to bring together the ambivalence between struggles, maneuvering, and negotiations that aim to secure specific resources and benefits from mining activities on one hand, and broader political projects for identity, sovereignty, and alternatives to extractivist development on the other (Anthias, 2019; Hale, 2011). Is it a contradiction to observe an Indigenous organization fighting for its fair share of benefits from mining extraction, while at the same time rejecting the very idea of mining altogether? Is it a contradiction to defend a piece of land at one moment on the basis of the resources it provides, and at another, to claim that it is actually a full member of the living community? We argue that this kind of tension is not best conceived as a contradiction, but as an inevitable ambivalence that is comprehensible when considering the constraints of people living in a particular place, with both long-term goals and immediate needs (Hale, 2011).

In what follows we examine how mining, territory, and indigeneity co-produce each other in a particular social and material context. By doing so we explore how the presence of mining itself shapes what 'Indigenous' means, who can claim this identity, and to what effect. Likewise, we highlight how Indigenous mobilization shapes how mining is perceived and, concretely, carried out. In turn, we show how both mining and Indigenous mobilization produce a territory in both material and discursive ways. Taking this analytical stance requires paying close attention to the empirical particularities of how these three dimensions – mining, territory, and indigeneity – interact in a particular place, to make room for apprehending ambivalence without assuming contradiction. This allows us to unfix our analysis from preconceived categories and conceptions, such as mining being (only) destructive or beneficial, territory being (only) about land or autonomy, and Indigenous peoples as fitting neatly into categories like victims, resistors, or strategic pragmatists.

3. Materials and methods

3.1. Study area

The study area included six indigenous communities living around the SdA: Beter and Tulor, Toconao, Séquitor, Quitor, San Pedro de Atacama and Salar de Tara (Fig. 1). As we will see in detail in Section 5, 'indigenous communities' in Chile have to be understood within the context of the state-sponsored 're-ethnification' initiated by Law N° 19.253 in 1993. There is a complex relationship between the legal entity of the 'community' and the traditional *ayllus* (family clan), which have a much longer history. San Pedro de Atacama and Toconao are two of the oldest settlements in the SdA Basin and, together with the ayllus of Séquitor and Quitor, were among the first to be constituted as indigenous communities under the new Law. In contrast, the indigenous community of Beter and Tulor is composed of two ayllus that merged to be legally recognized, and the community of Salar de Tara is in the process of being legally constituted.

3.2. Data collection and participants

This research builds on a long-term engagement with issues around lithium mining in the study area, and the region more broadly. For this paper, we conducted 14 semi-structured interviews with Indigenous
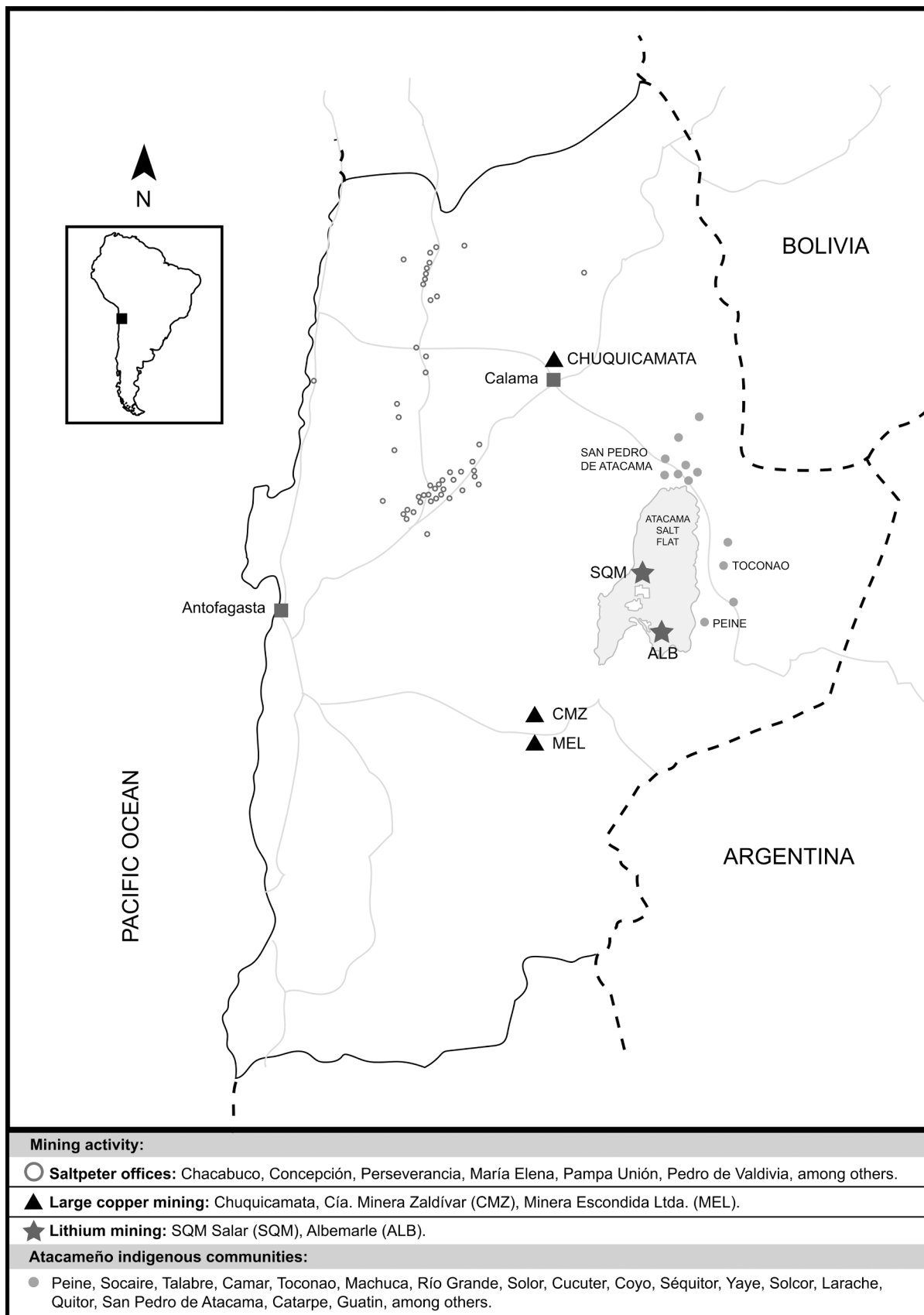
Fig. 1. Main mining sites and Indigenous communities around the SdA, Chile.

The figure legend reads:

Mining activity:

○ **Saltpeter offices:** Chacabuco, Concepción, Perseverancia, María Elena, Pampa Unión, Pedro de Valdivia, among others.

▲ **Large copper mining:** Chuquicamata, Cía. Minera Zaldívar (CMZ), Minera Escondida Ltda. (MEL).

★ **Lithium mining:** SQM Salar (SQM), Albemarle (ALB).

Atacameño indigenous communities:

● Peine, Socaire, Talabre, Camar, Toconao, Machuca, Río Grande, Solor, Cucuter, Coyo, Séquitor, Yaye, Solcor, Larache, Quitor, San Pedro de Atacama, Catarpe, Guatin, among others.

community members in March 2020, based on an interview guide with five thematic axes: livelihoods around the Salar de Atacama; lithium and development; relations between communities, the state and mining companies; socio-environmental impacts; and local organization. Interviews lasted an average of 90 min. With explicit consent from all participants we recorded the conversations, and later transcribed and analyzed them.

Overall, our interlocutors reflect the diversity of what it means to be Atacameño today and further illustrate the point that 'Indigenous communities' cannot be seen as bounded, fixed, or homogenous. Several have family ties to Argentina and Bolivia (Interviews 6 and 7). Most were born in the village but later migrated for study and work, in particular in the mining sector (Interviews 3, 10, 12, and 13). Several are involved in tourism (Interviews 1 and 11). Several have taken on leadership roles (Interviews 1, 3, 5 and 6) or are members of NGOs or environmental activists (Interviews 2 and 10). We conducted interviews with both men and women of different ages.

Data from interviews and fieldwork was analyzed in a coding process using WebQDA. The links between lithium mining, local organizations, indigeneity, and negotiation with external actors were coded and gave rise to analytical categories that allowed us to connect empirical data with conceptual elements. While our arguments are based on this overall analysis, we hereafter insert only selected anonymous quotations from different interviews to illustrate the points. We situate the interviews, conducted at a specific moment in time, in a broader historical perspective, based on literature on the history of mining, environmental change, and local organization in the SdA.

4. Mining and competing territorialities

4.1. Saltpeter and copper mining

Mining in the Antofagasta Region, where the SdA is situated, challenges typical conceptions of mining as an 'exogenous' force that disrupts 'pre-mining' cultural and environmental landscapes. While mining of copper pre-existed colonial times, cartographic missions and discoveries of silver and saltpeter deposits around 1870 made the Antofagasta region a territory to be valued, controlled and exploited for neighboring states (Vicuña, 1995). It is between the late 19th century and the beginning of the 20th century that commercial copper and nitrate mining became determinant in the lives of local people and the physical environment.

Although the Atacama Desert was valued for its mining potential, Chilean state officials initially considered it as 'marginal, extreme and uninhabitable,' given the inhospitality of the environment and its low agricultural potential. The perceived marginality of the lands and peoples living there was further reinforced by the weak presence of state administration. Its inhabitants were seen as 'more primitive and poorer' than those who lived in the Atacama lowlands (Sanhueza, 2001). The progressive arrival of the state after the War of the Pacific (1879–1883) brought local Indigenous identities into confrontation with this negatively-connoted perception of 'indigenous,' leading many people to renounce their indigeneity to claim a Chilean identity (Morales, 2013).

The growing market for saltpeter, used in Europe as fertilizer, led to the integration of Chile into the global economy and turned the Atacama Desert into a pole of national development. For politically marginalized Indigenous communities it brought dispossession of water, land and resources, which became property of the state, who in turn granted concessions to the mining industry (Acuña and Tironi, 2021; Morales and Azócar, 2015). It also resulted in a mesh of commercial and traditional practices. Indigenous economies were integrated into regional markets. During this period, more and more Indigenous peoples began to work as unskilled laborers in mining operations. After 1915, saltpeter was surpassed by copper in relative importance. With two of the world's largest copper mines, Chuquicamata and La Escondida (see Fig. 1),

copper mining is still significant. However, it has had huge impacts in the region, creating severe water shortage and shifting the perception of Indigenous peoples – from the 'primitive' inhabitants of an unincorporated borderland to ubiquitous unskilled mining laborers.

Mining also brought a new kind of relationship between the state and private capital, in which the state provides the legal and political conditions for the development of investments, while private capital is responsible for operating the region's economy (Sanhueza and Gundermann, 2007). As industrial mines employed significant numbers of Indigenous labor, most people now associate the copper economy with improved employment opportunities rather than with dispossession (Carrasco, 2020).

The industrial growth and the economic reconfiguration of the region during the 20th century is therefore intimately linked to extractive activities. Today, lithium is but the latest mining frontier and it perpetuates the historical trends of the region's extractive matrix. The story of lithium in the SdA does not begin ex nihilo. In fact, the very discovery of lithium deposits owes itself to mining companies expanding their consumption of and control over water. The main lithium producing company in the SdA started as a saltpeter producer (Compañía Salitrera Anglo-Lautaro), financed by English capital, and became SQM in 1968. In the same line, saltpeter was known at that time as the 'white gold', the nickname now attributed to lithium in the media.

4.2. Territorialities, lithium and environmental change

The first records of the presence of lithium date from 1962, when the company that would operate Chuquicamata explored the SdA in search of water for its operation (Pavlovic, 2014). In 1975, the state agency in charge of promoting economic growth (Corporación de Fomento de la Producción or CORFO) led the first prospecting campaigns and feasibility studies for exploiting the SdA. Two lithium mining operations emerged in the next decade: Sociedad Chilena de Litio (SCL) and Sociedad Minera Salar de Atacama S.A. (MINSAL). SCL was a joint venture between the U.S. company Foote Minerals and CORFO, and began to produce lithium carbonate in 1984. A few years later, in 1989, CORFO sold its shares to Foote Minerals, which became a partner in 1998 with the German Chemetall. In 2004, Chemetall was bought by the U.S. company Rockwood Holdings Inc. and in 2012 SCL became Rockwood Lithium Ltd. (CORFO, 2016). Since 2017 it has been owned by the U.S. corporation Albemarle. The second, MINSAL, began exploring the SdA in 1986. It was owned by CORFO, the U.S. Amax Exploration Inc. and the Chilean Molymet. In 1993 SQM entered the company's capital and became the sole owner in 1994. After many twists and turns, SQM is now owned by the Chinese company Tianqi (21.9%), BNY Mellon (21.77%), the Chilean Pampa Calichera (16.26%) and minor investors (SQM, 2020), and is currently the largest producer of lithium in the world. In a nutshell, over the last five decades, the state's participation in lithium production was gradually reduced in favor of complete control by private capital.

Lithium mining has significantly increased over the last two decades, quadrupling the surface area of its operations in the SdA from 20.54 km^2 in 1997 to 80.53 km^2 in 2017 (Liu et al., 2019). The intensive use of water by mining projects, and the pumping and evaporation of brine in the lithium mines particularly, have become major accelerators of the water shortage in the area – water use in the Salar exceeds supply, with a deficit of 15 m^3/s in 2016 (CEPAL-OCDE, 2016) – and of ensuing socio-environmental tensions (Babidge et al., 2019; Liu and Agusdinata, 2020).

Water is central to the ecological, cultural, and mining history of the SdA, as it is part of an endorheic basin of approximately 15 620 km^2, supplied by water flows from surrounding mountains, where water and the minerals it contains accumulate (Marquet et al., 1998). In this hyper-arid desert, the sun's energy can evaporate up to 200 times more water than it receives yearly from rainfall (Sun et al., 2018). The weathering of rocks and subsequent accumulation and evaporation has

thus formed the salt flat and its highly-concentrated brines. By pumping the brine to the surface into evaporation ponds, lithium mining benefits from both the high levels of evaporation and from the work performed by nature over millions of years (Marquet et al., 1998; Martínez-Tillería et al., 2017).

Yet, the SdA is composed of highly fragile, arid and semi-arid ecosystems of exceptionally high ecological, cultural and symbolic value (Gajardo and Redón, 2019). People and ecosystems in the area around the SdA have adapted their life forms to water scarcity over centuries and millennia. However, mining activities and other anthropogenic factors such as global warming and growing tourism have exacerbated droughts and environmental degradation (Campos-Ortega and Jorquera-Jaramillo, 2008; Morales and Azócar, 2015). While in Chile overall mining consumes an average of 7% of total water resources, in Antofagasta it accounts for 68% of total water use (Business News Americas, 2007).

As such, territorial disputes relate not only to 'land rights' per se, but rather to environmental change more broadly, with water at its core. Water became a banner of political struggle for human and territorial rights through Indigenous resistance to mining (Romero-Toledo, 2019). In these struggles, the articulation between identity, practices and traditions has been a key strategy to ensure 'water rights' for communities in a context of privatization (Prieto, 2016). Communities have a long-standing and painful experience with the drying up of wetlands and dispossession processes fostered by mining expansion (Morales and Azócar, 2015; Prieto et al., 2019). Nowadays, brine pumping is considered an additional pressure on water resources (Liu and Agusdinata, 2021).

All interviewees were deeply concerned about water scarcity in the area, based on the increasing signs of environmental deterioration they have perceived in recent years. They mentioned decreasing water bodies, changing landscapes, soil salinization, disappearing local fauna, and altered bird migration patterns. These assessments are in stark contrast to the studies carried out by the companies.

> […] with the extraction of thousands of liters of water in the desert, if it doesn't rain, there is no water recharge, there is chaos and the animals, the guanacos, began to abort; and if they gave birth, they abandoned their offspring because there was no food, no water. Nobody talks about this because here we have big transnational companies and everything is beautiful. But those of us who live here know what is happening (Interview 2, San Pedro de Atacama, 03/03/2020).[1]

According to our interviewees, these environmental changes are increasingly connected with the extraction of water. Some of them recounted how water is not (only) conceived as a resource, but as a part of a living being with complex linkages with soil, plants and animals. All water is one – surface, subsurface, brine, saltwater and freshwater (Romero and Opazo, 2019) – and not as inputs and outputs of different qualities for stages of industrial processes as in a mining company view.

> The Atacama Basin is a living being, I see it as a living being. I learned that here, and it is not just a romantic thing. It is a living being that is looking at us every day and it has a head, it has arms, it has legs and a heart, which is the salt flat. And as a living being, blood runs through it and the blood is the water and the different phases of

the environment, where the *pajonales* are, where the *yareta* is, [these places] are being deeply affected (Interview 10, Quitor, 16/03/2020).[2]

The exploitation and privatization of water in Chile has led to conflicts implicating competing meanings of water (Morales and Azócar, 2015). State and economic actors, such as mining companies and tourist agencies, base their understanding of water on the 1981 Water Code, in which water is considered a tradable good. Opposed to that view, some community members engage with water from a traditional 'hydro-cosmological' standpoint (Boelens, 2014), associating it with agro-pastoral practices and cultural and religious rituals. From this perspective water is a non-dissociable and sacred element that acts as a mechanism for social cohesion.

> We began to investigate how our ancestors engaged with the subject of rain in the desert […] We began an enormous project about the memory of water […] looking for the mountains, the exact places, and now I can tell you about the geography of water […]. We know that Man [*sic*] has such an affinity with water, or water with Man, that even scientists cannot find an explanation for it. She has a memory and is a very intelligent being. (Interview 2, San Pedro de Atacama, 03/03/2020).

Simply put, 'territorial' conflicts in the Salar de Atacama thus relate more to water than land. More completely, it could be said that they are about, as much and at the same time, water conceived as a resource, and water – in its different forms and in its unity – as part of a living socionatural landscape.

5. Indigenous organizations in the face of mining in the SdA

Just as lithium extraction inserts itself into a regional history of mining, lithium companies arriving in the SdA are confronted with an ongoing history of Indigenous organization and identity (re)construction. In this process, issues of who can claim the 'Indigenous' identity and to what effect, how and where the lines of 'Indigenous communities' are drawn, and who speaks for the 'Atacameño' people have undergone successive waves of transformation.

Already marginalized by colonization, many Indigenous peoples had given up their identity with the 'Chilenization' campaigns (Gundermann, 2017). As a result, in the 1980s, most did not identify themselves as 'Indigenous' anymore, as observed in local collective activities such as irrigation management or neighborhood councils (Morales, 2014). Many Indigenous peoples had migrated to the cities, losing the practice of their languages and traditions. Those who remained in rural areas lived off a mix of agriculture and wage-labor.

In the 1990s Indigenous peoples in Chile gradually entered a process of re-ethnification (Lorca and Hufty, 2017). The Indigenous Law (1993), negotiated with Indigenous groups, was a turning point. It created a state agency, the CONADI, to promote Indigenous development, protect Indigenous lands and maintain a registry of lands, communities and associations. It also gave communities access to state subsidies and a say in matters that were of their concern. Recognized as Indigenous were those whose parents had been Indigenous, and those with Indigenous names and specific cultural traits. The law had a tremendous symbolic effect, despite some weaknesses (Morales, 2014). As Benavides and Sinclaire (2014: 35) point out, "the 'community' is a legal organizational figure defined by, and for, the state, which does not necessarily coincide socially and territorially with the traditional community". Yet, the law

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[1] Atacameña woman, 67 years old, born in the Chuquicamata mining camp. She works in the recovery and dissemination of knowledge related to the sacred Atacameño geography and is a prominent environmental activist.

[2] Atacameño man, 66 years old, belongs to the Quitor community, was born in the city of Calama, is a mining engineer and has a long career in the mining sector in risk prevention and environment. He is currently retired and lives in San Pedro de Atacama where he leads a mining consultancy company. He also heads a foundation focused on environmental protection.

acknowledged for the first time the multicultural nature of Chilean society. Being Indigenous was not a shame anymore in democratic Chile. It also paved the way to Chile's ratification of ILO Convention 169 in 2008 and Chile's vote in favor of the United Nations Declaration on the Rights of Indigenous Peoples.

The Council of Atacameño People (CPA) emerged in 1992 as a platform to gather traditional authorities and community leaders from the villages surrounding the SdA. In 1994, the CPA became a territorially centralized Indigenous association that managed to represent communities before public and private actors, expressing a single 'Indigenous voice' for their political and cultural claims. Political mobilization under the Atacameño label subsequently began to coalesce around confrontation with mining and other interests, to protect cultural and natural heritage and resources, particularly water.

In 1998, the first Indigenous Congress in the region identified mining and tourism as activities with negative consequences for the region. It recognized that water represents "a big problem, since it is a basic resource for both the communities and industrial mining projects" (Morales, 2014: 123). Between 1995 and 1998, Indigenous organizations legally registered the surface waters of the Atacama basin to prevent its sale. However, the groundwater was left unprotected and accessible for mining companies (Gundermann and Göbel, 2018).

This process of Indigenous identity construction, organization and increasing political mobilization intersects with the history of lithium mining in the SdA in a number of ways (Fig. 2). For the last two decades, Atacameño communities have negotiated with mining companies for consultation processes, binding economic compensations and support of community development plans. At the same time, 'corporate social responsibility' became part of mining companies' discourses and strategies for community engagement (Bolados, 2014; Morales and Azócar, 2015). Crucially, in 2012, Rockwood signed an 'Agreement for cooperation, sustainability and mutual benefit' with one of the SdA communities, Peine, and an equivalent agreement with the Council of Atacameño People in 2016. According to these agreements, the community and the Council receive a percentage of the sales of lithium and potassium salts. Gundermann and Göbel (2018) understand it as part of the corporate concept of 'shared values,' according to which companies should share their economic gains as a way of reducing confrontation with local communities.

Such agreements form part of communities' strategies to regulate and monitor mining sites. However, there are strong local critics who see them as an exchange of natural resources for money, and a strategy to co-opt community leaders, in a context of strong asymmetry.

> Of course, what is happening is that the companies that provide these resources to the communities, do so based on a percentage of their sales. If you do that to someone you make them participants… you turn the communities into direct partners. So, if I am a community and a company gives me resources based on a percentage of its profits, I don't want the company to have to reduce its production. Then the communities say, "Okay, we're going to do the monitoring." But what confidence does that give you when it is based on a percentage? If the amounts were fixed, it would be different, maybe. (Interview 11, San Pedro de Atacama, 16/03/2020).[3]

As Babidge (2013) argues, Indigenous organizations are not only minor 'partners' in these agreements, but also those who risk the most, since the integrity of their environment is at stake and thus the very future of their communities. One of our interviewees seemed to view the agreements and the resulting payments as compensation for future

environmental degradation:

> This is not going to stop. The state is not going to care and nobody else is going to stop it either. If they can dry out the Salar de Atacama, they will. So, since we will pay the cost of the drying salar we have to squeeze out what we can, in that same cold logic. […] I agree with the claims and the organization, but what do we do? We stand by and watch it being exploited while we continue to agonize, quarrel […]. That's why I follow that logic to say that this is the opportunity cost. I have to go and squeeze the mining company, without being disgusted and be just like them […] between equals. […] I don't know, if it will be a dump tomorrow, they'll have to publicly explain it. […] Of course, my particularity is that I was trained in, and have knowledge about, copper mining […] This has led me to this hard and technical discourse, which is the worst thing for them, because they had to deal with someone who knows how to handle the numbers (Interview 3, Toconao, 03/03/2020).[4]

Further conflicts occur within communities regarding who can be admitted as a community member, with people advancing competing claims to Indigenous identity, especially in the case of urban Indigenous peoples, who have recently returned to the communities, and entered into conflict with families who remained. In addition, the mismatch between historical and legally recognized Indigenous communities and territories has led to tensions between Indigenous organizations that compete for overlapping territorial spaces. These conflicts have been exacerbated by competition over access to payments from lithium mining companies.

At a broader scale, the attempted unification of the Atacameño people under the Council of Atacameño People has come at the cost of obscuring internal differences and generating conflicts over included and excluded communities. Being recognized as a member, and therefore part of the Atacameño people it claims to represent, has direct consequences for the negotiations with lithium mining companies, and who benefits.

> The Council speaks very nicely, it speaks of the Atacama communities… for all the Atacameño, of course, but later, when they have to decide something, they say: "No, this is the Council of Peoples and the 18 communities [that make it up]." So, they are somehow exclusive. That's another reason why we constituted ourselves [as an Indigenous community], to make decisions for ourselves and because we also feel affected. Obviously, if a guy goes in tomorrow, now that they're looking at the [payments] issue with SQM, they'll most likely negotiate with them… Then the same thing will happen again, they'll decide for us… That's what we want to avoid. We tried [to join the Council, but]… nothing, there is no response… closed doors. This was 2018 and we've been waiting for more than a year, almost two years, for answers, and nothing (Interview 5, Beter and Tulor, 06/03/2020).[5]

As a result of the fractures appearing within the Council of Atacameño People, direct negotiations and extra-judicial agreements between companies and the communities impacted by their operations have increased. These negotiations have sidelined those aspiring towards a unified position of all Indigenous communities in the region. The resulting tensions and ruptures have translated into a process of community reorganization, in which how people relate to Atacameño

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[3] Atacameño man, 55 years old, born in San Pedro de Atacama. He works in a tourist agency that provides mountaineering, expedition and trekking services. He also participates in local social organizations and is part of an NGO. He leads the indigenous community of Salar de Talar, which is in the process of legal establishment.

[4] A 56-year-old man from Atacama, born in the city of Calama, he is an industrial engineer and belongs to the community of Toconao. Since the 1990s he has held leadership positions in the community. He works at the Chuquicamata division of Corporación Nacional del Cobre, where he has served as president of a union.

[5] A 34-year-old man from Atacama, born in the city of Calama, he is an electrical engineer and belongs to the Beter and Tulor community where he was president.

Main events		Characteristics	Period
Related to Indigenous peoples	Related to mining		
1870 — Discoveries of saltpeter			SALTPETER AND COPPER BOOM
1885			
1900		-Atacama is a pole of development	
1915 Indigenous peoples work in Chuquicamata as unskilled laborers	Chuquicamata starts operating / Water shortages due to mining	-Chile enters into the global economy	
1968	Co. Anglo-Lautaro becomes SQM	-Indigenous peoples are converted into wage laborers	
1973			CHILENIZATION CAMPAIGNS
1975	Start of Lithium prospection		
Neighborhood councils replace indigenous organizations		-Pinochet authoritarian regime	
1981 Water Code		-Lithium mining appears in the SdA	
1984 Many indigenous people migrate to the city	SCL starts producing Lithium carbonate in the SdA	-Loss of traditions, languages and identity	
1986	MINSAL explores the SdA		
1989			
1992 Creation of the CPA		-Indigenous rights are established by law	RE-ETHNIFICATION
1993 Indigenous Law n°19.253		- Recognition of the multicultural character of Chilean society	
1994 CPA as a centralized association	SQM buys MINSAL		
Surface waters are registered	Groundwater available for mining	-Shifts in the relations between indigenous communities and mining companies	
1998 1st "Atacameño" Congress: mining is defined as a damaging activity			
2008 ILO C169 is ratified by Chile			
	SCL becomes Rockwood Litio Ltda.	-Tensions between and within indigenous communities: who is Atacameño?	DISPUTES AROUND MINING AND IDENTITY
2012 Agreement Rockwood - Peine community			
2015 Agreement Rockwood - CPA	Rockwood is bought by Albemarle	-Contesting perceptions about mining and the agreements	
2016	Excesses in water use		
2019 Mobilizations	Chile is the 2nd largest Li producer	-Lithium mining is damaging the local environment	
2021 Lithium mining impacts are being reported in scientific literature			

Time →

Fig. 2. Main historical periods and events relevant to this study.

identity has shifted and "the system of ayllus, understood as a group of families linked by a common territory and ancestry," has regained prominence (Garcés and Maureira, 2018: 232).

How Indigenous peoples relate with lithium mining, then, is marked by a deep ambivalence, or "functional dualism" (de Janvry, 1981), about the role of mining in local development. On one hand, Indigenous identity is instrumentally used to resist mining, as well as to capture economic benefits from mining companies. While these are presented by some as fair compensation or participatory measures to prevent and mitigate adverse impacts, others understand them as corporate strategies to co-opt Indigenous organizations and divide communities. On the other hand, people recur to nostalgic discourses about the past, voicing a traditional awareness for the environment and corresponding anti-mining sentiments. Some interviewees express apparently competing sentiments within a single interview.

These negotiations and agreements between Indigenous organizations and lithium mining companies have transformed Indigenous societies around the SdA, resulting in tensions and fractures and straining the social fabric within and between Atacama communities. Struggling for the recognition of their political, social and cultural demands, while being faced with an asymmetrical distribution of opportunities and constraints vis-a-vis lithium mining, today's Atacameño communities are focusing their efforts on the issues of water and territorial rights. They do so while negotiating from a space of ambivalence between and within communities, and even within individual subjective positions.

The struggle for the (re)construction and recognition of Indigenous identity constitutes a strategy for collective action that, not without risk, aims to overcome the complex environmental challenges and social inequalities that have emerged from the historical expansion of mining in the region. These struggles take place in a scenario where the state has been long absent, except as the legal guarantor legitimizing extraction, leaving ample space for the mining industry to assume a central role in restructuring the socio-environmental fabric in the region. As a result, companies have been able to negotiate terms and adopt strategies that favor extraction, pacify resistance, and divide communities through the uneven distribution of benefits.

6. Conclusions

In this article we explored how mining, territory, and indigeneity are co-produced in the context of lithium mining in the SdA. We examined the history of mining in the region, and unpacked how contemporary territorial claims and conflicts manifest themselves in this particular place. We examined how Indigenous organization, and indeed indigeneity itself, have been shaped through their historical and current engagement with both mining and the territory.

We found that lithium mining in the SdA constitutes the most recent instance of a broader process of social and environmental change that has transformed the region and its people, and is directly related to the expansion of industrial mining from the end of the 19th century onwards. The consequences of this process today have become apparent in depleted water resources and increasingly vocal fears and grievances among local communities. The latter have reinforced Indigenous demands for territorial control over the Atacama Salt Flat and for lithium mining to stop. At the same time, Atacameño identity has become a highly valued, yet ambivalent, political opportunity. Agreements between Indigenous organizations and lithium companies have brought significant economic resources for community development, but have also expanded the mining industry's capacity for social control in the area. In particular, direct payments have generated tensions and disagreements within and between communities and their organizations.

These findings have important analytical and practical implications for comprehending Indigenous peoples' engagement with mining, in the SdA in particular. While there is widespread consensus among communities about growing water scarcity and rising concerns for the area's aquifers, people disagree on the social benefits and risks of different engagements with lithium companies. There are increasing doubts about the capacity and legitimacy of social organizations, such as the Council of Atacameño People, to represent the Atacameño people and protect its environmental and cultural heritage. As a consequence, people also increasingly question whether these agreements constitute a real contribution to local development for the region. Thus, the language of 'agreement' paints a simplistic image of consent that obscures the fact that dissent and tensions are equally important parts of the story. Thus, when encountering and employing concepts such as the 'social licence,' it is crucial to bear in mind the ambivalence inherent in even the most consensual encounters.

This paper has sought to make room for such ambivalence by reminding the readers of the dynamic nature of indigeneity. As we indicated in the conceptual section, the stereotypical ways that Indigenous peoples are often represented pose analytical and practical limits. In particular, by portraying Indigenous people as uniform and unified actors, they turn inherent ambivalences into apparent contradictions, further marginalizing the positions and concerns of actually existing people. To counter such portrayals, we have unpacked what 'indigenous' means, that is, how this particular subject position comes into being and takes on meaning through negotiation and struggle, in a specific historical and geographical context.

In fact, in the case presented here, mining, territory, and indigeneity all fit poorly into preconceived categories that are often employed in public media and academic literature alike. The long history of mining in the region, and the particularities of lithium extraction, unsettle ideas of mining as simply an exogenous force. Indeed, mining in itself not only is a part of the history, in which local territories were produced, but has also shaped what it means to be Indigenous, and how Indigenous organizations take shape. Mining continues to play a role in how indigeneity is conceived and employed. The territory, and the environmental struggles it is involved in, are about more than access to land, involving concerns over water, wildlife, and the survival of particular lifeways. Indigenous peoples, in turn, maintain complex relationships with both mining and the territory. They organize and express themselves in ways that reflect not contradiction, but ambivalences that become comprehensible when apprehended, ethnographically and historically, as people situated in particular places and lifeworlds, facing highly asymmetrical patterns of opportunities and constraint.

Thus, we argue that what is at stake in Indigenous territorial struggles over mining in the SdA and beyond are more than – but also – struggles over resources like land and water. They are – always ambivalent – struggles to remake Indigenous identity in particular ways, and to define alternative cultural-political projects. They are also struggles which have broader relevance. They serve as reminders of core contradictions and inequalities within global political economy and ecology, the links and disconnects between production and consumption, and the incongruences between value systems articulated through global markets. They raise questions about how and why particular ways of life in one part of the globe can be put at risk or even sacrificed for the benefit of saving – not 'the planet' – but a particular, privileged way of life in another part of the globe. In this sense, these struggles raise important questions about the implications of a global shift to renewable energy, and ethical responses to the climate crisis.

Acknowledgements

References

Acuña, R.M., 2015. The politics of extractive governance: indigenous peoples and socio-environmental conflicts. Extr. Ind. Soc. 2 (1), 85–92. https://doi.org/10.1016/j.exis.2014.11.007.

Acuña, V., Tironi, M., 2021. Extractivist droughts: Indigenous hydrosocial Endurance in Quillagua, Chile. The Extractive Industries and Society. In Press. https://doi.org/10.1016/j.exis.2021.101027.

Anthias, P., 2018. Limits to decolonization: Indigeneity, territory, and Hydrocarbon Politics in the Bolivian Chaco. Cornell University Press, Ithaca.

Anthias, P., 2019. Rethinking territory and property in Indigenous land claims. Geoforum 119, 268–278. https://doi.org/10.1016/j.geoforum.2019.09.008.

Babidge, S., 2013. "Socios": the contested morality of "partnerships" in Indigenous community-mining company relations, Northern Chile. J. Lat. Am. Caribb. Anthropol. 18 (2), 274–313. https://doi.org/10.1111/jlca.12020.

Babidge, S., 2016. Contested value and an ethics of resources: water, mining and Indigenous people in the Atacama Desert. Chile. Aust. J. Anthropol. 27 (1), 84–103. https://doi.org/10.1111/taja.12139.

Babidge, S., Kalazich, F., Prieto, M., Yager, K., 2019. That's the problem with that lake; it changes sides": mapping extraction and ecological exhaustion in the Atacama. J. Political Ecol. 26 (1), 738–760. https://doi.org/10.2458/v26i1.23169.

Baker, J.M., Westman, C.N., 2018. Extracting knowledge: social science, environmental impact assessment, and Indigenous consultation in the oil sands of Alberta, Canada. Extr. Ind. Soc. 5 (1), 144–153. https://doi.org/10.1016/j.exis.2017.12.008.

Bebbington, A., Humphreys Bebbington, D., Bury, J., Lingan, J., Muñoz, J.P., Scurrah, M., 2008. Mining and social movements: struggles over livelihood and rural territorial development in the Andes. World Dev. 36 (12), 2888–2905. https://doi.org/10.1016/j.worlddev.2007.11.016.

Benavides, C., Sinclaire, D., 2014. El convenio minero en tierras indias el oasis de Peine y la gran minería en la cuenca del Salar de Atacama. Revista Rufián 19, 31–39.

Bessire, L., Bond, D., 2014. Ontological anthropology and the deferral of critique. Am. Ethnol. 41 (3), 440–456. https://doi.org/10.1111/amet.12083.

Betancourt, M. 2017. Colonialidad territorial y conflictividad en Abya Yala/América Latina, in Alimonda, H., Toro Pérez, C. and Martín, F. (Eds.), Ecología política Latinoamericana: pensamiento crítico, diferencia Latinoamericana y rearticulación epistémica, Tomo II: 303–352. Buenos Aires.

Blaser, M., 2009. Political ontology. Cult. Stud. 23 (5–6), 873–896. https://doi.org/10.1080/09502380903208023.

Boelens, R., 2014. Cultural politics and the hydrosocial cycle: water, power and identity in the Andean highlands. Geoforum 57, 234–247. https://doi.org/10.1016/j.geoforum.2013.02.008.

Bolados, P., 2014. Los conflictos etnoambientales de 'Pampa Colorada' y 'El Tatio' en el Salar de Atacama, Norte de Chile. Procesos étnicos en un contexto minero y turístico transnacional Estudios Atacameños 48, 229–248. https://doi.org/10.4067/S0718-10432014000200015. http://doi.org/.

Bryan, J., 2012. Rethinking territory: social justice and neoliberalism in Latin America's territorial turn. Geogr. Compass 6 (4), 215–226. https://doi.org/10.1111/j.1749-8198.2012.00480.x.

Burman, A., 2015. Now we are Indígenas': hegemony and indigeneity in the Bolivian Andes. Lat. Am. Caribb. Ethn. Stud. 9 (3), 247–271. https://doi.org/10.1080/17442222.2014.959775.

Business News Americas. 2007. Agua y minería: una industria sedienta. Mining intelligence series. https://www.ocmal.org/wp-content/uploads/2017/03/agua.pdf.

Campero, C., Harris, L.M., Kunz, N.C., 2021. De-politicising seawater desalination: environmental Impact Assessments in the Atacama mining Region. Chile. Environ. Sci. Policy 120, 187–194. https://doi.org/10.1016/j.envsci.2021.03.004.

Campos-Ortega, C., Jorquera-Jaramillo, C., 2008. Minería y conservación en Atacama. In: Squeo, F., Arancio Gutiérrez, J.R. (Eds.), Libro Rojo De La Flora Nativa y De Los Sitios Prioritarios Para Su Conservación. Región de Atacama. Ediciones Universidad de La Serena, pp. 323–338.

Carrasco, A. 2020. The embrace of the serpent: A Chronicle of Atacameño Life in the Face of Mining. Lexington Books.

Carter, J., Hollinsworth, D., 2009. Segregation and protectionism: institutionalised views of aboriginal rurality. J. Rural Stud. 25 (4), 414–424. https://doi.org/10.1016/j.jrurstud.2009.05.008.

CEPAL-OCDE, 2016. Evaluaciones Del Desempeño ambiental: Chile 2016. Naciones Unidas, Santiago.

Cepek, M., 2012. The loss of oil: constituting disaster in Amazonian Ecuador. J. Lat. Am. Caribb. Anthropol. 17 (3), 393–412. https://doi.org/10.1111/j.1935-4940.2012.01250.x.

Cepek, M.L., 2016. There might be blood: oil, humility, and the cosmopolitics of a Cofán petro-being. Am. Ethnol. 43 (4), 623–635. https://doi.org/10.1111/amet.12379.

Conde, M., 2017. Resistance to mining: a review. Ecol. Econ. 132, 80–90. https://doi.org/10.1016/j.ecolecon.2016.08.025.

Coombes, B., Johnson, J.T., Howitt, R., 2012. Indigenous geographies I: mere resource conflicts? the complexities in Indigenous land and environmental claims. Prog. Hum. Geogr. 36 (6), 810–821. https://doi.org/10.1177/0309132511431410.

CORFO. 2016. Presentación comisión investigadora litio. https://www.camara.cl/verDoc.aspx?prmID=63026&prmTIPO=DOCUMENTOCOMISION (accessed 31 July 2021).

de la Cadena, M., 2010. Indigenous cosmopolitics in the Andes: conceptual reflections beyond "politics". Cult. Anthropol. 25 (2), 334–370. https://doi.org/10.1111/j.1548-1360.2010.01061.x.

de la Cadena, M., 2015. Earth beings : ecologies of practice across Andean worlds. The Lewis Henry Morgan Lectures. Duke University Press, Durham.

de Janvry, A., 1981. The agrarian question and reformism in Latin America. Baltimore and London. John Hopkins University Press.

Erb, M., Mucek, A., Robinson, K., 2021. Exploring a social geology approach in eastern Indonesia: what are mining territories? Extr. Ind. Soc. 8 (1), 80–103. https://doi.org/10.1016/j.exis.2020.09.005.

Gajardo, G., Redón, S., 2019. Andean hypersaline lakes in the Atacama Desert, northern Chile: between lithium exploitation and unique biodiversity conservation. Conserv. Sci. Pract. 1, 1–8. https://doi.org/10.1111/csp2.94.

Garcés, A., Maureira, M., 2018. De familia a organización étnica: redes para una espacialidad transfronteriza en la Puna de Atacama. Revista Chilena de Antropología 37, 230–248. https://doi.org/10.5354/0719-1472.2018.49514.

Greenwood, P. 2020. Will green technology kill Chile's deserts? the guardian, Feb. 18. https://www.theguardian.com/global-development/video/2020/feb/18/will-green-technology-kill-chiles-deserts-video (accessed 25 July 2021).

Gundermann, H., Göbel, B., 2018. Comunidades indígenas, empresas del litio y sus relaciones en el salar de Atacama. Chungará (Arica) 50 (3), 471–486. https://doi.org/10.4067/S0717-73562018005001602 http://doi.org/.

Gundermann, H., 2017. Los pueblos originarios del Norte de Chile y el estado. Diálogo Andino 8, 93–109.

Haesbaert, R., 2011. El Mito de La desterritorialización: Del 'Fin De Los territorios' a La Multiterritorialidad. Siglo Veintiuno, México.

Hale, C.R., 2011. Resistencia para que? territory, autonomy and neoliberal entanglements in the 'empty spaces' of Central America. Econ. Soc. 40 (2), 184–210. https://doi.org/10.1080/03085147.2011.548947.

Halvorsen, S., Mançano Fernandes, B., Torres, F.V., 2019. Mobilizing territory: socioterritorial movements in comparative perspective. Ann. Am. Assoc. Geogr. 109 (5), 1454–1470. https://doi.org/10.1080/24694452.2018.1549973.

Hitch, M., Barakos, G., 2021. Virtuous natural resource development: the evolution and adaptation of social licence in the mining sector. Extr. Ind. Soc. 8 (2), 100902 https://doi.org/10.1016/j.exis.2021.100902.

Holbraad, M., Pedersen, M.A., 2017. The Ontological Turn: An Anthropological Exposition. New Departures in Anthropology. Cambridge University Press.

Horowitz, L.S., Keeling, A., Lévesque, F., Rodon, T., Schott, S., Thériault, S., 2018. Indigenous peoples' relationships to large-scale mining in post/colonial contexts: toward multidisciplinary comparative perspectives. Extr. Ind. Soc. 5 (3), 404–414. https://doi.org/10.1016/j.exis.2018.05.004.

Hudayana, B., Suharko, Widyanta, A.B., 2020. Communal violence as a strategy for negotiation: community responses to nickel mining industry in Central Sulawesi, Indonesia. Extr. Ind. Soc. 7, 1547–1556. https://doi.org/10.1016/j.exis.2020.08.012.

Hufty, M., 2021. Indigenous and local people. In: Morin, J.-F., Orsini, A. (Eds.), Essential Concepts of Global Environmental Governance, 2d Ed. Earthscan/Routledge, pp. 95–98.

Hufty, M., Bottazzi, P., 2006. Peuples indigènes et citoyenneté en Amérique latine: entre adaptation et résistance à l'ordre mondial. In: Froger, G. (Ed.), La Mondialisation Contre Le Développement Durable? Bruxelles, Peter Lang, pp. 181–197.

Jerez, B., Garcés, I., Torres, R., 2021. Lithium extractivism and water injustices in the Salar de Atacama, Chile: the colonial shadow of green electromobility. Polit. Geogr. 87, 1–11. https://doi.org/10.1016/j.polgeo.2021.102382.

Kirsch, S., 2007. Indigenous movements and the risks of counterglobalization: tracking the campaign against Papua New Guinea's Ok Tedi mine. Am. Ethnol. 34 (2), 303–321. https://doi.org/10.1525/ae.2007.34.2.303.

Larsen, P.B., 2015. Post-frontier resource governance : indigenous rights, extraction and conservation in the Peruvian Amazon. International Relations and Development Series. Palgrave Macmillan, London.

Li, F., 2015. Unearthing Conflict : Corporate Mining, Activism, and Expertise in Peru. Duke University Press, Durham.

Liu, W., Agusdinata, D.B., 2020. Interdependencies of lithium mining and communities sustainability in Salar de Atacama. Chile. J. Clean. Prod. 260, 120838 https://doi.org/10.1016/j.jclepro.2020.120838.

Liu, W., Agusdinata, D.B, 2021. Dynamics of local impacts in low-carbon transition: agent-based modeling of lithium mining-community-aquifer interactions in Salar de Atacama, Chile. Extr. Ind. Soc. 8 (3) https://doi.org/10.1016/j.exis.2021.100927.

Liu, W., Agusdinata, D.B., Myint, S., 2019. Spatiotemporal patterns of lithium mining and environmental degradation in the Salar de Atacama, Chile. Int. J. Appl. Earth Obs. Geoinformation 80, 145–156. https://doi.org/10.1016/j.jag.2019.04.016.

Lorca, M., Hufty, M., 2017. El patrimonio como forma de resistencia a la gran minería. El caso del Huasco Alto, Chile. Revista Intersecciones en antropología 18 (1), 31–42. http://www.ridaa.unicen.edu.ar/xmlui/handle/123456789/1625.

Maclean, K., Robinson, C.J., Natcher, D.C., 2015. Consensus building or constructive conflict? aboriginal discursive strategies to enhance participation in natural resource management in Australia and Canada. Soc. Nat. Resour. 28 (2), 197–211. https://doi.org/10.1080/08941920.2014.928396.

Marazuela, M.A., Vázquez-Suñé, E., Ayora, C., García-Gil, A., Palma, T., 2019. The effect of brine pumping on the natural hydrodynamics of the Salar de Atacama: the damping capacity of salt flats. Sci. Total Environ. 654, 1118–1131. https://doi.org/10.1016/j.scitotenv.2018.11.196.

Marquet, P., Bozinovic, F., Bradshaw, G., Cornelius, C., González, H., Gutiérrez, J., Hajek, E., Lagos, J., López-Cortes, F., Núñez, L., Rosello, E., Santoro, C., Samaniego, H., Standen, V., Torres-Mura, J., Jaksic, F., 1998. Los ecosistemas del desierto de Atacama y área andina adyacente en el norte de Chile. Revista Chilena de Historia Natural 71 (4), 593–617.

Martínez-Tilleria, K., Núñez-Ávila, M., León, C., Pliscoff, P., Squeo, F., Armesto, J., 2017. A framework for the classification of Chilean terrestrial ecosystems as a tool for achieving global conservation targets. Biodivers. Conserv. 26, 2857–2876. https://doi.org/10.1007/s10531-017-1393-x.

McNeish, J.A., 2012. More than beads and feathers: resource extraction and the Indigenous challenge in Latin America. In: Haarstad, H. (Ed.), New Political Spaces in Latin American Natural Resource Governance. Studies of the Americas. Palgrave Macmillan, New York, pp. 39–60. https://doi.org/10.1057/9781137073723_3.

Mendez, M., 2021. Genealogy of mining territories in the Atacama Desert: the production of modern waterscapes in Tarapacá region, northern Chile (1853–1924). Extr. Ind. Soc. 8 (1), 111–122. https://doi.org/10.1016/j.exis.2020.05.003.

Morales, H., 2014. Génesis, formación y desarrollo del movimiento atacameño (norte de Chile). Estudios Atacameños 49, 11–128. https://doi.org/10.4067/S0718-10432014000300007 http://doi.org/.

Morales, H., 2013. Construcción social de la etnicidad: ego y alter en Atacama. Estudios Atacameños 46, 145–164. https://doi.org/10.4067/S0718-10432013000200009 http://doi.org/.

Morales, H., Azócar, R., 2015. Minería y relaciones interétnicas en Atacama. Estudios Atacameños 51, 49–63. http://repositorio.uchile.cl/handle/2250/137924. accessed 27 July 2021.

Neale, T., Vincent, E., 2017. Mining, indigeneity, alterity: or, mining Indigenous alterity? Cult. Stud. 31 (2–3), 417–439. https://doi.org/10.1080/09502386.2017.1303435.

OPSAL (Observatorio Plurinacional de Salares Andinos). 2021. Salares Andinos: Ecología de Saberes Por La Protección De Nuestros Salares y Humedales. Fundación Tantí.

Pavlovic, P., 2014. La industria del litio en Chile. Ingenieros 209, 30–35.

Porto-Gonçalves, C., 2009. De Saberes y de territorios: diversidad y emancipación a partir de la experiencia latino-americana. Polis 8 (22), 121–136.

Prieto, M., 2016. Transando el agua, produciendo territorios e identidades indígenas: el modelo de aguas chileno y los atacameños de Calama. Revista de Estudios Sociales 55, 88–103. https://doi.org/10.7440/res55.2016.06.

Prieto, M., Salazar, D., Valenzuela, M.J., 2019. The dispossession of the San Pedro de Inacaliri river: political ecology, extractivism and archaeology. Extr. Ind. Soc. 6 (2), 562–572. https://doi.org/10.1016/j.exis.2019.02.004.

Radcliffe, S.A., 2017. Geography and indigeneity I: indigeneity, coloniality and knowledge. Prog. Hum. Geogr. 41 (2), 220–229. https://doi.org/10.1177/0309132515612952.

Romero, A., Aylwin, J., Didier, M., 2019. Globalización de las empresas de energía renovable: extracción de litio y derechos de los pueblos indígenas en Argentina, Bolivia y Chile (Triángulo del Litio). Observatorio Ciudadano. https://media.business-humanrights.org/media/documents/files/documents/INFORME_LITIO_FINAL_PARA_WEB.pdf. accessed 27 July 2021.

Romero, H., Opazo, D., 2019. El ayllu como territorio de vida en las comunidades altoandinas y su relación con la configuración espacial de la minería en el Desierto y Salar de Atacama, Norte de Chile. Ambientes. Revista de Geografía e Ecología Política 1 (1), 38–78. https://doi.org/10.48075/amb.v1i1.22685.

Romero-Toledo, H., 2019. Extractivismo en Chile: la producción del territorio minero y las luchas del pueblo aimara en el Norte Grande. Colomb. Int. 98, 3–30. https://doi.org/10.7440/colombiaint98.2019.01.

Rossi, M., Forget, M., Gunzburger, Y., Bergeron, K.M., Samper, A., Camizuli, E., 2021. Trajectories of mining territories: an integrated and interdisciplinary concept to achieve sustainability. Extr. Ind. Soc. 8, 1–7. https://doi.org/10.1016/j.exis.2021.01.006.

Sanhueza, C., 2001. Las poblaciones de la puna de Atacama y su relación con los estados nacionales. Una lectura desde el archivo. Revista de Historia Indígena 5, 55–82. https://revistas.uchile.cl/index.php/RHI/article/view/39968.

Sanhueza, C., Gundermann, H., 2007. Estado, expansión capitalista y sujetos sociales en Atacama (1879-1928). Estudios Atacameños 34, 113–136. https://doi.org/10.4067/S0718-10432007000200007 http://doi.org/.

Santiago, A.L., Demajorovic, J., Rossetto, D.E., Luke, H., 2021. Understanding the fundamentals of the social licence to operate: its evolution, current state of development and future avenues for research. Resour. Policy 70, 101941. https://doi.org/10.1016/j.resourpol.2020.101941.

Savino, L., 2016. Landscapes of Contrast: the neo-extractivist state and Indigenous peoples in 'post-neoliberal' Argentina. Extr. Ind. Soc. 3 (2), 404–415. https://doi.org/10.1016/j.exis.2016.02.011.

Sawyer, S., Gomez, E.T., 2012. On Indigenous identity and a language of rights. In: Sawyer, S., Gomez, E.T. (Eds.), The Politics of Resource Extraction. Palgrave Macmillan, pp. 9–32. https://doi.org/10.1057/9780230368798_2.

Scott, J.C., 1998. Seeing Like a State. Yale University Press.

Spiegel, S.J., 2017. EIAs, power and political ecology: situating resource struggles and the techno-politics of small-scale mining. Geoforum 87, 95–107. https://doi.org/10.1016/j.geoforum.2017.10.010.

SQM, 2020. Annual Report.

Sun, T., Bao, H., Reich, M., Hemming, S., 2018. More than ten million years of hyperaridity recorded in the Atacama gravels. Geochim. Cosmochim. Acta 227, 123–132. https://doi.org/10.1016/j.gca.2018.02.021.

Sundberg, J., 2014. Decolonizing posthumanist geographies. Cult. Geogr. 21 (1), 33–47. https://doi.org/10.1177/1474474013486067.

Todd, Z., 2016. An Indigenous feminist's take on the ontological turn: 'Ontology' is just another word for colonialism. J. Hist. Sociol. 29 (1), 4–22. https://doi.org/10.1111/johs.12124.

USGS. 2020. US lithium carbonate imports, 2015-2018. https://pubs.usgs.gov/periodicals/mcs2020/mcs2020-lithium.pdf (accessed 27 July 2021).

Valdivia, G., 2007. The 'Amazonian Trial of the Century': indigenous identities, transnational networks, and petroleum in Ecuador. Alternatives 32 (1), 41–72. https://doi.org/10.1177/030437540703200103.

Vela-Almeida, D., 2018. Territorial partitions, the production of mining territory and the building of a post-neoliberal and Plurinational State in Ecuador. Polit. Geogr. 62, 126–136. https://doi.org/10.1016/j.polgeo.2017.10.011.

Vicuña, M., 1995. La imagen del desierto de Atacama (XVI-XIX). Del Espacio De La Disuasión Al Territorio De Los Desafíos. Editorial Universidad de Santiago.

Wanvik, T.I., Caine, K., 2017. Understanding indigenous strategic pragmatism: métis engagement with extractive industry developments in the Canadian North. Extr. Ind. Soc. 4 (3), 595–605. https://doi.org/10.1016/j.exis.2017.04.002.

Vela-Almeida, D., León, M. Lewinsohn, J.L. 2021. Indicadores de sostenibilidad en la minería metálica, Documentos de Proyectos (LC/TS.2021/47). Santiago, CEPAL. https://repositorio.cepal.org/bitstream/handle/11362/46876/1/S2100208_es.pdf (accessed 31 July 2021).

WITS (World Integrated Trade Solution). 2021. International trade indicators. https://wits.worldbank.org/country-indicator.aspx?lang=en (accessed 31 July 2021).