

Lithium in International Law: Trade, Investment, and the Pursuit of Supply Chain Justice

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ABSTRACT

Projected demand for renewable energy storage has underlined the importance of lithium-ion batteries, reflected in concern over ‘supply chain security’ for critical minerals. Yet, other voices have called for ‘supply chain justice’ among governments, firms, and communities affected by the social and environmental externalities of lithium extraction. To anticipate disputes and draw a baseline for further research, this article surveys the relevant rules of international law that presently regulate major operations of the lithium industry. First, the material dimensions of lithium are transformed into a workable object of international law, focusing on viable reserves (as opposed to all proven resources) and the analytical priority of territorial jurisdiction. Second, the regulatory regimes of four States with major reserves—Chile, Australia, Argentina, and China—illustrate recurring challenges, such as incentivizing investment in value-added production and the discontent of Indigenous communities. Third, the trade and investment treaties of these States help us to map an international legal framework for the lithium industry, focusing on the World Trade Organization, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, and the Regional Comprehensive Economic Partnership. But such treaties may be interpreted in light of a State’s obligations concerning human rights, environmental protection, and Indigenous peoples, giving legal form to the pursuit of supply chain justice in the energy transition.

I. INTRODUCTION: JUST SECURITY?

‘The development of the internal combustion engine enormously increased the importance of oil and consequently impaired the position of coal’, so observed a committee of the League of Nations, triggering ‘a long-term change in the relative importance of competing raw materials affecting the relative prosperity of countries.’¹ The transition away from these fossil fuels towards

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¹ ‘Annex 1682: Report of the Committee for the Study of the Problem of Raw Materials Appointed by the Council on January 26th, 1937’, 18(12) League of Nations Official Journal 1229 (1937), at 1232.

renewable energy sources is now poised to increase the importance of other non-renewable natural resources that underpin energy storage technologies, foremost lithium-ion batteries (LIBs).² The International Energy Agency (IEA) has stressed the high levels of cooperation required to secure a stable supply of such 'critical minerals', projecting that demand for lithium alone in 2040 could be between 13 and 51 times higher than 2021.³ Predictably, there is unease in the business press concerning a nascent 'lithium nationalism' in Latin America, with proposals to nationalize newfound deposits or establish State enterprises for their exploitation.⁴ But existing operations of lithium mining, chemical processing, and battery manufacturing are legally coordinated through the corporate structures and contractual relationships of global value chains (GVCs) that harness efficiency gains and reduce risks across several jurisdictions.⁵ While Chinese firms presently dominate production, many firms and governments are paying closer attention to GVCs for LIBs, hoping to secure the supply of critical minerals or to capture value through investment in profitable stages along the chain.⁶ Green industrial policy has accordingly coalesced with the discourse of 'supply chain security',⁷ a sign of the tightening nexus between national security and economic interests.⁸

The securitization of supply chains is hardly a novel phenomenon; the very concept of critical minerals was originally coined for US military stockpiles.⁹ Yet, other advocates of green industrial policy have called instead for 'supply chain justice', recognizing that lithium extraction in support of climate mitigation may carry its own kinds of devastation unless solidarity is fostered across borders.¹⁰ In Chile, for instance, there are risks of 'water depletion and pollution, toxicity impacts on flora and fauna, waste generation and disposal, and land subsidence',¹¹ linked to 'forced migration of populations from villages and the abandonment of ancestral settlements'.¹² While the agenda of supply chain justice typically targets the lead firms in GVCs through market pressure, such as shareholder proposals for corporate social responsibility, the notion is adopted here as shorthand for a broader set of interventions that are being led by host States and non-State actors in pursuit of relational or distributive justice among governments, firms, and communities.¹³ This article is agnostic towards specific interventions that seek to reorganize GVCs for LIBs in light of their social or environmental consequences, except to say that the prism of supply chain justice might serve as a salutary corrective to the traditional division between areas of law that facilitate economic transactions and those which merely regulate their negative externalities.¹⁴

² Glasgow Climate Pact, 'Decision -/CP.26, Advance Unedited Version', https://unfccc.int/sites/default/files/resource/cop26_auv_2f_cover_decision.pdf (visited 23 January 2022), para 20.

³ International Energy Agency (IEA), 'The Role of Critical Minerals in Clean Energy Transitions: World Energy Outlook Special Report', <https://iea.blob.core.windows.net/assets/24d5dfbb-a77a-4647-abcc-667867207f74/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf> (visited 23 January 2022) 53.

⁴ Jonathan Gilbert and Daniela Sirtori-Cortina, 'Lithium Nationalism is Taking Root in Region with Most Resources', *Bloomberg*, 29 June 2021.

⁵ See IGLP Law and Global Production Working Group, 'The Role of Law in Global Value Chains: A Research Manifesto', 4(1) *London Review of International Law* 57 (2016).

⁶ This article refers to both GVCs and supply chains: the former denote the stages of value creation in the cross-border production of a good or service, whether organized through intra- or inter-firm transactions, whereas the latter denote the physical flows of commodities that link those stages, including raw materials and intermediate or finished goods.

⁷ Supply chain security was once confined to physical threats posed by crime, terrorism, and natural disasters: Michel Donner and Cornelis Kruk, *Supply Chain Security Guide* (Washington, DC: World Bank, 2009) 73.

⁸ Anthea Roberts and Nicholas Lamp, *Six Faces of Globalization: Who Wins, Who Loses, and Why It Matters* (Cambridge: Harvard University Press, 2021) 129–31.

⁹ Marc Humphries, 'Critical Minerals and U.S. Public Policy' (Congressional Research Service, R45810, 28 June 2019), 6–7.

¹⁰ Kate Aronoff and others, *A Planet to Win: Why We Need a Green New Deal* (New York: Verso, 2019) 164.

¹¹ Rennie B. Kaunda, 'Potential Environmental Impacts of Lithium Mining', 38(3) *Journal of Energy & Natural Resources Law* 237 (2020), at 244.

¹² Datu Buyung Agusdinata and others, 'Socio-Environmental Impacts of Lithium Mineral Extraction: Towards a Research Agenda', 13(12) *Environmental Research Letters* 123001 (2018), at 9.

¹³ Cf Ioannis Kampourakis, 'From Global Justice to Supply Chain Ethics', 12(2) *Transnational Legal Theory* 213 (2021), at 222.

¹⁴ Jorge E Viñuales, *The Organisation of the Anthropocene: In Our Hands?* (Leiden: Brill, 2018) 26–28.

While the rival agendas of supply chain security and justice jostle over policies that could disrupt GVCs, a timely inquiry is to survey the relevant rules of international law that already regulate major operations of the lithium industry. In so doing, we might anticipate the character of possible disputes and draw a baseline for further research into global governance of critical minerals in the renewable energy transition. To circumscribe this inquiry, [Section II](#) digs into the material conditions under which lithium has surfaced as a salient object of international legal analysis. Contrary to its popular depiction as a monolithic commodity, lithium is chemically diverse (as a geological deposit, processed material, or battery component), commercially inchoate (from the vantage of commodity and financial markets), and legally fragmented (in terms of its jurisdictional distribution). Given the importance of existing or imminent sites of extraction, this article focuses on world lithium *reserves*, distinct from the unwieldy category of all proven *resources* in that the former are expected to yield a return on investment. The notion of an international legal framework for the lithium industry helps us to mine the regulatory landscape in a stratified fashion, from principles of customary international law, through domestic regimes and contractual arrangements, towards various treaty obligations.

As a first step in developing that framework, [Section III](#) explores the jurisdictional distribution of lithium reserves, underpinned by the customary principle of permanent sovereignty over natural resources but qualified by manifold international obligations. Four States assume primary relevance, each with more than a million tons of lithium reserves: Chile, Australia, Argentina, and China. Their regulatory regimes are briefly surveyed, sharpening our attention to recurring tensions, such as the desire to incentivize investment in value-added production and the discontent of Indigenous communities over lack of consultation. Geopolitical friction, moreover, could disrupt key links in lithium trade.

[Section IV](#) therefore turns to trade and investment treaties that may apply to existing operations, including the covered agreements of the World Trade Organization (WTO), the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), and the Regional Comprehensive Economic Partnership (RCEP). Whereas trade adjudication between States is foreseeable in certain circumstances, such as the application of export restrictions or domestic content requirements, individual firms may bring claims directly before investor-State arbitration in the event of disruptions to their economic interests. Yet, there are rules regarding human rights, environmental protection, and Indigenous peoples that might be relevant in the interpretation of investment obligations and should serve as touchstones for the reasonableness of sovereign conduct, offering legal form to the pursuit of supply chain justice and ensuring that domestic regimes may evolve in response to the concerns of affected communities. While these pathways are admittedly marked by legal uncertainty, they may be followed by future tribunals or formalized through treaty negotiations towards the just and secure governance of critical minerals in the energy transition.

II. LITHIUM AS A LEGAL OBJECT

Lithium has been identified by Australia, China, the EU, Japan, and the USA as one of roughly 30 critical minerals, defined as those essential to an economy or national security whose supply may be disrupted.¹⁵ As for hydrocarbons, geopolitical events are now dissected in terms of their implications for untapped deposits.¹⁶ Yet, lithium has rarely appeared in treaties or international

¹⁵ Mary Hui, 'What are Critical Minerals?' <https://qz.com/2056365/what-are-critical-and-strategic-minerals> (visited 23 January 2022).

¹⁶ Iain Marlow and Enda Curran, 'China Eyes Afghanistan's \$1 Trillion of Minerals with Risky Bet on Taliban', *Bloomberg*, 24 August 2021.

disputes, save for tariff schedules in trade agreements.¹⁷ Not to say that the industry has had no influence on international law; Bolivia's wish 'to build a port for the export of ... lithium minerals' via a special economic zone in Chilean territory, for instance, formed part of the immediate backdrop in a longer dispute.¹⁸ That detail, buried in a footnote, hints at how international law conversely shapes the lithium industry by allocating jurisdiction over resources among States and thus determining the conditions under which critical minerals may be accessed by the world market.

An inquiry into the latent regulation of lithium may therefore illuminate a vital resource in the shifting terrain of international energy law, which essentially governs the conversion of resources into energy products through various technologies.¹⁹ However, given the role of law in 'constructing, authorizing, legitimizing, and giving force' to certain objects over others,²⁰ one must take care not to speak of all matter containing lithium in a homogeneous manner. To translate the properties of lithium into a workable object of inquiry, this section examines its chemical and commercial dimensions, underlining the diversity of lithium in its geological and processed forms and its inchoate character from the vantage of commodity and financial markets. These material dimensions highlight the legal salience of economically viable reserves, as opposed to all proven resources, insofar as international disputes might be expected to emerge in or between States that are already hosting operations of the lithium industry.

A. Material dimensions

Lithium's highly reactive nature means it never appears as a pure metal: about 59% of the world's resources are found in groundwater containing lithium chloride (LiCl) and another 25% in silicate minerals, such as spodumene, with the remainder in clays, geothermal waters, and oilfield brines.²¹ Lithium is primarily extracted for the production of rechargeable LIBs utilized in electronic devices, electric vehicles (EVs), and grid storage.²² When these batteries are charged, lithium ions move from the positive electrode (or cathode, composed of a lithium metal oxide) through an electrolyte (composed of a lithium salt in an organic solvent) to the negative electrode (or anode, composed of graphite), moving in the opposite direction during discharge and thus delivering electrical energy. Such cathodes may include cobalt, manganese, nickel, phosphorus, or iron, which vary in terms of performance properties and supply chain vulnerabilities.²³ But all require battery-grade lithium, delivered to manufacturers as lithium carbonate (Li₂CO₃) or lithium hydroxide (LiOH). The production of these cathode feedstocks from geological deposits may be illustrated by two major operations in Chile and Australia: first, groundwater is pumped into drying ponds in the Salar de Atacama to produce a brine with ~6% LiCl that is processed to yield Li₂CO₃, a portion of which may be further reacted to produce LiOH; and, second, spodumene mined in Greenbushes is concentrated to an ore with ~5% lithium oxide, shipped to China for processing into either of the feedstocks.²⁴

¹⁷ Lithium materials are classified according to the Harmonized Commodity Description and Coding System of the World Customs Organization, notably HS 2836.91 (Lithium carbonate) and HS 2825.20 (Lithium oxide and hydroxide).

¹⁸ *Obligation to Negotiate Access to the Pacific Ocean* (Bolivia v Chile), Rejoinder of the Republic of Chile, Volume 1 of 3, 15 September 2017 para 8.31(c) fn 689.

¹⁹ Jorge Viñuales, *The International Law of Energy* (Cambridge: Cambridge University Press, 2022) ch 1.

²⁰ Jessie Hohmann and Daniel Joyce, 'Introduction', in Jessie Hohmann and Daniel Joyce (eds), *International Law's Objects* (Oxford: Oxford University Press, 2019) 1–11, at 8.

²¹ Laurence Kavanagh and others, 'Global Lithium Sources—Industrial Use and Future in the Electric Vehicle Industry: A Review', 7(3) *Resources* 57 (2018), at 4.

²² US Geological Survey (USGS), *Mineral Commodity Summaries 2021* (Washington, DC: US Government Publishing Office, 2021) 98.

²³ J. Lee and others, 'Reviewing the Material and Metal Security of Low-Carbon Energy Transitions', 124 *Renewable and Sustainable Energy Reviews* 109789 (2020), at 2–3.

²⁴ Jarod C. Kelly and others, 'Energy, Greenhouse Gas, and Water Life Cycle Analysis of Lithium Carbonate and Lithium Hydroxide Monohydrate from Brine and Ore Resources and Their Use in Lithium Ion Battery Cathodes and Lithium Ion Batteries', 174 *Resources, Conservation and Recycling* 105762 (2021), at 3–5.

To suggest that a lone chemical element allows us to view these diverse materials through a single juridical prism takes for granted a longer narrative trajectory that has only recently focused attention on the planet's lithium resources. In rough chronology, that narrative includes the discovery of lithium and its isolation through electrolysis in the early nineteenth century; development of a primary lithium battery by Exxon Corporation in 1972; mass production of rechargeable LIBs in the 1990s for Sony Corporation's electronic devices; awareness of climate change driving demand for energy storage infrastructure to bridge the intermittency of renewable sources; and enthusiasm for clean technology among governments and venture capital firms. Cumulatively, such processes have driven the emergence of lithium as 'a commodity that is of critical importance' to 'economic health and future welfare', in a premature appraisal of the US Geological Survey (USGS).²⁵ 'Oil is a single commodity with a large, liquid global market'; however, 'there are multiple minerals now in play for the energy sector, each with its own complexities and supply dynamics'.²⁶

Critical minerals that are stored as bullion—for example, cobalt, copper, or nickel—may be bought anywhere and sold anytime, creating opportunities for speculation and derivative financial instruments. But the IEA laments the 'ambiguity of standards and classifications' arising from lithium as a 'speciality chemical that comes in a variety of material grades'.²⁷ The chemical diversity of lithium, in other words, has resisted transformation into a 'banal market commodity'.²⁸ In 2019, however, the London Metal Exchange established its Lithium Committee, chaired by China's Tianqi Lithium Corporation, with a mandate to support 'the adoption of reference pricing in physical delivery contracts'.²⁹ The International Organization for Standardization created a Technical Committee on Lithium, with China serving as Secretariat, to standardize conditions in 'the field of lithium mining, concentration, extraction, separation and conversion to useful lithium compounds/materials'.³⁰ Moreover, the first futures contracts for battery-grade LiOH were launched in mid-2021, settled by reference to spot prices at Chinese, Japanese, and South Korean ports.³¹

China's influence on the emergence of lithium materials as standardized commodities is due largely to its dominance in chemical processing (80%) and the production of midstream components (66%) and battery cells (70%).³² With this extraordinary capacity, China exported more than eight times the value of the second largest exporter of LiOH in 2020 and was likewise the leading exporter of Li₂CO₃.³³ The top importers of both materials were Japan and South Korea, receiving over 14 times more LiOH than the USA in third place. Moreover, five firms from China, Japan, and South Korea supply 80% of the world's LIBs.³⁴ But China still depends upon 'imports of lithium compounds from Australia and to a lesser extent Chile and Argentina' for nearly 80% of its inputs, spurring the acquisition by Chinese firms of 'equity positions in global producers of the raw materials to ensure a steady supply'.³⁵ To capture these supply chains

²⁵ James D. Vine, 'The Role of the US Geological Survey in the Lithium Industry', 3(3) *Energy* 299 (1978), at 303.

²⁶ IEA, above n 3, at 33.

²⁷ *Ibid.*, at 171.

²⁸ Javiera Barandiarán, 'Lithium and Development Imaginaries in Chile, Argentina and Bolivia', 113 *World Development* 381 (2019), at 386.

²⁹ London Metals Exchange, 'Lithium Committee: Terms of Reference', <https://www.lme.com/-/media/Files/Company/Committee-terms-of-reference/Lithium-Committee-Terms-of-Reference-Combined-November-2019-CURRENT.pdf> (visited 23 January 2022).

³⁰ International Organization for Standardization, 'Technical Committees: ISO/TC 333 Lithium', <https://www.iso.org/committee/8031128.html> (visited 23 January 2022).

³¹ Henry Sanderson, 'LME Launches Lithium Contract as CME Rivalry Intensifies', *Financial Times*, 19 July 2021.

³² 'China Dominates the Lithium-Ion Battery Supply Chain, but Europe is on the Rise', *BloombergNEF*, 16 September 2020.

³³ UN Department of Economic and Social Affairs, 'UN Comtrade Database', <https://comtrade.un.org/data> (visited 23 January 2022).

³⁴ 'Lithium/Iron Ore: Getting it Spot Wrong', *Financial Times*, 29 December 2021.

³⁵ Gregory M. LaRocca, 'Global Value Chains: Lithium in Lithium-Ion Batteries for Electric Vehicles', https://www.usitc.gov/publications/332/working_papers/no_id_069_gvc_lithium-ion_batteries_electric_vehicles_final_compliant.pdf (visited 23 January 2022) 20 and 23.

Table 1. Supply chains for lithium materials in typical GVCs for LIBs

Main stages	Mining	Processing	Manufacturing	Consumption
Possible products	Lithium chloride and lithium oxide	Lithium carbonate and lithium hydroxide	Battery cells and components	EVs, electronic devices, and grid storage
Key locations (~80%)	Argentina, Australia, Chile, and China	China	China, Japan, and South Korea	China, EU, and USA

in simple terms, [Table 1](#) represents the main stages, possible products, and key locations along GVCs for LIBs, including their final consumption.³⁶

Against the grain of these interdependent chains, China aims at 70% self-sufficiency by 2025 in materials for high-tech industries, including EVs and power equipment.³⁷ Moreover, the USA has outlined its 2030 vision of ‘a secure battery materials and technology supply chain that supports long-term U.S. economic competitiveness and equitable job creation, enables decarbonization, advances social justice, and meets national security requirements.’³⁸ These targets gesture to the geopolitical implications of the lithium industry, calling for closer attention to the role of international law in resolving any looming disputes.

B. Towards a legal framework

In 1976, the USGS announced the ‘urgent need to develop vehicles that use alternate fuels’ against the backdrop of the ‘embargo by major Arab petroleum exporters and the subsequent price increases’ by the Organization of Petroleum Exporting Countries (OPEC),³⁹ legally justified as an expression of their sovereign right freely to dispose of natural resources.⁴⁰ The ultimate surge in demand for lithium some 40 years later may be similarly situated in international legal developments, including China’s WTO accession, facilitating its emergence as a hub for GVCs,⁴¹ and the need to decarbonize the energy sector implied by the temperature goal of the Paris Agreement.⁴² To date, express regulation of LIBs has been voluntary; the Global Battery Alliance (GBA) adopted ‘principles for a sustainable battery value chain,’⁴³ based on the UN Sustainable Development Goals.⁴⁴ While the GBA comprises major firms, NGOs, and international organizations, including the World Bank Group, only one government agency has endorsed this initiative, namely the president of the Democratic Republic of Congo (DRC).

As the world witnessed during the OPEC embargo, however, the international regulation of natural resources flows from the rights and obligations of States at the roots of supply

³⁶ For LIB demand by country, see ‘U.S. Narrows Gap with China in Race to Dominate Battery Value Chain’, *BloombergNEF*, 7 October 2021.

³⁷ Henry Gao and Gregory Shaffer, ‘The Role of Law in Chinese Value Chains’, 19(3) *Journal of Chinese Economic and Business Studies* 197 (2021), at 212.

³⁸ Federal Consortium for Advanced Batteries, ‘National Blueprint for Lithium Batteries 2021–2030: Executive Summary’, https://www.energy.gov/sites/default/files/2021-06/FCAB%20National%20Blueprint%20Lithium%20Batteries%200621_0.pdf (visited 23 January 2022) 5 and 15.

³⁹ J. F. Cooper and others, ‘Lithium Requirements for Electric Vehicles Using Lithium-Water-Air Batteries’ in James D Vine (ed.), *Lithium Resources and Requirements by the Year 2000* (Washington, DC: US Government Printing Office, 1976) 9, at 9.

⁴⁰ Ibrahim F. I. Shihata, ‘Destination Embargo of Arab Oil: Its Legality Under International Law’, 68(4) *American Journal of International Law* 591 (1974), at 626.

⁴¹ Gao and Shaffer, above n 37, at 206.

⁴² Article 2.1(a) of Paris Agreement, adopted 12 December 2015, in force 4 November 2016, 55 ILM 740 (2016).

⁴³ World Economic Forum, ‘42 Global Organizations Agree on Guiding Principles for Batteries to Power Sustainable Energy Transition’, <https://www.weforum.org/press/2020/01/42-global-organizations-agree-on-guiding-principles-for-batteries-to-power-sustainable-energy-transition> (visited 23 January 2022).

⁴⁴ UN General Assembly Resolution 70/1, Transforming Our World: The 2030 Agenda for Sustainable Development, adopted 25 September 2015, UN Doc A/RES/70/1.

chains. ‘The principle of territorial sovereignty, as the foundation of the allocation of jurisdiction over persons, events and resources,’ was underscored by Fatouros in his study of energy regulation: ‘Geographical and geological accident is converted in this manner into legal entitlement.’⁴⁵ But the jurisdictional fragmentation of fossil fuels simply provided points of departure in a wider framework, encompassing ‘the total legal environment within which the international energy industry operates.’⁴⁶ Fatouros sketched this framework in a layered fashion, proceeding from principles of customary international law, through domestic regulatory regimes and contractual arrangements, towards various bilateral, regional, and multilateral treaties.⁴⁷ This method is apposite to our present inquiry, allowing us to map a framework that captures any rights or obligations attaching to territorial jurisdiction over the lithium industry.

So defined, this framework excludes any resources that are unlikely to be exploited under prevailing business expectations. Here, it helps to draw a geological distinction between *resources*—materials in the Earth’s crust ‘in such form and amount that economic extraction of a commodity from the concentration is currently or potentially feasible’—and *reserves*, which ‘could be economically extracted or produced at the time of determination.’⁴⁸ This distinction is plainly dynamic, based on whether ‘profitable extraction or production under defined investment assumptions has been established, analytically demonstrated, or assumed with reasonable certainty.’⁴⁹ Extracting lithium from seawater, for instance, is not commercially viable.⁵⁰ Moreover, an investor’s expectation of profitable extraction is inevitably informed by physical and regulatory infrastructure in the territory where deposits are located. In *Quiborax v Bolivia*, the tribunal found that the respondent had breached an investment treaty by expropriating the claimants’ concession to mine ulexite from the Salar de Uyuni but was unconvinced that ‘they had any reasonably foreseeable plans to extract, exploit or market lithium.’⁵¹ As an object of international legal inquiry, therefore, an estimation of world reserves circumscribes the abundance of lithium resources through the relatively stable frame of territorial jurisdiction, while remaining attuned to geological surveys and financial forecasts that are always modulating the range of profitable deposits.⁵²

III. JURISDICTIONAL DISTRIBUTION OF LITHIUM RESERVES

Despite its fundamental role in ordering the world economy, the consolidation of territorial jurisdiction over natural resources is a rather recent phenomenon. This section briefly recalls the emergence of the customary principle of permanent sovereignty over natural resources and its qualification by various international obligations. To identify treaties that might apply to future disputes, it helps to examine the domestic regulatory regimes of States that are already hosting activities of the lithium industry by virtue of their major reserves: Chile, Australia, Argentina, and China.

⁴⁵ Arghyrios A Fatouros, ‘An International Legal Framework for Energy’ (2007) 332 *Recueil des Cours* 355, at 377.

⁴⁶ *Ibid.*

⁴⁷ *Ibid.*, at 377–79.

⁴⁸ USGS, above n 22, at 195–96.

⁴⁹ *Ibid.*, at 196.

⁵⁰ Chong Liu and others, ‘Lithium Extraction from Seawater through Pulsed Electrochemical Intercalation’, 4(7) *Joule* 1459 (2020).

⁵¹ *Quiborax S.A. and Non-Metallic Minerals S.A. v Plurinational State of Bolivia*, ICSID Case No ARB/06/2, Award (16 September 2015), paras 506–10.

⁵² While other minerals utilized in lithium-ion batteries may soon be mined in areas beyond national jurisdiction, lithium does not appear to have been targeted: K. A. Miller and others, ‘Challenging the Need for Deep Seabed Mining from the Perspective of Metal Demand, Biodiversity, Ecosystems Services, and Benefit Sharing’, 8 *Frontiers in Marine Science* 706161 (2021), at 2.

A. Territorial jurisdiction over natural resources

Natural resources were historically amassed through territorial acquisition by colonial powers and alienated to all manner of foreign interests.⁵³ In the postwar context, moreover, some saw '[n]o valid reason ... for regarding every raw material as the monopoly of the State within whose boundaries it happens to exist'.⁵⁴ But the tide of decolonization pushed in the opposite direction.⁵⁵ The political demands of national liberation movements assumed the legal form of the right of peoples to self-determination, elaborated in the economic domain as the principle of permanent sovereignty over natural resources.⁵⁶ While this principle was originally invoked to elevate the developmental aspirations of subjugated peoples over the subsoil rights of foreigners that had been acquired from colonial regimes, it was expressed upon independence through the rights of States freely to dispose of natural resources within their territories and to choose their own economic systems. More precisely, States have 'the right to regulate, exercise authority, legislate and impose taxes in respect of natural resources enjoyed and economic activities exercised and wealth held in their own territories', subject 'only to any applicable requirements of international law'.⁵⁷

A State's rights over natural resources are inherently limited by 'the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction'.⁵⁸ This prevention principle requires, among other things, a State to exercise due diligence by conducting an environmental impact assessment (EIA) before embarking on industrial activities that may have a significant adverse impact in a transboundary context.⁵⁹ Such obligations also apply to the extraction of minerals from transboundary aquifers, governed by the principle of equitable and reasonable utilization.⁶⁰ However, despite the well-known Lithium Triangle straddling the borders of Argentina, Bolivia, and Chile, none of the discrete deposits of subsurface brine appears to be situated in more than one State.⁶¹

Within this basic framework, States may develop their resources by entering further obligations in trade and investment treaties, regulating and taxing the activities of the lithium industry, and making contractual or legislative commitments under domestic law to incentivize long-term extraction or value-added production. In entering '[f]oreign investment agreements', the principle of permanent sovereignty is often qualified by the consent of States to 'arbitration or international adjudication'.⁶² Once resources have been extracted, moreover, they qualify as

⁵³ Ian Brownlie, 'Legal Status of Natural Resources in International Law (Some Aspects)', 162 *Recueil des Cours* 245 (1979), at 253.

⁵⁴ Nico Schrijver, *Sovereignty over Natural Resources: Balancing Rights and Duties* (Cambridge: Cambridge University Press, 1997) 37–38.

⁵⁵ Adom Getachew, *Worldmaking After Empire: The Rise and Fall of Self-Determination* (Princeton: Princeton University Press, 2019) ch 3.

⁵⁶ The right to self-determination and the principle of permanent sovereignty over natural resources have been recognized as norms of customary international law: *Legal Consequences of the Separation of the Chagos Archipelago from Mauritius in 1965* (Advisory Opinion) [2019] ICJ Reports 95, paras 140–50; *Armed Activities on the Territory of the Congo* (Democratic Republic of the Congo v Uganda) (Judgment) [2005] ICJ Reports 168, para 244.

⁵⁷ 'Seoul Declaration on the Progressive Development of Principles of Public International Law Relating to a New International Economic Order' in *Report of the 62nd Conference of the ILA held at Seoul* (London: International Law Association, 1987) section 5.5.

⁵⁸ Principle 2 of Rio Declaration on Environment and Development, UN Doc A/CONF.151/26 (Vol I), 31 ILM 874 (1992) [Rio Declaration].

⁵⁹ *Certain Activities Carried Out by Nicaragua in the Border Area* (Costa Rica v Nicaragua) and *Construction of a Road in Costa Rica along the San Juan River* (Nicaragua v Costa Rica) (Judgment) [2015] ICJ Reports 665, para 104.

⁶⁰ Articles 4–6 of the UN General Assembly Resolution 63/124, The Law of Transboundary Aquifers, adopted 11 December 2008, UN Doc A/RES/63/124.

⁶¹ Several unexploited salares in Chile, however, lie close to the border with Argentina, which 'might be part of transboundary aquifers': Francisco Suárez, Sarah Leray, and Pedro Sanzana, 'Groundwater Resources' in Bonifacio Fernández and Jorge Gironás (eds), *Water Resources of Chile* (Cham: Springer, 2021) 93–127, at 110.

⁶² Paragraphs 4 and 8 of UN General Assembly Resolution 1803 (XVII), Permanent Sovereignty over Natural Resources, adopted 14 December 1962, UN Doc A/S217.

Table 2. World lithium reserves

State	Lithium reserves (tons)
Chile	9,200,000
Australia	4,700,000
Argentina	1,900,000
China	1,500,000
USA	750,000
Canada	530,000
Zimbabwe	220,000
Brazil	95,000
Portugal	60,000
Other (Austria, Czech Republic, Democratic Republic of Congo, Finland, Germany, Mali, and Mexico)	2,100,000
World total (rounded)	21,000,000

Source: USGS.

goods or products subject to trade obligations.⁶³ As we will see in [Section IV](#), a State's trade and investment obligations may be situated within a wider framework of rules concerning human rights, environmental protection, and Indigenous peoples.

B. Domestic regulation of major reserves

Lithium resources greater than 50,000 tons have been discovered in 23 States, totalling 86 million tons.⁶⁴ But only four have reserves greater than a million tons, shown in [Table 2](#): Chile, Australia, Argentina, and China. They also represent four out of six States with the largest resources, alongside Bolivia and the USA.⁶⁵ In 2020, over 80% of lithium production flowed from 13 mines: 6 in Australia, 2 in Argentina, 2 in Chile, and 3 in China.⁶⁶ While the pool of global reserves is predicted to expand, these States provide starting points in charting a framework for the lithium industry. In what follows, each State's regulatory regime is described not from a perspective internal to the domestic legal system but rather as an evolving fact pattern, albeit with an eye to existing arrangements, for that it is how the regime would be viewed from the vantage of international adjudication. Highlighting the interactions among governments, firms, and communities will offer a range of possible disputes for our subsequent exploration of trade and investment treaties. Attention is drawn to the home States of various firms, given they remain creatures foremost of domestic corporate law that are protected by international law through inter-State agreement.

We should briefly address Bolivia, which holds a quarter of the world's resources but in 2017 exported a mere 0.076% of neighbouring Chile's total.⁶⁷ In 2008, the Morales government planned to industrialize the brine deposits of the Salar de Uyuni and produce batteries locally.⁶⁸ From 2009, Bolivia signed memorandums of understanding towards research cooperation with

⁶³ Kati Kulovesi, 'International Trade: Natural Resources and the World Trade Organization' in Elisa Morgera and Kati Kulovesi (eds), *Research Handbook on International Law and Natural Resources* (Cheltenham: Edward Elgar, 2016) 46–65, at 49.

⁶⁴ Argentina, Australia, Austria, Bolivia, Brazil, Canada, Chile, China, Czech Republic, Democratic Republic of Congo, Finland, Germany, Ghana, Kazakhstan, Mali, Mexico, Namibia, Peru, Portugal, Serbia, Spain, USA, and Zimbabwe: USGS, above n 22, at 99.

⁶⁵ Bolivia leads in resources (21 million tons), with the USA in third place (7.9 million tons): *ibid.*

⁶⁶ *Ibid.*

⁶⁷ Jennapher Lunde Seefeldt, 'Lessons from the Lithium Triangle: Considering Policy Explanations for the Variation in Lithium Industry Development in the "Lithium Triangle" Countries of Chile, Argentina, and Bolivia', 48(4) *Politics & Policy* 727 (2020), at 730.

⁶⁸ Vincent Bos and Marie Forget, 'Global Production Networks and the Lithium Industry: A Bolivian Perspective', 125 *Geoforum* 168 (2021), at 176–78.

Brazil, Iran, and Venezuela, as well as several East Asian firms.⁶⁹ But these initiatives yielded little assistance. In 2017, Bolivia relaxed restrictions on private investment and its State-owned developer entered joint ventures with German and Chinese firms.⁷⁰ Yet, these joint ventures were halted following protests by the Potosí Civic Committee and Bolivia's 2019 political crisis. Against the backdrop of the 2006 nationalization of hydrocarbons, therefore, tight government control, grassroots opposition, and lack of infrastructure continue to pose hurdles to attract sufficient capital to transform these resources into viable reserves.⁷¹ The case of Bolivia underscores an important limitation of the present framework; our focus on reserves excludes vast resources that have not been fully integrated into the world economy. If Bolivia does avail itself of foreign knowhow and overseas demand, however, the following regimes illustrate challenges that may arise in regulating the industry.

1. Chile

In 1979, lithium was reserved in the national interest of Chile as a mineral related to nuclear energy, thus removed from the general regime for mining concessions and placed under the control of the Comisión Chilena de Energía Nuclear (CCEN).⁷² The Chilean Constitution provides that deposits not susceptible to concession may be exploited only by the State, its enterprises, or private firms under presidential decree.⁷³ Concessions granted prior to 1979, however, were excluded from that requirement, notably 55% of the Salar de Atacama held by a government development agency, Corporación de Fomento de la Producción (CORFO).⁷⁴ Two companies are now responsible for its exploitation: US-based Albemarle Corporation and Chile's Sociedad Química y Minera de Chile S.A. (SQM).⁷⁵ In the 1990s, SQM acquired shares in a company that had been awarded a tender by CORFO to extract brine. Albemarle's concession, on the other hand, was only obtained in 2015 following a series of corporate acquisitions. Albemarle and SQM are mostly owned by Chilean shareholders or US asset managers, but, in 2018, Tianqi acquired 24% of SQM with a USD 3.5 billion loan from China's CITIC Bank. The approval of this acquisition by Chile's competition authority was unsuccessfully challenged in the Constitutional Court by the Pampa Group, the majority shareholder of SQM.⁷⁶

In 2014, the government's Comisión Nacional del Litio (CNL) advised that Chile's regulatory regime should not consider lithium as a mere commodity but also address the rights of Indigenous peoples and the protection of fragile ecosystems.⁷⁷ These values could be better integrated with national economic strategy by exploiting lithium through a new State enterprise.⁷⁸

⁶⁹ Luis Alberto Echazú Alvarado, 'Un Proyecto 100% Estatal: Industrializando Carbonato de Litio y Cloruro de Potasio con Dignidad y Soberanía' ('A 100% State-Owned Project: Industrializing Lithium Carbonate and Potassium Chloride with Dignity and Sovereignty') in Federico Nacif and Miguel Lacabana (eds), *ABC del Litio Sudamericano: Soberanía, Ambiente, Tecnología e Industria* (ABC of South American Lithium: Sovereignty, Environment, Technology and Industry) (Buenos Aires: Ediciones del CCC, 2015) 303–40, at 318.

⁷⁰ Martín Obaya, 'The Evolution of Resource Nationalism: The Case of Bolivian Lithium', 8(3) *Extractive Industries and Society* 100932 (2021), at 5.

⁷¹ Seefeldt, above n 67, at 745–49.

⁷² Rafael Poveda Bonilla, *Políticas Públicas para la Innovación y la Agregación de Valor del Litio en Chile* (Public Policies for Lithium Innovation and Value Addition in Chile) (Santiago: Comisión Económica para América Latina y el Caribe, 2021) 33.

⁷³ Article 19, number 24, of the Constitución Política de la República de Chile (Political Constitution of the Republic of Chile).

⁷⁴ Poveda Bonilla, above n 72, at 34.

⁷⁵ Ibid, at 34–35.

⁷⁶ 'Tribunal Constitucional Declara Inadmisible Recurso que Buscaba Frenar Ingreso de China Tianqi a Minera SQM' ('Constitutional Court Declares Inadmissible Appeal Seeking to Stop Chinese Tianqi from Acquiring Miner SQM'), 24 Horas, 25 October 2018.

⁷⁷ Comisión Nacional del Litio, *Litio: Una Fuente de Energía, Una Oportunidad para Chile: Informe Final* (Santiago: Ministerio de Minería, 2014) (National Lithium Commission, *A Source of Energy, An Opportunity for Chile: Final Report* (Santiago: Ministry of Mining, 2014)) 25–27.

⁷⁸ Ibid, at 17–23.

To capture value in the short term, CNL recommended that contracts authorizing the exploitation of lithium by public-private partnerships should apply royalties to the final sale price of products, suggesting that CORFO review its contracts with Albemarle and SQM.⁷⁹ By 2018, CORFO had renegotiated terms with each company, including expanded quotas for extraction and sale; term limits (2043 for Albemarle and 2030 for SQM); scaled royalty rates of between 6.8% and 40%, based on sale price; financial contributions to local communities and research and development; and an obligation to sell up to 25% of output at a preferential price to domestic value-added producers.⁸⁰

Already CORFO has commenced two proceedings against Albemarle before the International Chamber of Commerce (ICC) Court of Arbitration, disputing the calculation of preferential pricing (settled in 2019) and underpayment of royalties (filed in February 2021).⁸¹ CORFO relied upon increased output by Albemarle to feed three cathode plants to be built by Chilean, Chinese, and Korean companies, but these projects have stalled.⁸² At the same time, CCEN threatened to suspend Albemarle's export permits if it failed to disclose its reserve data, a condition of its expanded quota.⁸³ The renegotiation with SQM, in contrast, settled an outstanding dispute over royalties, thus terminating a suite of domestic arbitral claims by CORFO.⁸⁴ Yet, this settlement was impugned as an arbitrary or illegal act by the Asociación Indígena Consejo de Pueblos Atacameños (CPA), comprising 18 communities, because it was executed in violation of their right to consultation under Convention 169 of the International Labour Organization (ILO),⁸⁵ the precautionary principle,⁸⁶ and several constitutional and human rights. The Santiago Court of Appeals dismissed this complaint on the ground that arbitral conciliation of a contractual dispute was not an administrative or legislative act warranting consultation and, in any event, the impact on Indigenous peoples and the natural environment was purely hypothetical.⁸⁷

Subsequently, one of the Atacameño communities successfully challenged SQM's compliance plan before an environmental court, which agreed that the precautionary principle imposed a burden on SQM to show that its EIA had sufficiently addressed the scientific uncertainty of hydrogeological models.⁸⁸ Concern for the ecosystem, which includes flamingo habitat protected by the Ramsar Convention,⁸⁹ has also animated direct action, including blockades of lithium operations by CPA.⁹⁰ As these remain live issues in the constituent assembly charged with drafting a new constitution for Chile, the regulatory regime may be destined for democratic adjustment. In October 2021, however, the Piñera government

⁷⁹ Ibid, at 29 and 36.

⁸⁰ Poveda Bonilla, above n 72, at 36.

⁸¹ *Corporación de Fomento de la Producción v Albemarle Corporation*, ICC Case, Request for Arbitration (19 February 2021).

⁸² Dave Sherwood, 'How Lithium-Rich Chile Botched a Plan to Attract Battery Makers', *Reuters*, 17 July 2019.

⁸³ Dave Sherwood, 'Chile Settles Dispute with Albemarle over Lithium Reserves Data', *Reuters*, 23 April 2021.

⁸⁴ *Corporación de Fomento de la Producción c Sociedad Química y Minera de Chile S.A. et al.*, CAM Santiago (Santiago Centre of Arbitration and Mediation) 1954–2014, 1960–2014, 2663–2016 y 2699–2016, Acta de Conciliación (Conciliation Act) (17 January 2018).

⁸⁵ Article 15.2 of Convention (No 169) Concerning Indigenous and Tribal People in Independent Countries, adopted 27 June 1989, in force 5 September 1991, 1650 UNTS 383 [ILO Convention 169].

⁸⁶ Principle 15 of Rio Declaration.

⁸⁷ *Asociación Indígena Consejo de Pueblos Atacameños*, sentencia dictada por la Corte de Apelaciones de Santiago el 25 de septiembre de 2018 en causa rol 10.301–2018 (*Indigenous Advisory Council of Atacaman Peoples*, judgment issued by the Santiago Court of Appeals on 25 September 2018 in case number 10.301–2018).

⁸⁸ *Comunidad Indígena Atacameña de Peine y otros con Superintendencia del Medio Ambiente*, sentencia dictada por el Primer Tribunal Ambiental el 26 de diciembre de 2019 en causa rol 17–2019 (*Atacaman Indigenous Community of Peine and others v Environmental Superintendent*, judgment issued by the First Environmental Court on 26 December 2019 in case number 17–2019).

⁸⁹ Convention on Wetlands of International Importance Especially as Waterfowl Habitat, adopted 2 February 1971, in force 21 December 1975, 996 UNTS 245 [Ramsar Convention]. See Ramsar Sites Information Service, 'Sistema Hidrológico de Soncor del Salar de Atacama' ('Soncor Hydrological System of the Salar de Atacama'), <https://rsis.ramsar.org/ris/876> (visited 23 January 2022).

⁹⁰ Dave Sherwood, 'Chile Protesters Block Access to Lithium Operations: Local Leader', *Reuters*, 25 October 2019.

pressed ahead with a tender process for five production quotas in fresh locations.⁹¹ Following Piñera's presidential defeat a month later, this process has been challenged in the courts and legislature.⁹²

2. Australia

Each Australian state has primary responsibility for mineral tenements, environmental assessments, regional infrastructure, and water regulation, whereas the federal government controls foreign investment, exports, taxation, and native title.⁹³ The government of Western Australia therefore exercises immense influence over the lithium industry; 95% of national reserves are found in five deposits within Western Australia, foremost the spodumene at Greenbushes.⁹⁴ The Greenbushes site is operated by Talison Lithium Pty Ltd, a joint venture between Albemarle and Tianqi in which the latter sold a partial stake to Australian miner IGO Ltd.⁹⁵ Tianqi and IGO are also partners in the Kwinana refinery, which produced Australia's first batch of LiOH in August 2021.⁹⁶ The same week, a merger between Australian companies Galaxy Resources Ltd and Orocobre Ltd created the world's fifth largest lithium producer, rebranded as Allkem Ltd, with one Australian mine.⁹⁷ The two other active mines are, respectively, run by local companies Pilbara Minerals Ltd and Mineral Resources Ltd, the latter in partnership with China's Jiangxi Ganfeng Lithium Co. Ltd (Ganfeng).⁹⁸ Eight other sites in Western Australia are under care and maintenance, meaning they could be brought into operation, or undergoing exploration or prefeasibility study, including by SQM.⁹⁹

Hard-rock mining in Australia has not experienced the same scrutiny as brine operations, although an application to construct a tailings storage cell (to serve Albemarle's forthcoming refinery) was withdrawn following 200 community submissions.¹⁰⁰ A prefeasibility site in the Kathleen Valley, moreover, may be affected by the Tjiwarl people's application for native title compensation; if a compensable act arises from the grant of a mining tenement, the holder of the tenement is responsible for payment rather than the government.¹⁰¹ After the destruction of 46,000-year-old shelters by the Rio Tinto Group, Western Australia has reviewed its Aboriginal Cultural Heritage Act 1972, but amendments have been criticized as unduly favourable to mining companies.¹⁰² The lithium industry has enjoyed specific support amid the COVID-19 pandemic; Western Australia capped the royalty rate for spodumene concentrate at 5% when used as a feedstock for value-added production, then granted a 50% rebate if miners

⁹¹ Government of Chile, 'Chile Launches National and International Call for Applications to Boost Lithium Production and Attract New Operators', <https://chilereports.cl/en/news/2021/10/15/chile-launches-national-and-international-call-for-applications-to-boost-lithium-production-and-attract-new-operators> (visited 23 January 2022).

⁹² John Bartlett, 'Mining of Lithium, Key to the Climate Fight, Faces New Scrutiny in Chile', *New York Times*, 6 January 2022.

⁹³ Andrew D. Mitchell and Jessica Casben, 'Natural Resources and Energy Regulation in Australia: The Energy White Paper in Context' in Mitsuo Matsushita and Thomas J. Schoenbaum (eds), *Emerging Issues in Sustainable Development: International Trade Law and Policy Relating to Natural Resources, Energy, and the Environment* (Tokyo: Springer, 2016) 3–25, at 5.

⁹⁴ David Champion, *Australia Resource Reviews: Lithium 2018* (Canberra: Geoscience Australia, 2018) 3.

⁹⁵ Annie Lee and James Thornhill, 'Tianqi to Sell Stake in Top Lithium Mine to Ease Loan Troubles', *Bloomberg*, 8 December 2020.

⁹⁶ Will Owen, 'IGO Reports First Lithium Hydroxide Produced at Kwinana', *Global Mining Review*, 24 August 2021.

⁹⁷ Jacqueline Holman, 'Orocobre, Galaxy Merger Completed, Creating 5th-Largest Lithium Producer Allkem', <https://www.spglobal.com/platts/en/market-insights/latest-news/energy-transition/082521-orocobre-galaxy-merger-completed-creating-5th-largest-lithium-producer-allkem> (visited 23 January 2022).

⁹⁸ Government of Western Australia, 'Lithium in Western Australia', <https://geodocs.dmirs.wa.gov.au/Web/document/593702> (visited 23 January 2022).

⁹⁹ Australian Government, 'Critical Minerals Projects in Australia 2020', https://www.austrade.gov.au/ArticleDocuments/5572/Critical_Minerals_Projects_in_Australia.pdf.aspx (visited 23 January 2022) 47–48.

¹⁰⁰ Georgia Loney, 'Lithium's the Next Big Thing, but Proposed Tailings Facility at Dardanup Tip Faces Backlash from Farming Town', *ABC News*, 27 August 2019.

¹⁰¹ Section 12SA of Mining Act 1978 (WA). The Australian developer, Liontown Resources Ltd, has been joined to the proceeding: *Tjiwarl Aboriginal Corporation RNTBC v State of Western Australia* [2021] FCA 438.

¹⁰² Lorena Allam, 'Favouring industry': Protesters Demand Stronger Aboriginal Heritage Bill to Protect Sacred WA Sites', *The Guardian*, 19 August 2021.

retained their workforce.¹⁰³ The federal government, however, tightened the screening of foreign investment on grounds of national security.¹⁰⁴ Given the prominence of Ganfeng and Tianqi, challenges may arise from Australia's trade war with China, now before the WTO.¹⁰⁵

3. Argentina

There are two producing mines in Argentina: Salar del Hombre Muerto, run by US-based Livent Corporation; and Salar de Olaroz, run by Sales de Jujuy S.A., a local investment vehicle owned by Allkem (66.5%), Japan's Toyota Tsusho Corporation (TTC) (25%), and Jujuy Energía y Minería Sociedad del Estado (JEMSE) (8.5%).¹⁰⁶ Argentina's provinces have dominion over natural resources in their territories, which they are empowered to develop by establishing public enterprises.¹⁰⁷ Endowed with a third of reserves, the province of Jujuy declared lithium a strategic natural resource in 2011, incorporating JEMSE to pursue its exploitation.¹⁰⁸ The project at Salar de Olaroz, however, is financed by Mizuho Corporate Bank and guaranteed by State-owned Japan Oil, Gas and Metals National Corporation, with TTC as exclusive sales agent for its output.¹⁰⁹ Further projects are underway across the provinces of Catamarca, Jujuy, and Salta, the first being a joint venture between Ganfeng and a Canadian company, followed by firms from Australia, Canada, France, Hong Kong, and South Korea.¹¹⁰

Argentina's mining industry is marked by tension between levels of government. The federal Código de Minería regulates how rights of exploration and extraction may be acquired, albeit administered by the provinces.¹¹¹ Moreover, an incentive regime caps the provincial royalty rate at 3% of the pithead value and allows investors to apply for a 30-year guarantee of fiscal stability, covering all taxes, export duties, and foreign exchange.¹¹² In 2016, export duties on mineral resources were abolished.¹¹³ Then, the federal government declared a state of emergency amid economic recession, thereby empowered to impose 8% duties on minerals until the end of 2021.¹¹⁴ In November 2020, against the wishes of provincial governors, national deputies from the ruling party drafted a federal bill to declare lithium a strategic natural resource, proposing to incorporate a State enterprise to participate in the industry.¹¹⁵ In response, the three governors of lithium-rich provinces announced a collaboration with the federal government to harmonize regulations and promote value-added production.¹¹⁶

¹⁰³ Dalila Ouerghi, 'Western Australia Spodumene Producers Welcome Tax Reprieve Scheme', <https://www.metalbulletin.com/Article/3964642/Western-Australia-spodumene-producers-welcome-tax-reprieve-scheme.html> (visited 23 January 2022).

¹⁰⁴ Foreign Investment Reform (Protecting Australia's National Security) Act 2020 (Cth).

¹⁰⁵ Request for Consultations, *China—Anti-Dumping and Countervailing Duty Measures on Wine from Australia (China—AD/CVD on Wine (Australia))*, WT/DS602/1, received 28 June 2021.

¹⁰⁶ Martín Obaya and Mauricio Céspedes, *Análisis de las Redes Globales de Producción de Baterías de Ion de Litio: Implicaciones para los Países del Triángulo del Litio (Analysis of Global Networks of Production of Lithium-Ion Batteries: Implications for Countries of the Lithium Triangle)* (Santiago: Comisión Económica para América Latina y el Caribe, 2021) 40.

¹⁰⁷ Article 124 of the Constitución de la Nación Argentina (Constitution of the Argentine Nation).

¹⁰⁸ Decreto-Acuerdo No 7592 -P- (2 March 2011); Decreto-Acuerdo No 7626 -P- (15 March 2011).

¹⁰⁹ Pia Marchegiani, Jasmin Höglund Hellgren, and Leandro Gómez, *Lithium Extraction in Argentina: A Case Study on the Social and Environmental Impacts* (Buenos Aires: Fundación Ambiente y Recursos Naturales, 2018) 20.

¹¹⁰ Obaya and Céspedes, above n 106, at 53.

¹¹¹ Código de Minería, Ley 1.919 (Mining Code, Law 1.919) (30 May 1997).

¹¹² Articles 8 and 22 of the Ley de Inversiones Mineras, Ley 24.196 (Law of Mining Investments, Law 24.196) (19 May 1993).

¹¹³ Derechos de Exportación, Alicuotas, Decreto 349/2016 (Export Rights, Quotas, Decree 349/2016) (2 February 2016).

¹¹⁴ Title V of the Ley de Solidaridad Social y Reactivación Productiva en el Marco de la Emergencia Pública, Ley 27,541 (Law of Social Solidarity and Productive Reactivation in the Framework of the Public Emergency, Law 27,541) (21 December 2019).

¹¹⁵ Diputados Argentina, 'Proyecto de Ley 6438-D-2020' (Chamber of Deputies of Argentina, 'Bill 6438-D-2020') <https://www.diputados.gob.ar/proyectos/proyecto.jsp?exp=6438-D-2020> (visited 23 January 2022).

¹¹⁶ Ministerio de Desarrollo Productivo, 'El Gobierno y las Provincias Conformaron la Mesa Nacional del Litio' (Ministry of Productive Development, 'The Government and the Provinces Formed the National Lithium Board'), <https://www.argentina.gob.ar/noticias/el-gobierno-y-las-provincias-conformaron-la-mesa-nacional-del-litio> (visited 23 January 2022).

Yet, Indigenous communities in the provinces of Jujuy and Salta have long opposed exploration in their traditional lands without free, prior, and informed consent, bringing an unsuccessful petition before the Supreme Court.¹¹⁷ The UN Special Rapporteur on the Rights of Indigenous Peoples visited these provinces: communities ‘feared that the proposed extraction of lithium will reduce the water level in this arid region’ and ‘there is no law or policy at either the federal or the provincial level to regulate a consultation procedure.’¹¹⁸ In response, 27 affected communities developed their own Kachi Yupi protocol, meaning ‘tracks in the salt’ in Quechua, outlining how they expect their rights under international law to be protected.¹¹⁹ But it is noteworthy that other communities in Salta were successful before the Inter-American Court of Human Rights (IACtHR) in a dispute concerning livestock, illegal logging, and fencing.¹²⁰ Crucially, a majority found that Argentina breached the ‘interrelated rights to take part in cultural life in relation to cultural identity, and to a healthy environment, adequate food, and water’ by ‘fail[ing] to guarantee the indigenous communities the possibility of deciding, freely or by adequate consultation, the activities on their territory.’¹²¹

4. China

According to the China Geological Survey, all brine reserves are found in Qinghai, Tibet, and Hubei and 86.3% of rock reserves are found in Sichuan, Jiangxi, and Hunan.¹²² Along with Ganfeng and Tianqi, other major companies include spodumene miners Youngy Corporation Ltd and Sichuan Yahua Industrial Group Co. Ltd., the latter a recent supplier to US-based Tesla Inc.¹²³ Foreign firms may also own mining rights for lithium—unlike rare earths, radioactive minerals, and tungsten—so long as they are registered with the Ministry of Natural Resources.¹²⁴ But there does not appear to be any foreign investment in the extraction of China’s reserves. As shown in Section II.A, the vital functions of Chinese firms in investing abroad, importing materials, and exporting processed chemicals or manufactured components by far outstrip the significance of China’s own reserves. Yet, its share of global demand also has considerable impact. In 2019, lithium prices were driven down by China’s reduction of subsidies for EVs and its trade war with the USA.¹²⁵ Conversely, demand from Chinese EV manufacturers throughout 2021 drove prices for Li_2CO_3 to ‘new record highs almost daily’, increasing fourfold over the year.¹²⁶ Given the 2025 target of 70% self-sufficiency in high-tech industries, one might expect China to place export restrictions on lithium materials; the economic gains reaped from temporary breach of WTO law have previously outweighed any reputational harm.¹²⁷ With an

¹¹⁷ *Comunidad Aborigen de Santuario Tres Pozos y otros c/ Jujuy, Provincia de y otro s/ amparo* (Aboriginal Community of Three Wells Sanctuary and others v Province of Jujuy and others, in re protection) (18 December 2012) (C. 1196 XLVI).

¹¹⁸ ‘Report of the Special Rapporteur on the rights of indigenous peoples, James Anaya: The Situation of Indigenous Peoples in Argentina’, 4 July 2012, UN Doc A/HRC/21/47/Add.2, paras 42 and 45.

¹¹⁹ ‘Kachi Yupi: Huellas de la Sal: Procedimiento de Consulta y Consentimiento Previo, Libre e Informado para Las Comunidades Indígenas de La Cuenca de Salinas Grandes y Laguna de Guayatayoc’ (‘Kachi Yupi: Tracks in the Salt: Procedure of Free, Prior and Informed Consultation and Consent for the Indigenous Communities of the Salinas Grandes Basin and Guayatayoc Lagoon’), <https://naturaljustice.org/wp-content/uploads/2015/12/Kachi-Yupi-Huellas.pdf> (visited 23 January 2022).

¹²⁰ *Case of Indigenous Communities of the Lhaka Honhat (Our Land) Association v Argentina*, Judgment of 6 February 2020, IACtHR Series C No 400, paras 255–71.

¹²¹ *Ibid*, paras 288–89.

¹²² 中国地质调查局, 中国地质调查百项成果 (北京: 地质出版社, 2016) (China Geological Survey, 100 Achievements of the China Geological Survey (Baixiangcheng: Geological Press, 2016)) 252.

¹²³ Tom Daly, ‘China’s Yahua Agrees Five-Year Deal to Supply Lithium to Tesla’, *Reuters*, 29 December 2020.

¹²⁴ Guohua Wu and Yingnan Li, ‘China’ in Andrew Emrich (ed.), *International Comparative Law Guides: Mining Law*, 8th ed. (London: Global Legal Group, 2021) 27–33, at 27–28.

¹²⁵ Sophia Kalantzakos, ‘The Race for Critical Minerals in an Era of Geopolitical Realignments’, 55(3) *International Spectator* 1 (2020), at 8.

¹²⁶ Jacqueline Holman and Henrique Ribeiro, ‘Commodities 2022: Global Lithium Market to Remain Tight’, <https://www.spglobal.com/platts/en/market-insights/latest-news/energy-transition/121421-commodities-2022-global-lithium-market-to-remain-tight-into-2022> (visited 23 January 2022).

¹²⁷ Mark Wu, ‘China’s Export Restrictions and the Limits of WTO Law’, 16(4) *World Trade Review* 673 (2017), at 690.

emphasis on reducing pollution, however, the 14th Five-Year Plan for Industrial Green Development aims to establish a complete system of cascade utilization (reusing retired batteries) and battery recycling by 2025.¹²⁸ Waste recovery from LIBs may thus relax supply constraints and secure China's role in a circular economy for renewable energy technologies.¹²⁹

IV. INTERNATIONAL REGULATION OF THE LITHIUM INDUSTRY

We now have a firmer grasp on how movements for relational or distributive justice could disrupt the lithium industry. Alongside the concern for supply chain security, various actors are pushing to incentivize investment in value addition, redistribute wealth through royalties or community contributions, increase government participation, ensure Indigenous peoples are properly consulted, protect sites of ecological fragility or cultural heritage, and reduce pollution through recycling. From the vantage of international law, the translation of internal politics into a programme of regulatory reform that impacts upon economic activities is typically viewed through the prism of State responsibility: does an action or omission attributable to the State, regardless of its character under domestic law, constitute a breach of an international obligation?¹³⁰ This section builds upon our framework by identifying treaties that might apply to foreign investment in lithium reserves and international trade in lithium materials. While trade adjudication between States is foreseeable in certain circumstances, investor-State arbitration offers a direct mechanism for individual firms to defend their interests. Some argue that 'the existing investment regime remains stubbornly wedded to the ontology of state-centric international law', poorly equipped to deal with 'the power and authority wielded by private actors and foreign corporations' in the organization of GVCs.¹³¹ But this section illustrates how treaties concerning human rights, environmental protection, and Indigenous peoples may form an integral part of the international legal framework in which lithium investors and host States already operate,¹³² which should be reflected in the resolution of any disputes arising from regulatory reform.

A. Trade and investment treaties

By reference to foreign firms that operate in Chile, Australia, and Argentina, we may visualize investment flows through [Figure 1](#) below. One would also need to examine the shareholdings of local companies to develop a complete picture. [Figure 1](#) nevertheless captures the basic topography of foreign direct investment in States with major reserves, as well as significant trade blocs that overlap with those transactions: CPTPP,¹³³ RCEP,¹³⁴ and the WTO covered agreements.¹³⁵ The arrows do not account for the size or number of investments but rather indicate that at least one transaction mentioned in [Section III](#) involved that State. The cluster around Argentina suggests that several investment treaties could be relied upon by existing operators,

¹²⁸ 工业和信息化部, “十四五”工业绿色发展规划 (Ministry of Industry and Information Technology, '14th Five-Year Plan for Industrial Green Development'), https://wap.miit.gov.cn/zwgk/zcwj/wjfb/tz/art/2021/art_4ac49eddc6f43d68ed17465109b6001.html (visited 23 January 2022), at 12.

¹²⁹ Shiqiang Sun and others, 'Management Status of Waste Lithium-Ion Batteries in China and a Complete Closed-Circuit Recycling Process', 776 *Science of the Total Environment* 145913 (2021), at 4.

¹³⁰ Articles 1–3 of UN General Assembly Resolution 56/83, Articles on Responsibility of States for Internationally Wrongful Acts, adopted 12 December 2001 UN Doc A/RES/56/83, Annex [ILC Articles].

¹³¹ A Claire Cutler and David Lark, 'The Hidden Costs of Law in the Governance of Global Supply Chains: The Turn to Arbitration', *Review of International Political Economy* (2020), DOI: 10.1080/09692290.2020.1821748, at 4.

¹³² Cf Gabriela Quijano, 'Lithium Might Hold the Key to our Clean Energy Future, but Will this Star Metal Fully Deliver on its Green Potential?', 5(2) *Business and Human Rights Journal* 276 (2020).

¹³³ Comprehensive and Progressive Agreement on Trans-Pacific Partnership, adopted 8 March 2018, in force 30 December 2018, [2018] ATS 23 [CPTPP].

¹³⁴ Regional Comprehensive Economic Partnership, adopted 15 November 2020, in force 1 January 2022, [2022] ATS 1. Note that, despite [Figure 1](#), Hong Kong is not a signatory.

¹³⁵ Appendix 1 of Understanding on Rules and Procedures Governing the Settlement of Disputes, adopted 15 April 1994, in force 1 January 1995, 33 ILM 1226 (1994).

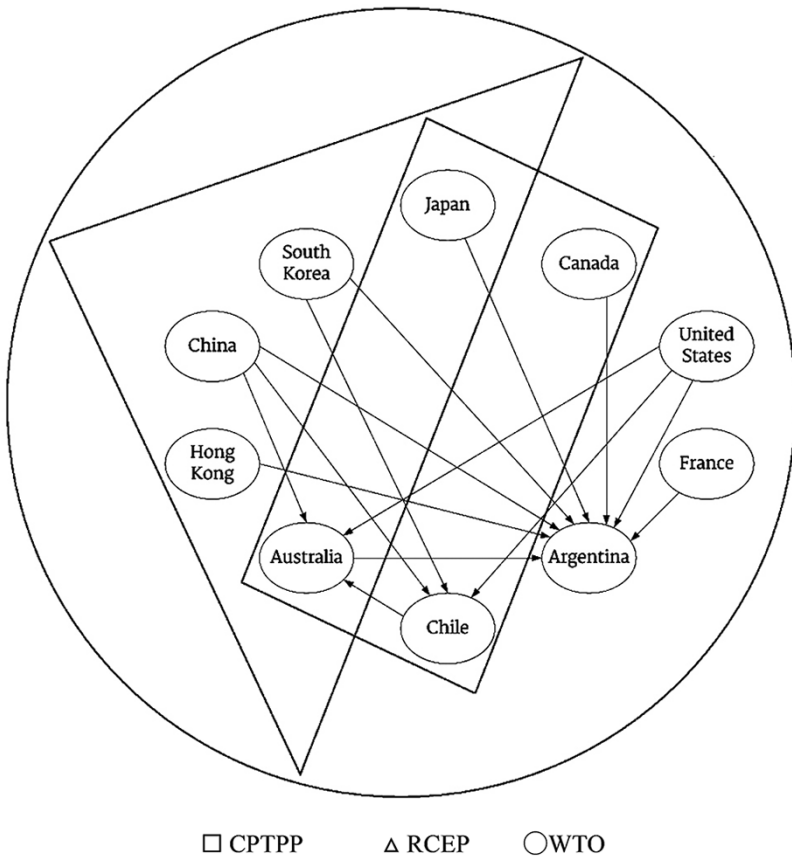


Figure 1. Bilateral investment in major reserves and overlapping trade blocs.

including Allkem and Livent.¹³⁶ Once in force, Argentina's latest treaty will cover Japanese investments in Sales de Jujuy.¹³⁷ Investment chapters in trade agreements between Australia and Chile, Australia and China, Australia and the USA, Chile and China, and Chile and the USA are likely to cover major operations by Albemarle, Ganfeng, SQM, and Tianqi.¹³⁸ Moreover, all States in Figure 1 are parties to the main instruments for investor-State arbitration and domestic enforcement of arbitral awards.¹³⁹

B. Trade adjudication

As discussed in Section II. A, two of the vital links in GVCs for LIBs include shipment of spodumene ore from Australia to China and the subsequent export of battery feedstocks from

¹³⁶ All bilateral flows presented in the Figure 1, except Hong Kong and Japan, are covered by investment treaties entered in the 1990s: International Investment Agreements Navigator, 'Argentina', <https://investmentpolicy.unctad.org/international-investment-agreements/countries/8/argentina> (visited 23 January 2022).

¹³⁷ Agreement Between the Argentine Republic and Japan for the Promotion and Protection of Investment, adopted 1 December 2018.

¹³⁸ One of these agreements includes an express reservation for Chile's lithium regime: Annex I-CH-6-7 of United States-Chile Free Trade Agreement, adopted 6 June 2003, in force 1 January 2004, 42 ILM 1026 (2003).

¹³⁹ Convention on the Settlement of Investment Disputes Between States and Nationals of Other States, adopted 18 March 1965, in force 14 October 1966, 575 UNTS 159; Convention on the Recognition and Enforcement of Foreign Arbitral Awards, adopted 10 June 1958, in force 7 June 1959, 330 UNTS 3.

China to manufacturers in Japan and South Korea. Each link could be disrupted through tighter regulation of lithium exports as Australia seeks to climb the value chain and China aims at self-sufficiency. However, quantitative restrictions are prohibited under Article XI of the General Agreement on Tariffs and Trade (GATT),¹⁴⁰ incorporated *mutatis mutandis* in Article 2.10 of CPTPP and Article 2.17 of RCEP. China has twice responded to WTO proceedings, with another ongoing, wherein the Appellate Body affirmed that various bans and quotas that restricted exports were inconsistent with Article XI of GATT and did not fall within exceptions for critical shortage (Article XI:2(a)) or conservation of exhaustible natural resources (Article XX(g)).¹⁴¹ Trade measures purporting to conserve resources must ‘work together with restrictions on domestic production or consumption,’¹⁴² excluding measures in pursuit of value addition or self-sufficiency. Even if conservation were one of several purposes being pursued, an export restriction that ‘treats domestic interests more favourably than foreign interests’ when less trade-restrictive alternatives were available would likely constitute ‘arbitrary or unjustifiable discrimination or a disguised restriction on international trade’ contrary to the chapeau of Article XX.¹⁴³

If a State sought to broaden its industrial base through local content requirements, including as a condition of access to subsidies, that measure may also be inconsistent with WTO law unless it falls within limited exceptions,¹⁴⁴ such as the derogation from national treatment under Article III:8 of GATT for ‘government procurement ... not with a view to commercial resale’. In *India—Solar Cells*, the Appellate Body dismissed India’s argument that, in pursuit of ‘energy security and ecologically sustainable growth’, ‘indigenously manufactured solar cells’ were ‘essential to the acquisition or distribution of products in general or local short supply’ under Article XX(j) of GATT, finding that ‘supply from all sources’ must be considered.¹⁴⁵ Given the recent focus on supply chain security within broader considerations of energy security, however, a State might be tempted to invoke the exception under Article XXI(b) of GATT—or similar provisions under CPTPP and RCEP—for ‘any action which it considers necessary for the protection of its essential security interests.’¹⁴⁶ Article XXI(b) enumerates three alternative requirements that an action must meet to fall within its ambit, none of which covers peacetime action taken for political or economic reasons.¹⁴⁷ However, Article 29.2(b) of CPTPP does not include these requirements, reflecting US model treaties that reduced the scope for judicial review. CPTPP parties could conceivably deem that export restrictions on lithium materials or local content requirements were necessary for their essential security interests. Article 17.13(b)(iii) of RCEP, moreover, extends the security exception to any action ‘taken to protect critical public infrastructures’, whether ‘publicly or privately owned’, including ‘power’ infrastructure, which could encompass lithium materials for grid storage. These self-judging provisions are nevertheless

¹⁴⁰ General Agreement on Tariffs and Trade 1994, adopted 15 April 1994, in force 1 January 1995, 33 ILM 1153 (1994) [GATT].

¹⁴¹ WTO Appellate Body Report, *China—Measures Related to the Exportation of Various Raw Materials (China—Raw Materials)*, WT/DS394/AB/R, adopted 22 February 2012; WTO Appellate Body Report, *China—Measures Related to the Exportation of Rare Earths, Tungsten, and Molybdenum (China—Rare Earths)*, WT/DS431/AB/R, adopted 29 August 2014.

¹⁴² Appellate Body Report, *China—Raw Materials*, above n 141, para 360.

¹⁴³ Panel Report, *China—Measures Related to the Exportation of Rare Earths, Tungsten, and Molybdenum (China—Rare Earths)*, WT/DS431/R, adopted 29 August 2014, paras 7.652–7.679.

¹⁴⁴ WTO Appellate Body Reports, *Canada—Certain Measures Affecting the Renewable Energy Sector (Canada—Renewable Energy)*, WT/DS412/AB/R, *Canada—Measures Relating to the Feed-in Tariff Program (Canada—Feed-In Tariff Program)*, WT/DS426/AB/R, adopted 6 May 2013; WTO Appellate Body Report, *India—Certain Measures Relating to Solar Cells and Solar Modules (India—Solar Cells)*, WT/DS456/AB/R, adopted 14 October 2016.

¹⁴⁵ *India—Solar Cells*, above n 144, paras 5.78–5.83.

¹⁴⁶ Cf Communication from the United States, *United States—Certain Measures on Steel and Aluminium Products (US—Steel and Aluminium Products)*, WT/DS548/13, 6 July 2018.

¹⁴⁷ Panel Report, *Russia—Measures Concerning Traffic in Transit (Russia—Traffic in Transit)*, WT/DS512/R, adopted 26 April 2019, paras 7.67–7.77.

conditioned by the obligation of good faith and a plausible relationship between the proffered interests and the relevant measure.¹⁴⁸

Further innovations in trade agreements might be relevant to the lithium industry, such as the obligation of CPTPP parties to cooperate in ‘development of cost-effective, low emissions technologies and alternative, clean and renewable energy sources.’¹⁴⁹ If a party engaged in regulatory competition by socializing the negative externalities of lithium mining, moreover, another party could bring a claim for its failure to enforce labour rights or environmental laws ‘in a manner affecting trade or investment between the Parties.’¹⁵⁰ But we saw in Section III that many actors are seeking instead to strengthen domestic regulation, which could negatively affect foreign investments. To the extent those investments are covered by an applicable treaty, investor-State arbitration provides a more effective mechanism for individual firms to safeguard their interests than the indirect protection offered by inter-State adjudication of trade disputes.

C. Investor-State arbitration

If a lithium investor were injured by a breach of international law, the host State would have to compensate for any financially assessable damage, including loss of profits.¹⁵¹ A prior inquiry, however, is which rules of international law might give rise to breach. Generalizations are difficult, not least because clauses on most-favoured-nation (MFN) treatment allow investors to import stronger standards from an extensive web of treaties. But we may focus on Chapter 9 of CPTPP for illustrative purposes, given Australia and Chile are both parties, China has applied for entry, and its provisions mirror those of US treaties with Australia and Chile.

Parties to CPTPP have consented to investor-State arbitration under the auspices of several institutions.¹⁵² Being an attenuated version of the Trans-Pacific Partnership, however, the parties suspended their consent to arbitrate any ‘investment agreement ... with respect to natural resources that a national authority controls,’¹⁵³ meaning a contractual breach cannot form the sole basis for an arbitral claim. Such an agreement would nevertheless constitute a covered investment,¹⁵⁴ allowing the investor to bring a claim based on international standards of protection under Chapter 9. Here, the most salient are indirect expropriation and the minimum standard of treatment, which draw out the ways in which the pursuit of supply chain justice might be transformed into applicable rules of international law. Finally, this section addresses possible responsibility for contractual breach by State enterprises and prohibited performance requirements.

1. Indirect expropriation

Another party to CPTPP, Mexico, recently broadcast the prospect of nationalizing its newfound lithium deposits.¹⁵⁵ Such a direct expropriation would be lawful if applied for a public purpose; in a non-discriminatory manner; on payment of prompt, adequate, and effective compensation; and with due process.¹⁵⁶ A more likely scenario, however, is a claim of indirect expropriation if domestic demands for supply chain justice were realized to the detriment of a lithium investor,

¹⁴⁸ Ibid, paras 7.127–7.147.

¹⁴⁹ Article 20.15.2 of CPTPP.

¹⁵⁰ Articles 19.4 and 20.3.4 of CPTPP. Such provisions require proof that a competitive advantage accrued: *In the Matter of Guatemala—Issues Relating to the Obligations Under Article 16.2.1(a) of the CAFTA-DR*, Final Report of the Panel (14 June 2017), paras 190–97.

¹⁵¹ Article 36 of ILC Articles.

¹⁵² Article 9.19.4 of CPTPP.

¹⁵³ Annex and Articles 9.1 and 9.19 of CPTPP.

¹⁵⁴ Article 9.1 of CPTPP, definition of ‘investment’.

¹⁵⁵ ‘AMLO Apunta Ahora al Blindaje del Litio, El Nuevo “Oro Blanco” de México’ (‘AMLO Now Points to the Shielding of Lithium, Mexico’s New “White Gold”’), *Infobae*, 11 March 2021.

¹⁵⁶ Article 9.8.1 of CPTPP.

such as stricter environmental regulation or the refusal of a mining permit following consultation with an Indigenous community. An expropriation is distinct from an expression of the sovereign right to regulate, a division drawn by the customary doctrine of police powers and codified in the provision that '[n]on-discriminatory regulatory actions ... to protect legitimate public welfare objectives, such as public health, safety and the environment, do not constitute indirect expropriations, except in rare circumstances.'¹⁵⁷ That final proviso might be engaged if a State provided contractual assurances or the measure had a severe adverse effect equivalent to 'outright seizure'.¹⁵⁸ On the other hand, some tribunals have dismissed claims of indirect expropriation when States have identified other international obligations that animated their conduct, such as human rights or environmental treaties.¹⁵⁹ In *Eco Oro v Colombia*, moreover, a prohibition on mining activities in the Santurbán Páramo (a wetland protected by the Ramsar Convention) did not amount to an unlawful expropriation, despite complete deprivation of the claimant's gold concession, because the prohibition was reasonable and proportionate in light of the precautionary principle in the Convention on Biological Diversity and the Rio Declaration on Environment and Development.¹⁶⁰

2. Supply chain justice in legal form

By reference to further instruments, the pursuit of supply chain justice may be transformed into relevant rules of international law, helping to integrate the social and environmental dimensions of the lithium industry in the resolution of investment disputes: Chile, Australia, Argentina, and China are all parties to the core human rights covenants;¹⁶¹ Indigenous cultural sites may be protected under the World Heritage Convention;¹⁶² Argentina and Chile are parties to the American Convention on Human Rights (ACHR),¹⁶³ the Protocol of San Salvador, which requires States to 'promote the protection, preservation and improvement of the environment' in accordance with 'the right to live in a healthy environment',¹⁶⁴ and ILO Convention 169, which protects the right of Indigenous peoples to consultation and participation in the management and exploitation of natural resources;¹⁶⁵ and Argentina is a party to the Escazú Agreement, guaranteeing access to information, public participation, and justice in environmental matters.¹⁶⁶ Moreover, the IACtHR held that investment treaties cannot supersede a State's obligation to protect the rights of Indigenous communities to their traditional lands and natural resources under Article 21 of the ACHR¹⁶⁷ and reaffirmed that States have a duty to regulate economic activities to prevent environmental harm that may violate human rights.¹⁶⁸

¹⁵⁷ Annex 9-B(3)(b) of CPTPP.

¹⁵⁸ Annex 9-B(3)(a) of CPTPP.

¹⁵⁹ *Chemtura Corporation v Government of Canada*, UNCITRAL, Award (2 August 2010), paras 133–43 and 266; *Philip Morris Brand Sàrl et al v Oriental Republic of Uruguay*, ICSID Case No ARB/10/7, Award (8 July 2016), paras 302–07.

¹⁶⁰ *Eco Oro Minerals Corp. v Republic of Colombia*, ICSID Case No ARB/16/41, Decision on Jurisdiction, Liability and Directions on Quantum (9 September 2021), para 654. See Preamble of Convention on Biological Diversity, adopted 5 June 1992, in force 29 December 1993, 1760 UNTS 79; Principle 15 of Rio Declaration. One arbitrator found that retroactivity constituted 'rare circumstances': *Eco Oro Minerals Corp. v Republic of Colombia*, ICSID Case No ARB/16/41, Partial Dissenting Opinion of Horacio A. Grigera Naón (9 September 2021).

¹⁶¹ International Covenant on Civil and Political Rights, adopted 16 December 1966, in force 23 March 1976, 999 UNTS 171; International Covenant on Economic, Social and Cultural Rights, adopted 16 December 1966, in force 3 January 1976, 993 UNTS 3 [ICESCR].

¹⁶² Convention for the Protection of the World Cultural and Natural Heritage, adopted 16 November 1972, in force 17 December 1975, 1037 UNTS 151.

¹⁶³ American Convention on Human Rights, adopted 22 November 1969, in force 18 July 1978, 1144 UNTS 123.

¹⁶⁴ Article 11 of Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights, adopted 17 November 1988, in force 16 November 1999, OAS Treaty Series No 69 (1988).

¹⁶⁵ Article 15 of ILO Convention 169.

¹⁶⁶ Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, adopted 27 September 2018, in force 22 April 2021.

¹⁶⁷ *Case of Sawhoyamaya Indigenous Community v Paraguay*, Judgment of 29 March 2006, IACtHR Series C No 146, paras 118 and 140.

¹⁶⁸ *The Environment and Human Rights*, Advisory Opinion OC-23/17 of 15 November 2017, IACtHR Series A 23, paras 140–74.

Yet, the tribunal in *South American Silver v Bolivia* refused to consider provisions under ACHR and ILO Convention 169 because the interpretative principle of systemic integration requires both the home and host State to be parties to a relevant rule of international law.¹⁶⁹ Tribunals have also shown reluctance to grant amicus applications of NGOs and local communities on the basis that human rights, even the right to live in a healthy environment, were legally irrelevant to mining investment disputes.¹⁷⁰ Under Article 9.16 of CPTPP, however, nothing in Chapter 9 shall be construed to prevent a party from adopting any measure ‘otherwise consistent’ with its investment obligations, which ‘it considers appropriate to ensure that investment activity in its territory is undertaken in a manner sensitive to environmental, health or other regulatory objectives’. Similar language was interpreted in *Al Tamimi v Oman* as placing ‘a high premium on environmental protection’, which ‘expressly qualifies the construction’ of investment obligations.¹⁷¹ Under Chapter 20 of CPTPP, moreover, each party not only ‘affirms its commitment to implement the multilateral environmental agreements to which it is a party’ but also recognizes ‘the importance of respecting, preserving and maintaining knowledge and practices of indigenous and local communities embodying traditional lifestyles that contribute to the conservation and sustainable use of biological diversity’.¹⁷² Rather than systemic integration, therefore, a contextual interpretation of investment obligations under CPTPP should lead tribunals to consider a State’s obligations in respect of Indigenous peoples and environmental protection. The ‘perspective, particular knowledge or insight’ of affected communities might then be taken seriously in amicus applications.¹⁷³

3. Minimum standard of treatment

These insights apply equally to the customary minimum standard of treatment, comprising fair and equitable treatment (FET)—the negative obligation not to deny justice in accordance with the principle of due process—and full protection and security (FPS)—the positive obligation to provide a minimum level of police protection.¹⁷⁴ The ‘mere fact’ that a party acts contrary to an investor’s expectations or modifies a subsidy does not constitute a breach.¹⁷⁵ In *Eco Oro*, however, a majority interpreted similar provisions to include the legitimate expectation of treatment in ‘an even-handed and just manner to ensure a predictable business environment’.¹⁷⁶ A violation of that expectation would breach the standard only if sovereign conduct engendered a ‘sense of outrage or shock’, which the majority found in the ‘arbitrary vacillation’ of government agencies and their ‘total failure’ in resolving tensions among environmental protection and ‘protection of jobs provided by the foreign mining companies and the rights of those mining companies’.¹⁷⁷ But a dissenting arbitrator held that Colombia ‘acted throughout in good faith, seeking to find compromises in balancing the competing objectives’, which could not be characterized as shocking

¹⁶⁹ *South American Silver Limited v Plurinational State of Bolivia*, PCA Case No 2013–15 (22 November 2018), paras 199 and 217. See Article 31(3)(c) of Vienna Convention on the Law of Treaties, adopted 23 May 1969, in force 27 January 1980, 1155 UNTS 331.

¹⁷⁰ *Eco Oro Minerals Corp. v Republic of Colombia*, ICSID Case No ARB/16/41, Procedural Order No 6 Decision on Non-Disputing Parties’ Application (18 February 2019).

¹⁷¹ *Al Tamimi v Sultanate of Oman*, ICSID Case No ARB/11/33, Award (3 November 2015), paras 387–89.

¹⁷² Articles 20.4 and 20.13 of CPTPP.

¹⁷³ Article 37(2)(a) of ICSID Rules of Procedure for Arbitration Proceedings, ICSID/15 (April 2006). See also Article 9.23 of CPTPP.

¹⁷⁴ Article 9.6.2 of CPTPP.

¹⁷⁵ Article 9.6.3–4 of CPTPP.

¹⁷⁶ *Eco Oro v Colombia*, above n 160, para 748.

¹⁷⁷ *Ibid*, paras 755, 816, and 821.

or offensive.¹⁷⁸ The investor went into the project ‘with its eyes open,’ knowing that precautionary protections were bound to become more restrictive in ‘the age of climate change and significant loss of biological diversity.’¹⁷⁹

The different views in *Eco Oro* underline a longstanding tension between investment obligations and other norms that might give legal form to supply chain justice. An alleged breach of FPS in Ecuador’s failure to secure an oil project from Indigenous protest,¹⁸⁰ for instance, was found by the IACtHR to involve a breach of the State’s duty to consult the people whose communal property fell within the concession area.¹⁸¹ Yet, many tribunals have assessed the reasonableness of sovereign conduct on the basis that diligent investors must be cognizant of the host State’s environmental or human rights obligations, regardless of whether their home State was a party to the relevant instrument.¹⁸² Given the right of Indigenous peoples ‘to participate in the use, management and conservation’ of lithium resources,¹⁸³ tribunals might be persuaded to exercise a heightened degree of deference if an investor’s interests are negatively impacted by a State’s obligations to conduct EIAs and ‘culturally appropriate negotiations on fair and equitable benefit-sharing’ in obtaining free, prior, and informed consent.¹⁸⁴ If such processes result in delay or termination of an investor’s entitlement to exploit resources, a breach of FET should only be found if a State has utterly disregarded the principle of due process.¹⁸⁵

Complications are posed by incentives offered to lithium investors, such as the tax stabilization regime and capped royalty rates in Argentina’s mining sector. In *Unión Fenosa v Egypt*, revocation of tax exemptions for gas companies did not violate an investor’s expectations in the absence of express agreement with a government agency.¹⁸⁶ A wave of cases regarding renewable energy incentives, however, generated two currents of jurisprudence: the first considers the registration of an investment to guarantee ‘full economic benefits’ for a fixed period such that any amendment violates the FET standard,¹⁸⁷ whereas the second emphasizes that States ‘enjoy a margin of appreciation in the field of economic regulation,’ whereby fiscally unsustainable incentives may be adjusted within the bounds of reasonableness and proportionality.¹⁸⁸ As a matter of principle, the tribunal in *Blusun v Italy* drew ‘a clear distinction between a law, i.e. a norm of greater or lesser generality creating rights and obligations while it remains in force, and a promise or contractual commitment,’ acknowledging that the former may be amended with ‘due regard to the reasonable reliance interests of recipients who may have committed substantial resources.’¹⁸⁹ Taking the case of Chile, it might be difficult to rely on the stability of any quota granted contrary to democratic mandate in the midst of constitutional reform, given the right of States freely to dispose of natural resources derives from the right of peoples to self-determination and is conditioned by enduring obligations to Indigenous peoples.¹⁹⁰

¹⁷⁸ *Eco Oro Minerals Corp. v Republic of Colombia*, ICSID Case No ARB/16/41, Partial Dissent of Professor Philippe Sands QC (9 September 2021), para 31.

¹⁷⁹ *Ibid*, paras 33 and 37.

¹⁸⁰ *Burlington Resources, Inc. v Republic of Ecuador*, ICSID Case No ARB/08/5, Decision on Jurisdiction (2 June 2010), paras 27–37.

¹⁸¹ *Kichwa Indigenous People of Sarayaku v Ecuador*, Judgment of 27 June 2012, IACtHR Series C No 245, paras 171–211.

¹⁸² *Urbaser S.A. and Consorcio de Aguas Bilbao Biskaia, Bilbao Biskaia Ur Partzuergoa v Argentine Republic*, ICSID Case No ARB/07/26, Award (8 December 2016), paras 621–24; *Philip Morris v Uruguay*, above n 159, paras 391–96.

¹⁸³ Article 15.1 of ILO Convention 169.

¹⁸⁴ Pia Marchegiani, Elisa Morgera, and Louisa Parks, ‘Indigenous Peoples’ Rights to Natural Resources in Argentina: The Challenges of Impact Assessment, Consent and Fair and Equitable Benefit-Sharing in Cases of Lithium Mining’, 24(2–3) *International Journal of Human Rights* 224 (2020), at 234.

¹⁸⁵ James Anaya and Sergio Puig, ‘Mitigating State Sovereignty: The Duty to Consult with Indigenous Peoples’, 67(4) *University of Toronto Law Journal* 435 (2017), at 463.

¹⁸⁶ *Unión Fenosa Gas, S.A. v Arab Republic of Egypt*, ICSID Case No ARB/14/4, Award (31 August 2018), paras 9.149–54.

¹⁸⁷ *PV Investors v Kingdom of Spain*, PCA Case No 2012–14, Concurring and Dissenting Opinion of Charles N Brower (28 February 2020), para 14.

¹⁸⁸ *PV Investors v Kingdom of Spain*, PCA Case No 2012–14, Final Award (28 February 2020), para 583.

¹⁸⁹ *Blusun S.A. et al v Italian Republic*, ICSID Case No ARB/14/3, Award (27 December 2016), para 371.

¹⁹⁰ M. Sornarajah, *The International Law on Foreign Investment*, 5th ed (Cambridge: Cambridge University Press, 2021) 600–02. The UN Committee on Economic, Social and Cultural Rights has found that Article 1(2) of the ICESCR (‘All peoples may, for their

4. Contracts of State enterprises

Outside of international law, contractual disputes with State enterprises may be pursued through commercial arbitration by either party, evident in CORFO's disputes with Albemarle and SQM. However, Chapter 9 of CPTPP also applies to measures adopted by State enterprises in their exercise of delegated 'governmental authority',¹⁹¹ codifying a customary route of attribution expressed in Article 5 of the International Law Commission's Articles on Responsibility of States for Internationally Wrongful Acts (ILC Articles).¹⁹² The conduct of State enterprises, such as CORFO or JEMSE, may therefore be attributable if they are authorized to exercise sovereign powers as distinct from commercial activities.¹⁹³ Recently, the tribunal in *Rios v Chile* suggested that a subsidiary of CORFO exercised such powers by implementing a public transport system.¹⁹⁴ Attribution under ILC Article 5, however, involves 'an inquiry into the nature of each and every act' alleged to constitute a breach.¹⁹⁵ Although an enterprise may have been empowered on grounds of public policy, such as economic development or resource management, that does not transform contractual violations into attributable instances of governmental authority.¹⁹⁶ If an enterprise is 'acting on the instructions of, or under the direction or control' of a State in exercising its contractual rights, that conduct may instead be attributable under ILC Article 8.¹⁹⁷ But it is not enough for the State to have issued a general policy concerning the relevant industry.¹⁹⁸ The termination of a contract may only constitute an expropriation if the procedure was triggered to give effect to government policy and to avoid the payment of compensation.¹⁹⁹ If they are effected through attributable conduct, moreover, aggravated instances of non-payment and coercive renegotiation could breach the minimum standard.²⁰⁰

5. Performance requirements

Even if the conduct of a State enterprise were not attributable, the State may breach Article 9.10 of CPTPP by imposing performance requirements on contracts entered with foreign investors, such as exporting a percentage of goods, achieving a level of domestic content, or according preference to goods produced or services provided in its territory.²⁰¹ In *Mobil v Canada*, the tribunal found that requirements of local expenditure on research and development were in breach of similar prohibitions.²⁰² It is telling that Chile made reservations in respect of Article 9.10 and national treatment under Article 9.4, providing that the 'exploration, exploitation, and treatment' of lithium shall be made by 'administrative concessions or special operating contracts' subject to conditions determined by presidential decree; and only CCEN may authorize the disposal of extracted lithium.²⁰³ Concerning the same provisions, plus the MFN standard under Article 9.5, Australia reserved '[a]ll existing non-conforming measures at the regional level of

own ends, freely dispose of their natural wealth and resources ...') imposed procedural obligations on States to consult peasants and Indigenous peoples concerning land acquisition and resource extraction by foreign investors: B Saul, D Kinley and J Mowbray, *The International Covenant on Economic, Social and Cultural Rights: Commentary, Cases, and Materials* (Oxford: Oxford University Press, 2014), 67–70 and 76–80.

¹⁹¹ Article 9.2.2(b) of CPTPP.

¹⁹² *Mesa Power Group, LLC v Government of Canada*, PCA Case No 2012–17, Award (24 March 2016), para 367.

¹⁹³ *Ortiz Construcciones y Proyectos S.A. v République Algérienne Démocratique et Populaire*, ICSID Case No ARB/17/1, Award (29 April 2020), paras 193–204.

¹⁹⁴ *Rios v República de Chile*, ICSID Case No ARB/17/16, Award (11 January 2021), para 309.

¹⁹⁵ *Gustav F W Hamester GmbH & Co KG v Republic of Ghana*, ICSID Case No ARB/07/24, Award (18 June 2010), para 197.

¹⁹⁶ *Ibid*, para 266; *Almás v Republic of Poland*, PCA Case No 2015–13, Award (27 June 2016), paras 209–12.

¹⁹⁷ *CC/Devas (Mauritius) Ltd. and others v Republic of India*, PCA Case No 2013–09, Award on Jurisdiction and Merits (25 July 2016), paras 282–90.

¹⁹⁸ *Hamester v Ghana*, above n 195, para 267.

¹⁹⁹ *Almás v Poland*, above n 196, paras 252–67.

²⁰⁰ Jean Ho, *State Responsibility for Breaches of Investment Contracts* (Cambridge: Cambridge University Press, 2018) ch 3.

²⁰¹ Article 9.10 of CPTPP.

²⁰² *Mobil Investments Canada Inc. and Murphy Oil Corporation v Canada*, ICSID Case No ARB(AF)/07/4, Decision on Liability and on Principles of Quantum (22 May 2012), paras 210–46.

²⁰³ Annex I-CHILE-8–9 of CPTPP.

government,²⁰⁴ covering Western Australia's mining sector. In *Mobil*, however, the majority found that burdensome amendments to non-conforming measures were not covered by original reservations.²⁰⁵ The careful modification of domestic regimes will be crucial as governments seek to attract lithium investors whilst distributing benefits locally and scaling the value chain.

V. CONCLUSION

We have transformed the material dimensions of lithium into a workable object of international law, focusing on the jurisdictional distribution of major reserves in Chile, Australia, Argentina, and China to foreground a framework for the lithium industry. Under salient trade agreements, States may not impose export restrictions or domestic content requirements in pursuit of industrial policy. But they might be tempted to invoke self-judging exceptions for essential security interests, given the focus on supply chain security for critical minerals within broader considerations of energy security. Foreign investors are well protected from expropriation, unfair treatment, and prohibited performance requirements insofar as conduct is attributable and not covered by reservations. Investor-State arbitration of lithium disputes, however, need not involve a blinkered inquiry into value deprivation or investor expectations but rather systemic or contextual interpretation of investment treaties that consider any relevant obligations of the host State regarding human rights, environmental protection, and Indigenous peoples, which offer legal form to the multifaceted agenda of supply chain justice. Recent handwringing over lithium nationalism, in this light, may be better understood as efforts to reintegrate rules of international law that have been hitherto downplayed.²⁰⁶

Our geographical focus reflected the legal entitlements of geological accident and deeper trends that have reoriented the world economy towards the Pacific Ocean. An expanded framework would encompass lesser reserves in Africa, Europe, and North America. There is already an ICC arbitration afoot between a Mauritian investor and a State enterprise in the DRC regarding a lithium venture.²⁰⁷ Communities have clashed with lithium miners in Serbia and Spain over environmental pollution and cultural heritage.²⁰⁸ And a single treaty covers a million tons of lithium reserves in North America, with asymmetrical access to investor-State arbitration.²⁰⁹ Perhaps, however, a more important inquiry is how lawyers could support moves by China and the EU towards a circular economy for LIBs to reduce demand for raw materials and the negative externalities of extractive industry.²¹⁰ In the interim, the present framework might help to navigate any disputes arising from the pursuit of supply chain justice amid the resource-intensive transition towards renewable energy sources.

²⁰⁴ Annex I-AUSTRALIA-2 of CPTPP.

²⁰⁵ *Mobil v Canada*, above n 202, paras 405–13.

²⁰⁶ Lorenzo Cotula, '(Dis)integration in Global Resource Governance: Extractivism, Human Rights, and Investment Treaties', 23(2) *Journal of International Economic Law* 431 (2020), at 453.

²⁰⁷ *MMCS Strategic 1 v La Congolaise d'Exploitation Minière SPRL*, ICC Case No 23225/GR.

²⁰⁸ Jillian Ambrose, 'Serbia Scraps Plans for Rio Tinto Lithium Mine After Protests', *The Guardian* (21 January 2022); Daniel Dombey, 'Spain's Rush for Lithium Falls Foul of Local Opposition', *Financial Times* (20 October 2021).

²⁰⁹ Article 14.2.4 of the United States-Mexico-Canada Agreement, adopted 1 October 2018, in force 1 July 2020.

²¹⁰ See Hans Eric Melin and others, 'Global Implications of the EU Battery Regulation', 373(6553) *Science* 384 (2021).