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Legitimising lithium mining: Global energy transition and green developmentalism in Jujuy, Argentina

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Abstract

The global green energy transition towards a low-carbon economy via decarbonisation is increasing the demand for and exploitation of so-called critical resources, including lithium. The growing demand for lithium, which, as a raw material, is primarily found in countries of the global South, has sparked a new debate on the global interdependencies, unequal ecological and economic exchange and unevenness of the energy transition between the global North and South. In this context, concepts such as green extractivism, green colonialism and green sacrifice zones have emerged. In this article, we build on this strand of literature, assuming that decarbonisation – as the overarching goal of the energy transition – influences the decisions taken over lithium mining and the narratives used for its legitimisation. It remains an open question, however, how the legitimisation of lithium mining is being shaped by decarbonisation and energy transition goals. What narratives are being used, by whom, how and with what socio-political and socio-economic effects? In Argentina, there are numerous lithium mining projects, and conflicts only arise in a fraction of them. We focus on two lithium mining projects at the Salar de Olaroz-Cauchari, Jujuy, where protests against the mines have been largely absent. We analyse the narratives applied by governmental and corporate actors. The theoretical underpinning of the analysis is based on a dialectical understanding of narratives, whereby narratives are seen as contingent products of social and global-local (multiscalar) interactions. We argue that, in order to become powerful and to legitimise lithium mining, two core narratives are applied by its proponents: a green development and industrialisation narrative and a climate protection narrative. Both narratives are increasingly linked to global discourses of green energy transition and are part of an emerging green developmentalist dispositive that manifests in new institutions, laws and administrative measures to enforce lithium mining. *Keywords*: Green developmentalism, lithium mining, energy transition, narratives, Argentina.

Resumen: Legitimando la extracción de litio: Transición energética global y desarrollismo verde en Jujuy, Argentina

La transición energética ecológica mundial hacia una economía baja en carbono a través de la descarbonización está aumentando la demanda y la explotación de los denominados recursos

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críticos, entre ellos el litio. La creciente demanda de litio, que, como materia prima, se encuentra principalmente en países del Sur global, ha suscitado un nuevo debate sobre las interdependencias globales, el intercambio ecológico y económico desigual y las desigualdades de la transición energética entre el Norte y el Sur globales. En este contexto han surgido conceptos como extractivismo verde, colonialismo verde y zonas de sacrificio verde. En este artículo nos basamos en esta corriente de la literatura, asumiendo que la descarbonización como objetivo global de la transición energética influye en las decisiones que se toman sobre la extracción de litio y en las narrativas que se utilizan para legitimarla en las regiones ricas en litio. Sin embargo, sigue siendo una incógnita cómo los objetivos de la descarbonización y la transición energética influyen en la legitimación de la minería del litio. ¿Qué narrativas se utilizan, quién las utiliza, cómo y con qué efectos sociopolíticos y socioeconómicos? En Argentina existen numerosos proyectos de extracción de litio pero los conflictos sólo surgen en una parte de ellos. Nos centramos en dos proyectos mineros de litio en el Salar de Olaroz-Cauchari, Jujuy, donde las protestas contra las minas han sido prácticamente inexistentes. Analizamos las narrativas aplicadas por los actores gubernamentales y empresariales. El sustento teórico del análisis se basa en una comprensión dialéctica de las narrativas, según la cual las narrativas son vistas como productos continuos de interacciones sociales y globales-locales (multiescalares). Sostenemos que, para hacerse poderosos y legitimar la minería del litio, sus defensores aplican dos relatos básicos: el del desarrollo y la industrialización ecológicos y el de la protección del clima. Ambas narrativas se vinculan a los discursos globales sobre la transición energética y forman parte de un dispositivo verde desarrollista emergente que se manifiesta en nuevas instituciones, leyes y medidas administrativas para imponer la minería del litio. *Palabras clave*: Desarrollismo verde, minería del litio, transición energética, narrativas, Argentina.

Introduction

The techno-managerial energy transition towards a low-carbon economy is increasing the demand for and exploitation of so-called critical resources. Lithium is one such critical raw material. The United States, the European Union, and China added lithium to their strategic lists of critical resources in 2018 and 2020, underlining its importance in efforts to decarbonise economies, particularly the transport sector through electrification (US Department of the Interior, 2018; European Commission, 2020; Riofrancos, 2022). Lithium is light and has a high energy storage capacity. Due to these material properties, lithium-ion battery (LiB) technology has in recent years become the major growth sector in battery chemistry. LiBs are relevant in many industries. However, the main driver of the increasing demand for lithium is the automotive sector and its reliance on LiBs in electric vehicles (Bridge & Faigen, 2022). Between 2016 and 2021, global lithium production doubled from 40,000 to 100,000 tons (USGS, 2018, 2022). For 2040, the International Energy Agency (IEA) (2022) predicts a 43-fold increase in demand compared to 2020. The US Geological Survey (USGS, 2022) estimates overall global lithium resources of about 89 million tons. In 2020, Australia was responsible for almost half of global lithium production (Desaulty et al., 2022). However, more than 50 per cent of the world's lithium resources are located in brines below the salt flats of the so-called lithium triangle, a border region shared by Argentina, Bolivia, and Chile (USGS, 2022).[1] Lithium is not a

scarce commodity, but it occurs in large deposits in only a few regions and countries of the world. Against this backdrop, it becomes clear that an energy transition based on electrification and access to and control over lithium is simultaneously embedded in and transforming transnational economic, political and social relations along the LiB production networks that link lithium mining sites to sites of lithium processing, industrial production and end-use locations (Bridge & Faigen, 2022; Sanchez-Lopez, 2023).

A country that plays a key role in this global production network is Argentina, which currently ranks as the world's second-largest lithium exporter following Chile, and the fourth-largest lithium producer following Australia, Chile, and China (USGS, 2022; Desaulty et al., 2022). In Argentina's national development discourse, lithium is often mystified as 'white gold' or the 'white oil' of the twenty-first century. It is represented as a strategic resource for economic development and imagined as a possibility to redefine the country's position in the global world market (Barandiarán, 2019). However, neither the expansion of lithium mining nor the imaginaries associated with lithium are uncontested. Struggles over lithium mining and its representation have emerged in different parts of the world where the exploitation of lithium is planned or already underway (Noever Castelos, 2023; Silva & Sareen, 2023; Jerez et al., 2021; Dorn, 2021; Sánchez-López, 2019, 2021). Conflicts related to lithium mining show similar characteristics to conflicts over mining in the context of the resource boom and extractivism in general (Conde, 2017; Walter & Wagner, 2021; Ospina Peralta et al., 2015; Bebbington & Bury, 2013; Bebbington et al., 2008). These conflicts are about the loss of livelihoods, land, and water; the non-recognition of cultural and territorial rights; the lack of participation in the process of awarding concessions; inadequate compensation and (forced) resettlement; adverse ecological effects; demands for jobs; the distribution of the profits, taxes and duties; and the representation of culture in development discourse. However, not everywhere where lithium mining is expanding do we witness the materialisation of conflict, as we do with other resources (Conde & Le Billon, 2017; Dietz & Engels, 2017).

One striking example is lithium extraction at the Salar de Olaroz-Cauchari in the province of Jujuy, in northern Argentina where the indigenous communities of the department of Susques largely cooperate with the mining companies. At the same time as protests in neighbouring communities of the Salinas Grandes-Laguna Guayatayoc against the state escalated in June 2023 (Dorn, 2023; Segato, 2023), a second mine at the Salar de Olaroz-Cauchari run by Minera Exar, a joint venture between Ganfeng Lithium and Lithium Americas, entered the phase of pre-commercial production – without protests. The simultaneity of conflict and non-conflict in one single province has attracted widespread scholarly attention. Pragier (2019) and Dorn (2021) have analysed the contrasting responses of the communities and identified particular context-related explanatory factors, such as differences in terms of territorialities, framings of the problem (recognition or distribution), and historical anchoring. With this article, we do

not intend to further contribute to these already convincing analyses, neither do we want to explain how protest is being demobilised. Rather, we aim to contribute to the critical scholarly literature on green extractivism and lithium mining in the context of the global green energy transition by focusing on the narratives applied to legitimise (new) mining projects. We argue that global energy transition strategies that aim for decarbonisation (e.g. at the global scale or in other world regions) are increasingly shaping the narratives, goals and decisions taken in favour of lithium mining. This has consequences for local protest movements.

In order to understand how lithium mining is being legitimised, we analyse the narratives that national state and corporate actors apply in order to garner support from the wider public and fend off possible protest actors' demands (Moezzi et al., 2017). Through narratives, actors give meanings to social realities, events, and actions. Narratives are understood as discursive strategies to exercise power. The question is how this occurs. Through which narratives is power exercised in lithium mining? How do the narratives applied unfold power to stabilise political power relations and enforce lithium mining? We argue that narratives are dynamic. They do not operate in isolation and are not powerful per se. They are most effective when they resonate with their audiences' needs and beliefs and if they refer both to context-related social actions and to global discourses, here the decarbonisation discourse.

To answer these questions, we offer a case where legitimation strategies work to blunt opposition. We focus on lithium mining in the department of Susques, where local communities cooperate with mining companies. Drawing on recent publications on the emergence and legitimisation of green extractivism (Voskoboynik & Andreucci, 2021; Bruna, 2021; Dorn et al., 2022; Ulloa, 2023; Noever Castelos, 2023) and on the role of narratives in social change (Hajer, 1997; Bridge & McManus, 2000; Beck et al., 2021), we argue that in Susques both a green development and industrialisation narrative, as well as a climate protection narrative, are being used to legitimise lithium mining. Both narratives are increasingly linked to global decarbonisation discourses and are part of an emerging green developmentalist dispositive that manifests in new institutions, laws and administrative measures to enforce lithium mining.

The data for the analysis are based on extensive fieldwork carried out between February 2018 and August 2019 by the first author. The applied data gathering methods included qualitative social research with observations, and semi-structured and go-along interviews with different actors (n=109; including company representatives, geologists, government authorities, NGO representatives, community representatives, and the local population). Extensive fieldnotes complemented the data set. Interviews were partially coded in the interest of qualitative content analysis. Direct citations from the interviews were translated from Spanish by the authors. We also draw on ongoing communication with local actors (voice messages and calls), and on document research, from 2017 to the present, which includes official reports, information from government

institutions, press and website records, newspapers, and documentation from indigenous organisations.

Global green energy transition and narratives supporting lithium mining

For our analysis, we draw on discourse-analytical approaches from the field of political ecology, in which knowledge-power relations are central. Scholars from this epistemological standpoint ask how nature is socially constructed and how certain ideas and knowledge about nature, ecology, society, and political economy shape and have shaped the ways in which people perceive and use nature, as well as how this perception shapes and has shaped subjects and power positions (Escobar, 1996). To analyse these interrelations, scholars examine how power in environmental and resource politics operates through discourse; that is, how certain knowledge systems are normalised, or certain subject positions are elicited, that work to the ends of a governing authority (Agrawal, 2005; Ulloa, 2010).

Based on these assumptions, we focus on narratives as a discursive strategy to exercise power in the enforcement of lithium mining. Narratives are defined as stories of past or present events with the aim of interpreting and ascribing meaning to them and thus guiding action. They are used to articulate claims or to promote or defend interests (Polletta & Chen, 2017). According to Hajer (1997, p. 56), finding an appropriate narrative (storyline) "becomes an important form of agency" in social contestations. In the process of cognition, people draw on narratives that make sense to them with regard to their values, interests etc., rather than referring to "comprehensive discursive systems" (Hajer, 1997, p. 56). Analysing narratives helps to reveal the stories through which actors make sense of what is at stake. Narratives are expressions of stories in an analytical sense; as such, they are analytical interpretations of storylines, produced by the researchers, in this case by us (cf. Abbott, 2008, p. 15ff). We treat narratives as a means of studying how proponents construct lithium mining as a development opportunity in order to garner public support for it (cf. Hajer, 1997).

A dialectical perspective on stories and action allows us to understand stories as constructed interactively. Stories do not emerge in isolation but are contingent products of social interaction across multiple scales (Tilly, 2002). This means that it is necessary to ask not only what people say but also what they do, as narration and social action are co-constituted. It is through social interaction that narratives produce power. Not all narratives are equally powerful, as their proponents are embedded in social power relationships. Colin Hay (2001, p. 10) argues that "in the same way that a given context is strategically-selective – selecting for, but never determining, certain strategies over others – it is also discursively-selective – selecting for, but never determining, the discourses through which it might be appropriated". The possibility for narratives to become powerful varies with the actors' identities, values, interests, strategies, actions, knowledge, and experiences, and with the extent to which the narratives of

specific actors resonate with the dominant discursive paradigms of a given context, which in general privilege some discursive strategies, tactics and statements over others. In other words, it is not only important how narratives are constructed, but also how audiences respond to them.

To understand how narratives operate and gain power in lithium mining, it is necessary to analyse how certain stories emerge and resonate with overriding discursive paradigms that have emerged in the context of the global climate crisis, particularly decarbonisation. Decarbonisation generally means a climate-neutral restructuring of the economy and society, i.e. the reduction of CO_2 emissions to achieve net zero.[2] Discourse-analytical approaches to 'green extractivism' (Voskoboynik & Andreucci, 2021; see also Kalt et al., 2023; Jerez et al., 2021; Dorn et al., 2022) have shown how, in relation to decarbonisation, resource extraction is being enforced by applying narratives of green modernisation and development. Green does not refer to an environmentally friendly and socially just way of mining. Instead, green extractivism is defined as "a variation of extractivism, in which resource appropriation and extraction is materialized through climate change policy guidelines and legitimized by green discourses" (Bruna, 2021, p. 163). In green extractivism, the extraction of raw materials is discursively constructed as a necessary means to achieving a variety of overriding ends: decarbonisation, energy transition, green industrialisation and green development. Voskoboynik and Andreucci (2021, p. 16) underline that in the context of the climate crisis, green extractivism is rendered "not only compatible with 'sustainable development', but *necessary* to it (...)".

Narratives unfold their power in interaction with or in a net of institutions, laws, and administrative measures that allow an operation (e.g. the enforcement of lithium mining) to be carried out and to exercise power. Foucault (1978, p. 119f) called such an ensemble or net of narratives, discourses, institutions, regulatory decisions, laws, administrative measures, scientific statements etc. a 'dispositive' (Fr. *dispositif*). A dispositive is historically specific; it serves as a decision-making tool or 'net' that produces and regulates the convictions of the people involved. By studying the narratives used to legitimise lithium mining in Susques, we aim to investigate the extent to which a green development dispositive has emerged that influences the actions and meanings promoting lithium mining, including the communities' responses.

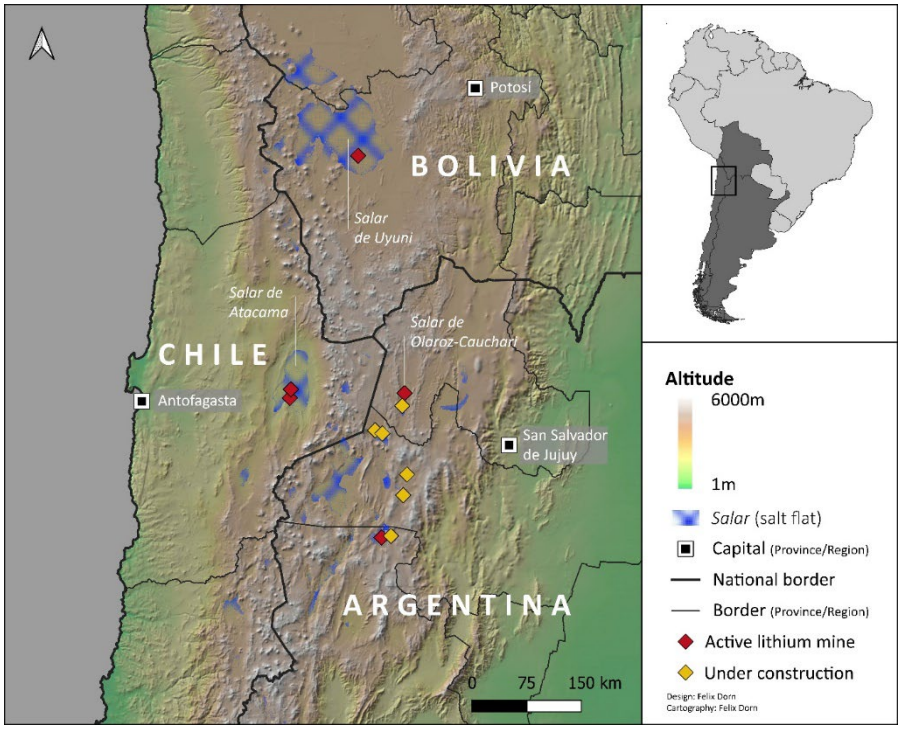
The power of narratives thus depends on various factors. These include the actors and their positions that promote or voice stories, the discursive selectivity of the context, the ways in which narratives are heard and responded to by the audiences, how they resonate with or override widely accepted interpretations, and how the narratives told correspond with the actions taken by those telling them. Depending on these factors, stories have the capacity to contribute to either changing the status quo, or to excluding contradicting views, countering claims and reproducing power relations (Verloo, 2018; Abbott, 2008). To answer the question of how lithium mining is being legitimised in the context of the global energy transition, we focus on three analytical dimensions: (1)

institutions and institutional forms, including laws and administrative measures to secure lithium mining; (2) actors (state and corporate) and their strategies; and (3) the stories and meanings attributed to lithium mining.

Lithium mining in Argentina

Compared to many other countries with significant lithium resources (e.g. Australia), in the border region of Argentina, Bolivia, and Chile, lithium can be extracted comparatively cost-efficiently from brine deposits. The region extends from the Bolivian Salar de Uyuni to the Chilean Salar de Atacama and a series of salt flats in northwest Argentina. It covers the high Andean plateau of the Altiplano, Atacama, and Puna, a highly arid area characterised by altitudes between 2,500 and 4,500 m.a.s.l. that is mainly populated by indigenous communities of the Atacama, Lickanantay, Kolla, and Quechua tribes. Following Riofrancos' (2022, p. 4) expression that "geology is not destiny", we see the term 'lithium triangle' as a discursive construction that underlines the single commodity emphasis of an entire region, as well as the dominant associated development imaginaries (Barandiarán, 2019; Soto Hernandez & Newell, 2022; Voskoboynik & Andreucci, 2021).

Figure 1: Advanced lithium mining projects in South America (Dorn & Gundermann, 2022)



This reshapes a complex and diverse region into what Bridge (2001) calls a 'commodity supply zone'. In contrast to 'lithium triangle', Forget and Bos (2022) propose the alternative designation 'Altiplania', to show how the energy transition is locally grounded, and to include other resources, local communities, and state strategies.

The homogenisation of this region into a single 'lithium triangle' also disguises different institutional forms for the regulation of lithium mining. In each country, lithium mining is politically implemented and institutionally regularised in different ways. In Chile, lithium has been mined since the early 1990s. Lithium is regulated as a mineral not subject to mining concessions. Permits are thus granted to private companies by presidential decrees of operation. Since the 1980s, the Chilean company SQM and the US firm Albemarle have been the only two companies authorised to conduct lithium mining. Chile is now the world's largest exporter of lithium, and the second-largest producer behind Australia (USGS, 2022). In Bolivia, lithium played an important role in the national development plan of former president Evo Morales (2006-2019). Despite partnerships with foreign companies and research institutions, however, Bolivia has not yet been able to move beyond a pilot plant.

In contrast to Chile and Bolivia, Argentina's lithium sector is wide open to private investment. It is the only one of the three countries without a lithium-specific regulatory framework. Instead, lithium mining is embedded in the country's overall neoliberal mining legislation, which is a legacy of the 1990s sector reform shaped by the Washington Consensus. This national legislation is fundamentally based on three pillars. First, the Mining Investment Law 24.196 of 1993 guarantees operating companies enormous tax advantages, 30 years of fiscal stability and mining fees of a maximum of 3 per cent.[3] Second, as per Article 124 of the 1994 constitutional reform, the provincial governments administer mining resources. Hence, the governments of the provinces of Jujuy, Salta, and Catamarca are legally responsible for and regulate lithium exploitation in their territories. The Argentine Constitution establishes that mines are the property of the provinces, and the provinces may grant concessions for their use. Mining rights are granted in perpetuity as long as the annual royalties are paid and investments are made for each stage of the mining activity. When the province grants a mining concession to a third party, it maintains the original ownership. However, third parties are able to sell the right to mine a concessioned area. In Jujuy, the provincial government's public mining and energy company, Jujuy Energy and Mining State Society (JEMSE), also sells concessions by means of tenders for the province of Jujuy (decree 7180/2018). This is because selling concessions, obtaining investments and benefitting from royalties present a huge opportunity for the provincial government to increase its revenues, create employment, and increase political independence from the national government. Third, the Argentine Mining Code, enacted in 1887 and reformed in 1997, empowers the private ownership and exploitation of mines (for a detailed outline, see Nacif, 2019; Obaya and Pascuini, 2020).

Since the FMC Corporation (now Livent) opened the Fenix lithium mining project at Salar del Hombre Muerto in the north of Catamarca province in 1997, Argentina's lithium *bonanza* has attracted a host of international investors. There are numerous other lithium mining projects in the exploration phase. However, many of these will most likely never start producing. Since lithium is hardly traded on the stock exchange, but the companies involved in its extraction are, it is possible to speculate with lithium mainly by trading with the companies' shares. This is why several mining companies conduct initial explorations with the aim of being sold later (interview with exploration company hydrogeologist, Salta, March 2018). Many of the numerous exploration projects are engaged in speculative mining; all salt flats of the three provinces are now covered by concessions for lithium mining. The governments of the provinces of Salta and Catamarca foster neoliberal mining policies, facilitating mining by private companies.

Jujuy's government, in contrast, has taken a more active role in managing lithium mining. Jujuy is the most northwestern province of Argentina, bordering Chile to the west and Bolivia to the north. In 2014, the company Sales de Jujuy inaugurated the province's first commercial lithium mining project at the Salar de Olaroz-Cauchari in the department of Susques. The operating company Sales de Jujuy is a joint venture between the Australian Allkem (until 2021 Orocobre) (72.68 per cent) and the Japanese Toyota Tsusho (27.32 per cent). JEMSE in turn holds 8.5 per cent of Sales de Jujuy. In May 2023, Allkem and Livent announced merger plans that would make the company the third largest lithium producer in the world (Allkem, 2023). In June 2023, the operating company Minera Exar started a phase of pre-commercial exploitation at the same salt flat. Minera Exar is a joint venture between Chinese Ganfeng Lithium (45.75 per cent) and American Lithium Americas (45.75 per cent). In April 2021, JEMSE was incorporated into Minera Exar's project, making use of its 8.5 per cent participation option. This is why, along with the Eramet mine in Salta, which is still under construction, Argentina almost doubled its production volume over the course of 2023, reaching a capacity of 200,000 tons of lithium carbonate equivalent (LCE) (USGS, 2022).

Jujuy's provincial government not only fosters investments in mining projects, but also emphasises its active contribution to the energy transition through solar energy projects and battery factories, among others. At the same time, this is leading to tensions and conflicts with indigenous communities at the local level. However, while in the late 2000s, protests around lithium mining in Susques were mobilised (Dorn & Gundermann, 2022), there are no manifest conflicts today. Instead, many indigenous actors seek to negotiate a profitable share in lithium mining, for example via jobs. Against this background, the province of Jujuy – and the department of Susques – offer particularly fruitful ground for analysing the legitimation of lithium mining in the context of the global green energy transition.

Actors and narratives of lithium mining at the Salar de Olaroz-Cauchari

In recent years, the Sales de Jujuy project has significantly expanded. In addition, at the same time as Jujuy's fast-track constitutional reform sparked massive protest from the communities of Salinas Grandes-Laguna Guayatayoc in Jujuy in 2023 (Segato, 2023), in the department of Susques the province's second lithium mine was able to enter the production phase – without protests. These recent events also reveal the dual role of the state in mining activities, whose control and implementation, based on Argentina's regulatory framework, are the responsibility of the provinces. On the one hand, the state guarantees the protection of minority rights. These are assured through the ratification of Convention 169 of the International Labour Organisation (ILO) and anchored in the Argentine constitution.[4] On the other hand, the state has a political and economic interest in the active development of mining projects for 'critical resources' in the context of energy transition.

In the remaining part of the text, we ask how a green development and industrialisation narrative is being used to legitimise lithium mining, and how this is unfolding at the Salar de Olaroz-Cauchari and contributing to an absence of conflict (cf. Conde & Le Billon, 2017; Furnaro, 2019). In doing so, we analyse the extent to which lithium mining in Jujuy is embedded in a green developmentalism dispositive. The Salar de Olaroz-Cauchari is located in the department of Susques in the province of Jujuy and is inhabited by ten indigenous communities. It is a marginalised region in the national and provincial context, with deficient infrastructure, including a lack of secondary schools and health care, poor road conditions, and limited transport and communication options. In the communities, material conditions lead to a lack of alternatives and the perception of lithium mining as an economic necessity. The resulting 'passive resignation' is exploited by co-opting their leadership by state and companies. On the other hand, the communities embrace the combination of economic and green arguments, so that we also observe active persuasion through discourse.

Institutions and institutional forms

In 2011, governor Walter Barrionuevo declared lithium a 'strategic resource' and a driver of the province's socio-economic development (decree 7592/2011). That same year, the provincial government created the private-public company JEMSE. The company's mission is to promote research, exploration and development in the mining sector. It also seeks to generate renewable energy and to contribute to a sustainable structural transformation of the province through public-private partnerships (decree 7627/2011). Although lithium mining at Salar de Olaroz-Cauchari is dominated by transnational companies, with JEMSE the provincial government is also trying to exercise limited control over lithium mining by direct company participation. Based on lithium's classification as a strategic resource, the province of Jujuy reserves its 8.5 per cent participation option at

its own expense. The province exercises this option for both Sales de Jujuy and Minera Exar.

A series of further laws and decrees underline the province's ambition to actively design and participate in the energy transition, not only as a provider of raw materials. In 2021, the government passed the Provincial Framework Law on Climate Change (law 6230/2021) to institutionalise mitigation and adaptation efforts. The law was promoted by the initiative Green Jujuy: Carbon Neutral 2050, and the initiative's aim to position the province as a national "pioneer regarding climate protection" (*Jujuy al día*, 2021). Within the provincial Green Jujuy strategy, the government recently passed a law declaring the production of green hydrogen as a strategic interest (law 6303/2022). As part of a green developmentalism dispositive, the hydrogen law cannot be separated from lithium mining. Rather, it shows how the government is combining lithium mining, battery manufacturing, the Cauchari solar project, the solar villages of the Puna and green hydrogen, emphasising that these ventures "are part of the energy transition and transformation, within the world's priority agenda" (Gobierno de Jujuy, 2022, n.p.).

At the same time as the abovementioned laws and decrees were being enacted, opposition to lithium mining was being actively weakened. In response to increasing tensions with communities, the government created the Secretariat for Indigenous Affairs in 2016 and appointed Natalia Sarapura as its leader (decree 989/2016). Sarapura's appointment is a prime example of how an opposition political leader can be absorbed into the dominant power structure, thereby neutralising opposition and gaining support from potential antagonists. At the time of her appointment, she was president of the Council of Indigenous Organisations of Jujuy (COAJ) and one of the most important indigenous voices in the province. One interviewee, who sees himself as opponent of the mining industry, recounted that in the past, it was Sarapura who supported the claims and interests of indigenous communities in relation to lithium mining. After her appointment as Secretary of Indigenous Affairs, however, she was the one who thwarted these interests. For most communities in the department this co-optation of the leadership resulted in passive resignation.

Actors and strategies

When first contacted by the mining companies, the communities organised themselves into the Atacama Peoples' Association. In particular, the largest of the ten communities, Susques, positioned itself in opposition to lithium mining when explorations began in the late 2000s. Arguments against lithium mining included the high level of water consumption, the uncertain environmental impacts and the potentially negative impacts on livestock. Based on their previous experiences with borate mining, the communities also questioned extractivism "in favour of the rich countries in the North" (interview with a llama shepherd,

Susques, May 2018), which leave high levels of unemployment after these activities shut down.

Instead of negotiating with the Atacama Peoples' Association, the lithium companies prioritised bilateral dialogue and negotiated with community presidents individually. Taking a paternalistic welfare approach (Dorn & Gundermann, 2022), they focused on meeting the communities' basic needs. First, the operating companies Sales de Jujuy and Minera Exar established the departments of Shared Values and Community Relations, respectively, to deal with community affairs and provide local contact persons. The companies also presented their environmental impact reports in the villages. Second, they focused on financing traditional festivals, buying equipment for local schools, and providing transportation and structural elements such as Wi-Fi and a new community hall. Third, they promised local employment programs and support for small supplier companies.

Through bilateral contracts and agreements with some communities, the companies achieved the approval of their environmental impact report.[5] Since then, the Atacama Peoples' Association has dissolved and the conflict has increasingly shifted to the level of internal relations, with regards to new competition within and between the communities for jobs and benefits from lithium mining. So as not to lose these perceived benefits, there is currently no manifest conflict against lithium mining in the department of Susques. As one community representative stated: "We cannot say no anymore. The projects are there, now we have to make the best of the situation" (interview with a treasurer of indigenous community, Susques, August 2019). Through local employment programs, concerns about livelihoods were actively incorporated into the mining proponents' arguments. The communities' perceived lack of alternatives accelerated the necessary consensus in favour of mining and energy transition.

To profit from the lithium mining projects, which themselves are permeated by transnational capital, the province of Jujuy has implemented and fostered a series of specific policies and a variety of corresponding projects. Building on Obaya et al. (2021, p. 4), these can be categorised as efforts to create forward and backward linkages within the lithium production network. While forward linkages refer to investment in "midstream and downstream activities using lithium compounds as an input to produce cathodes, battery cells, and packs", backward linkages regard investment in the "upstream segment of the LIB supply chain". Backward linkages include, for example, an agreement between Sales de Jujuy and the Faculty of Engineering at the National University of Jujuy (UNJu) for capacity building. The main objective is "that companies have their doors open for internships and practices and that there are job opportunities for graduates" (interview with the dean of the Faculty of Engineering at UNJu, San Salvador de Jujuy, May 2019). This agreement also resulted in the implementation of local one-time capacity-building measures. One workshop was aimed at employees without a secondary school diploma. Another training course was intended for the local population and implemented over several weeks in Susques.

However, due to the proximity between the state and mining companies (see also Soto Hernandez & Newell, 2022), backward linkages primarily involve the promotion of international investment in general. For example, in December 2017, the government presented the province's new slogan, *Jujuy Energía Viva* (Jujuy Living Energy). According to Governor Morales, this branding is not only aimed at the tourism market, but also seeks to promote energy production and investment, underlining the province's identity (*El Tribuno*, 2017). Beginning in 2019, the state and the three provinces of Jujuy, Salta and Catamarca came together in a 'lithium competitiveness roundtable', with the first meeting held in San Salvador de Jujuy. The central question discussed focused on what infrastructure would be needed for further lithium exploration projects to move into the commercial phase. In addition, a secondary focus was on the development of an extended LiB value chain (interview with mining secretary, San Salvador de Jujuy, March 2019). Furthermore, JEMSE issues regular tenders for the promotion of "untapped mining potential" (interview with JEMSE mining division manager, San Salvador de Jujuy, April 2019). For example, in November 2022, JEMSE launched a US$55,000 tender for mineral properties with potential for lithium exploration and development (JEMSE, 2022).[6] Meanwhile, the immediate monetary participation of the province exists only on paper. Since the 8.5 per cent stakes in Sales de Jujuy and Minera Exar are paid through profits, JEMSE does not increase the province's direct monetary participation for the time being.

Through JEMSE, however, the provincial government also aims to generate forward linkages. In May 2019, the company announced that it would build South America's first LiB factory. The factory is planned to be built together with the Italian SERI Group in Perico Industrial Park's free trade zone. Making use of JEMSE's 5 per cent preferential access to buy locally-mined lithium, the project, operated by the company Jujuy Litio (a joint venture between JEMSE [60 per cent] and SERI [40 per cent]), will include a pilot plant for LiB assembly and cell production. At a later stage, it will also include the production of electrodes. According to Governor Morales, the project will establish the foundation for the province's energy sovereignty and increase the value created locally by the lithium industry (*Jujuy al día*, 2019). After a first stage of providing lithium carbonate to SERI and importing cells for assembly in Jujuy, the province's future vision is for them to be produced entirely in Jujuy (Gubinelli, 2020). In 2022, the province signed an additional agreement with the Chinese company Gotion Inc. for the installation of a LiB factory in Perico to develop batteries for electric vehicles (Forbes, 2022).

The province is pursuing a similar thrust with the creation of the Centre for Research and Development in Advanced Materials and Energy Storage of Jujuy (CIDMEJu), a joint project between the National Scientific and Technical Research Council (CONICET), UNJu, and the Provincial Secretariat of Mining and Technology. CIDMEJu is part of the General Savio Technology Development Center opened in Palpalá in 2017, named after the Argentine general and engineer Manuel Savio (1893-1948), who is known for his contributions to the

development of the national steel industry (Dorn et al., 2022). Mainly known to the public as the Lithium Institute, its goal is to study lithium-based chemical systems and develop knowledge and technologies for lithium exploration, mining and industrialisation. Initial announcements also included the goal of constructing a pilot battery factory (Gobierno de Jujuy, 2017).

Many authors question these efforts to further industrialise the LiB value chain in Argentina, due to high barriers to entry, lack of know-how, the concentrated and oligopolistic market structure, and low demand for LiBs from South America – in the latter case, comparing it to Europe's low shares in the production of certain battery parts, despite great effort and investment to promote it (Nacif, 2019; Obaya et al., 2021; Dorn & Gundermann, 2022). In light of this argument, the provincial government states that "100 per cent of the labor force for the new production plant will come from Jujuy" (Forbes, 2022, n.p.). Thus, the construction of a battery assembly factory may create some jobs in the region but has nothing to do with promoting the battery value chain. In a recent contribution to the debate, Argento, Slipak and Puente (2022) show that these announcements do not provide a framework for either the joint participation of the Argentine state or the local scientific community in industrial upgrading, or for technology transfer. At the same time, a large proportion of lithium exports is not exported as battery grade. Instead, the majority of Sales de Jujuy's exports is further processed at Orocobre's factory in Naraha, Japan, destined for Prime Planet Energy and Solutions (PPES), a joint venture of Panasonic and Toyota (Argento et al., 2022). Many authors therefore argue that the logic of the perpetual announcements of ascending the value chain has actually been subordinated to the legitimatisation of the extractive activity (Argento et al., 2022; Dorn et al., 2022).

Storylines and narratives

Which narratives regarding lithium mining influence the public debate in Argentina, and especially in the Salar de Olaroz-Cauchari? From the data analysed, we have identified two main narratives that lithium mining protagonists have applied: a green development and industrialisation narrative, and a climate protection narrative. Within the global setting of climate change mitigation, an increasingly strong vision of economic development and expanded value creation has emerged in Argentina in recent years. Despite this, lithium mining is still of relatively limited economic importance. In 2020, with an export value of US$110 million, lithium carbonate exports accounted for 0.17 per cent of the country's total export value (in comparison to a 25.88 per cent share for soy products and derivatives) (OEC, 2022). Under former president Mauricio Macri (2015-2019), lithium deposits were primarily considered an attractor for foreign investment. Macri, in his storylines, linked lithium primarily with investments. He argued that the lithium deposits would release an 'investment rain' (*Mercatante*, 2016). During Alberto Fernández's administration (2019-2023), a green development

and industrialisation narrative has emerged, with Fernández envisioning expanded value creation within the country. During a visit to the United States in September 2022, Fernández announced that "lithium has to do with the energy of the future, but the key is that it should not be exported, but that Argentina should be a supplier of lithium batteries" (Beldyk, 2022, n.p.). Shortly before that, the then-Minister of Productive Development[7] Matías Kulfas announced that "lithium is consolidating hand in hand with electromobility, a trend that is accelerating and represents a real green revolution". This, he said, is "the Argentina we want, an Argentina where we no longer discuss trivialities, but focus on development, growth, and the development of technologies that will allow us to move the country forward" (Gobierno de Argentina, 2022a, n.p.). His successor, Daniel Scioli, has also emphasised that the "importance lies not only in jobs and investment, but also in supply chain development". He stresses first and foremost the need for a good investment climate around lithium (Gobierno de Argentina, 2022b, n.p.).

The green development and industrialisation narrative is also being used by public actors in the province of Jujuy, which is pursuing the goal of becoming a 'national vanguard' when it comes to increasing regional added value. In so doing, Gerardo Morales is connecting lithium to the explicit goal of "changing the production and energy matrix" (public speech, Huancar, May 2019). During the same speech, on the occasion of the celebration of the community's patron saint, Morales linked lithium mining to the Cauchari solar project, a series of solar villages, the global and local need for green energy, as well as the connection of indigenous communities to the fibre-optic network and a green power grid (fieldnotes, May 2019). The narrative that lithium contributes to the province's green development and industrialisation unfolds in constant interaction with announcements of battery factories and references to historical success stories of technological development, and frames the province of Jujuy as an active participant in the global energy transition. This narrative is also reproduced at the local level. In interviews with the local population in the communities of Susques, Huancar, and Olaroz Chico in addition to jobs and community support, 'better technology', 'energy storage', and 'battery production' were frequently mentioned as advantages of lithium mining. At the same time, the president of the Huancar community, for example, emphasises that lithium is "an important raw material for the energy transition" and that "we want to be part of it" (interview with a community president, Huancar, June 2019). This shows that, in addition to the perceived lack of alternatives, there is also active support. The arguments used are specific to lithium mining.

This vision of the future is anchored in the need for foreign direct investment. Investments in lithium and renewable energies are subsequently framed as essential for the economy and development of Jujuy province. When asked about the economic significance of lithium, the province's mining secretary stressed that "mining royalties are not the business". Instead, "we need more local labour, more local contractors". In this context, "the issue is investment security. For

that we need future commercial agreements" (interview with mining secretary, San Salvador de Jujuy, March 2019).

In recent years, under the influence of the global green energy transition and the climate crisis, a second narrative has emerged: the climate protection narrative. Under Governor Gerardo Morales, the government's rhetoric not only links raw lithium extraction with progress and technology, but also with climate change mitigation. For example, Morales emphasises the importance of lithium mining in the name of climate protection, which makes it seem like there is no alternative to mining itself. During his speech in Huancar, he emphasised that "we need lithium for a green future" (public speech, May 2019). At the LATAM Forum in November 2022, organised by the International Economic Forum of the Americas (IEFA), he put it even more clearly: "Lithium does not kill the Pacha, it does not kill the planet, it is to save the planet" (*El Economista*, 2022, n.p.). The green development and climate protection narratives leave little margin for (environmental) concerns or alternative approaches. Opponents of lithium mining are thus confronted with one central story: lithium mining in the name of climate protection serves the green and future-oriented development of the province.

Conclusion

Lithium mining is intricately embedded in the global energy transition, not only regarding lithium production, but also related to its legitimisation, even under conditions of social protest and ecological contradictions. Using the case of Salar de Olaroz-Cauchari, we investigated how lithium mining is being legitimised. To do so, we analysed the institutions that have been established for the regulation of lithium extraction, the strategies the proponents of lithium mining use, and the narratives they apply to counter and tame protest, and to construct a green development project around lithium.

With the objective of breaking the protest of an indigenous association that had mobilised against lithium mining when exploration started at the end of the 2000s, mining companies have deliberately split the movement. Instead of sitting down together at a negotiating table, they debated the terms of consent with individual group leaders, some of whom gave consent. The result was internal competition, and gradually everyone caved in, also because companies offered to provide some of the communities' basic needs. These strategies are certainly among the classic corporate social responsibility (CSR) repertoires. The regional government, on the other hand, began early to focus education, labour market and infrastructure policies on lithium; in particular, its production and processing. As such, it primarily offers training and job programs in this area, and not in others. Finally, the regional government seems to have been successful in manipulating the population with promises of future green development and industrialisation. No one knows whether LiB production will ever take place in the

province. But that does not matter much at the moment, since the announcement alone has a legitimising effect.

Support for lithium mining is, however, not only achieved through public opinion leadership and announcements. The provincial government of Jujuy is organising support for lithium mining through the institutionalisation of a green-technological energy transition manifested in the Green Jujuy strategy. The objectives of this institutionalisation are an increase in local value creation, investments in green technologies, and the taming of protest by the incorporation of indigenous leaders in public politics. In order to make these strategies and institutional regulations effective in terms of the containment of protest, and to gain support from the public and underpin the applied strategies, different stories are told.

State actors at the national and regional level link two different narratives: a green development and industrialisation narrative and a climate protection narrative. This is also partly reproduced by the local communities. Particularly the latter is linked to global storylines of technological solutions to the energy and climate crises. Herewith a repertoire of narratives is created that successfully makes the point that lithium is the key to a "'technological fix', capable of turning the climate crisis into a political and economic opportunity for those in power" (Voskoboynik & Andreucci, 2021, p. 16). We argue that this 'political and economic opportunity' can be termed green developmentalism (see Gabor & Sylla, 2023; for an in-depth discussion of the concept of developmentalism, see Wade, 2018; Nem Singh & Ovadia, 2018). We understand green developmentalism as a political-economic transformative project embraced by powerful state actors to tackle the multiple crises of development in the global South (climate, social, economic, political) by intervening in the national economy in a more targeted way, for example through (green) resource governance and (green) industrial policy. Based on the analysis, we can thus identify a green developmentalist dispositive that manifests not only in narratives, but also in new institutions, laws and administrative measures to enforce lithium mining. As a historically-specific and comprehensive 'net', it regulates the convictions of the involved actors.

Lithium mining is contested in the province of Jujuy and there is active resistance to lithium mining among the native communities of Salinas Grandes-Laguna Guayatayoc. This is why our findings do not apply to the province of Jujuy a whole. Yet, no open resistance has materialised in the indigenous communities surrounding Jujuy's active lithium mining projects – operated by Sales de Jujuy and Minera Exar – in the department of Susques. Instead, we have shown a complex interplay of 'passive resignation' and 'active consent' in the region. The material conditions make lithium mining appear to be without alternative. At the same time, arguments of green growth, new technology and participation in the energy transition are also propagated at the local level. The identified green developmentalism dispositive is thus also being reproduced at the local level and there are many proponents of mining also among the indigenous

communities. This advocacy stems from a continuous change in the narratives deployed by regional and national state actors to construct lithium mining as part and parcel of a green and future-oriented development of the province.

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Notes

1 Reserves are the well-explored and documented part of resources that can be extracted at a profit today.
2 Net zero does not necessarily mean that no more CO2 is emitted, but that it is either reduced, offset elsewhere or removed from the atmosphere. For a critique of the concept of net zero, see Brad et al. (2024).
3 At the provincial level, mining companies have to pay royalties, in addition to taxes on gross income. The former are set at 3 per cent of the pit-head value, i.e. the product value after deducting the production costs declared by the company. While royalties are set at the national level, they are levied by the provinces.
4 Since the constitutional reform in 1994, Argentina recognises the ethnic and cultural preexistence of the indigenous population. Article 75, paragraph 17 establishes the legal status of indigenous communities and recognises the ownership and possession of their

traditionally-used lands. In addition, in 2000 Argentina ratified the ILO Convention 169, which includes the self-determination and self-government of indigenous peoples, the recognition of their sovereignty over the territories they inhabit, and their ownership of natural resources, including those underground.

5 Companies have to submit a biannual environmental impact report. Reports are reviewed by the Provincial Mining Environmental Management Unit (UGAMP), which advises the Mining Application Authority of its decision to approve, reject, modify or extend the report. The indigenous communities of the affected area are represented among the 16 members of the UGAMP committee.

6 This is particularly controversial because the tender includes concessions in the Salinas Grandes – Laguna Guayatayoc area. The people in this area have been protesting against lithium mining for years (see Dorn, 2023).

7 In December 2019, Alberto Fernández created the Ministry of Productive Development, with responsibilities in trade, energy, mining and industry. In August 2022, it was abolished and its activities were integrated into the Ministry of Economy.

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