Sustainable Governance of Strategic Minerals: Post-Neoliberalism and Lithium in Bolivia

Daniela Sanchez-Lopez

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Lithium is a key component of the impending new generation of batteries and a core element in any debate about renewable energy. Its governance and mining stories have a bearing on the success of sustainable development goals and the advance of climate change adaptation policies for the transport and energy sectors. In terms of electric cars, lithium-ion batteries are powering electric and hybrid vehicles, along with billions of portable electronics devices worldwide. In terms of the energy market, large-scale lithium battery energy storage systems are already operating in different locations. Soon they should be connected to the grid, potentially dramatically changing the residential and commercial energy markets.1

Lithium is found in a wide range of natural sources: seawater, geothermic matter, oil deposits, brines and rock minerals. However, it is only profitable when sourced from hard rocks (pegmatite deposits) and from the evaporation of brines. The most common method for extraction in the salt flats is based on solar evaporation in brine pools. The so-called “lithium triangle” in the South American salt flats of northern Chile, southern Bolivia, and northwestern Argentina holds more than half of the world reserves.2 Reserve estimates suggest that Bolivia possesses around 10.2 million tonnes of lithium (equivalent to 38% of global resources).3

Despite possessing the largest world deposit, the country has not yet extracted lithium on an industrial scale. Contrary to Chile and Argentina, which have been extracting and exporting lithium from brines for more than 20 years through private companies, Bolivia has opted for a 100% state-controlled initiative in the Uyuni salt flat for extracting and industrializing lithium carbonate, lithium hydroxide, and associated sub-products (potassium chloride).4

In 2008, Bolivian President Evo Morales declared lithium as “a strategic resource and a national priority” in announcing an ambitious Bolivian state-owned project of extraction and industrialization of evaporite resources. The lithium project was presented as a successful example of post-neoliberalism (understood as an economic and political model with a strong state-based involvement in key sectors of the economy). However, 10 years later, lithium has become the center of huge controversy due to delays in the different project phases, the technology selected, the environmental impacts, and the social dynamics that emerged around this resource at community, regional, and national levels.

by Daniela Sanchez-Lopez
Lithium, unlike traditional hard rock mining, involves a peculiar process of extraction; it is removed from brine in salt flats through chemical and highly advanced technological processes. The lithium project in Bolivia represents a new type of mining with few prospects of employment as opposed to traditional mining, and is currently being developed within a post-neoliberal framework set by a domineering leftist government.

Based on primary qualitative information collected during several months of fieldwork research in Bolivia, this article exposes the social, political, and economic elements shaping the governance of lithium in Bolivia. It does so by analyzing the different phases of the lithium state project, the role indigenous communities in the surrounding areas of the Uyuni salt flat have had in this process, and the key features that make lithium a distinctive extractive resource.
The Politics of Extractive Resources

Bolivia has been, and still is, a mining country with a long and contentious history of social struggles, high levels of poverty and social exclusion, and large-scale environmental degradation. Over time, it has experienced patterns of boom and bust in terms of mineral development: silver, tin, oil, gas, and presently, the potential development of lithium.5

Extractive resources play a significant role in the way the contemporary structure of Bolivian society (and Latin America in general) has been formed.6 In economic terms, the country depends on the export of raw materials—gas and minerals—representing 60% of total exports in 2018.7 In social and political terms, the way resources are perceived and incorporated into discourse is central to understanding the ideologies behind them and the social struggles since colonial times. As Molina states, in Bolivia, natural resources are central to understanding three elements: the different historical periods of the country; the changing roles of the state in regulating and appropriating access to strategic natural resources according to the elite’s interests; and the social struggles that sought to change property regimes and distribution of benefits for the people.8

Over the last decade, Bolivia has undergone a political process mired in conflict that started with the emblematic water war in 2000,9 and continued into the gas conflicts in 2003 and 2005 and the democratic election of the first indigenous president (Evo Morales) and his left-wing political party (Movimiento al Socialismo [MAS]) in 2005.10 Under Morales, Bolivia has undergone sociopolitical transformation. First, the implementation of a so-called “post-neoliberal model” sets a different decision-making framework for economic and political domains. As an economic project, there has been a redefinition of the state’s role in the management of the economy, especially in the hydrocarbons sector. This has particularly been the case since the government successfully renegotiated the contract terms with the key foreign oil and gas companies in order to capture more revenues for financing social policies.11 As a political project, Bolivia and Ecuador officially incorporated the indigenous philosophy of Suma Qamaña (vivir bien or living well) as the framework that promotes harmonious respect for nature within development.12 This in turn recognizes indigenous rights and territories as part of political constitutions.13

Second, the decentralization process, which started in the 1990s, was developed into a framework based on regional autonomy in 2009.14 The transfer of political and economic power from the central government to autonomous
regions and indigenous territories was intended to reinforce democracy and citizen participation. However, this has proven to be a slow and complex process. In particular, this type of restructured autonomy created conflicts among the interests of central, local, and indigenous governments regarding natural resource management. The tensions among indigenous organizations that previously supported Evo Morales reveal the inconsistencies in the government’s “environmentalist indigenous” discourse as it clashes with the realpolitiks of extractive development. Under the Morales government, some 55% of Bolivia’s territory is assigned as hydrocarbon concessions. Many of the current conflicts in Bolivia can be classified into three categories: (i) conflicts for the agricultural frontier expansion in protected areas, (ii) conflicts between indigenous groups for land distribution, and (iii) conflicts related to indigenous rights, extractive activities, and the state. This new map of conflicts raises important questions about the differences in resource governance in “post-neoliberalism” and the type of institutional restructuring emerging in state-society relations at multiple scales.

Despite government efforts and accompanying social policies of redistribution, it seems that most people are discontented with the post-neoliberal process, particularly among indigenous organizations that perceive the extractive frontier expansion as a threat to their livelihoods and their arduously conquered autonomy. The official political discourse reevaluates the extraction of natural resources as the fundamental driver of economic growth for the reduction of poverty, purposely ignoring the negative and devastating environmental and cultural impacts. The ongoing conflict of the national park and indigenous territory TIPNIS is a good example of this complexity. TIPNIS (Territorio Indígena y Parque Nacional Isiboro Sécure) is a protected area and communal land of three indigenous groups (Yuracaré, Moxeño, and Chimán) who protested and halted the government’s plan to build a highway through their land in 2011.

**The Reinvention of Mining in Post-Neoliberalism**

Since the early 1990s, mining in Bolivia has undergone a reinvention due to the arrival of transnational companies, the expansion of the cooperative mining sector, and now the state retaking an active role in mining but in a less emphatic way compared to the hydrocarbons sector. For instance, state-based mining managed by the Corporación Minera de Bolivia (state mining corporation, COMIBOL) represents only 8% of total production.

“Mining for industrialization” has become central in Morales’s discourse. However, far from reaching his overblown expectations, the country adds less than 5% of value to mineral production (mostly transforming minerals to metals). Lithium showcases a new era of state control in mining, global economic significance, and access to technology as a strategic resource for the low carbon energy transition. “The export of raw materials is over, we seek not only lithium carbonate but to produce cars made in Bolivia” (President Evo Morales); “We are going to invest in lithium, Bolivia will regulate the price worldwide and now we are preparing for that, we are building laboratories, gigantic pools, mega industries to produce lithium carbonate and potassium chloride” (Vice-President Alvaro García Linera).

The lithium initiative became a reality in 2008. At the time, the debate about lithium had gained media momentum outside and inside the country. For many experts, lithium was to become the next “big resource” in the face of an oil crisis and concerns about climate change. Bolivia was portrayed as the future “Saudi Arabia of lithium” and the government of Morales was courted by different countries and transnational companies seeking to consolidate a partnership. Inside the country, the population had big expectations about the new government and perceived that lithium could be an opportunity “to do things differently.” The government’s discourse quickly highlighted lithium as “critical to growth, development and sovereignty” for the country. These media and discursive elements contributed to making lithium a strategic resource and in people’s imagination the next big resource of the country—indeed, “the jewel of the salt flat.”

The industrialization of lithium was incorporated as a state policy under the control of COMIBOL and GNRE (Gerencia National de Recursos Evaporíticos and nowadays called YLB, for Yacimientos del Litio Boliviano). A peasant grassroots organization called FRUTCAS was central to the extraction and industrialization of lithium as a state initiative. Although different transnational corporations and countries manifested their interests in a joint venture with the state, in the end FRUTCAS and the government decided to develop the project without foreign partners in the first two phases.

The “Plan for industrialization for evaporite resources in the Uyuni salt flat” has two main objectives: to obtain lithium carbonate to be used in the production of lithium cathodes for batteries, and to produce and commercialize potassium chloride as a byproduct also found in the brine and used as a fertilizer. The initiative is divided into three phases for the exploitation, industrialization, and commercialization of evaporite resources. In all, these represent one of the most ambitious state-sponsored mining initiatives in Bolivian history, with an estimated public investment of USD 1 billion.

Lithium is portrayed by the government as “environmentally friendly” and the opportunity to “do things differently” to break the resource curse that has characterized most of the economic history of the country. These claims need to be critically analyzed within the sociopolitical framework of post-neoliberalism and its implications in socio-environmental terms.

To date there has been little agreement on what post-neoliberalism means for resource governance or as a
practical construct. Yates and Bakker argue that much of the conceptual debate about the transformation and transitions in post-neoliberalism is primarily characterized as a utopian project (strongly rooted in political and academic discourse), and a political project (grounded on practices such as state intervention and control in decision making, institutional reforms, increased social control over market functioning among others) seeking to overcome its neoliberal heritage. Some argue it as an “ambiguous idea with few distinctive practices that can be defined.” Others discuss post-neoliberalism as a governance project seeking to redefine the identity of the state within an export-oriented economy based on extractive resources. Other authors argue that post-neoliberalism is more of a political project than an economic one and highlights the strong narrative of nationalism around extractive resources.

I concur with the critique of Yates and Bakker about the inadequacy of representing post-neoliberalism as “the binary other” of neoliberalism, considering that neoliberalism itself is a complex and variegated political, economic and ideological project. In this regard, I borrow the definition of Ruckert et al., who argue that post-neoliberalism is not an identifiable policy regime but rather a tendency to break with “certain aspects of neoliberal policy prescriptions.” In terms of economic policy, the state has become the central actor in the economy, reversing privatization policies and re-nationalizing major extractive industries. Yet, as the Bolivian case illustrates, this role is not homogeneous in all extractive sectors, particularly in mining. Most importantly, beyond a nationalist rhetoric about natural resources, the same notion of nature as external and prone to be seized by capitalism is conceptually reconceived as the central pillar in development, and legitimized at grass-roots levels.

The existing accounts on post-neoliberalism focus on the state role and the use of discourse to shape policies of access to and control over extractive resources. However, differences and convergences in relation to neoliberalism should be placed in the context of the boom in commodity markets during the past decade and its impact on Latin America more generally. Bebbington states that, regardless of their political stance, governments in the Andean region were determined to make the most of this boom (both in terms of revenues and implementation of social policies for reduction of poverty). Therefore, the inclusion of social policies also followed a route within a neoliberal logic and is not an exclusive feature of post-neoliberal regimes. This convergence underlies the legislative changes designed to promote the expansion of extractive industries, deepening the dependence to commodities (also known as “extractivism”). The main difference seems to lie in terms of the ownership of natural resources and taxes. Bolivia and Ecuador have increased the share of revenue for the state under a strong populist rhetoric of resource nationalism. In this sense, a central contradiction in the post-neoliberal model is the lack of coherence with the indigenous philosophy of Vivir Bien/Buen Vivir as a framework focusing on the respect of mother earth and a harmonic development model; and (ii) the legal recognition of indigenous rights and the self-determination on their territories. An important tension emerging is the conciliation of state priorities to expand the extractive frontier and the resistance of indigenous groups in their territories. Haarstad and Campero highlight that in post-neoliberalism there is an uneasy relationship between local territorial claims and the state strategies in extractive industries. In this vein, Anthias argues that the lack of implementations of indigenous rights exposes a fundamental contradiction in the post-neoliberal discourse and practice. As the case of Bolivia illustrates, a historical legacy of extractive dependency and the short-term economic and political gains from revenues for government “legitimacy” are structural features shaping post-neoliberalism.
This conceptual debate is the preamble for exploring the Bolivian initiative of lithium. In the following section, I am interested in exploring how lithium came to be a strategic resource for Morales’s government and how the intersection of political and economic interests within post-neoliberalism is shaping a type of governance with unpredictable effects in environmental and social terms.

The Uyuni Salt Flat: Natural Wonder and the Largest Lithium Deposit of the World

The Uyuni salt flat is the largest salt flat on earth, located in the Bolivian high plateau (in the southwest region of Potosi). It covers an area of 10,582 square kilometers and reaches an altitude of 3,653 meters.

The salt flat was formed as a result of transformations between several prehistoric lakes. Around 46,000 to 36,000 years ago, this area was the location of Lake Michin. This saline lake concentrated significant amounts of salt since its basins were originally sea water. When the lake dried, a new lake, Lake Tauca, was formed around 26,000 to 15,000 years ago, followed by a dry season of several thousands of years that shaped two major salt deserts—salt flat de Coipasa and Uyuni—and the river delta of Rio Grande. The brine is formed and fed by subterranean water and mineral salts. Its renewability heavily depends on geomorphological factors such as underground water channels, composition of the mineral salts, and levels of evaporation. Consequently, its mineral resources are not renewable per se.44

The salt flat is surrounded by four provinces and six municipalities (see Figure 1) with around 329 indigenous communities of Quechua and Aymara origins.45 For centuries, the dispersed communities surrounding the Uyuni salt flat harvested salt and traveled to the valleys in Chuquisaca, Cochabamba, and Tarija to exchange it for corn and other products.46 This past is long gone; although today some communities still extract salt, the economic dynamic and how people relate to this landscape have changed, diversified, and been inserted into a market logic.

Livelihoods are now linked to agriculture, especially quinoa, livestock (llama and alpaca) trade, mining, and tourism, notably in Uyuni city and the tourist route to the salt flat and the National Reserve Eduardo Abaroa. The harsh climatological conditions and environmental hazards, low wages, and low productivity contribute to out-migration from the region. This migration could be permanent or seasonal to Chile, to Argentina, and to urban centers in Bolivia.47

The Uyuni salt flat—once known as the white desert—was an isolated and

![Figure 1. Political map of Potosí.](source: Map data 2019 © Google and http://turismoculturalbolivia.blogspot.co.uk.)
largely unused location for the government until 1976. That year, the U.S. Geological Service found lithium in its brines and the ORSTOM mission (Office de la recherché scientifique et technique outre-mer) began the process of the identification and quantification of evaporite resources.48

This was the beginning of the long and contentious process of the commodification and transformation of the Uyuni salt flat. Over time, this landscape was at the core of social conflicts for its designation as a Fiscal Reserve on four separate occasions (1974, 1983, 1998, and 2003) (see Figure 2). A Fiscal Reserve is defined as a demarcated area with exclusive access reserved for the state in order to quantify mineral resources and define a strategy for extraction. In this sense, the Uyuni salt flat as a Fiscal Reserve is part of a changing history in terms of resource governance both in neoliberal and post-neoliberal times. Of particular relevance here is the designation of 1983 and the social conflict that later emerged in 1990 between the Lithium Corporation of America (LITHCO) and civil society organizations of Potosí city and the southwest region of the salt flat. The latter fiercely opposed the contract, arguing that it was a bad commercial deal for the state and a corrupt process due to the direct invitation to a transnational company. Eventually LITHCO resigned the contract and moved to Argentina.

In 1998, the Fiscal Reserve of the salt flat was modified for a third time (Law 1854). In this case, its original area was drastically reduced to the "salt crust perimeter." This reduction further consolidated the privatizing logic in mining that characterized the neoliberal model under mining law 1777, and opened and incentivized the expansion of private concessions in the Uyuni salt flat. After years of grievances between the communities and a Chilean company called Quiborax, in 2003 civil society organizations from Potosí and the southwest region initiated a new protest and succeeded in demanding the reconstitution of the Fiscal Reserve as defined in 1983.

These events illustrate how the Uyuni salt flat became a strategic space subject to varied interests of the state, private mining actors, and the surrounding communities. The last delimitation of 2003 sets the framework within which the state-supported initiative of lithium extraction is currently taking place. The history behind social conflicts is an important element of the nationalist narrative of lithium in Bolivia.

The different designations of the Fiscal Reserve illustrate a changing history of resource governance in neoliberal and post-neoliberal times and expose a history in which the state has played different roles: as instrumental to private mining; as mediator of local conflicts during the neoliberal period; and as economic actor and the driving force behind state capitalism in post-neoliberalism connected to lithium mining.

If post-neoliberalism is a framework whereby the state regains controls over resource governance and mining, then this framework is buttressed by perspectives favoring better redistributive mechanisms of extractive resources for people, an active role of communities over their territories, and better environmental practices compared to the private-oriented governance. However, the Bolivian lithium case illustrates that state capitalist forms of mining extraction do not necessarily improve par-

Figure 2. Various designations of the Uyuni salt flat as a Fiscal Reserve.

Source: Based on U.S. Geological Survey and Espinoza.49
participatory processes for communities, redistribution of revenue, or environmental sustainability.

From a Social Demand to a Business

The state project of lithium extraction and industrialization was an initiative pushed forward by Parliamentary members from the southwest region during the first presidential term of Evo Morales (2006–2009) along with the grassroots organization FRUTCAS (Regional Federation of Peasants from the Southwest of Potosí). FRUTCAS was founded at the beginning of the 1980s and represents the peasants groups of the five provinces of the southwest region (Nor Lipez, Sud Lipez, Quijarro, Daniel Campos, Valdiviez). The organization claims to be the founder of the MAS-IPSP political party and has strong and open ties with the government and the MAS political party. This link not only supported the lithium project in the region. It also provides an example of the political clientelism that the government has developed with favored grass-roots organizations.

FRUTCAS is a key actor in the salt flat because, on the one hand, it articulates the collective opposition to transnationals operating in the area in the past. Yet it also legitimizes the lithium project in the region by actively leading and participating in the so-called “socialization phase” in the surrounding communities during the first years of the project.

According to the New Political Constitution (Article 2), the self-determination of indigenous people in their territories encompasses the rights to autonomy and self-governance, to the promotion of their culture, and to the formal recognition of their institutions. In a further definition (Article 30: I–III), the state acknowledges the right to consultation in indigenous territories, as well as to the resource management of renewable resources within their territories. In the lithium initiative, the previous consultation did not take place because the Uyuni salt flat is a Fiscal Reserve and does not belong to any indigenous territory or province.

During the first years of the lithium project (2010–2013), the YLB established an “office of external relations and communication” in charge of the “community development component” (gestión comunitaria). Its main goals were to inform the communities of the region of the socioeconomic impacts of the industrialization strategy of evaporite resources, and to promote a harmonious relationship between the mining company and the communities. The socialization of information (so-called informative meetings) took place in only 33 communities (out of 329) and provided technical support and machinery for well drilling and the provision of drinkable water to some locations.

It was only in 2012 that there was one formal process of “public consultation” required by law before starting any kind of mining project. In this case, the public consultation explained the results of an official socioenvironmental evaluation of the pilot and industrial plants for potassium chloride done by an external consultancy company. Approximately 97 representatives from FRUTCAS and municipalities participated.

Two key elements characterizing the post-neoliberal model and the ascendance of the left and Evo Morales in Bolivia are the links between extractive resources and the policy and practice of redistribution and consultation with indigenous communities. The institutionalization and formal enactment of consultation rights in the Political Constitution are the result of a long process of political empowerment by indigenous groups. However, these consultation processes are contentious, their implementation differs from what was originally stipulated by the legal frameworks, and they tend to be submissive to government priorities rather than empowering for communities. The participatory process of the lithium project illustrates that state-controlled, post-neoliberal governance does not necessarily translate into a more inclusive and open process with communities. There is a top-down approach in the process, and participation is conceived as informative rather than empowering for the communities. As one former YLB representative stated:

Lithium is a strategic resource, [so] previous formal environmental evaluation or previous consultation processes were not done or were not seen as priorities. We needed to advance, take decisions very fast, show to Evo and the government there was progress since the expectations of lithium were immediate ... The YLB did a public consultation, explained to representatives of communities and other organizations the type of processes [extracting] lithium involves, but the previous consultation did not give the communities any opportunity to negotiate things.

During my fieldwork, the participatory process carried out by the YLB was widely criticized, with persistent questioning to the legitimacy of FRUTCAS to represent and negotiate the interests of communities. For instance, as a representative of Daniel Campos province in Llica expressed:

The communities were involved in the social defence of the Salar against transnationals but excluded from the lithium project. The information about lithium is done through the Reports; they are sent to some institutions here in the region. Most people don't get information or understand the information. FRUTCAS is selective; they meet in communities where they have support, so they are not legitimate nor do they represent all of us.

Over the past decade, the Morales government has been able to manage conflicts and legitimate the lithium initiative at local levels. However, the distribution of the lithium royalties is a potential source of conflict. The Fiscal Reserve centralizes all decision making in the national/central government, eliminating any possibility of departmental and mu-
nicipal governments managing mineral resources within their jurisdiction. In the particular case of the salt flat, the Fiscal Reserve further eliminates the right to direct royalties to the municipalities. According to Law 339 (Article 7), the Uyuni salt flat, due to its special characteristics, is declared an “independent area” so does not belong to any municipality. Although the municipalities of Uyuni, Llica-Tahua, and Colcha-K have boundaries with the salt flat, none has jurisdiction over this area.

As a result, the 15% royalty rate defined by the mining law (No. 535) to be transferred to the host municipality will go directly to the Departmental Government of Potosí (Ministry resolution 039/2016). This not only perpetuates the grievances between the departmental government and the municipalities in relation to income distribution and uneven development between urban and rural areas, but it is a potential source of conflict whenever lithium revenue materializes.

During my fieldwork, two important themes were identified in relation to the Fiscal Reserve and the conflicts at departmental and municipal scales. First, there is the government’s divisive strategy of negotiation and consultation with the communities of the southwest that excluded the Departmental Government of Potosí (and representatives of Potosí city). Some interviewees felt that the rules in place in relation to the Fiscal Reserve, the lithium project, and the distribution of revenues was backed up by political and sectarian interests that harmed the interests of the department as a whole. Second, the majority of informants agreed that lithium is to be the next source of social conflicts if the project is successful. The comments here illustrate this:

*The politics of lithium omitted the departmental government; this exclusion is premeditated, it responds to politics. It is part of a strategy to appropriate the lithium. In the municipalities, the MAS government negotiated more. The negotiators are the social organizations, who are easily manipulated by the MAS government. As departmental government, we cannot do anything with lithium; we can only participate through royalty revenues, we are not even able to participate in meetings, there should be a coordinated planning with the departmental government […] In people’s minds, “the lithium is grandma’s last jewel” (la última joya de la abuela): If we don’t get benefits now, we won’t get anything. When there will be royalties, there will be struggles. The distribution of wealth is the central topic here; society perceives that the department does not get what it deserves. We should get something else beyond royalties.* (Group interview, Planning secretory unit of the Departmental Government of Potosí, Potosí city)

The Fiscal Reserve for us is where there is a conflict for resources. The
Central Government manages it, and it is harmful for the Department of Potosí. All the communities involved should have the opportunity to negotiate. Now there is no chance. Those in conflicts are losing out. (Representative CONCIP, Potosí)

These elements illustrate that the lithium initiative has moved from a “social demand” for the communities of the southwest region and grass-roots organizations aligned with the Morales government to a business seeking to enter the global market of lithium. Far from an ideal new framework, post-neoliberalism and the case of lithium show that social participation and redistribution of extractive resources can be easily co-opted to consolidate a state-based capitalist model that centralizes decision making, does not promote transparency, and does not necessarily translate into socially just development.

From Environmental Sustainability to Environmental Permits

Yacimientos de Litio Bolivianos (YLB) is in charge of the management and operations of three different phases (pilot, industrial-scale extraction, and industrialization). Since 2012, the state initiative of lithium has placed less emphasis on the social component of the project and community relations, and focused more on making substantial investment in building infrastructure.

Although the initial time frame of the project is behind schedule, to date there are a pilot plant for lithium carbonate (1,500 tonnes/year), 30 hectares of evaporation pools, and a semi-industrial plant for potassium chloride (12,000 tonnes/year), located in the southern part of the Uyuni salt flat. However, both plants are far from reaching full productive capacity: In 2017, YLB reported that total sales of potassium chloride reached 2,119 tonnes/year to the internal market, and around 60 tonnes of lithium carbonate, of which 24 tonnes was sold to the Chinese company Jiangyin Zhuohong International Trade Co.

The industrial-scale phase seeks to produce lithium carbonate (30,000 tonnes/year) and potassium chloride (350,000 tonnes/year). In October 2018, the potassium chloride plant was inaugurated and is in full operation. In terms of an industrial-scale plant for lithium, one started its construction in 2018, and in the best-case scenario and without further delays in the construction and testing plans, Bolivia will enter into the lithium market from 2020 as a junior producer.

The last phase is the most ambitious of all: YLB seeks to undertake the industrialization of lithium-ion batteries and cathode materials under the modality of public-private partnership (PPP), with the state having a majority stake in the profits. Between 2014 and 2017, two pilot plants for cathode and battery assembly were inaugurated in La Palca, near Potosí city. Both were built by foreign companies (France’s ECM GreenTech and China’s LinYi Dake). In 2018, YLB announced that the German company ACI Systems GmbH would be the strategic partner for an industrial complex of lithium hydroxide, cathodes, and lithium-ion batteries, with an approximate investment of US$1300 million.

Recently, the Morales government seems to have adopted a more pragmatic spirit in relation to foreign companies and private investments, especially in the mining sector. On several occasions the President himself has declared the need to maintain private investments and encourage public-private partnerships. A crucial step was taken in January 2018 with the promulgation of a new Supreme Decree (No. 3469) opening the doors for public-private partnerships with both state-owned companies and subnational governments (departmental governments, municipalities, and territorial entities) for productive and infrastructure projects.

Of particular relevance for the Bolivian lithium industry, the Vice-Minister of Energy Technologies, Luis Echazú, stated that the industrial extraction of lithium carbonate will be done as a public-private partnership. The conditions for these partnerships are still to be defined, since the private partner should provide an investment similar to that provided by the Bolivian state, in addition to guaranteeing access to cutting-edge technology and the lithium-ion battery market. In this sense, the YLB and the Bolivian government seem to be changing the lithium strategy, opening up possible partnerships in both the extraction and industrialization phases of the chain. The new agreement with ACI Systems GmbH is a milestone in PPP, but it is yet to be seen how the partnership develops.

In terms of the technology that potential private partners can bring to the Bolivian initiative, the physical features of the salt flat can influence both the technological decisions and the environmental consequences these decisions will have for both the landscape and the people interacting within it. The brine of the Uyuni salt flat has three times the concentration of magnesium in relation to lithium (18 grams magnesium per 1 gram lithium) compared to the brine of the salt flat of Atacama in Chile (6.4 grams magnesium per 1 gram lithium). This particular physical characteristic added to the meteorological conditions increases the cost of production in the Uyuni salt flat, making the Bolivian lithium less competitive. The current method of extraction is based on solar evaporation of brine pools and adding large amounts of quicklime, producing residues of magnesium hydroxide and calcium sulfate. It is estimated that in the industrial phase of lithium extraction, 4,000 tonnes per day of these residuals would be generated, representing one of the most significant environ-
mental problems. Particularly, without an adequate storage and management of toxic chemicals, the strong winds in this semi-desert area could alter the alkalinity of the soil in the region, affecting the quinoa producers and biodiversity (the Uyuni salt flat is one of the 34 biodiversity hotspots of the world).

Far from being a mere technicality, the technology selected will generate considerable chemical residues that will affect the landscape. The lack of debate and serious solutions for the by-products of lithium mining reflects a political positioning consistent with the history of the country, which has always prioritized mining expansion over any other social and environmental consideration.

According to the information provided by the YLB, the required environmental license was given in 2013 for the pilot and industrial plants of potassium chloride only. The lithium pilot plant was defined as a minor impact mining activity (production less or equal to 300 MT/month) and its license followed an administrative procedure (Certificado de Dispensación Categoría 3 [CD-C3]) given by the departmental government in 2009. In January 2019, the Vice-Minister of the Environment conceded an environmental license for the lithium industrial plant. This license had a public consultation in August 2018; however, there are no further public details about the process, participants, or any agreements with the communities. Interestingly, the public consultation and license were given long after the industrial design was approved and construction of this massive plant took place.

These elements show the Bolivian lithium initiative is more focused on environmental licenses for legal compliance than on the environmental sustainability of the highly vulnerable Uyuni salt flat’s ecosystem. As a former official of GNRE/YLB explained (personal communication, La Paz), environmental considerations were not open to discussion when choosing the technology for the project, and no formal environmental evaluation was done prior to building the pilot plants. In his words:

The consultation with communities is more commercial than environmental: It is more like I give the OK to this activity in exchange of something. In the new mining law, the TCOs (Community Lands of Origin) are not considered. They have no decision making in mining concessions, no veto right. The communities can’t say no to mining, the only thing that is consulted is a way to reconcile certain interests with them. In Bolivia, the environmental permits have no real control; it is more formality, documents with X number of sig-
natures. The communities have no technical capacity to approve or understand a project like lithium; everything ends with negotiations of some community leaders and their interests.

**Final Remarks**

This article has discussed the governance of key resources such as lithium for the low-carbon energy transition within a post-neoliberal framework. By focusing on the Bolivian initiative to extract and industrialize lithium in the Uyuni salt flat, I show that what makes lithium a different case from other extractive resources are three interrelated factors: (i) its spatial delimitation as a Fiscal Reserve that consolidates state monopoly in all stages of mining activities and resources from the salt flat; (ii) a strong nationalist narrative created and sustained by a grass-roots organization (FRUTCAS) to consolidate mining expansion and subordinate any kind of local opposition to the state initiative; and (iii) a participatory process that disempowers local communities and does not address the economic, social, and environmental implications of the industrial scale at which lithium is extracted from the Uyuni salt flat.

The examination of these factors shows that a post-neoliberal governance framework does not necessarily translate into a better redistribution of economic gains, a more informed and empowering process of participation for indigenous communities, or better environmental practices conducive to sustainability of the Uyuni salt flat’s unique ecosystem.

A sustainability science perspective would examine further the structures of power and historical networks of governing that consistently add resources and wealth to the nexus of political and economic interests at the top of state power. The local scale, the powerful social actors, and their locally specific interests play a key role in defining state power relations when accessing and controlling strategic resources. This may explain the ambivalent role played by FRUTCAS in the highly circumscribed community consultation exercise, and the overall dominance of the YLB (Yacimientos del Litio Boliviano) and the MAS political party in that process. The Bolivian case of lithium provides insights on how these relations develop over time and how, beyond narratives of community empowerment, sustainability requires a critical examination of power structures at different scales.

**Dr. Daniela Sanchez-Lopez**

Dr. Daniela Sanchez-Lopez is a research fellow at the Margaret Anstee Centre for Global Studies, Newnham College, University of Cambridge. Her research focuses on the geopolitics of renewable energies and lithium in the South American salt flats of Bolivia, Argentina, and Chile. She has a background in economics at Universidad Católica Boliviana, an MA in development studies from the Institute of Social Studies (ISS) of Erasmus University Rotterdam in the Netherlands, and a PhD in international development from the University of East Anglia in the United Kingdom. She also has a decade of experience in public policy research in international organizations, notably like the United Nations Development Program (UNDP-Bolivia), Corporación Andina de Fomento (CAF), and nongovernmental organizations (NGOs).

**NOTES**

2. Chile is the second world’s largest producer after Argentina, followed by Argentina and China. According to estimates, Chile has 6.300 Mt of lithium (23% of world reserves) and Argentina has 800 Mt of lithium (3% of world reserves); M. Garside, “Lithium Mine Production Worldwide [Dataset],” Statista, (2019), https://www.statista.com/statistics/606684/world-production-of-lithium/ (accessed 15 May 2019); C. Grosjean, P. Herrera, M. Perrin, and P. Poggi, “Assessment of World Lithium Resources and Consequences of Their Geographic Distribution on the Expected Development of the Electric Vehicle Industry,” Renewable and Sustainable Energy Reviews 16, no. 3 (2012): 1735–44.
4. Lithium carbonate is the processed outcome of lithium. It is a colorless crystalline compound with different industrial uses in ceramic and porcelain glazes, pharmaceuticals, luminous paints, and batteries. Lithium hydroxide is another compound derived from lithium. It is mostly produced from hard-rock sources (spodumene). Potassium chloride is also the processed outcome of potassium extracted from the brine. It is a white crystalline solid or powder used widely in fertilizers. A. E. Henninger, P. Maxwell, and C. Mosco, “The Lithium Industry: Its Recent Evolution and Future Prospects,” Resources Policy 30, no. 3 (2005): 218–31.
6. Throughout this work, the term “extractive resources” refers to subsoil natural resources: hydrocarbons and minerals as defined by Bebbington and Burry: A. Beb-bington and J. Burry, Subterranean Struggles: New Dynamics of Mining, Oil, and Gas in Latin America (Austin, TX: University of Texas Press, 2013).
8. F. Molina, El pensamiento boliviano sobre los recursos naturales (La Paz, Bolivia: Fundación Vicente Pazoskani, 2009).
9. In April 2000, the city of Cochabamba exploded into a massive protest over water privatization. The internationally renowned Guerra del Agua, or water war, was seen as a victory against privatization and neoliberal orthodoxy. Kohl and Farthing, note 5 above; T. Perreault, “From the Guerra del Agua to the Guerra Del Gas: Resource Gover-nance, Neoliberalism and Popular Protest in Bolivia,” Antipode 38, no 1 (2006): 150–72.
10. In October 2003, the Guerra del gas, or “gas war,” started when citizens’ groups, the neighborhood associations FEJUVE (Federación de Entidades Juveniles y de Vecinos de El Alto), and other grass-roots organizations opposed the government’s plan to export natural gas to the United States and Mexico via a Chilean port. The violence, the repression, and the number of civilian deaths in the city of El Alto caused a massive rejection from the population. After several days of conflict, President Gonzalo Sanchez de Lozada had to resign and flee the country. In 2005 a new wave of protests demanded the nationalization of hydrocarbons caused the resignation of President Carlos Mesa and a call for general elections in December of that year, when Evo Morales won by a large majority of votes. J. Crabtree, Bolivia: Processes of Change (London, UK: Zed Books, 2013); L. Hinojosa, A. Bebbington, G. Cortez, J. P. Chumacero, D. Humphreys-Bebbington, and K. Hennermann, “Gas and Development: Rural Territorial Dynamics in Tarija, Bolivia,” World Development 73 (2015): 105–17.
11. Morales’ government has three main redistributive policies: (i) the unconditional and universal cash transfer program (Renta Dignidad), which is a monthly nonconditional social security program for all people older than 60 years. (ii) Rodriguez de la Pena, a cash transfer for families with children in public primary school (first to sixth grades), and extended progressively to cover all secondary school students by 2014. This transfer is paid at the end of each year, after student grades and the condition of not dropping out of school during the corresponding year. (iii) Bono Juana Azurduy, for expectant and new mothers and their infants. All together, they represent 1.5% of gross domestic product (GDP) and reached 30% of the population in 2014. J. Vargas and S. Garriga, Explaining Inequality and Poverty Reduction in Bolivia (Washington, DC: International Monetary Fund, 2015), https://www.imf.org/en/Publication/WPF/Issues/2016/12/31/Explaining-Inequality-and-Poverty-Reduction-in-Bolivia.