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BOOK REVIEW

Extracting the future: Lithium in an era of energy transition

By Mark Goodale. Oakland: University of California Press, 2025. 304 pp.

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Lithium may be the defining mineral of the early 21st century. Demand is projected to double by 2030, largely for use in electric vehicles (EVs), supposedly to wean us off fossil fuels. But above all, lithium is generating profits, dreams of national development, and geopolitical power. Bolivia is central to global lithium markets for two reasons that resonate differently with Global North and Global South audiences. Of interest to the North, it holds the world's largest reserves of lithium in various underground brine deposits. Among these, the vast Salar de Uyuni (Uyuni Salt Flat) stands out. Of interest to the rest, Bolivia launched in 2008

an ambitious lithium strategy that aimed for “industrialization with sovereignty”—meaning state-led investments in research, development, and manufacturing to develop both the raw material (lithium) and valuable downstream products (batteries and EVs). This policy, and its many travails, is what Mark Goodale chronicles in his stimulating new book, *Extracting the Future*, which is required reading for anyone interested in contemporary mineral politics or climate justice.

The book is fundamental because it captures, with ethnographic methods, an important snapshot of lithium’s global development. The years immediately before and after the 2019–20 COVID-19 pandemic were dramatic. Lithium markets surged: the metal’s price jumped from US\$8,000 to US\$75,000 per metric ton, then back down. Bolivian politics suffered a coup and the unraveling of President Evo Morales and his political movement, called MAS, after 20 years in power, having weathered earlier crises that brought the country “to the brink of civil war” (p. 68). In 2025, after Goodale’s book was published, Morales’s defeat was confirmed as voters elected Christian Democrat Rodrigo Paz as president—a choice that reflects both change and continuity, given that Paz is the son of former president Jaime Paz Zamora, who in the early 1990s oversaw a botched attempt to extract lithium from the Uyuni Salt Flat (chap. 1). Goodale’s book helps readers understand the continuities, ruptures, and contested hopes that have led to the current situation:

one best described as frustrating to all the parties involved, albeit for different reasons.

Goodale's main argument is that lithium-enabled EVs are not a solution to climate change because the conditions under which mining is happening—the scale, pace, and violence of extraction—are environmentally destructive and politically untenable (at least under democratic conditions, as Bolivia admirably demonstrates). Lithium's trajectory is therefore frustrating to anyone concerned about climate change and environmental sustainability (a point underscored in other recent studies of contemporary mining and extraction). But it is also frustrating for Bolivian officials, local authorities, and industry specialists of different nationalities who have invested tremendous resources and time trying to transform Bolivia's desert salt flats into industrial mines and lithium into sellable batteries. As Goodale documents, the ecology, chemistry, engineering, and politics of lithium have stymied their efforts at every turn, meaning that lithium production from the Uyuni Salt Flat remains in its infancy.

The complicated reasons for this are laid out by Goodale over six chapters. The first three focus on mining and extraction in Bolivia, providing histories of lithium exploration and development (chap. 1) and of resource politics (chap. 2), capped with an analysis of the construction of industrial facilities on the Uyuni Salt Flat (chap. 3). Chapter 1 explores the “prelives” and “afterlives” of lithium, while

chapter 2 delves into Bolivia's mineral politics, which has been shaped by regional grudges, legacies of colonial and racist violence, and accumulated frustrations from lost wars, failed policies, and entrenched power asymmetries. Chapter 3 presents two concepts that capture the trajectory of Bolivia's lithium policies: "flexible extractivism" and the "hydrocarbonization of lithium," which Goodale uses to describe the rising pragmatism of Bolivian policies. Confronted by technical, ecological, and political difficulties, the Bolivian government both raised the stakes of the lithium project and abandoned most ideological aspects of "industrialization with sovereignty" in favor of selective (and growing) engagement with foreign partners. In Goodale's analysis, lithium policies increasingly resembled those applied to oil and gas.

The next three chapters move the narrative down the lithium chain to examine innovations in research, development, manufacturing, and extraction technologies. Chapter 4 examines Bolivia's forays into battery research and development, led by state actors operating through a state-owned company (called YLB). Chapters 5 and 6 look at private actors: a Bolivian EV manufacturer that makes and sells small EVs, and a US technology company that entered the race to develop faster lithium-extraction methods. Chapter 4, "The Cathode Chronicles," tackles most directly the experience of building high-performance labs in Bolivia and the question of why the Morales government launched an

“industrialization with sovereignty” strategy that involved establishing a lithium-ion battery industry. The question is “perplexing”—only China produces both lithium and batteries in significant quantities (p. 130). It stands as one of several quixotic or even chimerical ambitions that Goodale analyzes, and in this chapter he captures the experiences of a generation of Bolivian scientists and engineers trained for a lithium economy. Like so many other parts of the project, the funding was pulled before the desired outputs were ready for market, but only after substantial public money had been spent.

Several tensions run through the analysis—between national, local, and global designs; between the present and ideas of the past and future; between business as usual and the transformative work needed to tackle climate change; and between what we might call normal and quixotic ambitions, which, in Goodale’s analysis, gripped Bolivian officials. But US entrepreneurs seem similarly afflicted; chapter 6 describes the bombastic efforts of a Texas-based start-up to deliver new extraction technologies that, as of writing, remain largely unproven. Goodale does not dwell much on the differences or similarities between actors in the Global North and South (e.g., there are differences in power, yet they have similar goals). Instead, he emphasizes two interrelated points. First, climate justice requires that Bolivia be free to decide whether to develop its lithium deposits. In other words, to suggest that Bolivia must leave its minerals in the ground is a

climate injustice (p. 230). Second, Goodale argues that Bolivian officials are caught in a kind of fog of climate uncertainty, forced to make difficult decisions amid informational chaos. Under these conditions, rival parties can ascribe very different goals to industrial projects. This, as he shows, can inadvertently undermine those very projects. Thus, Bolivia's lithium ventures have so far failed not because officials, scientists, and others haven't tried, but because of the gaps between expectations, on-the-ground realities, and the political performances needed for electoral survival. By contrast, the Texas start-up enjoys easy access to vast amounts of US dollars and seemingly gets away with its own entrepreneurial performance. Critical analysis of these power asymmetries and their consequences for a climate change economy will remain necessary for a long time.

Goodale is at his strongest in his analysis of contemporary Bolivian government and social movements. Reflecting his anthropological expertise in this country, he deftly examines the rivalries and tensions in Bolivian politics and provides an excellent account that is both national and grounded in specific localities. The narrative moves across La Paz, Potosí, Cochabamba, Uyuni, and towns in between. Goodale's ability to situate each place in Bolivian political and cultural life is a real strength and defies the tendency to flatten complex national realities. Likewise, the book captures the vast scale of the Uyuni Salt Flat better than anything else I have read. Goodale's analysis of Bolivian politics will be a

welcome addition to complementary research on the historical importance of industrialization (as distinct from extractivism), the legacies of the appropriate technology movement in Latin America (relevant to chaps. 4 and 5 in particular), and debates over where and how to draw the line between state-led and private enterprise. As an ethnography, the book moves across different groups—in the state, in labs, consumers of EVs, fenceline communities—and centers their experiences over such political-economic debates.

Goodale writes that he set out wanting to write a book about lithium in the tradition of great commodity histories, like those about sugar and palm oil. The result is instead a snapshot of a fascinating and revolutionary time and place, and it will feature prominently in future global histories of lithium. Goodale makes an excellent case that the history of lithium is being written now—accounts have been authored recently by people who worked in the first lithium mines and by a growing multitude of scholars. But lithium's history is also being shaped by a much larger set of forces: activists, industrialists, and officials working to counter climate change and advance climate justice. In one way or another, we are all shaping lithium's future history, and so it seems wise to learn all we can about this element and its complex economics and politics. Whatever happens with Bolivia's deposits or with battery chemistry, lithium is poised to remain important for a long time to come, and Goodale's book provides a fabulous entry point into this future history.