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Industrial Policy Space in Emerging Economies: The Case of Chile's Lithium Industry and the Energy and Raw Materials Chapter in the EU-Chile Free Trade Agreement

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Abstract:

Adequate policy space is essential for resource-rich countries to move up the value chain and seize the opportunities presented by global decarbonization and the demand for low-carbon technologies. However, WTO rules, investment and free trade agreements (FTAs) deprive non-hegemonic powers of the industrial policy tools used by successful developmental states in the past, thus reducing policy space and arguably 'kicking away the ladder'. The present article addresses these issues in the context of Chile's lithium industrial policy and the modernised EU-Chile FTA. With the objective of moving up the lithium value chain, Chile employs preferential pricing: offering lithium at a preferential price to companies that establish production sites for higher-value processes. However, the modernized FTA includes restrictions on the use of preferential pricing, as outlined in its Energy and Raw Materials Chapter (ERM) —a novel element in the EU FTAs aimed at safeguarding access to critical raw materials for the EU's Green Deal objectives. By means of document analysis and 21 expert interviews, we find that the modernised FTA and its ERM are compatible with Chile's current lithium industrial policy. Nonetheless, they further restrict Chile's policy space, potentially limiting future policy adaptations. These restrictions, alongside further national factors, may hinder the fulfilment of Chile's industrial policy goals. The article offers explanations for the negotiation outcomes and identifies factors beyond policy space that constrain the effectiveness of Chile's lithium industrial policy.

Keywords: Chile, Lithium, Policy Space, Industrial Policy, Free Trade Agreement

JEL Codes: F63, O24, O25, O54

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1. Introduction

While reconciling economic development with decarbonisation presents considerable challenges, the structural transformation driven by global decarbonisation strategies—and the resulting expansion of low-carbon technologies—offers opportunities for industrial development. To avoid replicating patterns of commodity dependence within the framework of low-carbon transitions, non-hegemonic powers[1] must strive to integrate into higher-value segments of low-carbon technology value chains. Achieving this requires a paradigm shift in policy, and targeted public and industrial policies play a key role in shaping the economic geography of low-carbon technology value chains (Lebdioui, 2024).

A prerequisite to take advantage of the increasing demand for low-carbon technologies, and hence to avoid the replication of core-periphery relations, is to ensure the adequate policy space that allows targeting both developmental and sustainability goals. However, multiple factors limit non-hegemonic powers' agency to successfully implement new industrial policies. One significant limiting factor lies in the international trade system. While free trade agreements (FTAs) and World Trade Organization (WTO) membership have historically expanded access to external markets, they have also constrained industrial policy space. Due to the essential role of industrial policy in economic development (Cimoli et al., 2010), this fact has proven detrimental to the economic development of developing and emerging economies and has been famously coined as 'kicking away the ladder' (Chang, 2002). In fact, WTO rules and bilateral FTAs with advanced economies have deprived these countries of policy instruments that advanced nations used during their own industrialization and catching-up processes (Chang, 2002). In the context of the green transition, this could lead to a new generation of trade and environmental conflicts arising from green industrial policy plans (Wu and Salzman, 2014).

[1] As the term suggests, 'non-hegemonic powers' possess some power and agency as they can devise their national policies while holding relative regional influence. However, these countries lack the power to impose their national policy priorities on many other states. They often rely on the US dollar in global transactions and cannot fully pursue their policies independently of the US and US-led organisations. This term includes countries typically commonly classified as 'emerging economies' as well as some 'advanced' or 'developed' nations with less capacity to devise policies vis-à-vis the hegemon.

Within this context, Chile, rich in natural resources and critical raw materials like lithium, becomes an interesting case study. Given lithium's growing importance for global decarbonization plans, Chile recently established industrial policy programs aiming to increase domestic value-added in this sector. These programs offer companies lithium at preferential prices in exchange for establishing production sites for higher-value processes along the lithium value chain (Carrasco, 2024). Although the success of these programmes would be a fundamental step to reduce Chile's heavy reliance on commodity exports, which account for around 88% of total exports (UNCTAD, 2023), their compatibility with the recent developments in the country's trade policy becomes fundamental. Historically, Chile's economic openness—evidenced by WTO membership and numerous FTAs—has resulted in restricted policy space (Ahumada, 2019).

In line with its commitment to international markets, Chile agreed to negotiate the modernization of its FTA with the European Union (EU), first established in the early 2000s. The negotiation of the *Advanced Framework Agreement* (AFA), which concluded in December 2022, contributes to the EU's Green Deal objectives, including securing access to lithium, a critical mineral for battery production. It also aimed to reduce the EU's reliance on other external sources like China. According to the EU, these goals could be achieved by prohibiting import and export monopolies for raw materials and restricting Chile's preferential pricing policy (European Commission, 2024a). Both measures are outlined in the FTA's Energy and Raw Materials chapter (ERM)—a novel feature in EU FTAs.

Against this backdrop, this article will concentrate on how the modernised EU-Chile FTA, and the ERM in particular, affect Chile's industrial policy space in the context of the implementation of its current industrial policy in the lithium sector. For our analysis, we follow a qualitative approach which consists of a single case study (Yin, 2018) that focuses on the ERM chapter of the EU-Chile FTA and Chile's industrial policy in the lithium sector. For an in-depth analysis, we conducted 21 expert interviews as well as a document analysis.

The second part of the article discusses policy space in the context of industrial policy, focusing on its evolution, constraints from trade rules, and the role of Global Value Chains (GVCs), with examples from Chile's trade policies and industrialization efforts. The third section lays out

the applied methodology. The fourth part then introduces the case of Chile's lithium industry and current key industrial policy initiatives. The fifth part critically examines whether, and to what extent, the modernised EU-Chile FTA and the ERM restrict Chile's current industrial policy in the lithium sector. Finally, this article concludes that although the ERM is compatible with current lithium industrial policy—a compatibility which is primarily the result of successful negotiation by Chile—the ERM nonetheless imposes restrictions on potential future policies, thereby creating a lock-in effect.

2. Policy Space for Industrial Policy: Historical and Recent Developments

The rise of East Asian countries such as South Korea, Taiwan, and, more recently, China, from low-income economies to the technological frontier—the so-called 'East Asian Miracle'—stands as a modern example of successful structural transformation by non-hegemonic powers. This achievement has been widely attributed to their developmental state model, characterized by the strategic use of targeted industrial policy (Amsden, 2001; Wade, 1990, 2018). However, replicating such success today presents non-hegemonic powers with at least three significantly altered contexts.

First, the climate crisis requires a shift away from carbon-intensive industrialization, which is incompatible with the transition to a low-carbon future. Policymakers must recognize that 'the exports of carbon-intensive products will face increasing constraints, while considerable market opportunities arise for low-carbon technologies and environmental goods' (Lebdioui, 2024: 23). This circumstance reshapes the sectors that countries should prioritize for industrial upgrading.

Second, since the early 1990s, economic activity has increasingly been organized within GVCs, reshaping industries and narrowing the scope of industrial policymaking. GVCs, characterized by outsourcing and a focus on core competencies, influence how countries advance—or fail to advance—in the global economy (Gereffi et al., 2005). Lead firms, often multinational enterprises, wield significant power by determining suppliers' access to GVCs and their potential for value chain upgrading (Dallas, 2014). Nonetheless, targeted industrial policies

can still enable states to influence outcomes and support value chain progression (Lebdioui, 2022; Dünhaupt et al., 2022). In this context, industrial policy has shifted toward 'open-market industrial policy,' emphasizing integration into GVCs while relying on fewer direct policy instruments (Bulfone, 2023).

Third, as critical International Political Economy (IPE) scholars emphasize, the availability of policy space for industrial policy has significantly diminished. Supra- and international legal agreements, such as WTO rules and regional and bilateral trade agreements, have facilitated access to external markets but simultaneously restricted the use of industrial policy tools once employed by East Asian developmental states and earlier late-industrializing nations (Chang, 2002; Rodrik, 2001; Wade, 2018). This reduction in policy space— 'defined as the flexibility under trade rules that provides nation states with adequate room to maneuver to deploy effective policies to spur economic development' (Gallagher, 2007:63)—has been widely criticized. While increased market access was gained in return, many argue that these constraints hinder economic development in emerging and developing countries, amounting to an act of 'kicking away the ladder' (Chang, 2002).

After the establishment of the WTO in 1995, other critical voices noted that 'the bark is worse than the bite' (Amsden and Hikino, 2000). While WTO agreements—such as the General Agreement on Tariffs and Trade (GATT), the General Agreement of Services (GATS), the Trade Related Intellectual Property Rights Agreement (TRIPS), the Trade Related Investment Measures Agreement (TRIMS) and the Agreement on Subsidies and Countervailing Measures (ASCM)—have removed certain policy tools previously used by developmental states, a wide array of instruments remains available for pursuing industrial policy (Dünhaupt and Herr, 2020). Subsidies, patent regimes, and performance requirements remain permissible under specific conditions, as long as they do not violate principles like non-discrimination (UNECA, 2016; Shadlen, 2005). For instance, TRIMS allows non-quantitative requirements such as those related to employment or technology transfer while GATS permits states to exempt certain service sectors from liberalization (Aggarwal and Evenett, 2014; Thrasher and Gallagher, 2008). What is more, Hopewell (2024) argues that WTO rules currently no longer effectively restrict policy space as they are not legally enforceable due to the US blockage of judicial appointments to the WTO's Appellate Body. Hopewell (2024) illustrates this with Indonesia's

export restrictions and domestic processing requirements in the nickel sector and India's special economic zone export subsidies, which all have been found to violate WTO rules but are maintained, as both countries' appeal renders these rulings unenforceable.

However, policy space does not guarantee its use, as Chile's case demonstrates. In the mid-1980s, Chile introduced export subsidies (simplified drawbacks) aimed at fostering non-traditional, infant exports, leading to a notable success (Agosin et al., 2010; Schrank and Kurtz, 2005). Yet, in the early 2000s, Chile voluntarily dismantled this scheme to comply with the WTO's ASCM, even though no trade partner had filed a formal complaint (Agosin et al., 2010; Ahumada, 2019). Rather than navigating WTO constraints to maintain industrial policy tools, Chile prioritized trade liberalization. Similarly, its eagerness to secure WTO membership led Chile to refrain from joining other emerging and developing economies in resisting the outcomes of the Uruguay Round negotiations (Ahumada, 2019).

While the WTO leaves room for industrial policy to manoeuvre, which can be used creatively, FTAs and (bilateral) investment agreements tend to be more restrictive. In terms of performance requirements on investment, for instance, those not explicitly prohibited via TRIMS are banned in several bilateral trade agreements (Aggarwal and Evenett, 2014; Thrasher and Gallagher, 2008). Again, Chile is clear illustration of this fact. The US-Chile agreement prohibits, among others, export level requirements and technology transfer requirements, neither prohibited by WTO law (Thrasher and Gallagher 2008). Likewise, regarding intellectual property rights, bilateral agreements with the US usually tighten legal standards beyond WTO's TRIPS rules, the US-Chile FTA being a case in point (Thrasher and Gallagher, 2008; Shadlen, 2005).

New trade and investment agreements, alongside developments at the WTO, may influence the policy space available to economies in various ways. Within the WTO context, the unenforceability of certain rules may expand policy space for non-hegemonic powers (Hopewell, 2024). The growing emphasis on industrial policy for green technologies further raises questions about its ultimate impact on the policy space of these economies. Wu and Salzman (2014) predicted that green industrial policy would ignite new trade conflicts, as its instruments already then violated WTO rules. This trend still persists, as exemplified by local content requirements in the US Inflation Reduction Act and the import constraints implied by

the EU's Carbon Border Adjustment Mechanism. As Lebdioui (2024: 66) notes, these measures 'provide precedents for developing countries to pursue the same strategies,' thereby leaving some policy space for late industrializers. Simultaneously, Lebdioui (2024: 63) highlights the phenomenon of 'kicking away the "green" ladder,' wherein US, EU, and Chinese green protectionist and industrial policy measures hinder green industrialization in other regions'. By examining the modernized EU-Chile FTA and its implications for Chile's lithium industrial policy, this analysis explores the dynamics of policy space in the context of green industrial policy.

3. Methods

In order to examine how the modernised EU-Chile FTA and the ERM in particular affect Chile's industrial policy space in the lithium sector, this article builds theoretically, on I) Critical IPE literature to analyse the potential negative impact of trade policy on Chile's industrial policy, and (II) GVC research to understand the altered context for industrial policy-making to capture value-addition in the lithium value chain. Thus, the IPE dimension concerns the transnational and potentially limiting impact of EU trade policy on Chilean industrial policy as a non-hegemonic power in the case of the lithium value chain, and Chile's GVC position considering the fact that the Comparative Political Economy (CPE) dimension addresses the latest national industrial policy against the specific political-economic context of Chile.

Chile was chosen not only because it is one of the two countries that have implemented an ERM in an FTA with the EU, a regional power, but also because, as a non-hegemonic power, Chile has recently initiated national industrial policies in the lithium sector that rely on preferential pricing —initially intended to be restricted by the ERM. Methodically, the article conducts a single case study (Yin, 2018) for an in-depth analysis focusing on the impact of the ERM chapter of the EU-Chile FTA on Chile's industrial policy in the lithium sector, in particular, the current practice of the system of preferential pricing. To this end, the study employs a qualitative approach that combines a secondary literature review and a document analysis of the ERM chapter as well as relevant Chilean industrial policy initiatives in the lithium sector.

The document analysis is complemented by expert interviews to gain more insight into current developments, the rationale for policy choices, the negotiation processes and resulting outcomes as well as expert assessments. Experts were selected based on their knowledge of

the lithium value chain in Chile, Chilean industrial policy, EU-Chile trade policy and their interconnections, particularly concerning the ERM from both the EU and Chilean perspectives. The resulting sample of 21 experts (detailed in Table A1) encompasses business actors (companies and business sector representatives), state actors (active and former politicians and bureaucrats), consultant agencies, civil society actors (NGOs and trade unions), and (academic) researchers both from the EU and Chile. The interviews applied snowballing techniques and the interview questions centred on the overall EU-Chile FTA, the negotiation process, and involved actors, with a focus on the ERM. Furthermore, various questions addressed Chile's industrial policy both broadly and specifically in the lithium sector, e.g. the National Lithium Strategy (NLS), the system of preferential pricing and the associated tenders. Additional questions concerned the impact of geopolitics and socio-ecological concerns related to lithium production. The questions were tailored to each interviewee's area of expertise, and new information obtained during interviews was incorporated to refine and expand the discussion. Interviews were conducted both online and in person between July 2024 and January 2025. Hence, the analysis covers the period up to the implementation of the renegotiated EU-Chile FTA. Transcriptions were completed with the assistance of an external software provider. Finally, data evaluation incorporated both inductive and deductive approaches in an iterative process and data triangulation was applied to verify the results.

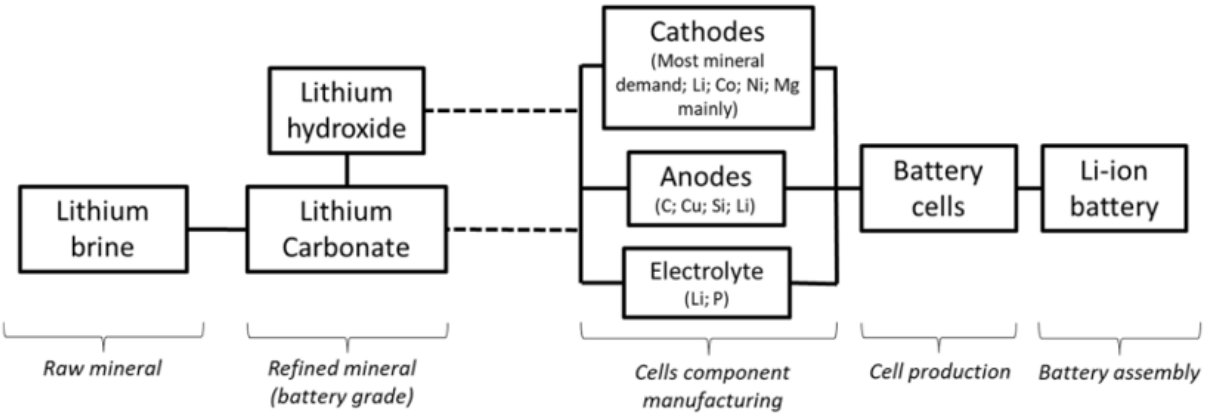
4. Chile's Industrial Policy for Value-Addition in the Lithium Sector

Chile is part of the Lithium Triangle, a region in the Puna de Atacama desert bordering Argentina and Bolivia, which holds 46 per cent of global lithium reserves and up to 63 per cent of resources (US Geological Survey, 2023).[2] Chile is the world's second largest supplier of (unprocessed) lithium after Australia, positioning the country as a critical player for the global decarbonization process and the associated demand for low-carbon technologies (IEA, 2024b).

[2] In geography, reserves are defined as 'proven, economically recoverable quantities at today's prices and with today's technology' (BGR 2009, p. 273), whereas resources are defined as 'proven, but currently technically and/or economically unrecoverable, as well as unproven, but geologically possible, future recoverable quantities' (BGR 2009, p. 274).

Lithium differs from most other minerals in several key ways that contribute to both its importance and the challenges associated with its extraction, with implications for Chile. Firstly, lithium mining involves advanced methods such as brine extraction, which requires specialised technologies both for the traditional evaporation process, as well as for the direct lithium extraction method (CleanTech Lithium, nd).[3] Second, while lithium is not particularly rare, its extraction can be expensive and, in some cases, even not economically viable. The scarcity of profitable sites can enhance their leverage in global markets. Thirdly, most lithium (75 per cent) is currently used in electric batteries, and the International Energy Agency (IEA) (2021) predicts that this figure will increase, with almost 90 per cent of lithium expected to be used in electric vehicles (EVs) in the near future. Finally, the IEA predicts that by 2040, global demand for lithium will increase by 40 compared to 2020 levels.

Figure 1: Simplified lithium-ion battery value chain focused on lithium



Source: Irarrazaval/Carrasco (2023: 3)

The lithium-ion batteries value chain, depicted in Figure 1, comprises several stages:, the extraction of raw lithium in the form of brine or ore is followed by processing into refined lithium carbonate or hydroxide, which is essential to produce battery components. Lithium-

[3] Interview Tech. and raw materials agency, 3 September 2024; Interview, State-owned enterprise, 14 November 2024; Interview, Chilean Ministry of Mining, 28 November 2024.

ion batteries consist of an anode, a cathode, a separator, and an electrolyte.[4] The leading cell and battery manufacturers are located mostly in China (85 per cent) and to a lesser extent in Europe (7 per cent) and the US (6 per cent) (IEA, 2024a). These regions also lead in midstream lithium-ion battery component manufacturing (Bridge and Faigen, 2022). The need for geographic proximity between battery production and automotive assembly to reduce transportation costs and optimize logistics contributes to a regionalization of global automotive value chains (Sturgeon and Van Biesebroeck, 2009). This creates challenges for countries like Chile in the (semi-)periphery to integrate and upgrade battery-based automotive production systems.[5]

Despite the potential complications in moving up the value chain, the abundance of lithium in Chile and its critical role for low-carbon technologies have increasingly positioned it as a mineral of high strategic importance, sparking intense political debate about the industry's future in Chile. These discussions encompass key issues such as the country's productive capacity, the sustainability of lithium extraction, and its potential to drive productive diversification (Government of Chile, 2023).

While lithium in Chile is state-owned, the industry is dominated by private companies, with production led by Albemarle and SQM under contracts originally issued in the 1980s and 1990s (Schmidt, 2017). Initially declared a 'material of nuclear interest', and state property in 1979, the governance of lithium evolved through liberal market reforms under the military dictatorship. These reforms led to public-private partnerships, and later, privatization policies in the 1990s shifted control of production to private entities, limiting the state's role to ownership of the reserves (Poveda Bonilla, 2020).

In a context of limited state control in the lithium sector and an industrial policy largely confined to horizontal measures (Bril-Mascarenhas and Madariaga, 2019), the surge in global lithium demand reignited political interest in the mineral since the mid-2000s. This was initially reflected in the first Piñera administration's attempt to increase raw material extraction and

[4] Even though lithium is an essential element of EV batteries, it typically constitutes only about 4% of the battery's total mass, with other materials like nickel, cobalt, and manganese making up the bulk of the battery's composition.

[5] Interview Tech. and raw materials agency, 3 September 2024; Interview, Extractive industries NGO, 9 September 2024; Interview, Chilean Ministry of Mining, 28 November 2024; Interview, CORFO, Chile 23 December 2024.

exports, which failed due to various controversies and a corruption scandal (Irarrazaval and Carrasco, 2023). As lithium demand surged with the rise of EVs in the mid-2010s, the state sought greater control over rule enforcement and industrialization promotion. During Bachelet's second administration (2014-18), the National Lithium Commission (NLC) was established to advise on the lithium strategy. Its final report advocated for increased extraction, rent capture, environmental mitigation, industrialization, and advancement in the lithium value chain (Carrasco, 2024), stressing the importance of proactive state involvement. The industry's domination by SQM and Albemarle for decades highlighted the need to strengthen state capacities to oversee industrialization according to some actors.[6]

A pivotal step in advancing Chile's lithium sector was renegotiating contracts with SQM and Albemarle. These contracts banned low-value lithium brine exports and required the production of lithium carbonate, the second stage in the value chain (see Figure 1). Furthermore, preferential pricing was established as the central policy instrument to move up the value chain, with CORFO (Chile's economic development agency) mandating that both companies reserve 25 per cent of lithium production at the lowest average export prices over the last six months. The rationale for this choice is linked to the price developments observed in 2016 and as reiterated in the NLS, the expectation that prices would remain high because of the increasing demand for lithium (Government of Chile, 2023). This added to the fact that preferential pricing is an incentive with zero cost for the state, which could be included in the renegotiated contracts, were crucial aspects for the choice of this tool.[7] Access to lithium at preferential prices is conditioned on the establishment of higher value-added processes in Chile (Irarrazaval and Carrasco, 2023). From 2016 to 2024, CORFO launched four tenders to support such projects.

In the first tender (2017), Albemarle was supposed to provide lithium at preferential prices to three selected companies—Molymet (Chile), Sichuan Fulin (China), and a POSCO-Samsung consortium (South Korea). However, no projects materialized due to disputes over pricing between Albemarle and CORFO, the lack of regulatory capacity of the state and Albemarle's limited legal obligations to sell and not just 'offer' lithium to the awarded companies

[6] Interview, Private lithium firm, 5 September 2024; Interview, Senior researcher, 27 August 2024; Interview, Senior researcher, 29 August 2024.
[7] Interview, Chilean Ministry of Mining, 18 November 2024; Interview, CORFO, 5 December 2024.

(Carrasco, 2024), and Albemarle's exclusive production of lithium carbonate instead of the required hydroxide (Irarrazaval and Carrasco, 2023). Similarly, a 2019 tender with SQM supplying lithium at preferential pricing also failed to generate significant investments (Schmidt, 2023). A third tender in 2022 offered lithium carbonate and hydroxide from SQM (CORFO, 2022). Although BYD and Yongqing Technology were able to secure quotas, investments are still pending to this day. According to Reuters (2024), BYD delayed construction of its plant due to general uncertainties. Finally, a 2024 tender with Albemarle offering lithium until 2043 is still pending (Solomon and Cambero, 2024).[8]

Parallel to the mentioned calls, in April 2023, Chile's President Boric (2022–) presented the NLS with the primary goal of ensuring that the industry's development be led by the state, with the private sector acting as a 'strategic partner' (Government of Chile, 2023: 4). This strategy includes five key points: 1) Aiming at state participation in the entire production cycle, including a draft law to establish a national lithium company under state control. 2) The private sector is to be involved via public-private partnerships. 3) A public technology and research institute for lithium and salts flats is to be established. 4) In accordance with ILO Convention 169 - Convention on Indigenous Peoples - affected indigenous communities will be involved through dialogue. 5) In addition to lithium extraction, the production of higher value-added lithium products should also be established in Chile, incentivized by the reservation of quotas at preferential prices.

Thus, despite significant transformations in the governance of Chile's lithium industry, the strategic value of this mineral is once again recognized by the government, which is currently aiming for greater state control and industrialization efforts. The latter seems viable especially by means of joint ventures, such as the one established between SQM and CODELCO, and renegotiated contracts.[9] At the same time, the system of preferential pricing is central to lithium industry policy-making. Nonetheless, the ERM and EU-Chile FTA originally foresaw prohibitions on the preferential pricing (European Commission, 2018b), highlighting a potential conflict between trade and industrial policy making. Against this backdrop, the next

[8] According to the head of CORFO, a dozen companies have already signalled their interest (Solomon & Cambero, 2024).

[9] Interview, Private lithium firm, 5 September 2024; Interview, State-owned enterprise, 14 November 2024; Interview, Chilean Ministry of Mining, 28 November 2024.

section will explore how Chile's lithium industrial policy aligns with the ERM provisions in the modernised EU-Chile FTA and assess the implications of this agreement for Chile's strategic objectives in the lithium sector.

5. Chile's Lithium Industrial Policy in the context of the EU-Chile FTA and the ERM

As noted above, throughout the Lithium-ion battery value chain, the EU plays only a minor role globally (IEA, 2024a). Likewise, mining and processing of the raw materials required for batteries and the Green Transition mainly happens outside Europe (IEA, 2021). Targeting these dependencies, the EU has been facilitating the development of European battery innovation and production networks by declaring battery production of strategic importance and initiating several policies, starting with the European Battery Alliance in 2017 (Gräf, 2024). Besides initiatives like the Critical Raw Materials Act and strategic raw material partnerships with key supplier countries (Council of the European Union, 2024a), the novel ERMs of EU FTAs form an important pillar of the EU's efforts to secure (external) supply of critical raw materials. As of 2024, six negotiated EU FTAs contain an ERM, for instance the modernised FTA with Chile, a leading producer of the two critical raw materials copper and lithium (European Commission, 2024c).

In the following sections, we first provide context on the modernised EU-Chile FTA and give an overview about its content focussing on the aspects most relevant with regards to lithium. We subsequently assess the effect of the new FTA on Chile's policy space with a focus on the ERM's impact on Chile's current lithium industrial policy and offer explanations for the final negotiation outcomes. Finally, we discuss obstacles other than policy space that constrain the realization of the desired outcomes of Chile's lithium industrial policy.

5.1. The modernised EU-Chile FTA and its Energy and Raw Materials Chapter

In 2003, the first EU-Chile FTA entered into force. The agreement covered a range of areas and contained, among others, measures to liberalise trade in goods and services, foreign direct investment and protection of intellectual property rights (European Commission et al., 2017). In terms of tariffs, the first FTA already contained the full liberalisation of industrial products, only some agricultural and food products on both sides remained exempted from full

liberalisation (ITAQA Sarl, 2012). When signing the first FTA in 2003, the EU was Chile's most important trade partner. In 2023, the EU ranked only third behind China and the US (Grieger, 2024). At the same time, Chile is the EU's 33st most important export market and 40st most important source for imports (UN, 2024). While the EU mainly imports commodities from Chile, it exports mostly consumer and capital goods (European Commission, 2024b).

In 2017, the EU and Chile started negotiating a modernization of their first FTA. In December 2022, negotiations on the so-called *Advanced Framework Agreement* (AFA) were concluded. The AFA consists of a pillar of political dialogue and cooperation as well as on trade and investment. In 2024, the EU concluded the ratification of the AFA and the *Interim Trade Agreement* (ITA). The ITA covers the aspects of the AFA that are of the EU's exclusive competence, that is, the trade and investment pillar including the ERM but excluding the chapters on investment protection, financial services and capital movements (European Commission, 2024a).

In 2024, the European Parliament and the Chilean Senate adopted the AFA and ITA, which entered into force in February 2025. The AFA will enter into force and replace the ITA after being ratified by all EU member states (SUBREI, 2024).[10] The ratification of the AFA would replace the 16 bilateral investment treaties that Chile has in place with single EU member states (Ministry of Foreign Affairs Chile, 2021). This has been a main motivation on both parts, next to strengthening the political stance vis-a-vis one another.[11] The ITA also liberalises trade in agricultural products further, especially for Chilean goods entering the EU, so that 95% of the EU-Chile trade in agricultural products will be tariff-free (Grieger, 2024), even if the change is actually considered as minor.[12] Moreover, the FTA covers a range of common areas within FTAs such as trade in services, intellectual property rights and public procurement. In terms of investment liberalization, the ITA contains prohibition of performance requirements not present in the first FTA (Council of the European Union, 2002). These prohibitions essentially mirror the US-Chile FTA by banning for example, export requirements and technology transfer

[10] Notably, an interviewee affiliated with the Chilean state expressed his doubts regarding the AFA getting ratified by all EU member states (Interview, Chilean Ministry of Foreign Affairs, 21 August 2024). In that case, the ITA would stay in place. The ITA already contains the ERM.
[11] Interview, Chilean Ministry of Foreign Affairs, 21 August 2024; Interview, DG Trade, 17 September 2024.
[12] Interview, Chilean Ministry of Foreign Affairs, 21 August 2024; Interview, Chilean Ministry of Foreign Affairs, 25 November 2024.

requirements, thus going beyond TRIMs prohibitions (EU-Chile-ITA: Art. 10.9; US-Chile FTA: Art. 10.5).[13]

Furthermore, driven by the EU side, the ITA contains an ERM (EU-Chile-ITA: Ch.8). Already at the start of the negotiations in 2017, increasing raw material security was a central issue for the EU, or as an interviewee from the Directorate General for Trade of the European Commission (DG Trade) puts it:

> Given the importance of Chile as a source of raw materials and the importance for the Union to diversify - at the time, Russia had not yet invaded Ukraine, but still, the China economic security dimension was clear - so the idea of using trade in order to diversify export in a bid to foster the economic security of the union was already there. So we negotiated this chapter, which has an energy and a raw materials dimension.[14]

In general, "there is a lot of cooperation language as well as some obligations in the chapter" [15]. The relevant obligations that refer to raw materials and, hence, to lithium, are article 8.4 (prohibiting 'import and export monopolies' for energy and raw materials) and article 8.5 on 'export pricing' that limits Chile's ability to supply companies with preferentially priced raw materials (EU-Chile-ITA: 149). Both articles, along with the prohibition of any kind of export restrictions aim to foster the EU's 'non-discriminatory access to lithium' (European Commission 2024a). The prohibition of export restrictions, however, applies to any goods, as in Article 2.11 in the 'Trade in Goods' chapter where such provisions are common. Furthermore, this prohibition constitutes merely an incorporation of GATT Article XI to which both parties already adhere. The prohibited import and export monopolies refer to entities with the exclusive import and export rights granted by the state. With that, the EU aims to prevent 'market distortions' as they, according to an interviewee, were experienced vis-a-vis Gazprom even prior to Russia's invasion of Ukraine, but the prohibition also serves 'to make sure that in the future there cannot be a legal way to favor exports to China in discrimination of the EU. And if you give the monopoly to export to one company that is a possibility'.[16]

[13] Interview, Chilean Ministry of Foreign Affairs, Chile, 19 December 2024.
[14] Interview, DG Trade, 17 September 2024.
[15] Interview, DG Trade, 17 September 2024.
[16] Interview, DG Trade, 17 September 2024.

Various interviewees corroborated that the EU's concerns regarding China have been a driving force during the ERM negotiations.[17]

The restriction of Chile's preferential pricing policy refers to Article 8.5 in the ERM entitled 'Export pricing'. The article's first paragraph prohibits charging export prices for energy goods and raw materials higher than those charged in the domestic market. This is what Chile's preferential pricing policy effectively implies. However, the second paragraph puts the first paragraph into perspective as it allows Chile to supply industrial sectors with preferential prices to promote domestic value added under certain conditions, to be found in the article's annex.[18] First, Chile may supply industrial sectors with preferential raw material prices as long as this does not become an 'export restriction on exports to the [EU]', second, nor shall it 'adversely affect the capacity of the [EU] to source raw materials from Chile' (EU-Chile-ITA: Annex 8/en 3). Furthermore, if an 'economic operator in a third country' receives the raw material at a preferential price it should be supplied to 'economic operators in like situations in the [EU]' (ibid.). Finally, the annex states that the preferential price may not be lower than the lowest price for the same good realised during the previous twelve months.

5.2. Chile's Lithium Industrial Policy vis-à-vis the ERM: Compatibility amidst reduced policy space

The modernised EU-Chile FTA reduces Chile's policy space as it legally deprives the Chilean government from measures it previously was not limited by, either through WTO rules or the preceding EU-Chile FTA, for example, performance requirements on investment. However, as these prohibitions merely mirror the US-Chile FTA, it is arguable whether they constitute an extended reduction in policy space.[19] The prohibition of import and export monopolies and the restrictions on preferential pricing within the ERM, however, are new, and they do

[17] Interview, Chilean Ministry of Foreign Affairs, 21 August 2024; Interview, Member of the European Parliament, 17 September 2024; Interview, Chilean Ministry of Foreign Affairs, 25 November 2024.
[18] Paragraph two reads: "Notwithstanding paragraph 1 of this Article, Chile may introduce or maintain measures with the objective of fostering value addition by supplying raw materials to industrial sectors at preferential prices so that they can emerge within Chile, provided that such measures satisfy the conditions set out in Annex 8-B." (EU-Chile-ITA: Art. 8.5 §2)
[19] Interview, Chilean Ministry of Foreign Affairs, 19 December 2024.

constitute a reduction in policy space.[20] [21] Both issues were contentious during the negotiations that only have been resolved during the very end of the negotiations.[22] The European Commission's (2018a, 2020, 2021) negotiation round reports reflect this.

In terms of the change in policy space through the ERM to Chile's current lithium industrial policy, import and export monopolies are non-existent in Chile; they are not part of a current industrial policy program, nor are there currently intentions to establish such entities.[23] At a later stage of negotiations, during the Boric government, the Chilean negotiating team used the ban on import and export monopolies merely as a bargaining chip to achieve more on critical points such as preferential pricing.[24] Hence, in a way, Chilean actors leveraged the geopolitical rivalry between the EU and China.

In contrast to import and export monopolies, preferential pricing is a component of Chile's current industrial policy programs in the lithium sector. Furthermore, the NLS signals a longer-term commitment to this instrument (Section 4). The EU side, on the other hand, initially aimed for an unconditional prohibition of the preferential pricing practice, as the textual proposal of the ERM reveals (European Commission, 2018b). Interviews suggest that the EU's motivation for limiting Chile's lithium preferential pricing was also related to Chinese value chain dominance. Chilean actors assumed an anticipation on the EU side that Chile may use preferential pricing to attract Chinese FDI, buttressing the Chinese dominance in the global lithium sector.[25] Thus, here, the EU-China geopolitical competition motivated policy space reductions by the EU on Chile. Chilean actors meanwhile emphasized that they do not have a preference for Chinese investment over other investors, including European ones, but that the latter have not shown much interest in participating.[26] The dominance of Chinese

[20] Interview, Chilean Ministry of Foreign Affairs, 25 November 2024; Interview, CORFO, 5 December 2024; Interview, Chilean Ministry of Foreign Affairs, 19 December 2024.
[21] Strictly speaking, policy space is also reduced through the further liberalisation of tariffs through the new EU-Chile FTA. However, we limit ourselves here to aspects relevant for Chile's lithium industrial policy. A full analysis of Chile's policy space would encompass further areas such as intellectual property rights (Thrasher and Gallagher 2008) out of the scope for this paper.
[22] Interview, Chilean Ministry of Foreign Affairs, 21 August 2024; Interview, Member of the European Parliament, 17 September 2024; Interview, Chilean Ministry of Foreign Affairs, 25 November 2024.
[23] Interview, Chilean Ministry of Foreign Affairs, 21 August 2024.
[24] Interview, Chilean Ministry of Foreign Affairs, 21 August 2024.
[25] Interview, Chilean Ministry of Foreign Affairs, 21 August 2024; Interview, Chilean Ministry of Foreign Affairs, 25 November 2024.
[26] Interview, State-owned enterprise, 14 November 2024; Interview, Chilean Ministry of Mining, 18 November 2024.

investment interest in this regard arguably reflects the Chinese dominance in the global battery value chain.

The final ERM, however, permits preferential pricing under certain conditions that align with Chile's current conduct (see previous section). The final rounds of negotiations were crucial for reaching this compatibility.[27] This final phase lasted from early 2022, when the Boric government in Chile came to power, until December 2022. The previous Piñera administration sought to conclude the negotiations before the end of its mandate, which ultimately failed due to France's resistance on agricultural issues. Following that, members from the Chilean negotiation middle staff raised concerns to the incoming administration on issues disregarded by the previous administration. These concerns pertained to the conditions for preferential pricing and the prohibition of R&D performance requirements, which by then was entailed in the agreement and would have implied a reduction in Chile policy space beyond WTO rules and its other FTAs. The initial aim from the Chilean side for the last rounds of negotiation were then to not only get rid of the R&D performance requirement prohibition but also the elimination of the export pricing and import and export monopolies articles in the ERM. As interviews and the final FTA tells, the Chilean side was able to get rid of the R&D performance requirements prohibition and to modify the preferential pricing conditions listed in the annex to guarantee compatibility.[28]

Explanations for the final result falling short of the initial Chilean objectives differ. One argument states that these aims were out of reach to begin with due to credible threats from the EU to open further chapters of the agreement again. In this perspective, the stated goals served rather as bargaining chips.[29] Others highlight the foremost domestic political forces within the government as well as in the opposition pushing for a quick conclusion of the agreement rather than extending the negotiations to attain all set aims.[30]

The improvements achieved during the last rounds of negotiations can nonetheless be attributed to various factors. A technical task force was established during the final

[27] Interview, Member of the European Parliament, 17 September 2024; Interview, DG Trade, 17 September 2024; Interview, Chilean Ministry of Foreign Affairs, 25 November 2024.
[28] Interview, Chilean Ministry of Foreign Affairs, 21 August 2024; Interview, Chilean Ministry of Foreign Affairs, 25 November 2024.
[29] Interview, Chilean Ministry of Foreign Affairs, 19 December 2024.
[30] Interview, Chilean Ministry of Foreign Affairs, 25 November 2024.

negotiation rounds, consisting of members from all relevant Chilean ministries (Economy, Mining, Energy and Finance) and CORFO to transfer knowledge and ensure compatibility.[31] Arguably, one determinant of Chile's bargaining position at that point can be attributed to the time pressure on the side of the EU. The responsible Americas division within DG Trade needed results before the next European Parliament elections in 2024. While developments regarding the FTAs with Mexico, MERCOSUR and Canada stalled, closing negotiations with Chile was the only option offering short-term results. This was experienced on the Chilean side as a push from the EU side to rush for the agreement's swift conclusion thereby increasing Chile's leverage.[32] The EU's motivation for a swift conclusion also came from the interplay of the EU's dependence on critical raw materials, as on lithium, in the context of geopolitical competition, intensified by Russia's invasion of Ukraine in the very same year of the last negotiation rounds.[33] In this context, Chile had leverage in two respects. For one, the growing influence of China—especially through Chinese firms operating in Latin America — reflected in the fact that China has become Chile's most significant trading partner, increased competitive pressures on both the EU and European businesses.[34] Furthermore, with regards to lithium, Chile possesses leverage over the EU [35] as the EU depends more on Chilean lithium imports than Chile does on the EU as an export market (UN, 2024).[36] From the EU side, the conditions regarding preferential prices has been viewed as a 'gesture' towards Chile to grant them policy space,[37] because the EU has no general problem with processes further up the battery value chain occurring in Chile - and even prefers this over them taking place in China.[38]

Some actors view the conditional allowance and compatibility with Chile's lithium industrial policy as a negotiation success on the Chilean side, especially if considered along the equally

[31] Interview, Chilean Ministry of Foreign Affairs, 19 December 2024.
[32] Interview, Chilean Ministry of Foreign Affairs, 21 August 2024; Interview, Chilean Ministry of Foreign Affairs, 25 November 2024.
[33] Interview, Member of the European Parliament, 17 September 2024; Interview, EU Trade union, 24 October 2024.
[34] Interview, Member of the European Parliament, 17 September 2024.
[35] Interview, Trade policy NGO, 28 August 2024; Interview, Chilean Ministry of Foreign Affairs, 25 November 2024.
[36] For lithium oxide and hydroxide, in 2023, exports from Chile amounted to 23% of total EU imports ranking second behind China (51%). But from the Chilean perspective only 7% entered the EU market. For lithium carbonate, Chile is the most important source for EU imports accounting for 61% in 2023. Meanwhile, only 4% of Chile's lithium carbonate exports go to the EU ranking fourth behind China (67%), Korea (20%) and Japan (6%) (UN, 2024).
[37] Interview, Member of the European Parliament, 17 September 2024.
[38] Interview, DG Trade, 17 September 2024; Interview, Trade policy NGO, 28 August 2024.

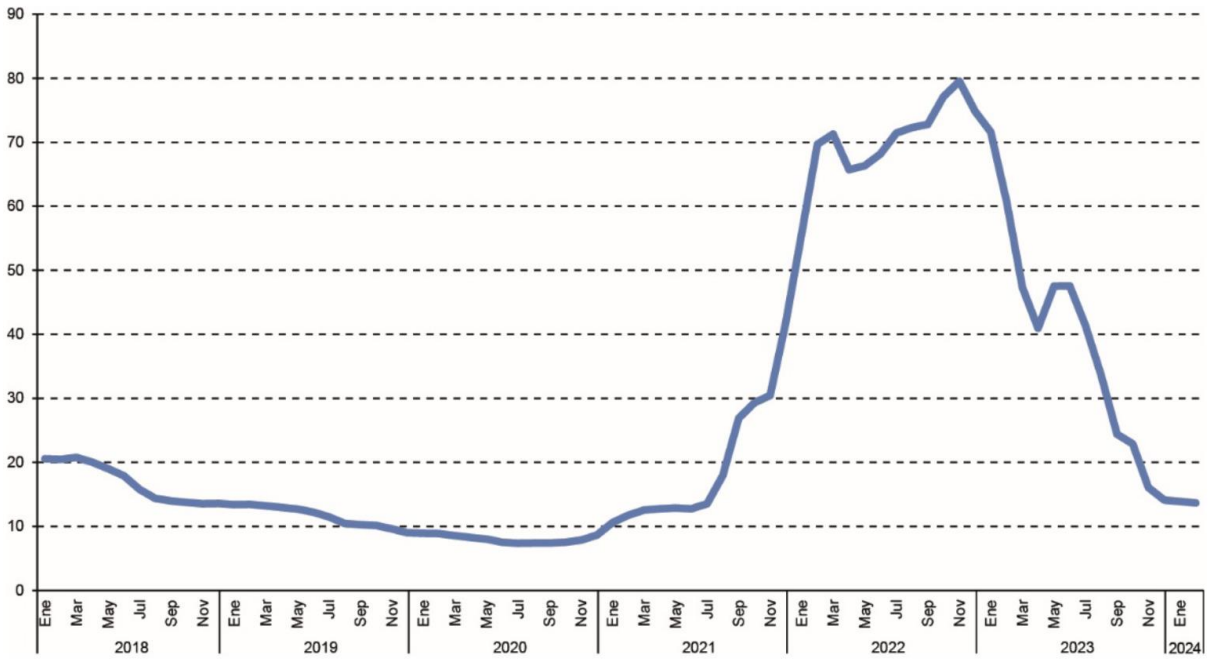
recent EU-New Zealand FTA that unconditionally bans preferential pricing[39] (Council of the European Union, 2024b). Other actors from the Chilean side emphasize the loss in policy space for future policy initiatives, especially regarding the little benefits for Chile in terms of increased market access.[40]

Notwithstanding their compatibility at the time of the FTA's conclusion, the ERM may still impact Chile's preferential pricing policy as it constitutes a sort of policy 'lock in' so that any revisions to the policy must now align with the given policy space allowed by the EU-Chile FTA.[41] Especially since the new possibility to renegotiate individual chapters, driven by pressures from the European Parliament, seems highly complicated and very unlikely.[42] More importantly, there are plans to change the current preferential pricing system. These considerations are driven by the lithium price dynamics, which have changed since the invention of the policy and the latest tender. As Figure 2 shows, after the lithium price increase of 2021 and 2022, driven by increased demand for EVs triggered by massive government purchase premiums in the US and the EU during the covid-19 crisis (The Economist, 2023), the lithium price exhibits a downward trend. If prices settle at levels similar to the average of the past six months, preferential pricing may no longer serve as an effective incentive for attracting investment.[43] In response to this, concrete plans are in place to revise the methodology used to calculate preferential prices. For example, the methodology is being revised by the Ministry of Mining for the SOE Enami in relation to lithium tenders in the Salares de Altoandinos, one of the newly defined strategic salt flats, through the CEOL framework (see previous section).[44] Similarly, the calculation method is being questioned at CORFO for the mining sites of SQM and Albemarle in the Salar de Atacama.[45] While a ministerial committee comprising several key Chilean ministries was consulted on what should be considered relevant for the FTA, these considerations for revising the methodology have not been

[39] Interview, Chilean Ministry of Foreign Affairs, 21 August 2024; Interview, Trade policy NGO, 28 August 2024.
[40] Interview, Chilean Ministry of Foreign Affairs, 25 November 2024.
[41] Interview, Trade policy NGO, 28 August 2024; Interview, State-owned enterprise, 14 November 2024; Interview, Chilean Ministry of Foreign Affairs, 25 November 2024; Interview, Chilean Ministry of Foreign Affairs, 19 December 2024.
[42] Interview, Private lithium firm, 5 September 2024; Interview, Chilean Ministry of Foreign Affairs, 19 December 2024; Interview, EU Trade union, 24 October 2024.
[43] Interview, Tech and raw materials agency, 3 September 2024; Interview, State-owned enterprise, 14 November 2024; Interview, Chilean Ministry of Mining, 28 November 2024.
[44] Interview, State-owned enterprise, 14 November 2024; Interview, Chilean Ministry of Mining, 18 November 2024.
[45] Interview, CORFO, 5 December 2024.

considered during the trade negotiations.[46] This reflects a silo effect, highlighting a broader disconnect between trade policy-making and national industrial policy-making.

Figure 2: Lithium prices in US$/kg, 2018–2024



Source: Castillo et al. (2024 : 29).

Notably, however, Chile's lithium preferential pricing policy has not yet materialised in any investment although price developments have been favourable, private companies were interested, and the ERM has not been in place yet. The next section reviews further factors besides policy space constraining successful industrial policy implementation in Chile's lithium sector.

5.3. Obstacles for successful Industrial Policy beyond the ERM

Besides the constrained policy space through the ERM of the EU-Chile FTA, other national factors have become an obstacle to the success of industrial policy measures in the lithium sector. 'Policy failures' (Carrasco, 2024) have raised concerns about the effectiveness and

[46] Interview, State-owned enterprise, 14 November 2024; Interview, Chilean Ministry of Mining, 18 November 2024.; Interview, CORFO, 5 December 2024; Interview, Chilean Ministry of Foreign Affairs, 19 December 2024.

success of the tool of preferential pricing and the lithium tenders. Besides a past scandal of SQM underpaying royalties to the Chilean state, loopholes and unenforceable clauses in contracts with SQM and Albemarle have been identified. Doubts also remain about the tool's ability to attract investments as none have materialized thus far. More importantly, the development of lithium-forward industries in Chile has yet to happen, as seen with the pending plans for cathode production. Consequently, the Chilean state changed its role from simply controlling payments to actively shaping contracts and enhancing its capabilities in governing lithium, though the results remain to be seen.[47]

Moreover, no national consensus on the extent of industrial policy-making exists. Varying preferences and levels of willingness among domestic political forces have developed historically (see previous section) and continue to evolve today: the right and the business sector tend to favor market forces, while the left advocates for active state involvement. This extends to implications for more comprehensive industrial policymaking in the lithium sector. For example, instead of President Boric's original plan for a state-controlled national lithium firm, the NLS relies on existing SOEs, Enami and CODELCO, to manage new strategic salt flats.[48]

Furthermore, the Chilean state governs within generally limited state capacity and financial resources. For instance, other (aspiring) hegemonic powers or regions like China, the USA, and the EU use subsidies to boost their EV sectors. Instead, Chile has to rely on non-cost tools, like preferential pricing (see previous section), enabled by Chile's unique regulatory framework and the state's ownership of lithium. This tool is intended to contribute to national development goals by leveraging the terms of contracts to incentivize value addition and enforce conditions (Bulfone et al., 2024), including possibly more comprehensive considerations of indigenous and local communities in decision-making and financial contributions and (sustainable) technology choices[49].

This limited state capacity also explains why preferential pricing remains in place despite certain policy failures (e.g. being based on the premise of high lithium prices). Instead, there

[47] Interview, Chilean Ministry of Mining, 28 November 2024; Interview, CORFO, 5 December 2024; Interview, CORFO, 23 December 2024.
[48] Interview Chilean Ministry of Mining, 28 November 2024; Interview, CORFO, 5 December 2024; Interview, CORFO, 23 December 2024.
[49] Interview Comité de Desarrollo y Fomento Indígena, 03 January 2025.

is increasing awareness of the flaws of this policy tool. Moreover, the primary investment incentive is not solely the price element, but rather non-price factors such as access to lithium, especially in the context of high prices and its strategic importance for the automotive industries and the green transition, as well as a stable economic and political investment environment.[50]

Chile's policy space is further constrained by its specific integration into the world economy. The EU-Chile FTA is merely one of the 33 FTAs that Chile has concluded, a country known for its liberal and open trade policy.[51] Despite its abundant lithium reserves, Chile further faces challenges in capturing higher- value-adding activities within the battery and EV sectors due to its GVC position. On the one hand, this relates to Chile's geographical position and the economic geography of automotive value chains (see previous section). Battery manufacturing is indeed expected to remain concentrated elsewhere (Castillo et al., 2024). On the other hand, lead firms, SQM and Albemarle, who do not only hold more technical expertise vis-à-vis SOEs,[52] but also quasi-monopolistic positions in the extractive sector, are criticized for 'state capture' at the cost of public interests (Yurisch Toledo et al., 2024) as the Chilean state has to rely on them to seize the current 'window of opportunity' of lithium. For instance, despite discussions on not extending SQM's mining rights after 2030, a SQM-CODELCO partnership was formed to prevent production disruptions until a replacement was established.[53] Overall, the Chilean lithium value chain largely depends on foreign firms.[54]

Chile has not yet developed car production and national demand increases yet remains insufficient for EVs, partly due to the country's small size and its GVC position. Thus, there have been proposals for a regional (electro) mobility market and manufacturing hub (Castillo et al., 2024) within Latin America involving Brazil, Argentina, and Bolivia—countries with car production and raw material reserves, also accounting for GVC configurations. This could also

[50] Interview, Tech and raw materials agency, 3 September 2024; Interview, Senior Researcher, 9 September 2024; Interview, CORFO, 5 December 2024; Interview, CORFO, 23 December 2024.
[51] Interview, Chilean Ministry of Foreign Affairs, 21 August 2024.
[52] Interview, Senior Researcher, 9 September 2024.
[53] Interview, Chilean Ministry of Mining, 28 November 2024; Interview, CORFO, 23 December 2024.
[54] Interview, State-owned enterprise, Chile 14 November 2024; Interview, Chilean Ministry of Mining, 28 November 2024.

be enabled through public procurement with Chile already operating e-buses for public transportation.[55]

However, to overcome extractivism and commodity dependence as a result of gradual and premature deindustrialization, Chile may consider active industrial policy embedded within a broader long-term strategy (Castillo and Ominami, 2024) beyond the system of preferential pricing. Besides plans to explore underpenetrated segments within the lithium value-chain such as next-generation technologies like solid-state batteries, or to focus more generally on the mining sector, Chile's industrial policy could target other renewable fields of the energy transition such as solar and wind energy hence expanding into new comparative advantages.[56]

6. Conclusions

This article explores and contributes to the understanding of the phenomenon of 'kicking away the green ladder' for non-hegemonic powers in the context of the green transition. To do so it examines the impact of trade policy on national industrial policy space. Specifically, it investigates the modernized EU-Chile FTA, focusing on its novel ERM and its implications for Chile's industrial policy in the lithium sector, particularly regarding preferential pricing policies and broader developmental goals.

The findings reveal that while the ERM permits preferential pricing under specific conditions, it also introduces new restrictions, such as banning import and export monopolies and limiting preferential pricing mechanisms. These measures restrict policy space beyond WTO rules or the previous EU-Chile FTA, reflecting broader trends of FTAs. More significantly, this creates a 'lock-in' effect that limits Chile's ability to adapt policies to shifting global and domestic dynamics.

Chile was able to negotiate the inclusion of preferential pricing under certain conditions and avoided even more restrictive constraints on its use of strategically leveraging geopolitical factors in negotiations, in particular the EU's reliance on Chilean lithium and competition from China. However, our analysis for Chile's case demonstrates that policy space, while essential for national development, does not guarantee the success of industrial policy instruments.

[55] Interview, Senior Researcher, 20 November 2024; Interview, CORFO, 23 December 2024.
[56] Interview, Extractive industries NGO, 9 September 2024; Interview, CORFO, 5 December 2024.

Domestic factors, such as the absence of a political consensus on comprehensive industrial policy and past policy failures, also hinder progress. For instance, despite CORFO's lithium tenders and renegotiated contracts with leading lithium mining firms SQM and Albemarle to ban low-value brine exports and require lithium carbonate production, significant investments have yet to materialize.

While the ERM is not 'Chile's biggest problem,' it illustrates how trade agreements can restrict industrial policy in resource-rich economies. To avoid replicating patterns of commodity dependence in low-carbon transitions, non-hegemonic powers like Chile must still find ways to integrate into higher-value chain segments. However, the dominance of Chinese firms and the economic geography of the global battery value chain highlight further the challenges Chile faces in doing so.

Addressing these challenges requires more than preserving policy space—it requires structural transformation, aligning national policies with GVC dynamics, and building robust domestic capacities, achieving both external and internal coherence. Future research should continue to monitor the ERM's implementation and its long-term implications for Chile's policy space.

References

Aggarwal, V. K., and S. J. Evenett (2014) 'Do WTO Rules Preclude Industrial Policy? Evidence From the Global Economic Crisis', *Business and Politics* 16(4): 481–509.

Amsden, A. (2001) The Rise of "The Rest": Challenges to the West from Late-Industrializing Economies. Oxford University Press.

Amsden, A., and T. Hikino (2000) ''The Bark is Worse Than the Bite: New WTO Law and Late Industrialization', *The Annals of the American Academy* 570: 104–14.

Agosin, M. R., C. Larrain and N. Grau (2010) *Industrial Policy in Chile*. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.1817286

Ahumada, J. M. (2019) *The Political Economy of Peripheral Growth: Chile in the Global Economy*. Cham: Springer International Publishing AG. http://ebookcentral.proquest.com/lib/hwr/detail.action?docID=5739708 (accessed 15 January 2025).

BGR (2009) Energierohstoffe 2009. Reserven, Ressourcen, Verfügbarkeit [Energy Raw Materials 2009: Reserves, Resources, Availability]. https://www.bgr.bund.de/DE/Themen/Energie/Downloads/Energierohstoffe_2009_gesamt.pdf?__blob=publicationFile&v=2 (accessed 10 May 2024).

Bril-Mascarenhas, T. and A. Madariaga (2019) 'Business Power and the Minimal State: The Defeat of Industrial Policy in Chile' *The Journal of Development Studies* 55(6): 1047–66.

Bridge, G., and E. Faigen (2022) 'Towards the Lithium-Ion Battery Production Network: Thinking Beyond Mineral Supply Chains', *Energy Research & Social Science* 89.

Bulfone, F. (2023) 'Industrial Policy and Comparative Political Economy: A Literature Review and Research Agenda', *Competition & Change* 27(1): 22-43.

Bulfone, F., T. Ergen and E. Maggor (2024) 'The Political Economy of Conditionality and the New Industrial Policy'. MPIfG Discussion Paper, No. 24/6. Cologne: Max Planck Institute for the Study of Societies.

Carrasco, S. (2024) 'State Capacity for Green Growth: Analyzing Industrial Policy in the Latin American Lithium Triangle', *Competition & Change* 0(0) https://doi.org/10.1177/10245294241249202

Chang, H.-J. (2002) *Kicking Away the Ladder: Development Strategy in Historical Perspective*. London: Anthem Press.

Cimoli, M., G. Porcile and S. Rovira (2010) 'Structural Change and the BOP-Constraint: Why did Latin America ail to Converge?' *Cambridge Journal of Economics* 34(2): 389–411.

CORFO (2022) 'Proceso de Selección de Productores Especializados para la Elaboración de Productos de Valor Agregado de Litio en Chile' [Process of Selecting Specialized Producers for the Development of Value-Added Lithium Products in Chile]. https://www.corfo.cl/sites/cpp/landing_litio (accessed 24 July 2024).

Castillo, M. and C. Ominami (2024) 'Transformación productiva y nueva actualidad de las políticas industriales en América Latina' [Productive Transformation and the New Reality of Industrial Policy in Latin America] *Estudios internacionales*, 56(207): 185-216.

Castillo, M., Garcés, I. and R. Furtado Messias (2024) 'Perspectivas de desarrollo de las cadenas de valor relacionadas con el litio en Chile y América del Sur' [Development Prospects for Lithium-Related Value Chains in Chile and South America] Recursos Naturales y Desarrollo series, No. 223 (LC/TS.2024/38). Santiago: Economic Commission for Latin America and the Caribbean (ECLAC).

Council of the European Union (2002) 'Agreement Establishing an Association Between the European Community and its Member States, of the One Part, and the Republic of Chile, of the Other Part—Final act. , 352 OJ L §. http://data.europa.eu/eli/agree_internation/2002/979/oj (accessed 15 January 2025).

Council of the European Union (2023) 'Interim Agreement on Trade between the European Union and the Republic of Chile' http://data.europa.eu/eli/dec/2023/2761/oj (accessed 15 January 2025).

Council of the European Union (2024a) 'Critical Raw Materials Act'. https://www.consilium.europa.eu/en/infographics/critical-raw-materials/ (accessed 4 April 2024).

Council of the European Union. (2024b)' Free Trade Agreement between the European Union and New Zealand' http://data.europa.eu/eli/dec/2024/244/oj (accessed 15 January 2025).

CleanTech Lithium. (n.d) 'Direct Lithium Extraction'. https://ctlithium.com/about/direct-lithium-extraction/ (accessed 3 January 2025).

Dallas, M. (2014) 'Cloth Without a Weaver: Power, Emergence and Institutions across Global Value Chains', *Economy and Society* 43(3): 315-45.

Dünhaupt, P. and H. Herr (2020) 'Catching Up in a Time of Constraints—Industrial Policy Under World Trade Organization Rules, Free Trade Agreements and Bilateral Investment Agreements'. Friedrich-Ebert Foundation Singapore.

Dünhaupt, P., H. Herr, F. Mehl and C. Teipen (2022) 'Comparing National and Industry-Specific Trajectories of Economic and Social Upgrading as Well as Various Strategic Solutions' in: C. Teipen, P. Dünhaupt, H. Herr and F. Mehl (eds) *Economic and Social Upgrading in Global Value Chains – Comparative Analyses, Macroeconomic Effects, the Role of Institutions and Strategies for the Global South*, pp. 505–564. Basingstoke: Palgrave Macmillan.

European Commission (2018a) 'Report on the 3rd Round of Negotiations Between the EU and Chile for Modernising the Trade Part of the EU-Chile Association Agreement. https://circabc.europa.eu/ui/group/09242a36-a438-40fd-a7af-fe32e36cbd0e/library/1f9dff02-d5fe-47f4-b664-7556e6b1a04a/details (accessed 15 January 2025).

European Commission (2018b) 'EU-Chile Free Trade Agreement. EU Textual Proposal Energy and Raw Materials Chapter'. https://circabc.europa.eu/rest/download/cd08a570-d08c-407e-97a2-c656a94c3e3a? (accessed 15 January 2025).

European Commission (2020) 'Report on the 8th Round of Negotiations Between the EU and Chile for Modernising the Trade Part of the EU-Chile Association Agreement'. https://circabc.europa.eu/ui/group/09242a36-a438-40fd-a7af-fe32e36cbd0e/library/5f1be243-9943-4f17-8caa-4da1e46084af/details (accessed 15 January 2025).

European Commission (2021) 'Report on the 9th round of Negotiations Between the EU and Chile for Modernising the Trade Part of the EU-Chile Association Agreement'. https://circabc.europa.eu/ui/group/09242a36-a438-40fd-a7af-fe32e36cbd0e/library/c43382b9-07dc-46a2-9b76-a9a23541d12e/details (accessed 15 January 2025).

European Commission (2024a) 'The EU-Chile Agreement Explained'. https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/chile/eu-chile-agreement/agreement-explained_en (accessed 15 January 2025).

European Commission (2024b) 'EU Trade Relations With Chile'. https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/chile_en (accessed 15 January 2025).

European Commission (2024c) 'EU Trade Agreements'. https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/negotiations-and-agreements_en (accessed 15 January 2025).

European Commission, ECORYS, & CASE (2017) 'Ex-Ante Study of a Possible Modernisation of the EU-Chile Association Agreement: Final Report'. LU: Publications Office. https://data.europa.eu/doi/10.2781/982198 (accessed 15 January 2025).

Gallagher, K. P. (2007) 'Understanding Developing Country Resistance to the Doha Round', *Review of International Political Economy* 15(1): 62–85.

Gereffi, G., J. Humphrey and T. Sturgeon (2005) 'The Governance of Global Value Chains', *Review of International Political Economy,* 12: 78–104.

Government of Chile (2023) 'National Lithium Strategy – For Chile and its People'. https://s3.amazonaws.com/gobcl-prod/public_files/Campa%C3%B1as/Litio-por-Chile/Estrategia-Nacional-del-litio-EN.pdf (accessed 31 October 2023).

Gräf, H. (2024) 'A Regulatory-Developmental Turn Within EU Industrial Policy? The Case of the Battery IPCEIs' *Politics & Governance* 12 8188, https://doi.org/10.17645/pag.8188.

Grieger, G. (2024) 'Modernisation of the Trade Pillar of the EU-Chile Association Agreement' https://www.europarl.europa.eu/RegData/etudes/BRIE/2018/630278/EPRS_BRI(2018)630278_EN.pdf (accessed 15 January 2025).

Hopewell, K. (2024) 'The (Surprise) Return of Development Policy Space in the Multilateral Trading System: What the WTO Appellate Body Blockage Means for the Developmental State' *Review of International Political Economy* 31(4): 1245-1270.

IEA (International Energy Agency) (2021) 'The Role of Critical Minerals in Clean Energy Transitions' World Energy Outlook Special Report. https://iea.blob.core.windows.net/assets/ffd2a83b-8c30-4e9d-980a-52b6d9a86fdc/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf (accessed 2 August 2024).

IEA (2024a) 'Batteries and Secure Energy Transitions'. https://iea.blob.core.windows.net/assets/cb39c1bf-d2b3-446d-8c35-aae6b1f3a4a0/BatteriesandSecureEnergyTransitions.pdf (accessed 10 December 2024).

IEA (2024b) 'Global Critical Minerals Outlook 2024'. https://iea.blob.core.windows.net/assets/ee01701d-1d5c-4ba8-9df6-abeeac9de99a/GlobalCriticalMineralsOutlook2024.pdf (accessed 8 January 2025).

Irarrazaval, F. and S. Carrasco (2023) 'One Step Forward, Two Steps Back? Shifting Accumulation Strategies in the Lithium Production Network in Chile' *The Extractive Industries and Society*, 15, 101327. https://doi.org/10.1016/j.exis.2023.101327

ITAQA Sarl (2012) 'Evaluation of the Economic Impact of the Trade Pillar of The EU-Chile Association Agreement—Final Report.'

Lebdioui, A. (2024) *Survival of the Greenest: Economic Transformation in a Climate-Conscious World* (1st ed.). Cambridge: Cambridge University Press.

Ministry of Foreign Affairs Chile (2021) 'Negotiations for the Modernization of the Association Agreement between Chile and the European Union Conclude. https://minrel.gob.cl/news/negotiations-for-the-modernization-of-the-association-agreement-between (accessed 10 October 2024).

Poveda Bonilla, R. (2020). 'Estudio de caso sobre la gobernanza del litio en Chile [Case Study on Lithium Governance in Chile]'. Recursos Naturales y Desarrollo, 195. Santiago: Economic Commission for Latin America and the Caribbean.

Reuters (2024) 'China's BYD Postpones Plans for 2025 Chile Lithium Cathode Plant'. *Reuters*. https://www.reuters.com/markets/commodities/chinas-byd-postpones-plans-2025-chile-lithium-cathode-plant-2024-05-16/ (accessed 15 January 2025).

Schmidt, M. (2017). Rohstoffrisikobewertung – Lithium [Raw Material Risk Assessment – Lithium]. DERA Rohstoffinformationen 33: Berlin.

Schmidt, M. (2023). Rohstoffrisikobewertung – Lithium [Raw Material Risk Assessment – Lithium]. DERA Rohstoffinformationen 54: 81 S., Berlin.

Schrank, A. and M.J. Kurtz (2005) 'Credit Where Credit Is Due: Open Economy Industrial Policy and Export Diversification in Latin America and the Caribbean', *Politics & Society* 33(4): 671–702.

Rodrik, D. (2001) 'Trading in Illusions', *Foreign Policy* (123): 54-62.

Shadlen, K. C. (2005) 'Exchanging Development for Market Access? Deep Integration and Industrial Policy Under Multilateral and Regional-Bilateral Trade Agreements', *Review of International Political Economy* 12(5): 750–75.

Solomon, D. B., and F.A. Cambero (2024) 'Chile to Seek Bidders for Preferential Pricing on Lithium by July'. https://www.mining.com/web/chile-to-open-calls-for-preferential-pricing-on-lithium-in-second-half-of-2024/ (accessed 25 July 2024).

Sturgeon, T.J. and J. Van Biesebroeck, (2009) 'Crisis and Protection in the Automotive Industry: A Global Value Chain Perspective', in S.J. Evenett, B.M Hoeckman and O. Cattaneo (eds) *Effective Crisis Response and Openness: Implications for the Trading System*, pp.285-305. Washington: The World Bank.

SUBREI. (2024). 'Congreso aprueba y despacha Acuerdo Marco Avanzado entre Chile—Unión Europea' [Congres Approves and Dispatches Advanced Framework Agreement between Chile-European Union]. https://www.subrei.gob.cl/sala-de-prensa/noticias/detalle-noticias/2024/11/13/congreso-aprueba-y-despacha-acuerdo-marco-avanzado-entre-chile---unión-europea (accessed 9 January 2025).

The Economist (2023) 'Why Crashing Lithium Prices Will Not Make Electric Cars Cheaper'. https://www.economist.com/business/2023/04/20/why-crashing-lithium-prices-will-not-make-electric-cars-cheaper (accessed 15 January 2025).

Thrasher, R. D. and K.P. Gallagher (2008) '21st Century Trade Agreements: Implications for Long-Run Development Policy' Pardee Papers No. 2. Boston: Boston University.

UNCTAD (2023) 'The State of Commodity Dependence 2023'. Geneva: United Nations Conference on Trade and Development.

UNECA (2016) 'Transformative Industrial Policy for Africa'. Addis Ababa: United Nations Economic Commission for Africa.

US Geological Survey (USGS) (2023) 'Lithium. Mineral Commodity Summaries, January 2023'. https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-lithium.pdf (accessed 18 October 2024).

Wade, R. (1990) Gover*ning the Market: Economic Theory and the Role of Government in East Asian Industrialization*. Princeton, N.J: Princeton University Press.

Wade, R. H. (2018) 'The Developmental State: Dead or Alive?' *Development and Change* 49(2): 518–46.

Wu, M. and J.E. Salzman (2014) 'The Next Generation of Trade and Environment Conflicts: The Rise of Green Industrial Policy' *Northwestern University Law Review* 108(2): 401-75.

Yin, R. K. (2018) *Case Study Research and Applications: Design and Methods* (6th edition). Los Angeles: SAGE.

Yurisch Toledo, T., G. González Robles and E. Ramírez Venegas (2024, Abril) 'Diagnostic Report on Corruption in the Chilean Lithium Industry'. Fundación Terram. Santiago. https://www.terram.cl/wp-content/uploads/2024/07/Diagnostic-Report-on-Corruption-Lithium-Industry_Terram.pdf (accessed 15 August 2024).

Appendix

Table A1. Interviews

Type of actor / institution	based in	DATE
Private Lithium Firm	Chile	09/05/2024
State-owned enterprise	Chile	11/14/2024
Chilean Ministry of Mining	Chile	11/18/2024
Chilean Ministry of Mining	Chile	11/28/2024
Chilean Ministry of Foreign Affairs	Chile	08/21/2024
Chilean Ministry of Foreign Affairs	Chile	12/19/2024
Chilean Ministry of Foreign Affairs	Chile	11/25/2024
CORFO	Chile	12/05/2024
CORFO	Chile	12/23/2024
Comité de Litio y Salares	Chile	12/20/2024
Comité de Desarrollo y Fomento Indígena	Chile	01/03/2025
Tech. and raw materials agency	Chile	09/03/2024
Extractive industries NGO	Chile	09/09/2024
Trade policy NGO	EU	08/28/2024
Trade Union	EU	10/24/2024
European Commission DG Trade	EU	09/17/2024
Member of the European Parliament	EU	09/17/2024
Senior Researcher	Chile	08/27/2024
Senior Researcher	Chile	09/09/2024
Senior Researcher	Chile	08/29/2024
Senior Researcher	Chile	11/20/2024

Source : Authors' own depiction

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