Resource Colonialism in Northern Chile: Indigenous Environmental Justice and Atacameño Responses to the Socio-Environmental Impacts of Lithium and Copper Mining

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“Somos una zona rica en cultura, en tradiciones, en paisaje, pero estamos malditos por el extractivismo y la extracción de salmuera y litio de nuestros salares.” - Jorge Muñoz Coca, Comunidad Socor (Muñoz Coca, 2023, 1:17-1:28)

“We are rich in culture, traditions, and landscapes, but we are cursed by extractivism and the extraction of brine and lithium from our salt flats.” - Jorge Muñoz Coca, Socor Community (Muñoz Coca, 2023, 1:17- 1:28)

“Estamos reclamando que defendiendo el agua porque esto es si no hay agua no hay vida.”- Roman Guitian, Cacique Comunidad Atacameños del Alitplano (Guitian, 2022, 1:07-1:14)

“We are demanding and defending the water because if there is no water, there is no life.”- Roman Guitian, Chief of the Atacameños Community of Alitplano (Guitian, 2022, 1:07-1:14)

"Estos territorios, durante siglos – desde que llegaron los españoles – han sido zonas de sacrificio, zonas destinadas a obtener recursos naturales para beneficiar al hemisferio norte quedando aquí las consecuencias." - Francisco Mondaca Espindola de Toconao, San Pedro (Mondaca Espindola, 2023, 1:33-1:53)

"These territories, for centuries – since the arrival of the Spanish – have been sacrifice zones, places used to extract natural resources to benefit the Northern Hemisphere while the consequences remain here." - Francisco Mondaca Espindola from Toconao in San Pedro (Mondaca Espindola, 2023), 1:33- 1:53

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I would like to express my gratitude to my supervisor Cesar Yanko Cervantes Benavides for your guidance, feedback, and direction throughout the development of this thesis. Your positivity, knowledge, encouragement, motivation, and constructive criticism have been instrumental in shaping this work into what it is today. I feel deeply connected to the impacts that extractivism has on marginalised and Indigenous Communities around the world, and I am especially grateful to have been guided toward writing on such a crucial topic. Highlighting the agency, resistance, and lived experiences of the Atacameño community in the Chilean Atacama Desert has not only been essential for understanding the complex socio-environmental dynamics at play but has also challenged me to reflect deeply on my own positionality, biases, and assumptions. It has prompted me to question dominant narratives and to center the strength, resilience, and knowledge embedded in Indigenous Communities' struggles against extractivism and environmental injustice. Through this thesis, I have learned so much about the importance of engaging with local and Indigenous perspectives on their own terms. Now, more than ever, I feel committed to challenging the structural injustices produced by colonial systems and working toward a world in which the voices of Indigenous Peoples, who not only speak for themselves but also embody powerful and active resistance, are respected, centered, and listened to. Thank you, Cesar, for guiding me through this process, and for helping me grow both as a student and as a person.

Abstract

Chile, the world's leading copper and second-largest lithium producer, hosts the Atacama Desert – one of Earth's driest regions. Home to the Atacameño Indigenous People, this ecologically fragile yet mineral-rich region faces extremely low rainfall and high evaporation rates, making Chile one of the most water-stressed countries in the Americas (Garcés & Alvarez, 2020; Babidge et al., 2021; Akchurin, 2025). Lithium and copper are key resources for the global transition to renewable energy technologies, but their highly water-intensive extraction raises significant environmental and social concerns. This thesis critically examines these dynamics through a case study, using three decolonial frameworks – Green Extractivism, Resource Colonialism, and Indigenous Environmental Justice – to analyse the socio-environmental crisis unfolding in the Atacama. It examines how mining reshapes the livelihoods of Atacameño Communities and how they respond. Guided by these frameworks, the thesis reveals that mining's socio-environmental consequences – water depletion, ecosystem degradation, and biodiversity loss – undermine traditional livelihoods, fuel conflicts, and deepen social inequalities. These impacts reflect colonial patterns as resources are extracted in the name of sustainability, yet benefits bypass local communities and thereby perpetuate inequalities between the global north and South (Blair et al., 2023; Jerez et al., 2023). Atacameño Communities respond with legal actions, negotiations, and cultural revitalisation, all aiming to protect Their rights, land and water. Despite varied strategies, they share a deep connection to their territories and a determination to defend Their natural resources. This research highlights the pressing need to critically reassess so-called 'green' solutions and to urgently engage with and respond to the knowledge, experiences, and actions of Atacameño Communities in order to mitigate the disproportionate adverse effects They face.

Keywords: Mining Atacama Desert, Atacameño Indigenous Responses, Green Extractivism, Resource colonialism, and Indigenous Environmental Justice

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1. Introduction

1.1 Context and Significance

The Atacameño people, also known as the Likanantay, reside in northern Chile, a country shaped by a long, narrow strip of land between the Andes and the Pacific Ocean. Accounting for 1.39 per cent of the national Indigenous Population, Atacameños have inhabited the Atacama Desert, one of the driest places on earth, for approximately 6,000 years (O'Faircheallaigh & Babidge, 2023). This region encompasses Salar de Atacama (also known as the Salar[1]), a vast salt pan located in the Antofagasta region, boasting some of the world's richest reserves of copper and lithium that are crucial minerals for the global energy transition (Blair et al., 2023; US Geological Survey, 2021).

Over the past three decades, extractive industries in the region have severely depleted the limited water resources, often exceeding natural regeneration rates (Kalazich et al., 2019). Thus, the Chilean state has recently declared the environment of the Salar "exhausted" (Babidge et al., 2019).[2] Policies aimed at mitigating climate change, such as the energy transition, are contributing to the expansion of extractive frontiers, driven by growing demand for copper and lithium used in energy storage technologies (Blair et al., 2023; Mejia-Muñoz & Babidge, 2023). While mining has contributed to economic growth in some parts of the world, it has more importantly resulted in ongoing environmental degradation and placed significant social strains

[1] "Salar" is a Spanish noun meaning "salt flat".

[2] In economic terms, "exhaustion" is defined as when more water is extracted than can possibly be regenerated. However, Babidge et al. (2019) argue that this definition is too simplistic, as ecological exhaustion is far more complex, especially when viewed from the ground. For the communities living in the Salar de Atacama, exhaustion extends to social, political and cultural life. It is not just a physical depletion, but the unravelling of the relationship between land, institutions and identity (Babidge et al., 2019). Thus, not only covering the material degradation of the environment, environmental degradation is multi-scalar as it is not only visible in large-scale phenomena like the water shrinkage, but it is also experienced intimately and directly in daily life, for example, through the reliability of water flowing from household taps. This underscores that environmental exhaustion is not abstract or distant for local communities, but a constant presence that affects social and material life (Babidge et al., 2019).

on local communities. These impacts largely stem from the lack of effective recognition and implementation of Indigenous Rights, particularly the right of Indigenous Communities to govern their own territories. This is also the case for the Atacameño people, who have been profoundly affected by extractivism[3] (O'Faircheallaigh & Babidge, 2023). Chile's privatisation of water rights and its facilitation of intensified mining operations have heightened the communities' struggles over water, undermining Their cultural and traditional livelihoods, and deepening existing inequalities and injustices. Following entrenched global power imbalances, the Atacameño people are positioned as subordinate to the demands of global economic accumulation, serving the acceleration of the global energy transition (Jerez et al., 2023). Against this backdrop, this thesis uses a case study approach to explore how the socio-environmental impacts of mining shape the responses of the Atacameño people. These responses reveal both the persistence of colonial dynamics and the emergence of strategies of resistance and adaptation in the face of extractivist pressures. By engaging with decolonial frameworks and Indigenous Perspectives grounded in lived experience and place-based knowledge, this study offers critical theoretical insights into Green Extractivism, Resource Colonialism and Indigenous Environmental Justice. Moreover, it also points to practical considerations for more equitable climate transitions, emphasising the need to centre Indigenous Voices.

1.2 Research Problem and Gap

Existing research in this field has explored the socio-environmental impacts of mining on the Atacameño People, shedding light on the lack of effective rights these communities have under Chilean law to govern and protect Their land and waters. Some additional work has been done on how the Atacameños respond to extractive mining in the region.

[3] Extractivism encompasses the practices, ideologies, and consequences of natural resource extraction. In capitalist systems, extractivism often prioritises profit and economic expansion at the expense of Communities and ecosystems (ClimaTalk, 2024)

However, a research gap exists in analysing how these socio-environmental effects shape Indigenous Resistance, analysed through a decolonial lens[4]. The struggles of Atacameño Communities are rarely framed within the broader context of neo-colonial power structures that continue to disproportionately harm vulnerable populations and ecosystems. This research gap matters because understanding the socio-environmental impacts of mining from a decolonial perspective is essential for advancing more just and inclusive environmental policies, empowering Indigenous Communities to defend Their rights, and challenging the ongoing colonial structures that enable extractive industries to harm vulnerable populations.

This thesis addresses that gap by examining how the gradual yet destructive environmental changes caused by mineral extraction that disproportionately affects Indigenous and marginalised communities, also called "slow violence"[5], mirror existing global inequalities, while also analysing how groundwater extraction for copper and lithium mining affects local ecosystems and the Atacameño people (Babidge, 2021). Taking an interdisciplinary approach, this research integrates environmental science, social science, Indigenous Studies, and legal analysis to comprehensively understand these complex impacts. This thesis highlights how these effects, along with Their resilience and agency, shape Their responses to destructive extractivism on Their lands. A broader aim and reason for this research is not only to highlight the importance of a decolonial lens, but also to emphasise the unique challenges and resilience of the Atacameño people without generalising Their experience. At the same time, it situates Their struggles within the broader, global issue of extractivism – a practice that disproportionately harms marginalised

[4] Decoloniality is a stance or approach that seeks to rediscover, revalidate, and restore knowledge, cultural values, social and economic structures, etc., that have been displaced or suppressed by colonialism, and to decenter or dismantle dominant colonial attitudes and power structures: decolonise (Dictionary.com, 2022).

[5] "Slow violence" is a term used to describe environmental harm that occurs gradually and often invisibly, impacting people and ecosystems over extended periods (Blair et al., 2023).

and Indigenous Communities worldwide. By emphasising the Atacameños' distinct context and honouring Their integrity, this case study ultimately calls for greater awareness of Indigenous Resistance and Environmental Justice across diverse communities facing similar pressures.

Framed within this context, the central research question guiding this thesis is: *"How do the socio-environmental impacts of lithium and copper mining in the Chilean Atacama Desert, as a manifestation of Resource Colonialism, shape Atacameño Indigenous responses to Green Extractivism?"*

2. Contextual Background

As an important background to this case study, a concise overview of mineral extraction in Chile, the country's brief history, its legal and institutional framework regarding Indigenous Rights, and the history of Indigenous Resistance has been provided.

2.1 Mineral Extraction

Since pre-industrial levels, global warming has caused the Earth to heat by 1,5 degrees. This dramatic shift requires the world to abandon fossil fuels and transition to more sustainable sources of energy, with a strong focus on electrified transportation and energy storage (Blair et al., 2023). Green technologies designed to mitigate the ongoing and worsening effects of climate change, through the use of renewable energy and zero-emission transportation, currently heavily rely on lithium-iron technologies.[6] Although lithium is found worldwide, one of the key commercial reserves is located in Salar de Atacama (Blair et al., 2023).

[6] These require lithium as their key component for the batteries that store energy for electric vehicles, smart devices and renewable power plants (Blair et al., 2023).

Chile, the world's largest copper and second-biggest lithium producer, is at the centre of the pressure to serve the idea of transitioning to renewable energy production (O'Faircheallaigh & Babidge, 2023).[7]

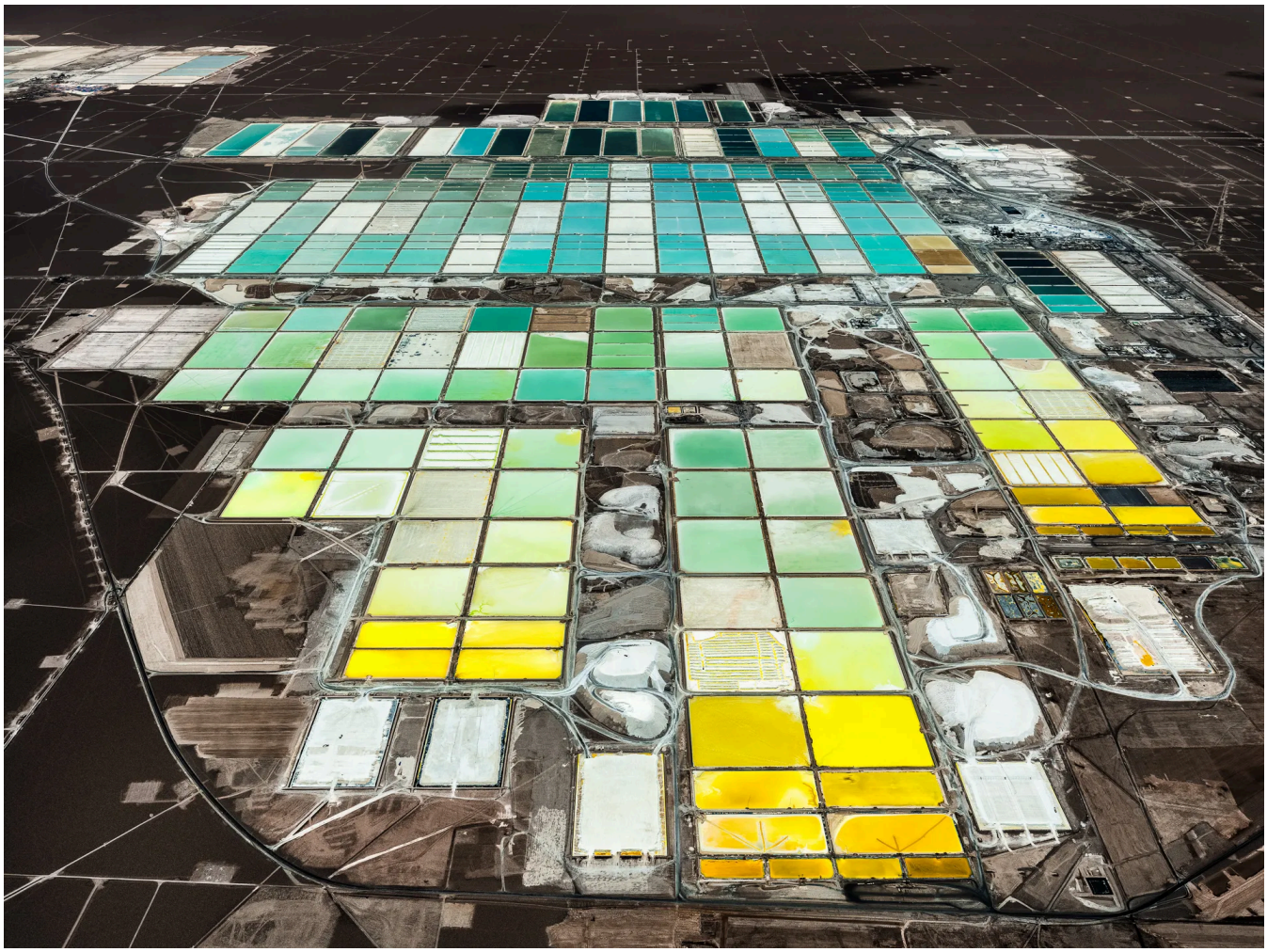
Albemarle and Sociedad Química y Minera (SQM) are the two main companies extracting lithium in Chile's Salar de Atacama, next to Minera Escondida Limitada, the world's largest copper mine (Babidge, 2020).[8] Figures 1 and 2 are photographs of these lithium evaporation production sites, while Figures 3 and 4 are maps of the Antofagasta Region and Salar de Atacama basin, respectively, illustrating the mining operations in the Atacama salt flats. As aforementioned, brine lithium extraction in the Atacama desert is highly controversial due to its severe environmental and social consequences for Indigenous Communities like the Atacameño Communities, specifically regarding water depletion and the violation of Indigenous Rights (Jerez et al., 2023).[9]

[7] Chile produces more than 5.5 million metric tons of copper annually, accounting for over 25% of global supply (O'Faircheallaigh, & Babidge, 2023).

[8] Albemarle Corporation is a US-based multinational and one of the world's largest lithium producers. In Chile, Albemarle operates a major lithium extraction facility at the Salar de Atacama and SQM is the country's largest concession holder for lithium and other minerals which is partly owned by Chilean and Chinese private investors. Minera Escondida Limitada (MEL) is the operating company of the Escondida copper mine, the world's largest copper mine by production (Babidge, 2020).

[9] The lithium extraction process consumes vast amounts of water, leading to significant groundwater depletion (Jerez et al., 2023; Blair et al., 2023).To understand the environmental impacts in the Salar de Atacama, it's essential to examine the lithium extraction process. Producing lithium carbonate and hydroxide requires the extraction and evaporation of large volumes of brine-salt-rich water located beneath the salt crust. This brine is pumped to the surface and left to evaporate in open ponds under the intense sun, allowing potassium to crystallise early in the process. Once lithium concentrations reach the desired level, the brine is transported to industrial facilities near Antofagasta for further processing (Babidge et al., 2019). Akchurin (2025) emphasises that lithium mining is essentially "water mining," as roughly 2 million litres of water are used per ton of lithium, an immense demand in the arid Atacama Desert. While notable, this consumption is still less than that of copper mining in the region (Babidge et al., 2019).

Figure 1 - Lithium Evaporation Production Site (a)



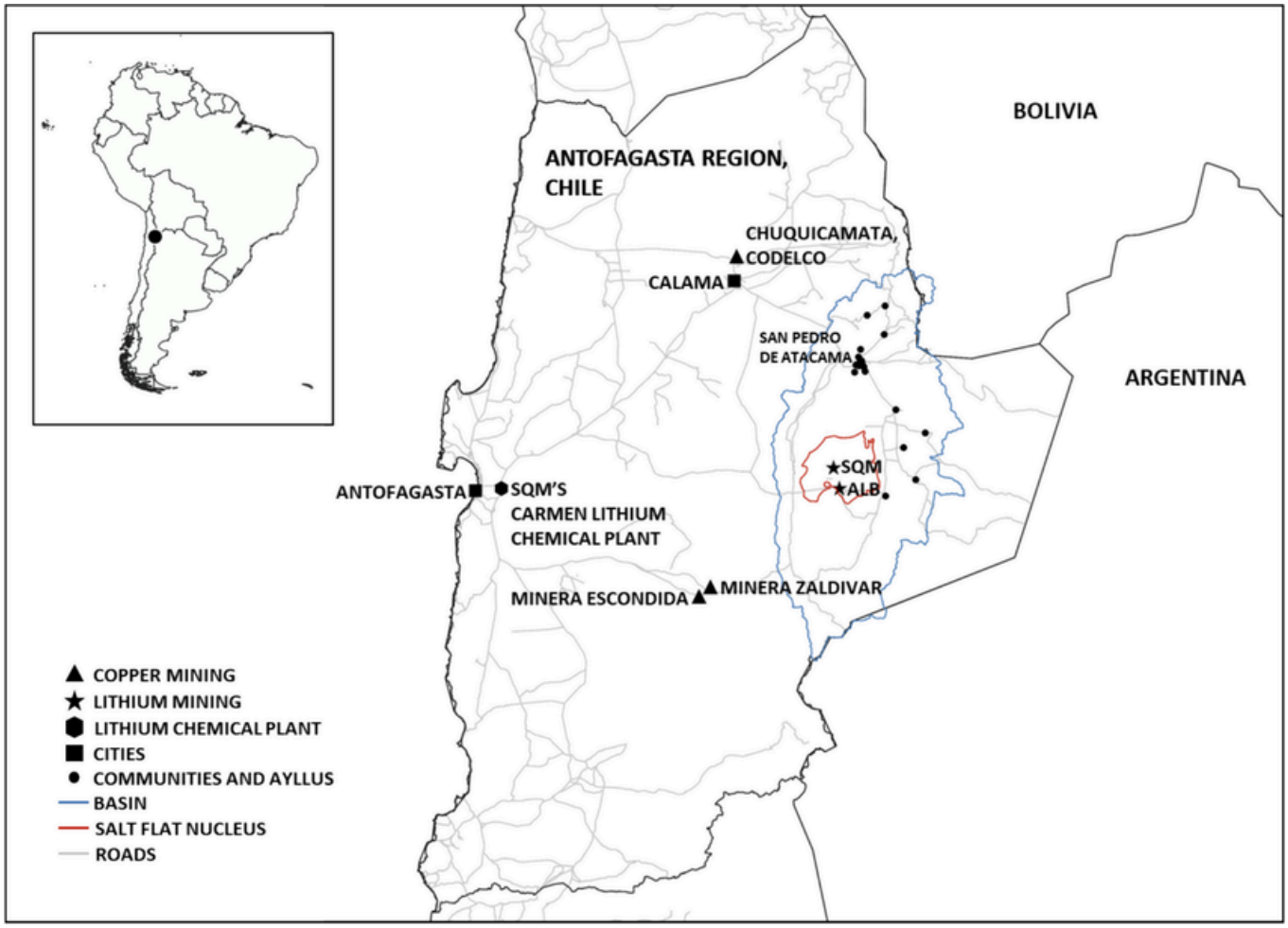
Note. From Lithium Series I – No. TLiSI03 by T. Hegen (2021), Tom Hegen, https://www.tomhegen.com/collections/the-lithium-series-i.

Figure 2 - Lithium Evaporation Production Site (b)

Note. From Lithium Series I – No. TLiSI04 by T. Hegen (2021), Tom Hegen,

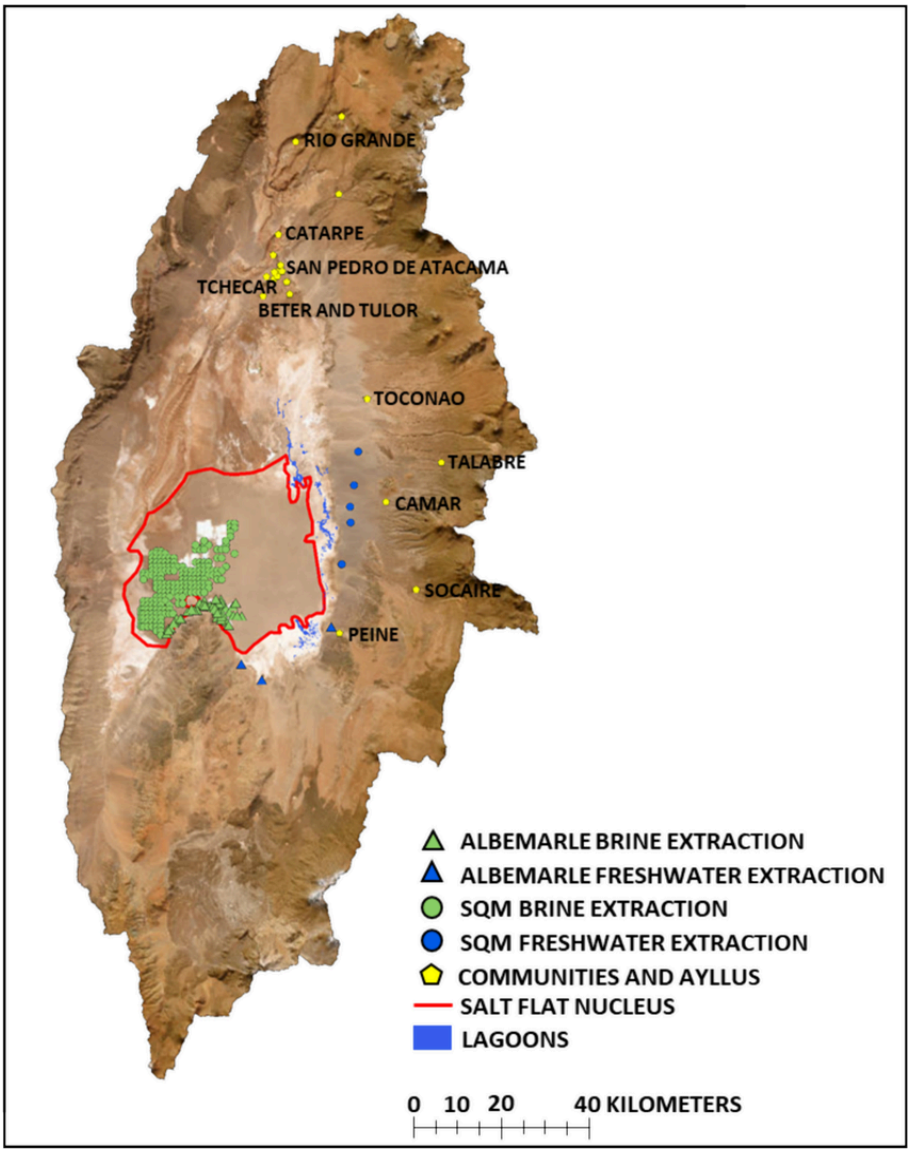
https://www.tomhegen.com/collections/the-lithium-series-i.

Figure 3 - Map of Antofagasta Region, displaying the mining operations from the Atacama salt flats



Note. From The International Journal of Life Cycle Assessment by Ewing & Iriarte (2024), https://doi.org/10.1007/s11367-024-02378-8. Licensed under CC BY 4.0.

Figure 4 - Map of Salar de Atacama basin, displaying freshwater and brine extraction wells from lithium operations



Note. From The International Journal of Life Cycle Assessment by Ewing & Iriarte (2024), https://doi.org/10.1007/s11367-024-02378-8. Licensed under CC BY 4.0.

These extractive pressures are not merely environmental or economic – they are deeply entangled with Chile's colonial legacies, legal structures, and the historical marginalisation of

Indigenous Peoples. To understand how global green energy demands shape local realities, it is necessary to contextualise the Atacameño experience within Chile's broader historical, political and legal landscape.

2.2 Brief History

Characterised by the violent expansion of the Spanish Empire into Indigenous Territories, Chile's colonial history resulted in widespread displacement, forced labour, and cultural suppression of Indigenous Peoples.[10] The introduction of colonial Spanish rule enforced racial hierarchies and land dispossessions, which laid the foundation for structural marginalisation of Indigenous Communities that persists to this day (Guengerich, 2024).

After declaring independence from Spain in 1818, Chile has undergone various political systems, ranging from authoritarianism in the nineteenth century to democratisation during the twentieth century, to a period of political polarisation in the 1960s and 1970s. This period ended with the removal and assassination of the Socialist President Salvador Allende in 1970, and transitioned into the dictatorship by the Pinochet regime. As a regime it lasted until 1990 and pursued a vigorous program of neo-liberal economic reform, including widespread privatisation and deregulation, measures largely left in place after Chile's return to democracy (Babidge & Belfrage, 2017). This Privatisation process placed many of Chile's resources within the realm of the free market, and in turn, continues to allow the extraction of minerals in Chile by national and foreign investors, leading to the country's continued reliance on mining and resource exports (O'Faircheallaigh & Babidge, 2023).

[10] Specifically in the Atacama Desert, colonisation brought disruption to traditional ways of life and the imposition of newly imposed extractive economic models centred around mining and resource exploitation (Guengerich, 2024).

2.3 Legal and Institutional Context of Indigenous Rights

Chile's legal system has long contributed to structural inequality, especially in Indigenous Territories (Castillo, 2016). After the country annexed the Atacama Desert from Bolivia in the late 19th century, the land rights of the Indigenous Atacameños were not recognised. In the 1930s, the Chilean state formally registered much of the region's ancestral grazing lands as government property. It wasn't until the 1990s, after Chile's return to democracy, that the state began formally addressing Indigenous territorial claims (Dorn & Gundermann, 2022).

The 1981 Chilean Water Code, established during Pinochet's dictatorship, privatised water rights and severely undermined Indigenous Communities by commodifying a vital resource (Dorn & Gundermann, 2022; Ministerio de Justicia, 1981).[11] Although the 1990s saw efforts to address these inequities through the Indigenous Law No. 19.253 and initiatives like CONADI's (National Corporation for Indigenous Development) Plan of Regularisation of Indigenous Water Titles, only a handful of communities succeeded in reclaiming legal recognition of Their water rights (Carrasco, 2016; Biblioteca del Congreso Nacional de Chile, 1993).[12]

Further legal developments initially raised hopes for change. In 1993, Chile passed its Indigenous Law, which formally recognised Indigenous Peoples and, later, ratified the ILO Convention 169 in 2008 (Castillo, 2016).[13] However, government agencies often acted contrary

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[11] Many Atacameño Communities, unaware of the need to register Their ancestral water use, lost access and control. This legal framework prioritised market efficiency and private interests, especially mining, over traditional practices and state regulation (Carrasco, 2016). Although some rights were registered in the late 1990s, mining companies continued to hold most water rights under the existing legal structure (Dorn & Gundermann, 2022).

[12] This is because areas considered economically or scientifically valuable, such as mining zones, astronomical observatories, and tourist destinations, were excluded from these land transfers (Carrasco, 2016).

[13] These steps promised a voice for Indigenous Communities in environmental governance and resource management. However, implementation proved largely symbolic. The Indigenous Law was applied in ways that continued to enable unregulated mining access, and environmental assessments remained reactive and superficial (Carrasco, 2016). It lacks retroactivity and relies on the state buying back land and water from private owners, rather

to the principles of ILO 169, failing to ensure meaningful participation or consent from affected communities (Carrasco, 2016).

Conclusively, despite persistent and ongoing efforts, the Atacameño people have not been able to obtain pronounced influence over mineral extraction on Their ancestral lands, particularly in the crucial area of water resources and Their management (O'Faircheallaigh & Babidge, 2023).

2.4 Indigenous Resistance

Although Chile has consistently supported large-scale mineral developments beyond its political complexion of government, these projects have been highly opposed in recent years by the resistance of Indigenous Communities fighting for Their rights, land, water and the broader protection of the natural environment. When situating the current Atacameño opposition to lithium mining within this broader historical context, it becomes clear that these actions are the continuation of a long-standing struggle for territorial rights, cultural survival, and environmental stewardship, and how asserting Their rights is part of an ongoing, generational struggle, not a reaction to only recent extraction (Babidge, 2020).[14]

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than restoring ancestral control (Castillo, 2016).

[14] After Chilean independence in 1818, the Mapuche in southern Chile, known for Their fierce and prolonged resistance, maintained significant autonomy until the state launched military campaigns such as the "Pacification of the Araucanía" (1861–1883), which forcibly incorporated Mapuche lands and led to displacement and marginalisation. Despite violent repression, the Mapuche resisted but were confined to a fraction of Their ancestral territory. In the 20th century, Indigenous organising gained momentum through political associations and alliances with leftist parties, leading to land restitution under Allende. These gains were reversed under Pinochet through re-privatisation and repression, yet Indigenous Resistance persisted through direct action, legal challenges, and mobilisation (O'Faircheallaigh, 2023). Since the return to democracy in 1990, resistance has intensified, including land occupations, sabotage of extractive operations, and legal advocacy. Despite ongoing repression, Indigenous Voices have increasingly entered political institutions, most notably during the 2021 Constitutional Convention (O'Faircheallaigh, 2023).
In the case of the Atacameño Communities, socio-environmental concerns were not a central issue during the early stages of lithium production in the 1980s. However, after 2000, resistance grew when the environmental and social consequences of existing operations became more evident. Communities increasingly voiced concerns over irregularities in new projects and the high consumption of freshwater and groundwater, which threatened local ecosystems and territories. This marked a clear shift from early acceptance to growing opposition, driven by lived experiences of harm, exclusion from decision-making processes, and escalating environmental degradation, particularly around water resources (Ciftci & Lemaire, 2023).

3. Theoretical Framework

To shed light on how the socio-environmental effects of mining shape the Atacameño responses as a form of Resource Colonialism, the theoretical framework for this thesis introduces three key conceptual tools – Green Extractivism, Resource Colonialism, and Indigenous Environmental Justice. These frameworks, within the broader lenses of political ecology and environmental justice, provide a foundation for analysing the research question from a decolonial perspective. These tools are used to understand and critically frame the lived experiences, power relations, and resistance strategies of the Atacameño people in the context of lithium and copper mining. By applying them to the Atacameño case, the frameworks together reveal the structural dynamics that enable extractivism to persist under a green guise, uncovers deeper patterns of inequality and dispossession, and recentres Indigenous Voices as political actors rather than passive victims.

3.1 Green Extractivism

Extractivism, justified in the name of "green transitions" (e.g., lithium mining for batteries, copper for renewables), frames resource extraction as necessary and positive for the global fight against climate change, even though it reproduces many of the same extractive logics seen in fossil fuel extraction and historical extractivism. Thus, Green Extractivism highlights how sustainability discourses justify new waves of resource extraction while revealing the contradictions between green transitions and local socio-environmental harms. Consequently, it provides a nuanced understanding of how greenwashing within the energy transition, along with contemporary justifications for extraction framed by climate transition discourses, continue to reinforce the dominant logics of transnational capitalism (Mejía-Muñoz & Babidge, 2023; Dunlap et al., 2024).

3.2 Resource Colonialism

Resource Colonialism, a concept and theoretical perspective, highlights how the extraction of natural resources perpetuates colonial power structures by exploiting Indigenous Lands and Labour. Contrary to Green Extractivism, which underlines the contemporary justification of how lithium mining is legitimised today, Resource Colonialism underlines the historical structural foundation of these practices and shows how marginalised communities have historically been exploited (Jerez et al., 2023). It examines the underlying principles of consumption habits, thereby challenges the prevailing discourses on development that often obscure the persistent issues of exploitation. Resource Colonialism is informed by the frameworks of Marxist theories on imperialism and dependency theory, which highlight the economic structure that propels resource extraction and exacerbates global inequalities (Sustainability Directory, 2025). As a concept it places the previously named Green Extractivism within a historical and geopolitical power structure, and thereby indicates how lithium and copper mining exacerbate neo-colonial dependencies (Jerez et al., 2023).

3.3 Indigenous Environmental Justice

The last framework and simultaneous movement is rooted in the Indigenous Perspectives on the wider concept of Environmental Justice, which is critiqued for neglecting Indigenous Worldviews and Sovereignty. It serves as a lens to focus on how the Indigenous People resist and mobilise to protect Their land and sovereignty, highlighting Their agency and resilience. As a framework, it furthermore aims to recover the lost identities and voices of colonised people by advocating for self-determination, empowerment, social justice, and decolonisation (McGregor et al., 2020). Indigenous Environmental Justice challenges traditional understandings of Environmental Justice by moving beyond western liberal frameworks and advocating for a more

pluralistic perspective grounded in Indigenous Ontologies and Epistemologies. With this, Indigenous Environmental Justice incorporates intergenerational and more-than-human justice[15] considerations (Parsons et al., 2021).

3.4 Conceptual Foundation for Analysis

Together, these three conceptual tools form a strong analytical framework for examining the socio-environmental crisis unfolding in Salar de Atacama. They serve as the lens through which this thesis interprets empirical data on mining and Indigenous Resilience in northern Chile and are highly interrelated and mutually reinforcing. Each framework contributes to understanding power and resistance, with a distinct focus, as outlined above.[16] In this way, the frameworks collectively move beyond describing harms to illuminate how power operates and can be contested, making visible the complex interplay between structural domination and local resilience. Together, these interrelated tools enable a comprehensive analysis of both the structural conditions enabling extractivism and the strategies of resistance emerging from affected communities, thereby providing the foundation for answering the research question.

4. Methodology

4.1 Research Design

This thesis employs a qualitative case study design, utilising secondary documentary data analysis, which is analysed through a thematic approach, combining deductive and inductive methods. The deductive component lies in the three central conceptual frameworks – Green

[15] "More-than-human justice" is a concept that expands the traditional understanding of justice beyond human beings and Their relationships to include other species, ecosystems, and landscapes (Sudenkaarne & Butcher, 2024).

[16] Green Extractivism offers the contemporary ideological justification for extraction projects that continue to dispossess Indigenous Communities; Resource Colonialism situates these processes within historical and global power structures that have long exploited Indigenous lands and labor; and Indigenous Environmental Justice intersects with these critical perspectives by foregrounding the Agency, Voices, and Knowledge Systems of the Atacameño people, offering a counter-narrative that challenges dominant frameworks and reclaims Indigenous sovereignty.

Extractivism, Resource Colonialism, and Indigenous Environmental Justice – guiding the analysis (Smith, 2021). Following Braun and Clarke (2006), the inductive aspect lies in the emergence of themes through iterative, interpretive engagement with the data, informed by the three applied theoretical frameworks.[17] Rather than applying a rigid coding scheme, this approach prioritises contextual understanding and meaning-making, which is particularly appropriate for research centred on power, discourse, and socio-ecological dynamics (Wodak & Meyer, 2009; Given, 2008).[18] This method is particularly well-suited to the nature of the data, which consists mainly of secondary sources, including academic literature, published ethnographic studies, NGO reports, relevant legal frameworks, a local magazine and selected testimonies, thereby allowing for a critical synthesis of diverse materials (Sukhera, 2022). To deepen the analysis, selected publicly available interviews and testimonies from Indigenous Actors were incorporated, which are also thematically interpreted to amplify Atacameño Voices and ensure the analysis remains grounded in localised knowledge and perspectives (Dorpenyo, 2019).[19]

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[17] To balance the potential tension between inductive and deductive methods, this research was intentionally structured to avoid such conflict. The conceptual frameworks shaped the thematic domains—that is, they guided what to focus on—with each framework applied to explore a different dimension of the data, as outlined above. These frameworks served as interpretive lenses, directing attention without predetermining the findings. Within each conceptual space, themes still emerged through close, iterative reading—meaning the inductive process occurred inside each framework, rather than across or beyond them. Categories were not rigidly imposed; instead, labels and themes were developed organically from the material. Notably, no major themes emerged that could not be meaningfully interpreted through the chosen frameworks. This approach was a deliberate alignment between data and theory – a purposeful structuring of the analysis to ensure that each framework could surface different aspects of the empirical material.

[18] The inductive approach following grounded theory is specifically valuable, since it aligns with decolonial methodology by focusing on localised knowledge and perspectives. Thereby, grounded theory is an inductive method that constructs theory directly from data and emphasises flexibility, reflexivity, and the centrality of participants' voices (Dorpenyo, 2019).

[19] Following this decolonial methodology is an appropriate approach to conduct research because Indigenous Ways of Knowing have been marginalised and colonised by discourses that favor Western and non-Indigenous epistemologies. The aim is to recover Indigenous Identities and empower colonised communities. Decolonial methodology emphasises self-determination, reflexivity, and respect for local knowledge and histories. It furthermore addresses the ongoing influence of colonialism on knowledge production and promotes reciprocal dialogue between cultures (Dorpenyo, 2019).

The case study methodology is appropriate here, as it enables an in-depth exploration of complex phenomena within Their real-world context, utilising multiple sources of evidence (Yin, 2009). Rather than aiming for broad generalisations, case studies offer analytical insights and help test and apply theoretical propositions in situated contexts (Flyvbjerg, 2006).

The three named interrelated conceptual frameworks are not only theoretical guides but actively shape the empirical approach of this thesis. They inform the selection and interpretation of secondary data sources, ensuring that the analysis remains attuned to the historical, political, and cultural dimensions of the Atacameño experience. By framing the data thematically through these lenses, the research moves beyond surface-level descriptions to critically unpack the underlying power dynamics and structural inequalities that sustain extractive practices. In summary, this combined deductive–inductive, decolonial case study approach facilitates a critical and contextual understanding of how Indigenous Responses to extractivism are rooted in broader struggles over land, water, and environmental justice (Whyte, 2017).

4.2 Data Selection and Source Identification

Between March and May 2025, relevant academic literature was sourced through databases such as Google Scholar, Smartcat, and JSTOR, using targeted keywords including “lithium mining Atacama Desert,” “Atacameño Indigenous Responses,” “Green Extractivism,” “Resource Colonialism,” and “Indigenous Environmental Justice.” Further academic literature was identified through a snowballing technique by tracing references from the work of key scholars engaged in Atacama-focused research. To mitigate the risk of relying exclusively on western-centric perspectives and to incorporate local knowledge and viewpoints, this research intentionally prioritised academic papers and sources from Chile and Latin America. To familiarise myself with the topic and focus on local voices, I reviewed the content on the

Facebook page of the Consejo de Pueblos Atacameños[20] (Consejo de Pueblos Atacameños, n.d.). There, I came across the Atta Anu magazine – written by Atacameños themselves – which was incorporated into the data analysis to include less visible, yet highly direct and locally grounded sources (Unidad de Patrimonio del Consejo de Pueblos Atacameños, 2024, Unidad de Patrimonio del Consejo de Pueblos Atacameños, 2025). This approach aimed to better capture the diversity of Atacameño Voices. Keyword searches related to mining and extractivism were conducted to identify relevant content.

In addition to academic texts and this community magazine, publicly available testimonies and interviews with Atacameño community members were accessed to foreground Indigenous Perspectives. These were retrieved through NGO websites working in the region, as well as via publicly available video materials and documentaries found on YouTube, using the same search terms as for the scientific articles.

4.3 Data Analysis

All materials were organised under the three key conceptual lenses: Green Extractivism, Resource Colonialism, and Indigenous Environmental Justice. Within each framework, distinct themes based on the specific insights each lens offers, were identified:

- *Green Extractivism:* Themes centring around existing socio-environmental impacts of mining and comments on the contemporary contradictions of lithium and copper extraction and their environmental framing.

[20] The Consejo de Pueblos Atacameños is a collective council representing various Atacameño Communities (Ciftci & Lemaire, 2023).

- *Resource Colonialism:* Themes that situate these harms within a broader historical context, highlighting structural injustices.

- *Indigenous Environmental Justice*: Themes revolving around expressions of Atacameño responses to these harms.

This approach allows each conceptual framework to focus on its unique analytical strength by examining distinct aspects of the data, rather than diluting insights by applying all frameworks simultaneously to the entire dataset. This choice was made as each lens enables readings of themes from different angles.[21] Structuring the analysis this way ensures clearer, more nuanced interpretation within each lens.

The coding process followed a hybrid inductive-deductive approach as outlined by Fereday and Muir-Cochrane (2006). Initial coding was guided deductively by the three conceptual frameworks, which served as umbrella themes in Google Sheets columns. During the first round of coding, initial labels were assigned to excerpts of data reflecting specific ideas or concepts. Through iterative reading and organisation in Google Sheets, related labels were grouped and refined and colour-coded into broader themes that captured overarching patterns and meanings. As new themes emerged inductively during close reading, additional columns were created to capture these insights. A second coding round revisited the data to review, refine, and synthesise themes, including opening new columns for emergent themes, merging related

[21] Green Extractivism as a framework enables a critical reading of themes not just as accounts of socio-environmental impact, but as situated within global climate strategies that obscure or justify localised dispossession. Resource Colonialism illuminates how patterns of land appropriation, labor exploitation, and racialised violence are embedded in long-standing systems of domination, which is why the framework allows the analysis to interpret themes around inequality, dependency, and disempowerment as structural rather than incidental. Indigenous Environmental Justice moves the analysis toward the recognition of alternative epistemologies and practices of resistance that may not align with western legal or environmental norms. It allows for a reading of themes not only as instances of harm but also as expressions of autonomy, cultural resurgence, and place-based ethics that resist extractivist logics.

ones, and further organising the data for clarity and depth. This practical use of Google Sheets, rather than specialised qualitative software, was chosen for its accessibility and transparency, allowing flexible, collaborative handling of data without the complexity or learning curve of dedicated programs. No triangulation or formal peer review of coding was conducted due to the scope of the study, but regular self-reflection and comparison across the data supported rigor and consistency.

In the analysis, within each theme, a synthesis of existing academic discussions was conducted, summarising key contributions and highlighting the main arguments made by different authors. After this synthesis, interpretations were added, linking them to the themes and analysing the findings through a critical perspective. This means that within each thematic section, the presentation moves between empirical examples and theoretical interpretation, weaving them together. Interview excerpts were coded in the same way described above and woven into each applicable thematic section, offering a rich, narrative-driven exploration that provides context and personal perspectives. Lastly, given the critical and interpretive nature of this study, the analysis integrates the presentation of results with their interpretation and discussion, and therefore presents a single, merged Analysis chapter.[22]

By using these frameworks to develop themes, the analysis reveals not only the patterns of dispossession and structural power underpinning mining practices but also highlights the diverse strategies of Atacameño Resistance and Resilience, thereby unpacking the dynamic interplay between domination and agency.

[22] This approach aligns with qualitative and decolonial methodologies, which emphasise the inseparability of data and meaning, recognising that knowledge production is a dynamic, context-dependent process rather than a simple reporting of objective “findings.”(Stevens-Uninsky et al.,2025; Clarke & Braun, 2021).To avoid confusion or difficulty in identifying concrete findings, the chapter is clearly structured with thematic subheadings and sub-subheadings, supported by direct quotations and systematic referencing.

4.4 Positionality and Ethical Considerations

In order to integrate a decolonising approach to one's work, Holmes (2023) highlights how positioning a researcher's identity matters because intersecting identities, such as race, gender, class, and geographical location, influence their perspectives and research practices. Therefore, it is crucial to acknowledge that as a non-indigenous, white European, bachelor student, I recognise that my identity and background will fully shape every stage of this research process. To address potential biases and avoid reinforcing colonial patterns, I drew on Indigenous Research Methodologies, particularly Wilson's (2008) Relational Accountability and Archibald's (2008) Indigenous Storywork (Archibald & Xiiem, 2008; Kovach, 2009; University of Alberta, 2025). These frameworks helped me centre relationality, context, and respect for Indigenous Knowledge Systems, rather than applying western interpretive models. My goal throughout has been to foreground Atacameño Voices, Perspectives, and Agency, and to cite all sources in a way that honours their intellectual contributions.

A fuller reflection is provided in Appendix A.

5. Analysis

In order to answer the research question – *How do the socio-environmental impacts of lithium and copper mining in the Chilean Atacama Desert, as a manifestation of Resource Colonialism, shape Atacameño Indigenous responses to Green Extractivism?* – this thesis proceeds in three analytical steps. First, the socio-environmental impacts are illustrated through the lens of Green Extractivism to highlight how lithium and copper extraction create contradictions in the supposed 'green' energy transition. Next, to understand how these impacts reflect historical and structural injustices, the lens of Resource Colonialism is applied. Finally,

Indigenous Environmental Justice is used to analyse how Atacameño Communities respond to these impacts.

5.1. Environmental & Social Impacts under Green Extractivism

Green extractivism is a critical concept that exposes the contradiction within so-called "green" industries such as lithium mining, which promote environmental sustainability while continuing environmentally and socially destructive extraction practices (Dunlap et al., 2024). This paradox justifies large-scale extraction in the name of sustainable development. As a multiscalar process, Green Extractivism is embedded in global and national policies, reshaping legal and political frameworks and deeply affecting local ecological and social realities (Mejia-Muñoz & Babidge, 2023). Francisco Mondaca Espindola, a local from Toconao in San Pedro, highlights the dilemma of lithium mining, stating that the widely promoted energy transition to combat climate change comes “at what cost?” (Espindola, 2024, 1:14–1:29).[23]

5.1.1. Environmental Impacts

Regarding the environmental impacts of extractivism on Atacameño Communities, under the lens of Green Extractivism, the following themes were constructed: “Direct Environmental Consequences”, “Community Perceptions and Experiences”, and “Gap in Understanding Status Quo”.

5.1.1.1 Direct Environmental Consequences. The literature commonly highlights the theme of environmental consequences, including both the direct and indirect impacts of water overextraction and hydrological disruption, as well as various forms of ecosystem damage and pollution. Prior to the onset of intensive mining, Salar de Atacama was a highly sensitive and ecologically important region, sustained by hydrologically interconnected aquifers and

[23] Original words: “Y ahora, con el famoso boom del litio, la transición energética – que tanto se habla para poder cambiar, supuestamente combatir el cambio climático – , ¿pero ese cambio climático va a ser a costa de qué?”

high-altitude wetlands (Romero et al., 2012). However, Babidge et al. (2019) emphasised that in Salar de Atacama, large-scale water extraction, primarily for lithium mining, has significantly disrupted the region's hydrological balance, resulting in the depletion of underground aquifers and a reduction in available freshwater for local communities. The Dirección General de Aguas (DGA) reports that current withdrawal rates exceed natural recharge levels, creating a long-term imbalance. This overextraction contributes to increased desertification, further intensifying the region's arid conditions (Dirección General de Aguas, 2014; Jerez et al., 2023). Indigenous Communities have seen a decline in Their access to water, both in terms of quantity and quality. (Blair et al., 2023).[24] Additionally, Akchurin (2025) highlights the growing risk of freshwater salinisation, compounding the environmental stress on both ecosystems and Indigenous Livelihoods. Water usage has become highly unsustainable, with mining operations consuming 2 million litres of water per ton of lithium and generating up to 12.3 million cubic metres of waste salt per month (Garcés & Alvarez, 2020).

Fragile ecosystems, such as bofedales (high-altitude wetlands), Andean wetlands, and ancient paleolakes, all of which are crucial for biodiversity and ecological balance, are highly affected by these practices (Blair et al., 2023; Chocobar & Tironi, 2022). Moreover, these activities threaten salt flat microbial communities and species, such as flamingos, which depend on stable water levels and intact lagoon and peatland systems for survival (Jerez et al., 2023; Garcés & Alvarez, 2020; Unidad de Patrimonio del Consejo de Pueblos Atacameños, 2024).

[24] Remote sensing images near the village of Peine initially indicated an increase in surface water within the Salar, which could be mistakenly interpreted as a sign of water resource recovery. However, follow-up participatory workshops with local Peineños revealed a very different understanding. The apparent increase in water levels was not seen as an improvement in ecological conditions but rather as evidence of irregular and unorthodox hydrological behavior, potentially linked to subsurface aquifer depletion or the displacement of brine beneath the surface. Supporting these local insights, a lithium company representative recently hypothesised that brine extraction might cause the central area of the Salar to sink, leading to the formation of new surface water pools around its edges. This theory corresponds with the observations shared by the community, highlighting the complex and dynamic impacts of lithium mining on the region's hydrology (Babidge et al., 2019).

In addition, mining activities in the Salar can lead to the potential extinction of extremophile microorganisms (Blair et al., 2023) and significant water contamination due to the shared use of groundwater for both drinking and industrial purposes (Dorn & Gundermann, 2022; Babidge et al., 2019). This habitat loss of endemic and vulnerable species is occurring alongside large-scale vegetation decline, evidenced by remote sensing images that show large-scale vegetation loss over 20 years (Garcés & Alvarez, 2020). Damage to salt flat surfaces, lagoon systems, water tables, and brine composition has also been documented (Dorn & Gundermann, 2022; Fernandez & Alba, 2023). Lastly, specifically, lithium extraction from brines can lead to other types of environmental damage, including land degradation, soil contamination, and loss of soil fertility, as chemical residues from processing can seep into the ground. Air contamination is furthermore a risk, as the extraction process releases dust and particulate matter, which can harm the respiratory health of nearby communities and wildlife (Flexer et al., 2018).

5.1.1.2 Community Perceptions and Experiences. Direct knowledge from community members enriches and significantly broadens existing studies, with personal testimonies emerging as a recurring theme across all types of available secondary sources. As Francisco Mondaca Espínola from Toconao warns, if current practices continue, "we will end up drying up what little there is and leaving no life or ecosystem here in Salar de Atacama basin" (Espínola, 2023, 9:49–9:55).[25] Moreover, as Sergio Chamorro, an attorney and advisor to the Council of Atacameño Peoples, states, "lithium mining is essentially water mining that has caused drops in groundwater levels, and with that, damage to the ecosystem" (Chamorro, 2023, 1:15–2:00).[26] Lastly, as Jorge Muñoz Coca, a member of the Socaire community, states, "For the people of

[25] Original words: "Terminemos secando lo poco y nada que tenemos de vida y ecosistema acá en la Cuenca Salar de Atacama."

[26] Original words: "La minería del litio es básicamente minería de agua, que ha causado descensos en los niveles freáticos y, con eso, daño al ecosistema."

Atacama, Salar de Atacama is a zone of ecological balance. Unfortunately, with extractivism and lithium mining, this balance is being disrupted, turning us into a sacrifice zone" (Muñoz Coca, 2023, 1:01–1:28).[27]

5.1.1.3 Gap in Understanding Status Quo. Another recurring theme in the literature is a general and significant knowledge gap surrounding local water systems, water flows, and the long-term impacts of mining in Salar de Atacama. This understudied matter is exacerbated by the privatised nature of water rights and the Chilean state's reluctance to curb mining expansion (O'Faircheallaigh, 2023). Scholars highlight that both industry and state actors often resist generating deeper hydrological knowledge, as doing so could require restricting extractive activities (Babidge et al., 2019; O'Faircheallaigh, 2023).

Regulatory frameworks further complicate the issue. Firstly, companies are only required to report their own environmental impacts, leading to fragmented, isolated assessments that obscure cumulative, long-term degradation (Babidge, 2020; Babidge et al., 2019). These fragmented operations result in a lack of holistic understanding of the ecological impacts, as they are isolated in data and time, making long-term, cumulative degradation difficult to discern (Babidge et al., 2019).[28] This lack of visibility and agency in environmental and political decision-making, combined with the omnipresent sense that environmental degradation remains "invisible" to public institutions and broader society, constitutes a distinct form of environmental suffering (Castillo, 2016). This obscurity, combined with the technical complexity of reports,

[27] Original words: "Para los habitantes de Atacama, el Salar de Atacama es una zona de equilibrio ecológico. Lamentablemente, con el extractivismo y la minería de litio, este equilibrio se está alterando, llevándonos a convertirnos en una zona de sacrificio."

[28] The ecological exhaustion in the Atacama desert can furthermore be linked to James Ferguson's (2005) concept of "territorialised capital" – the idea that extractive economies often produce enclaves of productivity (isolated zones of industrial activity) that are surrounded by disorder or abandonment. This is apparent as the mining companies operate in fragmented zones when extracting lithium and copper, and subsequently monitoring and producing knowledge that only stays in disconnected territorial segments discern (Babidge et al., 2019; Ferguson, 2005).

limits Indigenous Leaders' participation and fosters mistrust (Castillo, 2016; Dorn & Gundermann, 2022). Additionally, the Chilean law does not recognise brine as "water", enabling mining companies to continue extraction while sidestepping water regulations. This legal ambiguity provides "spaces of manoeuvre" for extractive industries, allowing them to deplete critical water resources with minimal accountability (Babidge et al., 2019). In one specific case, another alarming layer is that a mining company's (Escondida) technicians had even injected water back into the aquifer in an attempt to artificially maintain water levels, hiding the real extent of the damage for years (Akchurin, 2025).

5.1.2. Social Impacts

Carrasco (2016) highlights the lack of research done on the impacts that the Chilean water markets have on social equity. It is clear, however, how the previously highlighted environmental effects come with significant social and economic challenges, as also Peine's community president in 2018 stressed that environmental changes are inseparable from social effects, recognising that extraction disrupts both nature and society (Babidge et al., 2019). Analysing the social effects of lithium and copper mining on Atacameño Communities, under the lens of Green Extractivism, the following themes were constructed: "Cultural and Spiritual Significance of Water and Its Disruption by Mining", "Disruption of Traditional Livelihoods", "Conflict Creation", "Rights Violations", and "Process of Depopulation".

5.1.2.1 Cultural and Spiritual Significance of Water and Its Disruption by Mining. A common theme identified across existing literature highlights the cultural significance of water to local communities and how mining activities are disrupting and negatively impacting its natural occurrence. O'Faircheallaigh (2023) notes that, due to the region's arid climate, water is highly valued as an economic resource and is integral to the local culture, rituals, and spirituality

(O'Faircheallaigh, 2023; Chocobar & Tironi, 2022).[29] In Atacameño cosmology, water is seen as a living being ("agua es un ser") with spiritual presence that must be cared for and reproduced through both ritual and labour.[30] This ethic reflects traditional ways of managing scarcity and uncertainty in the harsh Andean environment (Babidge, 2015).

Local communities interpret environmental changes, such as the prolonged drought since the 1970s, as being linked to a decline in ritual practices and spiritual relationships with water sources. This decline has coincided with the rise of mining activities and increasing individual wealth, raising concerns about the erosion of traditional values. This shows how the value of water is deeply rooted in ancestral identity, ritual obligations, communal labour, and place-based relationships; and how it is threatened not only by drought but also by mining activities and policies that ignore and marginalise Indigenous Views and Values, exerting profound socio-cultural pressure on the Atacameños (Babidge, 2015; Akchurin, 2025).

5.1.2.2 Disruption of Traditional Livelihoods. The next identified theme in existing documents concerns the disruption of traditional livelihoods through mining activities, a term often discussed in relation to changes in farming practices and economic shifts as a social consequence. Garcés & Alvarez (2020) note how Indigenous Communities in the Atacama rely on the Salar for cultural and subsistence practices. They describe how water depletion under extractivism leads to cultural erosion and the loss of ecosystem services and land use patterns.[31] Seefeldt (2022) continues this theme, citing Babidge (2016), Babidge and Bolados (2018), and

[29] Akchurin (2025) elaborates on how water has been essential for the survival and cultural development of the Atacameño Indigenous People for thousands of years, enabling early human settlements and traditional agropastoral practices. Some communities across the Atacama desert also view water as a human right, a holy natural element, and a fundamental part of livelihoods and ecosystems (Akchurin, 2025).

[30] Water holds productive value (for agriculture/pastoralism) but also spiritual significance, embedded in rituals that connect humans to non-human beings like Pachamama (Earth Mother) (Cuadra, 2000).

[31] Although companies offer financial compensation (e.g., Albemarle contributes $15 million per year; SQM gives 3.5% of sales), the authors argue that this cannot replace the loss of cultural heritage and ecological knowledge.

Jerez et al. (2021), who report community concerns over the loss of farmland and reduced collective practices resulting from lithium operations. Indigenous Magazine Atta Anu, confirms that the ongoing water crisis in the Puna and Atacama Desert region severely threatens the ancestral livestock farming and agriculture of Indigenous peoples (Unidad de Patrimonio del Consejo de Pueblos Atacameños, 2025). Akchurin (2025) also finds that local herders now purchase water to sustain livestock, a new reality driven by increasing water scarcity linked to mining. In that regard, Evelyn Vallejos, an Atacameño local, notes in an interview that: “The Condori family, who used to herd livestock in the floodplain of the Trapiche River, is now dry. They used to have 900 head of cattle, but today that family no longer raises animals because They have no food or water to give them" (Vallejos, 2022, 0:54 - 1.07).[32] [33] [34] Together, these sources highlight how mining-induced water scarcity not only undermines ancestral knowledge in the Atacama but also erodes traditional agro-pastoral livelihoods and the socio-cultural fabric that sustains collective identity.

5.1.2.3 Conflict Creation. Conflict creation is a prominent theme in the literature, particularly concerning tensions between mining companies and Indigenous Communities. Dorn and Gundermann (2022) describe these conflicts as territorial, environmental, and economic,

[32] Original words: “Tenemos el ejemplo de la familia Condori, que acostumbraba a pastorear en la planicie aluvial del río Trapiche, que hoy está seco. Antes tenían 900 cabezas de ganado, pero hoy esa familia no cría animales porque no tienen comida ni agua para darles.”

[33] Babidge et al. (2019) also cover the disruption of traditional livelihoods in more detail about the Atacamneos living in Peine: Since the mid-20th century, Peineños gradually shifted from long-distance, seasonal pastoralism to a mixed economy combining subsistence agriculture and cash income from mining-related jobs. The arrival of Albemarle’s predecessor plant and industrial activity in the 1970s marked the decline of transhumant practices. Military conflicts, land degradation, and crop theft further pushed families away from agriculture. The authors noted that these factors – prolonged droughts, a decrease in pastoralism, the expansion of industrial and mineral extraction alongside the penetration of free-market capitalism and the privatisation of water – result in systemic exhaustion. People, ecosystems, traditional practices, and resources have all been worn down by cumulative stresses.

[34] Babidge et al. (2019) summarise and support this common theme in social effects, drawing on narratives gathered during fieldwork that provide insight into how local people understand the landscape’s exhaustion. Atacameño stories blend political, environmental, economic, and cultural perspectives, revealing how various actors, including industries, governments, climate, and capitalism, intersect to produce ecological and social strain.

stemming from disputes over mineral- and groundwater-rich areas considered ancestral lands by the Atacameños. However, Chilean law only partially recognises Their land ownership, contributing to prolonged disputes. Romero et al. (2012) add that numerous legal battles over water rights have placed a significant burden on local populations. These unresolved conflicts reveal the limitations of current legal and institutional frameworks and signal the potential for more widespread disputes in the future.

Building on this, Babidge (2015) warns that growing resistance by Indigenous Communities, coupled with the inflexible stances of companies and governments, increases the risk of violent confrontation. She highlights how violence, especially from state and private security forces, is often legitimised by the global demand for critical raw materials like lithium, linking this dynamic to the broader critique of Green Extractivism. Another recurring form of conflict is intra-community tension. Blair et al. (2023) note that while some community members benefit economically from mining, others feel excluded or exploited, leading to divisions and eroding social cohesion. Carrasco (2016) offers a clear example: farmers selling Their water rights to mining companies for high profits, while others are left without access to essential resources. These actions have exacerbated inequalities and caused significant strain within and among communities.

5.1.2.4 Rights Violations. One of the most recurring themes covers Indigenous Rights violations with an exclusion from political decision-making, a lack of consultation, and the creation of legal disputes. Indigenous Communities, besides Their historical stewardship of the land, are effectively excluded from decision-making by the two largest lithium mining companies regarding major environmental and social changes in Their territory (Babidge,

2020).[35] Carrasco (2016) illustrates another form of opacity imposed on local communities was the Pinochet's military government's failure to provide information, guidance, or support regarding the new legal framework – 1981's Water Code[36]. The lack of territorial recognition over the Salar itself limited Indigenous Consultation Rights and led to disputes over sovereignty and resource governance of the communities. Some benefit-sharing agreements exist but remain controversial due to transparency issues and legal disputes (Babidge, 2020; Blair et al., 2023). Another complex example of rights violations revolves around the contamination of the Loa River between 1997 and 2000. Industrial waste polluted the river, thereby devastating agriculture and livestock. Although not officially recognised, communities viewed this as another form of abuse, prompting migration and economic shifts (Castillo, 2016).

5.1.2.5 Process of Depopulation. Another common theme that emerged was the process of depopulation and demographic change. Carrasco (2016) explains how some Atacameño Communities suffered large population declines due to the depletion and privatisation of water resources, as the loss of water made traditional farming increasingly difficult (Carrasco, 2016; Akchurin, 2025). Romero et al. (2012) note that this depopulation and diminution of the rural population coincided with communities being divided when They lost control over the critical resources of Their territories, forcing them to emigrate to nearby sprawl cities (Romero et al., 2012). While much of the literature discusses demographic change in terms of depopulation, some studies highlight this theme in the opposite trend, a population increase in certain villages,

[35] This can be explained by many mining operations failing to initiate proper consultation with Indigenous Peoples, thereby violating international standards on Free, Prior, and Informed Consent (Blair et al., 2023).

[36] This law privatised water rights and allowed them to be bought, sold, or leased, treating water as a tradable commodity. Many smaller communities learned about these regulations too late to use them effectively to safeguard Their resources from mining companies. Even those aware of the requirements faced prohibitive costs to travel to urban centres and navigate complex, bureaucratic procedures. Farmers almost universally lacked both the financial resources and the political leverage needed to assert Their claims or contest water rights conflicts (Carrasco, 2016). Castillo (2016) adds that Indigenous Farmers feel, as with this, the government enables a deliberate dispossession, leaving them at great disadvantage.

such as Peine. This growth has driven territorial expansion, increased housing needs, and rising water demand. For the expanded population, concerns about water scarcity and water contamination have become increasingly pressing (Babidge et al., 2019). Thus, it can be interpreted that whether through forced migration or increased settlement in mining-adjacent areas, demographic change emerges as both a consequence and a driver of new social and environmental tensions in the Salar.

5.1.3 Link to Green Extractivism

These themes, centring on socio-environmental harms in the Salar, reflect key contradictions of Green Extractivism. While lithium and copper mining extraction are promoted as essential for climate action, they cause extensive ecological degradation, long-term water destruction of wetlands, and biodiversity loss. Community water scarcity illustrates how environmental exhaustion is both material and social, all while the industry frames brine extraction as disconnected from water governance, obscuring regulatory oversight (Mejia-Muñoz & Babidge, 2023). Socially, lithium and copper mining dispossess Indigenous Communities of vital resources and undermine their livelihoods. The focus on commodifying nature marginalises Indigenous Knowledge, erodes traditional values, and disrupts spiritual connections to land and water. Legal systems often prioritise economic interests over Indigenous Rights, exacerbating social conflicts. What can be interpreted from these findings is that Green Extractivism introduces new socio-ecological disparities by shifting environmental harms from the Global North to the Global South. The emerged socio-environmental themes under this lens also help understand how global green energy demands are prioritised over local environmental justice. Furthermore, these themes underscore how Green Extractivism, presented as part of the global

transition to sustainable technologies, entails significant socio-environmental consequences for Atacameño Communities.

5.2. Historic Global Power Asymmetries under Resource Colonialism

To not only understand *what* social and environmental harms occur, it is also crucial to highlight *how* these harms are structurally produced and reproduced through unequal power relations rooted in historical and ongoing extractive practices, thereby offering a bigger historical context analysis. This part of the research was looked at through the lens of Resource Colonialism.

While the themes identified under this framework are deeply interconnected, reflecting overlapping dynamics of dependency, dispossession, and inequality, they are organised here into multiple broad categories to aid clarity: “Mirroring Historic Patterns of Coloniality”, “Fostering Dependencies”, “Opacity and Data Control” and “Privatisation and Neoliberal Technocratic Governance”.

5.2.1 Mirroring Historic Patterns of Coloniality

A recurring theme, when analysing the data through the lens of Resource Colonialism, is that the present-day marginalisation of the Atacameños is not isolated or accidental side-effects, but is a systemic outcome of extractive industries with practices deeply rooted in enduring patterns of colonialism (Mejia-Muñoz & Babidge, 2023).[37] The mining industry is often rhetorically framed as a progressive solution to climate change, presenting itself as an economic sector focused on mitigating environmental risks and addressing ecological scarcities. However, it continues to operate through familiar logics of dispossession and asymmetrical benefits that

[37] Many scholars highlight the neo-colonial dimensions of mineral extractivism, which closely follow historical trajectories of resource exploitation. In discussions of extractivism in the Global South, particularly in South America, authors often describe dynamics that align with the concept of Resource Colonialism and put specific focus on the continuity of historic exploitation, domination and accumulation (Mejia-Muñoz & Babidge, 2023).

have historically defined extractive regimes in Latin America (Mejia-Muñoz & Babidge, 2023). The relationship between the Chilean state, transnational corporations, and Indigenous Territories is marked by persistent colonial dynamics: natural resources are extracted from Indigenous Lands under the guise of sustainability and global good, while the social and environmental costs are externalised onto these same communities. This reflects the historical exploitation of the Global South for the economic and technological advancement of the global north, with the Global South bearing the environmental and social costs (Jerez et al., 2023). Dynamics as such also feed into the pattern of extractive territoriality, meaning powerful groups claim and control land to extract resources, perpetuating colonial-like exploitation under modern forms (Seefeldt, 2022).

Furthermore, modern control of land and water by companies in Chile repeats the same patterns of exploitation and exclusion that Indigenous Groups faced during colonial times. The tools have changed (laws, licences, and infrastructure instead of armies), but the outcome is similar: resources flow to the powerful, while Indigenous Communities are marginalised. Even after Latin American countries gained independence, they continued to operate in ways shaped by colonial power dynamics, especially by relying on export economies, which benefited elites and foreign interests more than local or Indigenous Communities. (Seefeldt, 2022). Furthermore, the governance of lithium in Chile, by treating it as a strategic mineral and managing it through state-private partnerships, demonstrates how modern state apparatuses can perpetuate colonial relations by granting foreign capital access to Indigenous Territories (Jerez et al., 2023). Through this lens, it becomes clear how extractivism is a contemporary form of Resource Colonialism: it is not merely extractivism with a green façade, but a structural extension of historical colonial

projects that do not address extractive dependencies but instead reproduce them under a different guise. (Jerez et al., 2023).[38]

Video interviews confirm the existence of this recurring theme of enduring patterns of colonialism, when Evelyn Vallejos, a local Atacameño, highlighted: “A person from here cannot access an electric car battery. An electric car battery uses 67 kilos of lithium; we basically only use lithium in cellphones, about 0.2 grams of lithium. We are extracting the lithium entirely for the benefit of others far away, causing enrichment for them and impoverishment for our province and our water.” (Vallejos, 2022, 6:41- 7:05).[39] Also, Francisco Mondaca Espindola from Toconao in San Pedro adds that: "When I’m told about the transition, I don’t believe in it. I don’t believe in a just transition or in green lies either." (Espindola, 2024, 2:50 -2:57).[40]

5.2.2 Fostering Dependencies

One of the most prominent themes is the way extractive mining fosters economic dependencies among Atacameño Communities. This theme highlights how communities living near mining sites increasingly rely on employment provided by the mining industry, whether directly through jobs in the mines or indirectly through associated service sectors. While these jobs offer immediate economic benefits, they simultaneously entrench a structural dependency

[38] With this, multiple authors have highlighted how the energy transition is not a neutral or universally beneficial endeavour, but deeply entangled in unequal power relations that reproduce global hierarchies and perpetuate forms of ecological injustice rooted in colonial pasts (Mejia-Muñoz & Babidge, 2023; Jerez et al., 2023). The shift to electric vehicles, digitalisation, and renewable energy is framed as a solution to climate change, yet it is based on an unsustainable demand for critical minerals. It externalises the costs onto vulnerable communities and ecosystems and does not challenge overconsumption and extractivism, but instead shifts the burden from fossil fuels to minerals. (Jerez et al., 2023).

[39] Original words: “Una persona de aquí no puede acceder a una batería de coche eléctrico.
Una batería de coche eléctrico usa 67 kilos de litio; básicamente sólo usamos litio en los celulares, como 0.2 gramos de litio. Estamos extrayendo el litio totalmente para beneficio de otros lejos, causando enriquecimiento para ellos y empobrecimiento para nuestra provincia y nuestra agua.”

[40] Original words; “Cuando me hacen transicion no creo en lad transiction y no creo tampoco la transicion justa o lejias verdes”.

that weakens the community's ability to resist projects that jeopardise Their environment and livelihoods. This dependence reduces bargaining power and limits options for opposing harmful extractive activities, as economic survival becomes tied to the continuation of mining operations (Babidge, 2020).[41] The lens of Resource Colonialism not only identifies dependency as a theme, but it also explains it as a systemic and structural outcome of a broader colonial and neocolonial logic that continues to shape global extractive relationships. It helps the understanding of how Chile remains locked in a position of resource supplier, dependent on external markets and capital for economic growth (Jerez et al., 2023).

5.2.3 Opacity and Data Control

A typical dynamic highlighted within Resource Colonialism and appearing as a clear theme in literature is the control over knowledge that the state and mining companies exert over local communities. As mentioned before, through withholding data, private ownership of resources, and enclosure of mined territory, ecological degradation in the Salar has been deliberately obscured and made difficult to trace (Babidge et al., 2019).

As is often the case, extractive corporations produce structural effects that enhance disorder through the territorialisation of capital interests, fragmenting landscapes and disrupting the ability to perceive or manage ecologies as interconnected systems. Corporations create fragmentation and disorder that benefit capital accumulation while disempowering local actors. This speaks to a coloniality of power where induced opacity serves extractive interests. This is

[41] Castillo (2016) brings an example of the Chuquicamata mine that partnered with local agricultural communities, buying Their produce to feed miners. In the end, the contamination of the Loa River and a shift to outsourcing food supplies from large private contractors ended this local economic link. Instead of stimulating alternative income sources or sustainable development, mining has exacerbated poverty and contributed to migration from Indigenous Territories to urban areas, leaving only broken promises of development. Carrasco (2016) offers another example of the community of Tocone, who became dependent when mining companies shifted to the tactic of leasing water, implying installments on locals, and thus further exacerbating the power of corporations and deepening structural inequalities.

clearly understood through the lens of Resource Colonialism, which explains how these dynamics mirror colonial control over knowledge production and withholding of critical information to maintain dominance (Escobar, 2008).

5.2.4 Privatisation and Neoliberal Technocratic Governance

An important theme in the existing literature highlights how the rise of privatisation and neoliberal technocratic governance in Chile has led to the systematic dispossession and marginalisation of Indigenous Governance Systems.[42] As described, following Chile's neoliberal turn in the 1970s and 1980s, water was redefined as a private, tradable commodity within a framework of free-market environmentalism. This transformation displaced alternative governance approaches, particularly Indigenous Systems, which resulted in reducing space for diverse, culturally embedded water management practices (Carrasco, 2016; Boelens et al., 2012).[43]

Today, this legacy is evident in the concentration of resource control in Chile: powerful families and corporations dominate the mining sector, while Indigenous Communities often lack the institutional power or legal mechanisms to challenge environmental and social harms. In the Atacama region, for instance, over 90 per cent of the land is licensed to mining companies. These developments mirror historical enclave economies[44], where national governments

[42] Holmes (2023) explains how the marginalisation of Indigenous Groups in global water policy is deeply tied to colonial histories of exclusion, power imbalances, and social oppression that have fueled centuries of elite-driven capital accumulation, as also seen in Chile. Indigenous Water Struggles are rooted in colonial legacies, as water allocation systems of the time prioritised the interests of white settlers and non-Indigenous populations over those of Indigenous Communities. Under the claim of rational, efficient management, water government was state-led and mono-juridical, which imposed western models and thereby disempowered local systems.

[43] Vélez Torres (2012) links this back to a global scope when highlighting how the political exclusion of Indigenous Groups is common, as it reinforces a self-perpetuating cycle of elite control and cultural erosion.

[44] Enclave economies are areas where foreign companies control resource extraction such as mines (Seefeldt, 2022).

structured laws to benefit foreign capital at the expense of local populations, a pattern that persists under modern neoliberal governance (Seefeldt, 2022).

Further reinforcing this dynamic is the dominance of Western-trained engineers and technical experts in water governance. This technocratic model presents science as neutral, rational, and universally applicable, thereby justifying top-down management approaches that erase local cultural and ecological complexity (Boelens et al., 2010).[45] In the case of the Atacameños, state-led, standardised water governance has failed to account for the ecological diversity and spiritual significance of water, revealing how technocratic systems reproduce exclusion (Carrasco, 2016).

Interpreting these findings, it becomes evident that neoliberal governance models are fundamentally incompatible with Indigenous Worldviews. Neoliberalism, which extends beyond economics into dominant political and cultural practices, prioritises efficiency, individualism, and market growth. In contrast, Indigenous Water Governance Systems, such as those of the Atacameños, emphasise reciprocity, community wellbeing, and spiritual connection to the land and water. The neoliberal governance of resources, therefore, not only excludes Indigenous Perspectives but structurally undermines them, perpetuating and masquerading historical patterns of domination under the justification of development and technical expertise (Holmes, 2023).

5.2.5 Link to Resource Colonialism

Viewing the situation through the lens of Resource Colonialism clarifies how the identified themes are all interconnected expressions of enduring power imbalances. The theme of fostering economic dependencies frequently hints at how extractivism limits community autonomy, while control over territorial knowledge and data perpetuates opacity and

[45] Such narratives mask their political and ideological underpinnings, often embedding biases of class, gender, and race. As a result, Indigenous Institutions have been dismantled, traditional water knowledge devalued, and Indigenous Voices excluded from decision-making processes as seen on a global scale (Zwarteveen, 2010).

disempowerment. Meanwhile, it can be interpreted that neoliberal governance further entrenches inequalities by sidelining Indigenous Systems and prioritising market logic over cultural and ecological well-being. Together, these themes highlight that environmental and social harms cannot be separated from the colonial and neocolonial power dynamics that sustain them.

5.3. Indigenous Resistance and Adaptation under Indigenous Environmental Justice

Although the existing literature commonly addresses mining in the Salar from an angle of Green Extractivism and sometimes even Resource Colonialism, it seldom incorporates the analytical lens of Indigenous Environmental Justice. Integrating this lens into the analysis not only addresses this gap but also centres the agency, voices, and diverse responses of Atacameño Communities and, by doing so, emphasises how They engage with, resist, and reconfigure extractive processes on Their own terms. Using this lens to analyse Atacameño responses seeks to raise greater awareness of Indigenous Perspectives and justice-oriented Frameworks in debates on lithium and copper extraction and sustainability transitions (McGregor et al., 2020). The self-emerged themes are centred around: “Political and Legal Advocacy”, “Cultural Resistance” and “Collaborative Adaptation”.

5.3.1 Political and Legal Advocacy

Viewed through the lens of Indigenous Environmental Justice, the political and legal advocacy emerged as the strongest, most apparent theme in most literature covering the resistance of Atacameño Communities. Many Atacameño Communities reveal how legal and procedural tools can be mobilised in a long-term struggle to protect land, water, and cultural survival. Much literature illustrates how this type of resistance is deeply grounded in community-led governance, ancestral water rights, and a longstanding commitment to defending territory against extractive harm (Babidge, 2021).

Scholars have emphasised that, even without the backing or mediation of the state, communities have actively exercised Their own agency in negotiating the terms of lithium mining projects in Their territories. Rather than being disempowered by the state's absence, Atacameños have responded with adaptability and resourcefulness, developing a range of strategies to assert Their interests and protect Their rights.[46] Depending on the means of navigating socio-environmental impacts and benefits provided by mining projects, different Atacameño Communities choose varying legal resistance strategies. Clear is, however, that resistance is not just protest; it is survival, self-determination, and care for the land of Atacameño Communities. (O'Faircheallaigh and Babidge, 2023; Ciftci & Lemaire, 2023).

A key strategy of resisting legally was by invoking the international legal framework of ILO Convention 169, which protects Indigenous Peoples ' right to consultation and participation, as done by the Peine community (Babidge, 2021).[47] Another form of legal resistance has involved the strategic disengagement from state institutions.[48] Land recognition was slow, and consultations under ILO Convention 169 were often symbolic rather than meaningful. This frustration pushed communities toward more autonomous strategies. Instead of relying solely on

[46] One example of this is the previously mentioned lack of accessible environmental data, which led locals in San Pedro de Atacama to rely on Their own knowledge to monitor environmental changes, build independent databases, with the goal of ultimately holding mining companies accountable for Their impacts (Mondaca Espindola, 2023).

[47] Ratified in 2008 in Chile, this step enhanced the legal avenues available to communities for resistance (Muñoz and Babidge, 2023). This enabled them to challenge projects more assertively from early stages. While such tools did not always compel corporate accountability, they provided a legal and moral basis for demanding recognition and a seat at the table. Since the 1990s, the community had also worked alongside anthropologists and lawyers to document Their ancestral water rights, efforts that strengthened Their claims through ethnographic, historical, and legal evidence (Babidge, 2021).

[48] In response to growing disillusionment with state-led Indigenous Development, many communities began distancing themselves from institutions like CONADI and questioning the effectiveness of supportive policies (Dorn & Gundermann, 2022).

the state, They built ties with civil society, NGOs, academics, and even private companies (Dorn & Gundermann, 2022).[49]

Another key legal strategy was the formation of the Consejo de Pueblos Atacameños (CPA) in 1994, a collective council representing various Atacameño communities in northern Chile. The CPA challenged powerful actors like SQM, asserting Their rights as stewards of ancestral lands and defenders of vital ecosystems (Ciftci & Lemaire, 2023; O'Faircheallaigh & Babidge, 2023).[50] By the mid-2010s, resistance evolved further into direct negotiation with mining companies, most actively done by those directly affected by lithium mining in Salar de Atacama: Peine, Socaire, Toconao (Dorn & Gundermann, 2022). Entering into formal agreements with companies like Albemarle, these agreements often introduced financial compensation, environmental monitoring rights, and territorial recognition. Community leaders actively sought legal and scientific support, drafted development proposals, and made autonomy a central demand (O'Faircheallaigh & Babidge, 2023).[51]

As another step, some communities politically opposed mining companies by lodging formal complaints (Babidge, 2020).[52] Other communities build Their own governance structures

[49] These networks offered legal tools, knowledge, funding, and platforms to voice demands. Rather than rejecting engagement, communities reshaped it on Their own terms (Dorn & Gundermann, 2022).

[50] The CPA emphasised the aforementioned lack of proper consultation and free, prior, and informed consent as required by ILO Convention 169 and the UN Declaration on the Rights of Indigenous Peoples and criticised the government for profiting from resource extraction while many Indigenous Communities remain without basic services like water, sewage, and electricity (Blair et al., 2023).

[51] The Atacameño approach when getting into agreements contests the notion that these negotiations are merely neoliberal tools serving corporate interests. Instead, their strategies demonstrate an active pursuit of developmental control as a deliberate effort to assert Indigenous control over development processes and equitable sharing of benefits, which may contrast with corporate objectives (O'Faircheallaigh & Babidge, 2023).

[52] In Peine, opposition to Minera Escondida's 2017 Environmental Impact Assessment, which sought to justify continued groundwater extraction, was possible by combining scientific critique and traditional ecological knowledge. The community rejected the claims of "low or no impact," based on years of firsthand observation of environmental damage (Babidge, 2021). The Peine community used another tool: memorising and sharing collective memories as a political means by transforming personal and cultural narratives into forms of resistance that challenge state and corporate accounts of environmental change. These politicised memories help mobilise

through the asamblea, a collective decision-making body ensuring legal strategies are community-driven. In consultations, community members directly confronted corporate actors, challenged environmental assessments, and enlisted researchers to translate technical documents into formal objections (Babidge, 2021). Furthermore, mass mobilisations have become increasingly common across the region, particularly in response to lithium mining conflicts. In the 2010s, this form of resistance gained prominence as communities developed new and creative strategies to confront the challenges posed by extractive projects, especially in contexts where state mediation proved ineffective (O'Faircheallaigh & Babidge, 2023). [53]

Most recently the Intercultural Andean and Educational Summit was held in January 2025, with the summit bringing together over 200 Indigenous representatives from Argentina, Bolivia, Peru, Ecuador, and Chile, including the Atacameños Peoples.[54] Scholars describe the legal and political agency of Atacameños as "slow resistance", a gradual, cumulative mobilisation that builds power over time, contrasting with the invisible, slow violence of extractive industries. In Peine, decades of groundwater extraction degraded ecosystems, but persistent legal resistance helped the community expose these harms, challenge dominant narratives, and reclaim Their voice (Babidge, 2021).[55] Mejia-Muñoz & Babidge (2023) add how

communities against mining by grounding Their opposition in a deep, historical connection to the land and a long legacy of dispossession and resilience (Babidge et al., 2019).

[53] Tactics such as protests, reported in nine lithium-related cases, and roadblocks to physically block access to mining sites, seen in at least three cases, illustrate how communities mobilise to apply pressure on companies and decision-makers. These protests have expanded from regional to national and even transnational levels serving both to disrupt harmful operations and to make Their opposition more visible on a broader political and social stage (Seefeldt, 2022; Ciftci & Lemaire, 2023).

[54] The summit focused on collective rights and defending ancestral territories affected by lithium exploitation in the Andean salt flats. Key issues discussed included the legal frameworks and community rights related to lithium extraction, strategies for community cohesion and resistance to increasing extractive pressures. The summit emphasised cultural activities and long work sessions to reinforce Indigenous identity and political, social, and environmental contexts surrounding mining (Unidad de Patrimonio del Consejo de Pueblos Atacameños, 2025).

[55] For example, Minera Escondida withdrew its groundwater extraction proposal, demonstrating that Indigenous Environmental Justice relies on persistence, not just protest (Babidge, 2021).

this very strategy of persistent legal resistance helped Atacameños create openings to challenge the dominant narratives of the "green and sustainable" energy transition and expose critical shortcomings in so-called progressive legislation.

5.3.2 Cultural Resistance

Another common theme identified under the lens of Indigenous Environmental Justice was cultural resistance. Atacameño communities actively reshape and assert Their collective identity and narratives in response to socio-environmental harm and systemic exclusion. By crafting new discourses around ethnicity and confronting inequalities and marginalisation, They resist dominant structures not just through politics or law, but also by strengthening Their cultural cohesion and reclaiming Their identity. This cultural resilience becomes a powerful way to maintain social unity, affirm Their rights, and challenge the status quo (Castillo, 2016). Moreover, by asserting Their identity and traditional practices, these communities resist the neoliberal commodification of nature and advocate for sustainable and culturally respectful water management. (Carrasco, 2016). An example of this resistance can be found in Armando Condori from Rio Grande's claim about the mining industry: "They really need to give something back, because they've been here for years, and the communities were getting nothing. Lithium belongs to the communities." (Condori, 2022, 2:47 - 2:56).[56]

Cuadra (2000) highlighted how, despite all the challenges, many Atacameños have continued to use water communally and maintain traditional practices, showing resilience and commitment to Their way of life. To this, Holmes (2023) adds that the intensification of environmental degradation and conflict has led the Atacama communities to reclaim ethnic identities more strongly and develop new collective strategies rooted in indigeneity to defend

[56] Original words: "Realmente se tienen que dar una vuelta de mano, porque ya llevan años y las comunidades se estaban quedando sin nada. El litio es de las comunidades."

Their territory and water rights. On the other hand, Babidge et al. (2019) illustrate how other community members have returned to traditional practices, such as revitalising herding practices, a cultural assertion of responsibility and care for the land.

Babidge (2021) introduces another form of cultural resistance, operating on an ontological level, when shaping the concept of how Atacameños "see water", referring to the assertion that detecting the consequences of mining water extraction is possible through the community's traditional ecological knowledge. This concept not only challenges extractive practices but also the very ways of knowing and valuing the world.[57] Carrasco (2016) adds that traditional rituals, such as the annual canal cleaning ceremony, underscore the sacredness of water in Atacameño culture. These ceremonies reinforce communal bonds and the moral economy that governs water use and, by this, emphasise reciprocity and respect for natural resources. Thus, the performance of such rituals serves as a form of resistance against the commodification of water and the encroachment of mining activities. This highlights how, besides significant ecological changes in the Salar, local people retain and continue to transmit cultural memory and environmental knowledge. Memory persists even when the land is exhausted. Cultural attachments, stories, and ways of relating to the land are resilient and adaptive, rather than inevitably erased by ecological transformation (Babidge et al., 2019).

5.3.3 Collaborative Adaptation

Lastly, another prevalent indicated theme derived from the literature is collaborative adaptation. Although lithium and copper mines in the Salar produce considerably difficult circumstances in the Salar, Atacameño people also possess a long experience with the industry, and some communities have therefore also sought to be incorporated into newer forms of

[57] By asserting that water is not just a resource but a living, relational presence, the Atacameños resist the dominant worldview that renders it invisible or expendable and give a different understanding of what water is, what it means, and how it should be treated (Babidge, 2021).

extractivism through purposeful agreement-making with extractivism companies (Mejia-Muñoz & Babidge, 2023). Collaborative actions with the mining companies as a theme becomes evident through the lens of the Indigenous Environmental Justice framework as it emphasises that resistance can also look like care, adaptation, and the creation of alternatives that uphold Indigenous Values and Lifeways (Whyte, 2018).

In some cases, collaboration is pursued because agreements offer financial benefit-sharing, with funds supporting community-led development and improving infrastructure such as health centres, roads, and schools (O'Faircheallaigh & Babidge, 2023). Another form of collaboration is not just with the mining companies but also in the form of state engagement. Atacameño communities have identified and collaborated with specific state entities that can act as allies in advocating for Indigenous Rights and regulating extractive industries, and with this strategy, They aim to assert rights and influence development trajectories (O'Faircheallaigh & Babidge, 2023).

Furthermore, another form of collaboration revolves around productive responses, as some communities' local men, since the industrialisation of the Salar in the mid-1980s, have participated in mining as surveyors, labourers, contractors, and service providers. Some others opened businesses connected to mining, preserving relationships with the Salar even within extractive economies (Badidge et al., 2019), and it was also common that some local business owners supported the mine, hoping for job creation and more customers (Babidge, 2020).

Uberlinda Fernandez Saye, from Yerbas Buenas indirectly in an interview confirmed how collaboration and adaptation are types of resistance when stating: "We already know that lithium

is the future. It's a resource already being used. For me, it's important, because through it we benefit." (Fernandez Saye, 2022, 2:59 - 3:08).[58]

Many scholars view agreements between Indigenous Communities and mining companies as neoliberal tools that secure consent for extraction without granting real power or benefits. However, through the lens of Indigenous Environmental Justice, it can be interpreted that the case of Salar de Atacama reveals a more complex reality. Here, Indigenous Communities often use these agreements strategically, not as passive acceptance, but as part of broader efforts to assert Their rights and influence extractive decision-making. This strategy stems from frustration with the state's failure to protect Indigenous Interests and becomes a means to demand accountability, not just to fill the void left by the state (O'Faircheallaigh & Babidge, 2023).

5.3.4 Link to Indigenous Environmental Justice

Far from passive victims of Resource Colonialism or Green Extractivism, Atacameño communities demonstrate multifaceted resistance through legal and political advocacy, cultural continuity and revival, and strategic forms of collaborative adaptation. While some communities pursue agreements for tangible benefits, others do so out of necessity, given the lack of better options (Carrasco, 2016).[59] The Atacameño people's historical engagement with the mining sector, as labourers and negotiators, illustrates the nuanced and context-specific ways Indigenous Communities respond to extractive industries. Their actions reflect a dual role: participating in negotiations to secure tangible benefits, while simultaneously resisting harmful impacts and asserting Their rights. Interpreting these findings, it becomes clear how this strategic engagement

[58] Original words: "Ya sabemos que el futuro es el litio. Es un recurso que ya está en uso. Para mí es importante, porque a través de él nos beneficiamos."

[59] In Toconao, for instance, leasing water to mining companies reflects a survival strategy in response to the near disappearance of pasturelands. The resulting vulnerability has made traditional livelihoods untenable, pushing the community toward negotiations in an unequal legal landscape where communities and corporations are theoretically equal, but not in practice. Such decisions, like exchanging water access for infrastructure, should not be seen as naïve, but as pragmatic responses to urgent needs (Carrasco, 2016).

complicates binary notions of resistance versus collaboration. Viewed through the lens of Indigenous Environmental Justice, these approaches are not signs of consent but can be interpreted as context-driven strategies for survival, autonomy, and justice within deeply unequal power structures. These findings highlight how resistance can take many forms, including adaptation, negotiation, and the redefinition of power on Indigenous Terms (Whyte, 2018; Mejia-Muñoz & Babidge, 2023).

6. Limitations

This research, grounded in a decolonial approach, acknowledges its own constraints in challenging colonial legacies embedded in knowledge production and extractive industries. Relying solely on secondary sources limits direct engagement with Atacameño epistemologies and lived experiences, risking the reproduction of colonial power dynamics through privileging western academic perspectives. It may furthermore limit the depth of contextual understanding and the opportunity to capture more nuanced or emergent voices firsthand.

Secondly, the reliance on secondary literature means the findings are shaped by the availability, selection, and framing of existing sources. Given the historical marginalisation and underrepresentation of Indigenous Voices in official and academic records, there is a risk that some perspectives, especially dissenting or less formalised community views, may remain under-documented or filtered through external intermediaries. This limitation is further compounded by the time and spatial constraints of this thesis, which restricted the inclusion of additional local and non-academic sources that could have amplified even more diverse local voices.

Thirdly, as already stated, my positionality shapes interpretation and risks epistemic violence by speaking for communities without Their direct participation. Theoretical frameworks

used, while critical, may insufficiently capture the specificity of Indigenous Worldviews, sometimes imposing external categories. Ethically, the absence of Indigenous Collaboration highlights ongoing challenges in achieving truly decolonial research practices and respecting intellectual sovereignty.

In addition, the use of Google Sheets instead of more advanced qualitative analysis software may have limited analytical depth and efficiency, though this choice was shaped by practical time and resource constraints.

Finally, some of the interviews, literature and the magazine consulted were originally in Spanish and translated into English, which introduces the possibility of translation loss – particularly in conveying the cultural and linguistic subtleties embedded in Indigenous testimonies.

While these limitations are significant and must be taken seriously, the study nonetheless offers meaningful contributions by critically engaging with extractivism through a decolonial lens and foregrounding the structural dynamics and resistances often obscured in dominant environmental narratives.

7. Recommendations and Future Research

While further research could deepen the current understanding of specific environmental processes and long-term impacts, it is crucial that decision-makers act on the existing, well-documented socio-environmental knowledge already available. Future policies and recommendations must be grounded in the knowledge, experiences, and priorities of local communities. Whilst further environmental studies may provide additional insights, the socio-environmental impacts already documented are sufficient to justify immediate action to alleviate negative impacts on Atacameños. Action should not be delayed under the pretext of

scientific uncertainty; rather, decision-makers must honour and integrate these community voices into environmental governance and policy-making processes. Institutions such as the Chilean Ministry of Environment, the National Geology and Mining Service (SERNAGEOMIN), the Ministry of Mining, and international stakeholders involved in climate and energy transitions must be held accountable for integrating Indigenous Voices into environmental governance, regulatory frameworks, and extractive decision-making processes. Furthermore, it is important that further research follows Indigenous-informed Methodologies that go beyond traditional Western scientific frameworks since Indigenous Knowledge helps promote equitable and sustainable environmental governance. All in all, Indigenous Well-being should always be at the forefront of impact assessments (Babidge, 2021).[60]

8. Conclusion

This thesis explores how the socio-environmental impacts of lithium mining in the Atacama Desert shape the responses of the Atacameño Indigenous Community. Using

[60] More generally, supporting Chile's transformation into a plurinational, intercultural, and ecological state is essential. This involves deconstructing the narrative that frames parts of Chile as lifeless and redefining legal frameworks surrounding brine to better manage lithium mining impacts (Blair et al., 2023). Moreover, future efforts must dismantle political constraints that uphold existing power hierarchies by encouraging adaptive and flexible governance frameworks that are capable of addressing climate complexity and uncertainty. Future efforts should focus on fundamentally redefining sustainability, moving beyond resource-intensive and extractive models. Greater focus should be placed on degrowth approaches that prioritise reducing material consumption rather than simply substituting fossil fuels with lithium-based technologies (Jerez et al., 2023). Another idea proposed is to develop new battery technology, using more common, environmentally-friendly materials (Turcheniuk et al., 2018).
To ensure natural resources are managed in ways that are culturally respectful and just, there is an urgent need to shift from Chile's neoliberal, technocratic water governance toward inclusive, democratic models that prioritise Indigenous Knowledge and Grassroots Movements. Embracing post-capitalist approaches that value Indigenous Water Management, based on collective responsibility and ecological democracy, is essential, allowing Indigenous Perspectives to shape governance on Their own terms (Holmes, 2023) This means that effective climate policies should prioritise justice by giving local communities control over Their resources, encouraging inclusive decision-making, and ensuring that technological advancements support social and ecological well-being, not just corporate profits (Holmes, 2023).
Equally important is the promotion of decentralised energy systems that address local community needs instead of prioritising global markets. It's also essential to question the dominant Eurocentric, neoliberal climate model that relies heavily on technology and market solutions, which often continue patterns of growth and resource extraction. A truly sustainable and fair transition must take into account the broader ecological, social, and cultural consequences of energy changes, resource extraction, and electromobility, rather than focusing only on reducing emissions in wealthy consumer markets. This justice-centred approach is vital for building resilient, equitable, and environmentally sound futures. (Jerez et al., 2023).

frameworks of Green Extractivism, Resource Colonialism, and Indigenous Environmental Justice, it reveals how these impacts have sparked multidimensional resistance grounded in sovereignty and justice.

Communities near the Salar de Atacama face severe ecological and social consequences from lithium and copper extraction. Water depletion has led to drying wetlands, biodiversity loss, and ecological degradation. Socially, these impacts erode traditional livelihoods, fuel rights violations and conflict, and drive demographic shifts – widening inequalities and fragmenting Atacameño communities.

These dynamics reflect enduring colonial logics: natural resources are extracted from Indigenous Territories in the name of global sustainability, yet benefits flow outward while burdens remain local. The green energy transition, far from universally just, risks reproducing the same inequalities it claims to address, embedding the Atacama in a new cycle of extractive dependency and slow ecological violence.

Atacameño communities have responded with adaptability and resourcefulness, developing diverse strategies to assert Their interests and protect Their rights amid mining impacts. Depending on differences in local histories, exposure to mining, and social dynamics and benefits of mining projects, different communities adopt varied resistance approaches. Those directly affected by mining in the Salar often engage in negotiation with companies, seeking agreements to secure tangible benefits or out of necessity due to limited alternatives. Alongside negotiation, many communities have mounted strong legal responses to defend Their land and environmental rights. Additionally, cultural resistance plays a crucial role, as Atacameños actively preserve and revitalise Their traditions, languages, and spiritual practices to maintain identity and cohesion in the face of extractive pressures. This combination of legal, cultural, and

negotiated strategies highlights the multifaceted and context-specific ways Atacameño communities engage with mining impacts.

Future initiatives need to challenge political structures that reinforce current power dynamics and fundamentally transform sustainability by adopting degrowth principles that focus on lowering material use instead of merely swapping fossil fuels for lithium-based solutions. Ensuring equitable and culturally sensitive management of natural resources demands a move away from Chile's neoliberal, technocratic water governance toward participatory, democratic frameworks that prioritise Indigenous Knowledge, empower local communities and align technological progress with social and environmental welfare rather than corporate gain.

Lastly, listening to, recognising and honouring the active and powerful resistance of Atacameños and other Indigenous Groups is essential for working towards a more culturally respectful and just future that leaves no one behind. This research has shown that any sustainable transition must be just, and that justice must begin with the recognition of Indigenous Rights, Knowledge Systems, and Governance.

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[61]Produced by France 24 Español (a reputable international broadcaster, 15 Feb 2024). It includes interviews with Indigenous leaders and community experts. The video is a journalist-led report with Sergio Chamorro as interviewee (attorney and advisor to the Council of Atacameño Peoples).While credible, it may not fully capture the variety of Atacameño perspectives. Framed as a news segment about the social and environmental impacts of lithium mining. Its purpose appears to be informing a global audience and raising awareness of Indigenous concerns under climate transition narratives.

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[62] DW is a German broadcast chanel and the video was produced ~3 years ago. The video focuses on testimonies from local farmers and residents directly experiencing water scarcity. As a documentary-style local report, it appears to provide firsthand accounts.It features multiple interviewees, suggesting varied community experiences. Still, it's unclear whether these voices represent the broader Atacameño population beyond a specific area.
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Appendix

Appendix A - Full Positionality and Ethical Considerations

As a student, I remain critically aware of the potential biases associated with my positionality, including the risk of unconsciously privileging western epistemologies or interpretative frameworks over Indigenous Ways of Knowing. My European heritage and the privileges it entails may result in assumptions that shape my interpretations, even unintentionally. I acknowledge the danger that, despite efforts to avoid this, my perspectives could overshadow the narratives of the Atacameño People or misrepresent Their experiences.

Being in the process of engaging with the struggles of the Atacameño Communities under extractive projects, I am aware of the critical need to examine the power dynamics and historical contexts that frame this interaction. Historically, research involving Indigenous Peoples has often been conducted through colonial lenses, marginalising Their voices and perpetuating systemic inequities. I recognise this legacy and the responsibility it entails for conducting research ethically and reflexively.

To manage the dialogue between Indigenous and western Epistemologies, I sought to allow Indigenous Knowledge Systems to guide both the research design and interpretation of findings. Engaging with Indigenous Methodologies served as a deliberate strategy to counteract Western bias and to ensure, as best as possible, that the interpretation of Indigenous sources was not mediated through academic or colonial lenses. A central influence for this was Wilson's (2008) concept of *Relational Accountability*, which emphasises that knowledge is not an abstract object but is created through relationships – with the community, the land, the ancestors, and the topic itself. This understanding challenged the individualistic and extractive tendencies of western academic research, and reminded me to remain accountable not just to academic

standards, but to the people whose experiences and knowledge are being represented. Similarly, Archibald's (2008) *Indigenous Storywork* framework highlighted how stories are not merely data but are respected carriers of knowledge, emotion, and cultural continuity. Rather than breaking down narratives into abstract themes, I tried to honour their integrity and meaning as they were presented. This guided me to resist fragmenting stories into analytical units in ways that could strip them of their cultural or spiritual context – a common practice in western methodologies (Archibald & Xiiem, 2008; Kovach, 2009; University of Alberta, 2025).

These approaches helped me to avoid treating Indigenous Narratives as raw data for theoretical interpretation, and instead understand them as expressions of lived knowledge and collective identity. The frameworks taught me to ask: *Whose knowledge am I prioritising? Whose terms am I interpreting on?* This helped decentre western analytical dominance and with this I tried to reframe the research as a respectful dialogue with Indigenous Epistemologies rather than an analysis imposed upon them.

This approach promotes an exchange rather than a hierarchy between knowledge systems, aiming to centre Atacameño Worldviews while situating findings within broader academic discourse. Reflexive practices – including continuous self-examination of my assumptions, engagement with literature by Indigenous Scholars, and feedback from my supervisor – supported this process of negotiating multiple ways of knowing.

The primary objective of this study has been to centre the agency, resistance, and lived experiences of the Atacameño Community in the Chilean Atacama Desert. I have given my best to ensure that Their voices are not only included but are at the forefront of this analysis. This involves prioritising sources that amplify Their perspectives and ensuring that all contributions are cited appropriately to honour intellectual ownership and avoid appropriation.

Appendix B - Use of Help-Tools

In this research, AI tools such as ChatGPT were utilised to assist in summarising academic sources to efficiently assess their relevance to the study and to generate explanations for difficult concepts. Additionally, AI-driven paraphrasing tools like Grammarly Pro and QuillBot support the sentence-structuring and rephrasing of complex sentences to improve clarity and readability. DeepL was used to translate texts and interview testimonies from Spanish to English. These tools were engaged with critically, acknowledging both their potential to enhance efficiency and clarity and their limitations, such as the risk of introducing bias or oversimplifying complex arguments. Their use was thus carefully considered and complemented by manual review to ensure academic integrity and rigour.