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Extractivism, development narratives and the myth of the "trickle-down effect": the case of lithium mining in Argentina

I. Introduction

Besides being a mineral extensively used in industry, laboratory research and the military, aerospace and pharmaceutical sectors, lithium is a key input for the manufacture of rechargeable Li-Ion batteries, widely used in consumer electronics, electrical vehicles and renewable energies. For this reason, for both capital and the state, lithium is a strategic, essential good to ensure the post-fossil energy transition, the electromobility, and the "green" economy. In this context, the so-called "Lithium Triangle", made up of the Bolivian south, the Chilean north and the Argentinean Puna, has acquired great importance due to the fact it houses 46.1 per cent of the reserves and 53.4 per cent of the lithium resources. For lithium in brine, i. e. one of the cheapest and most profitable forms of extraction of this mineral, these figures rise to 67 per cent and 85 per cent, respectively. In this context, Argentina is positioned on a global scale, concentrating 10.4 per cent of the reserves and 20.6 per cent of the resource, notwithstanding which it paradoxically continues to be the only country in the region that did not declare lithium as a strategic mineral.

During the last years, the advance of lithium mining in Argentina has been justified by both the state and corporations through the production of a narrative that conceives the activity as synonymous of modernity, progress, and well-being. These ideological constructions represent a partial reissue and (re)signification of the *El Dorado* myth, with lithium emerging as a fast and safe vehicle to wealth, development, and prosperity. Such a narrative is actively designed and spread by financial journals, investment and mining companies, and almost all political parties, despite their different creeds, ideologies and platforms. In the broad arc that goes from progressivism to conservatism and liberalism, practically all actors with the capacity to dispute, build and accumulate political power in Argentina emphasize the "trickle-down effect" of lithium, considering its exploitation as an instrument of both generations of genuine wealth and employment, as well as expansion of the public treasury. This narrative turns lithium into a key tool to get out of backwardness and poverty, connecting it with a promising future of development, growth of small and medium-sized businesses, fiscal resources for the provinces and energy transition for the region.

In light of such a situation, this paper studies the supposed relationship between lithium mining and socioeconomic development in Argentina, seeking to verify if the "white gold" boom and the million-dollar investments and exports that accompany it have really resulted in greater tax pressure, nationalization and redistribution of export income, substantial contributions to public treasuries and improvement of infrastructure for local communities. Using secondary sources, such as official statistics and reports, scholarly bibliography, corporate reports and journalistic information, the article analyzes the export dynamics of lithium mining, the regulatory framework of the sector and the actual impact of the exploitation of the resource's exploitation on both national tax collection and provincial public coffers. Also, it describes the Corporate Social Responsibility policies de-

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ployed by the companies, as well as the situation regarding the access to infrastructure and basic services by the local communities.

II. BRIEF CHARACTERIZATION OF THE LITHIUM BOOM IN THE WORLD AND IN ARGENTINA

At a world scale, the current lithium boom is determined by two factors: on the one hand, the gradual diffusion of electromobility; on the other hand, the slow migration towards a "green" energy matrix. This has led to batteries becoming the main destination for this mineral: if in 1998 they absorbed only 7 per cent of the supply, in 2020 they represented 71 per cent. As a result, the price of battery-grade lithium carbonate (i.e., Lithium Carbonate Equivalent (LCE) at 99.1 per cent purity, or higher) rose from just 1,770 dollars per ton in 1990 to the all-time peak of 88,000 dollars per ton reported in November 2022.

In this context, Argentina is a world leader in investments for the exploration and extraction of lithium in brines, as well as the fourth largest producer and exporter of this mineral. In a framework marked by the massive grabbing of land, salt flats and mineral deposits by both domestic and foreign companies (especially, those coming from China, Canada, Australia, the United States, England, France, and South Korea), national lithium production grew from 6,015 tons of LCE in 1998 to 33,003 tons in 2022, being entirely exported to external markets such as China, Japan, South Korea and the United States. Although in that period lithium exports went from just 1 million dollars to almost 696 million dollars, currently Argentina only has two mines in full activity: *Fénix*, belonging to the American company Livent (ex-FMC Lithium) and located in the Dead Man Salt Flat, near the town of Antofagasta de la Sierra (Province of Catamarca); and *Olaroz*, located in the salt flat of the same name, in the department of Susques (Province of Jujuy), and exploited by both the Australian mining company Allkem (ex-Orocobre) and the Japanese automobile company Toyota.

Lithium represents less than 1 per cent of Argentine foreign trade. However, this mineral leads the export matrix of the provinces of Catamarca and Jujuy, concentrating between 57 per cent and 60 per cent of their shipments to international markets. Even so, the sector barely explains between 0.89 per cent and 2.12 per cent of provincial formal employment, and just over 1 per cent of the regional workforce. It is important to add that several lithium prospects show significant degrees of progress, as well as dozens of projects in the pilot, pre-feasibility, economic evaluation and advanced exploration stages. For this reason, it is estimated that by 2030 Argentinean production will oscillate between 246,500 and 375,000 tons of LCE per year, while exports will reach 5.6 billion dollars per year.

III. THE FALSE "TRICKLE-DOWN EFFECT" OF LITHIUM: FROM FISCAL PRIVILEGES AND TAX EVASION TO CORPORATE SOCIAL RESPONSIBILITY AND INFRASTRUCTURAL DEFICIT

The regulatory framework of the mining sector and, specifically, lithium mining, grants numerous tax privileges to companies. Enacted during the nineties and perfected during the subsequent decades, such legislation is based on a complex legal building that grants companies several tax, exchange, tariff and financial benefits and exemptions, all of them established within the context of thirty years -counted from the date of approval of each investment project- of fiscal stability. Naturally, this has implied extremely beneficial conditions for the capital. Firstly, hidden public subsidies, basically state investments in fixed capital and preferential electricity and natural gas rates. Secondly, numerous tax exemptions (e.g., liberalization of imports of inputs and equipment without paying customs duties, tax exemptions on bank loans, assets, stamps, fuel and minimum presumed profit, early refund and financing of the Value Added Tax for both the import and local purchase of goods, deduction of 100 per cent of the Income Tax on all expenses necessary to produce a profit, etc.). And finally, financial and exchange benefits, such as the authorization to remit profits abroad without paying taxes and permissions to open offshore accounts in tax havens and use them as a basis for their financial assets, not to mention that in certain periods existed the possibility for companies to remit the incomes coming from their exports to such offshore accounts, without settling them in domestic financial centres.

In addition, the few national taxes that public regulations impose on companies are insubstantial. To begin with, the exploitation fee is the only national contribution that can be required from companies during the first five years of concessioning the mines. This helps to explain the meagre or almost non-existent input of lithium mining companies in terms of payment of the Income Tax, which can nominally tax up to 35 per cent of the capital's income but which in practice has been reduced to a minimum, despite the already mentioned escalation of the international price of lithium carbonate.

On the other hand, the national state has been unable to appropriate a substantial part of the export income. In fact, lithium mining was exempt from the payment of export duties from 1997 to 2002, the latter date from which carbonate and chloride shipments were taxed at a rate of 5 per cent. Between the end of 2015 and mid-2018, the activity was again exempt from the tax, but later such duty was reintroduced, ranging between three pesos per dollar exported and a rate of 8 per cent. Despite the international prices' boom, during the 2021-2023 three-year period export duties fell to 4.5 per cent, until at the end of the last year the ultra-liberal government of J. Milei decided to raise the rate to 15 per cent.

It is worthwhile noting that both the flow of income coming from export duties and the general tax collection captured by the national treasury due to lithium mining are liquefied by certain tax deductions that the national state itself granted to the companies during a large part of the analyzed period. Such is the case of export refunds, whose rates, which initially ranged between 5 per cent (for lithium chloride), 8.5 per cent (for lithium hydroxide) and 10.5 per cent (for lithium carbonate), later underwent successive modifications, first falling to 2.5 per cent, then increasing to 3 per cent and finally descending to 1.5 per cent. Since the national state completely eliminated this benefit just in March 2023, its participation in lithium revenues has been low. Regarding this topic, the reconstruction of the historical series of lithium exports, the main national taxes paid by the sector and the tax refunds granted to companies are conclusive. While between 2001 and 2022 accumulated lithium exports totalled 2,765.7 million dollars, the net tax revenue collected by the federal state was reduced to just 113.9 million dollars (4.12 per cent of the export income, on average), once discounted 44.1 million spent as tax refunds.

Regarding the provincial public treasuries, the main contribution of the sector has been mining royalties, set at a maximum limit of 3 per cent of the production value at the mine pit. However, this 3 per cent is actually a fictitious figure, though Argentine legislation allows mining companies to deduct from the corresponding amount certain production costs, as well as the entire treatment process prior to the sale of the final product. In 2017, the Government of the Province of Catamarca renegotiated the concession contract with the then FMC Lithium, providing that the company had to pay net royalties (without deductions) of 3 per cent of the production value at the mine pit. Nevertheless, this improvement was partially liquefied by other clauses introduced in the new contract, which established that the company's contributions to the provincial treasury could not exceed 2 per cent of its income. As a result, the Catamarca's Government would be able to appropriate (in theory and for all reasons) 3.5 per cent of the gross sales value, a little more than double the 1.6 per cent it received before the contract was renegotiated. Likewise, the Jujuy's Government also implemented changes in the mining royalty regime, bringing the effective rate to approximately 1.6 per cent of the sales, equivalent to 2 per cent of the value at the mine spit. Such meagre improvement was liquefied by a regulation that established that a third of what accrued from the royalty could be resigned to be used for exploration work on geological targets that were of interest to the companies and/or the Jujuy's Government. In addition, mining has been exempted from paying the Gross Income Tax in such province.

Although there are no official public statistics, the available information suggests that the collection of lithium royalties is negligible in both provinces. Since the beginning of the exploitation of Olaroz, Orocobre/Allkem has made public its disbursements in royalties and other provincial and local taxes. The reconstruction of the historical series of these disbursements clearly demonstrates that the Jujuy's public treasury would have barely captured between 1.58 per cent and 2.93 per cent of the Australian-Japanese consortium's incomes. Regarding FMC Lithium/Livent, the availability of information is scarce, despite it being the oldest active lithium company in the country. However, it does not seem reasonable to expect great progress in this regard, considering that between 1997 and 2015 the company refused to pay for its massive use of fresh water, the main input required for its extractive process.

As a result, the tax contribution of lithium mining represents only between 0.43 per cent and 2.36 per cent of the provincial public expenditures of Jujuy and Catamarca, figures that are clearly insubstantial for an activity that, according to the hegemonic discourse, constitutes an irreplaceable pillar of local and regional development. Hence, in terms of generating their tax resources, both provinces are at the bottom of the national ranking, with rates of 15.6 per cent and 12.3 per cent, respectively. Such a situation makes them highly dependent on remittances of federal co-participation funds from the nation-state.

The Corporate Social Responsibility (CSR) policies of lithium mining companies require special mention. The case of Orocobre/Allkem is eloquent in this regard.

Between 2017 and 2022, the company contributed 5.7 million dollars to local communities, a figure that ranged between 0.34 per cent and 0.72 per cent of the incomes originated in the Olaroz’s lithium carbonate exports. Of this accumulated total, most funds corresponded to the “strategic community investment” (28.1 per cent) and, above all, to the so-called “participation agreements with communities” (49.1 per cent). However, the latter has nothing to do with Corporate Social Responsibility. In reality, such mechanisms do not grant genuine participation to the communities in the decisions and profits of the company, but rather they are agreements thanks to which the company must -in accordance with the regulations provided by the National Mining Code- compensate the land owners for using their territories for both the resource’s exploitation and the construction of the roads, infrastructure and facilities necessary for this purpose. The Australian-Japanese consortium even lists as CSR those events dedicated to promoting the “goodness” of lithium mining, strengthening the (pro) extractivist myth.

Not less important, the meagre public funds generated by the exploitation of “white gold” are further dwarfed by tax evasion practices. Such is the case of Livent, a company that the General Directorate of Customs and the Federal Public Revenue Agency found that, between 2015 and 2022 at least, had incurred under-invoicing of exports through triangulation and transfer pricing manoeuvres. This allowed the company to sell both the lithium carbonate and lithium chloride extracted from Catamarca to its own headquarters in the United States at a value of 6,000 dollars per ton (i. e. far below the international price), defrauding the national and provincial public treasuries.

Despite all the above, the hegemonic discourse of the governments of the lithium provinces propagates the myth that the fiscal resources derived from such economic activity are a pillar for local and regional development, improving the quality of life of the population and allowing them to achieve substantial levels of progress and well-being. Nevertheless, significant infrastructure deficits currently persist in the region. In fact, communities currently are demanding public and private investments in this regard, aware that the service infrastructure that is built or expanded while the “white gold” boom lasts will be the only benefit they will have left once the resource is exhausted.

The empirical examples of such shortcomings are eloquent. According to the last National Census of Population, Households and Housing, performed in 2022, Antofagasta de la Sierra, an area of direct influence of the Dead Man Salt Flat, was the fifteenth department of Catamarca (out of a total of sixteen districts) in terms of rate of homes with a bathroom inside the housing (85.4 per cent), as well as the eleventh department regarding the availability of piped water (84 per cent). In both cases, such figures were much lower than the provincial and Argentinean averages. Although Livent uses natural gas coming from the Puna Gas Pipeline in order to generate the electrical energy necessary for its operations, the necessary investments for the network to reach the homes of Antofagasta have not yet been made. In fact, only 1.3 per cent of the occupied homes in the department use gas and electricity, something to highlight taking into account the harsh winters in the area, where temperatures drop to -10º C. This rate placed the district in the last place of the provincial ranking, extremely far from both the Catamarca (18.7 per cent) and Argentina averages (58.4 per cent). The only indicator that showed improvements was access to the sewer network. Between 2010 and 2022, the rate of occupied homes with access to the sewage network went from 30 per cent to 42.6 per cent, something due to the reinvestment of a part of Livent’s profits. Although this became Antofagasta de la Sierra the third Catamarca district with the best relative situation regarding this indicator, the figures (still far from reaching all of its inhabitants, it is worthwhile noting) continue to be lower than both national (62.6 per cent) and provincial standards (54.6 per cent).

Something similar happens in Susques, where Orocobre/Allkem exploits the Olaroz mine. According to the already mentioned National Census, just 1.8 per cent of occupied homes have gas and electricity -the Jujuy’s worst relative situation about this indicator, at a departmental scale-, while only 5.2 per cent of housing is connected to the sewage network, against 68.9 per cent and 62.6 per cent of provincial and national average, respectively.

IV. CONCLUSIONS

Despite the idyllic visions of easy wealth and socioeconomic prosperity inherent to the hegemonic discourse of economic elites and the leaders of governments and majority political parties, the lithium model has not fulfilled -at least in Argentina- its promises of nourishing the treasury or underpinning the progress of the regions where “white gold” is extracted. On the one hand, companies have not only been exempted from the vast majority of taxes paid by other economic activities in the country, but also the few taxes they pay have largely neutralized or liquefied by certain tax deductions granted by the national state. Suggestively, even when the production and export records are broken year after year and the lithium companies have been largely benefited from the recent boom in prices and international demand, they have not paid taxes -or have done so very sporadically- for their exorbitant profits, nor substantial export duties. Consequently, the capture of lithium export income by the national state has been extremely low.

On the other hand, mining royalties paid to local public treasuries show negligible rates, which in turn are diminished by both the Argentinean tax legislation and the discretionary agreements signed between the Catamarca and Jujuy's Governments and foreign corporations, not to mention the fraudulent practices of tax evasion, under-invoicing of exports and transfer pricing routinely carried out by companies. As a result, and despite the promoted corporate Social Responsibility policies, the communities near the salt flats continue -after 25 years of lithium mining, it is worthwhile noting- to suffer dire situations regarding housing conditions, access to basic services and health care. Thus, in the Argentinean portion of the so-called "Lithium Triangle" the narrative that links development with the rise of "white gold" is nothing more than a mirage that fails to hide the sharp contrast between the golden future predicted by the elites and the pressing shortcomings of the present.