Identity Shaping and Multiple Lags: Lithium Resource Governance in the Context of Latin American Critical Mineral Strategies

LIU PENG
Beijing International Studies University

Abstract

In the context of the global energy transition and intensifying technological competition, the reshaping of the global industrial chain and the strategic deployment of critical minerals have gained increasing attention, with the governance of lithium resources emerging as a hot and significant research topic. The study finds that three Latin American countries (Argentina, Bolivia, and Chile) on lithium resource governance have adopted two major emerging policy orientations in the field of critical minerals: promoting downstream processing to increase exports and tax revenues, reviewing mining fees and taxes to balance government income with investor interests. These policy orientations reflect the proactive stance and strategic adjustments of Latin American countries in global lithium resource governance. The research analyzes and compares the similarities and differences in the governance models of lithium resources in the "Lithium Triangle" countries of Latin America from two dimensions: national policies, legal frameworks. Utilizing discourse analysis methods, the study reveals that the leaders of the three Latin American countries have employed different official strategies in the governance of lithium resources, reflecting the distinctive mechanisms of national identity formation behind the discourse. The deep-seated challenges in the governance process of lithium resources in the three Latin American countries primarily lie in the institutional lag between collective expression and collective action, the technological lag between resource reserves and resource extraction, and the collaborative lag between self-organization and re-organization.

Keywords: Critical mineral strategies, lithium resource governance, lithium triangle countries, national identity shaping, multiple lags.

Author's Bio: Peng Liu (1985-), male. Now he is an Associate Professor of the Faculty of Spanish of the School of European studies of Beijing International Studies University, mainly focusing his studies on the economy of Latin American countries and cultural trade of Latin American countries. In terms of academic part-time work, he currently serves as the director of the Peruvian Research Center of Beijing International Studies University, researcher of the Beijing Base of Foreign Culture Communication, and researcher of the Beijing Services and Cultural Trade Research Base..

Contact: +86 15010051900, 15010051900@163.com

Critical minerals generally refer to those minerals and metals crucial for renewable energy, clean technologies, and the transition towards a more sustainable, low-carbon future. These critical raw materials are sometimes referred to as Strategic Minerals, Strategic and Critical Minerals, or Energy Transition Minerals. By 2050, to meet the growing demand for clean energy technologies, over 3 billion tons of minerals and metals will be needed globally. (World Bank, 2020) If the goals of the Paris Agreement on carbon reduction and green energy transition are achieved as scheduled, the production of global critical mineral products such as graphite, lithium, and cobalt could increase by nearly 500%. The International Energy Agency estimates that clean energy technologies will significantly drive the demand for minerals such as lithium, cobalt, nickel, copper, and rare earth elements.

In the context of global energy industry transformation and intensifying technological competition, sectors like green energy, aerospace, and electronics manufacturing are always closely dependent on critical mineral resources. Meanwhile, these critical minerals are facing a significant increase in the disruption of global supply-demand relationships and supply chain breakdown risks due to their heightened importance in geopolitical contexts, escalating strategic competition among major powers, and ongoing military and geopolitical conflicts in Eastern Europe. As the strategic value of these minerals becomes increasingly prominent, major countries have deepened their understanding of their strategic significance and proposed strategic policies to cope with possible supply chain crises, ensuring national economic and security defenses. Sometimes, they even utilize these resources as tools in strategic games, attributing a pan-security political attribute to minerals that were originally non-political resources.

On one hand, against the backdrop of frequent geopolitical conflicts, uncertainties facing global industrial chains and supply chains, and the exacerbation of deglobalization, critical minerals are increasingly of economic strategic significance to resource-rich countries. Mineral-rich countries like Brazil, Canada, and Australia leverage their dominant positions in the global critical minerals market to gain competitive advantages in global industrial chains and supply chains. Critical minerals are also critical elements for clean energy technology and energy transition, essential for driving technological innovation and the development of emerging mineral substitutes. On the other hand, critical minerals are also of great developmental security significance to resource-poor countries. In terms of development security, the supply of critical minerals is crucial for countries highly dependent on importing these resources. Factors such as the vulnerability of supply chains, potential supply interruptions, governance issues, political risks, or over-concentration of production may all affect the economic development and security of these countries.

Latin America is an important production area for critical minerals needed for clean energy technologies, including lithium, copper, etc., crucial for the expansion of batteries, renewable energy, and power grids. Latin America accounts for 40% of global copper production, with Chile, Peru, and Mexico being the major producing countries. The region also supplies 35% of the world's lithium, with Chile and Argentina being the second and fourth largest producers globally. Additionally, Latin America has

significant potential in the production of graphite, nickel, manganese, and rare earth elements.

On a global scale, lithium, as a crucial mineral in the new energy revolution, has seen its supply security become a core consideration in the strategic calculus of nations. With the rapid development of electric vehicles and energy storage technologies, the demand for lithium resources has surged, leading to increased attention to the reshaping of the global industrial chain and the strategic layout of critical minerals. In this context, the governance of critical minerals resources in Latin American countries has become a hot and important research topic. Despite possessing abundant reserves of critical mineral resources, many Latin American countries have not effectively transformed these resources into strong driving force for national economic and social development. They have failed to substantially enhance their resource discourse power in the international market, and deficiencies persist in the governance of critical minerals, including lithium. In addressing this issue, scholars at home and abroad have proposed various explanatory perspectives.

Chinese scholar Lu Siheng, finds that the participation structure of resource property rights, rent-seeking culture and weak intertemporal commitment are the institutional incentives that lead to the long-term "locked" political and economic ecology of resource-based countries in Latin America at a low level of equilibrium. (Lu Siheng, 2019) She further argues from the perspective of populism that such cultural trends have engendered irrational expansion of resource nationalism and an overly aggressive sense of resource ownership, ultimately negatively impacting the shaping of the national business environment. (Lu Siheng, 2020) Hugo Altomonte et al. discuss the natural resource economy of Latin American countries and the so-called "resource curse," suggesting a paradigm shift in natural resource governance in Latin America and the Caribbean to support inclusive and sustainable development strategies. (Altomonte & Sánchez, 2016)

Scholar Mario Tessone et al. examine the different policies and positions of the lithium triangle countries (Argentina, Chile, and Bolivia) regarding lithium resource governance from the perspective of national interests. (Tessone, et al., 2021) Scholar Mauricio León et al. provide a multidimensional analytical framework to understand the complexity of lithium governance in Andean countries, which includes political and economic factors, technological and innovation capacity factors, community participation and environmental factors, international market price factors, policy coherence, and resource nationalism factors. (León et al., 2020)

Aleida Azamar Alonso analyzes lithium resource governance in Latin America from the perspective of environmental damage, focusing on potential environmental and community challenges that Mexican lithium resource governance may face. (Azamar, 2022) Scholar Ariel M. Slipak et al. focus on the social, economic, and environmental challenges that Argentina, Bolivia, and Chile need to address in lithium resource governance from a global geopolitical, energy, and territorial perspective. (Fornillo et al., 2019)

From a research perspective, the existing literature mainly focuses on cultural and institutional factors, political-economic factors, community and environmental factors,

and geopolitical factors in the challenges of lithium resource governance in Latin American countries. Although the above studies provide some insight for us to understand the motivation of lithium resource governance policies and behaviors in Latin American countries, they somewhat overlook the discourse expression and identity shaping of Latin American countries in lithium resource governance in the context of critical mineral strategy. How these countries shape their image on the international stage and enhance their discourse power in lithium resource governance through discourse strategies is a topic worthy of further exploration. Additionally, the deep-seated dilemmas between policy design and actual effectiveness remain inadequately examined.

Building upon the aforementioned research findings, this paper first introduces the policy orientation, model orientation, and key trends in lithium resource governance in Latin American lithium triangle countries represented by Peru, Argentina, and Chile. It then analyzes the official discourse of lithium resource governance in these three countries and the mechanisms behind the reshaping of national identity. Finally, it draws the conclusion that the governance of lithium resources in Latin American countries is facing multiple lags, aiming to further deepen the interpretation and understanding of Latin American critical mineral strategies, thereby providing valuable insights for promoting cooperation between China and Latin America in the field of critical minerals.

I. Policies, Models, and Trends in Lithium Resource Governance in Three Latin American Countries

In response to the increasing demand for clean energy technologies, governments of Latin American countries, led by Peru, Argentina, and Chile, are actively exploring resource development approaches tailored to their national conditions. They have introduced their own critical mineral policies and developed distinctive governance models, along with implementing a series of organized actions and measures.

1. Policy Orientation in Lithium Resource Governance in Three Latin American Countries

These policies aim to increase fiscal revenue through mineral refining and project auctions, enhance economic development benefits, and optimize the fiscal structure of their respective countries. (Taquiri & Ruete, 2021) The three emerging policy orientations regarding lithium resources in Latin American countries are promoting downstream processing, reviewing mining taxes and fees, and auctioning mining rights. They are manifested as follows:

First, at the institutional and industrial levels, promoting downstream processing of lithium resources to increase exports and tax revenues to promote economic development. Peru possesses abundant critical minerals such as copper, lithium, and nickel. As lithium is a crucial component of electric vehicle batteries, its demand is expected to significantly increase in the coming decades. In Law No. 31283 of 2021, Peru declares that lithium and its derivatives are important strategic resources in Peru, and that the exploration, exploitation and industrialization of lithium mines are in the national interest and public needs to ensure their sustainable development. (D&H Law

Firm, 2023) The Peruvian government's strategic elevation of lithium industrialization to the strategic level of a "public necessity" means that the country will strongly support and promote the mining and downstream processing of lithium in the coming period to increase export revenues and tax revenues, as well as create new jobs and skills training for workers. The Peruvian government has introduced incentives for the development of critical minerals, streamlined approval processes, and provided infrastructure support. These are typical measures for Latin American countries to actively seek to improve the economic benefits of the national mining industry through the downstream processing of critical minerals. Additionally, as one of the Latin American countries, Argentina possesses abundant lithium resources, providing it with potential advantages in the development of clean energy technologies. With the global growth in demand for electric vehicles and energy storage systems, the lithium battery market is rapidly expanding. To seize this opportunity, the Argentine government seeks to increase the economic value of lithium resources by establishing more lithium battery factories. Reasons for the Argentine government's push to establish more lithium battery factories include utilizing domestic lithium resources to enhance the country's position in the global lithium battery supply chain and responding to global demand for clean energy technologies to support the country's clean and green energy transition.

Second, promoting mining tax and fee reforms according to each country's national conditions and actively seeking a balance between government revenue and investor interests. Chile is the world's largest copper producer and also an important lithium producer. With the rapid development of clean energy technologies, demand for critical minerals such as copper and lithium is expected to grow substantially. The Chilean government hopes to obtain more revenue from the extraction of these critical minerals to cope with the opportunities brought by high copper and lithium prices and fill the budget Lag caused by the decline in oil and gas revenue. Chile is considering a bill that would introduce a concession tax model based on variable income ratios. This tax model would adjust tax rates based on mineral prices, meaning that when mineral prices rise, the government's share of revenue increases; conversely, when prices fall, the burden on investors is lightened, thus achieving a balance between government revenue and investor interests. This is significantly different from Chile's current mining tax system, which mainly relies on operating profits ("special mining tax") for taxation. Chilean legislators have temporarily postponed the vote on the bill. The challenge of this tax model lies in how to set appropriate tax rates to ensure both attracting investment and ensuring stable government revenue.

In contrast to Chile's proposed reforms on concession taxes for critical minerals, the Peruvian government has proposed a fixed profit concession tax of 10% for the extraction of lithium and uranium in the country, replacing the previous variable tax rates ranging from 1% to 12%. This proposal aims to simplify the tax system and ensure that the government can consistently generate revenue from mineral extraction. Specific reasons include: the fixed tax rate ensures that the government receives a certain proportion of profit regardless of fluctuations in mineral prices. The fixed tax rate simplifies the tax collection process, reducing administrative costs compared to implementing variable tax rates. The fixed tax rate provides investors with a more

predictable tax environment, helping to attract and retain investment. (Taquiri & Ruete, 2021)

2. Model Orientation in Lithium Resource Governance in Three Latin American Countries

The extraction and development of lithium resources in Argentina, Bolivia, and Chile are influenced by historical, legal, tax, and political factors. Additionally, they are constrained by differing policy priorities, regulatory frameworks, and social environments, resulting in heterogeneity in the lithium resource governance models of these three countries concerning national policies and legal frameworks.

At the national policy level, given that Argentina's lithium industry mainly focuses on upstream activities such as exploration, extraction, and primary processing, the Argentine government actively seeks private investment participation in lithium resource exploration and development, providing an open mining environment, particularly in salt flat areas. By offering tax incentives and streamlining permit procedures, Argentina encourages private sector investment in lithium resource projects. In contrast, the Bolivian government adopts a state-led governance model, emphasizing state control over resources. Through the state lithium company (Yacimientos de Litio Bolivianos), Bolivia promotes the development of the entire lithium resource industry chain from mining to battery production. Chile is the largest supplier of lithium in the region, with cutting-edge technology and relatively modern infrastructure. The Chilean government, for its part, has advocated for state-owned enterprises to play an important role in the development of lithium resources, with the aim of balancing national interests and private investment while promoting sustainable development.

At the legal framework level, Argentina's mining regulations require private enterprises to comply with relevant environmental protection and social responsibility laws when developing lithium resources and implement an environmental impact assessment system to ensure that project impacts on the environment are adequately considered. Bolivia's regulatory framework similarly emphasizes national sovereignty and control over natural resources, while implementing strict environmental impact assessment systems to ensure that mining projects meet national environmental protection standards. Although the country legally acknowledges the opinions of indigenous communities on mining issues, prior consultation has yet to be formalized. (Tessone et al., 2021) Chile has established stringent environmental regulations, including water resource protection and rational use, and has set up specialized environmental regulatory agencies such as the Environmental Assessment Service (Servicio de Evaluación Ambiental) and the Environmental Superintendent (Superintendencia del Medio Ambiente) to ensure that mining activities comply with environmental standards.

In summary, Argentina tends towards a market-driven model, with the government adopting an open attitude towards lithium resource development, encouraging foreign direct investment but also facing challenges in balancing economic development with environmental protection. Bolivia adopts a model of state-controlled lithium resource development, emphasizing state control over resources and technology transfer and

national sovereignty, aiming to increase national revenue through state-led lithium development projects but also facing technical challenges and competition from the international market. Chile mainly adopts a model of state-owned enterprise-led lithium resource development, with the Chilean government granting project mining rights to major corporations such as the Chilean Chemical and Mining Company (SQM) and Albemarle, triggering discussions about resource control, environmental impact, and community interests.

Table 1 Heterogeneity in the Lithium Resource Governance Models of Three Latin American Countries

Lithium Resource Governance	Argentina	Bolivia	Chile
Model Characteristics	Market-driven	State control	State-owned enterprise-led
National Policies	Attract private investment, provide tax incentives	State-led, promote the entire industry chain	State-owned enterprise-led, balance government investment and private investment
Legal Frameworks	Require compliance with environmental regulations, conduct environmental impact assessments	Emphasize state control, strict environmental assessments	Strict environmental regulations, water resource protection, specialized regulatory agencies

3. Key Trends in Lithium Resource Governance in Latin American Countries

The rise of new energy vehicles and energy storage technologies has made lithium a crucial resource for the global strategic emerging industry development. With lithium prices experiencing explosive growth driven by demand, Latin American countries aim to enhance their collective bargaining power in international lithium pricing. To achieve this, the lithium triangle countries of Argentina, Bolivia, and Chile aim to create a Latin American version of "OPEC for lithium," aiming to enhance Latin American countries' position in the global lithium resource market by controlling natural resources and influencing world commodity prices. (Lu Siheng, 2023b)

In the early planning stage, Bolivia proposed the idea of establishing a " OPEC for lithium" with Chile as early as 2011. However, due to strained relations between the two countries, this proposal did not materialize. After the political crisis in Bolivia in 2019, the similarities in governing principles between the leftist government of Boric in Chile and the government of Bolivia furthered the planning of the " OPEC for lithium". In 2022, through continuous dialogue and negotiation, Chile, Argentina, and Bolivia jointly sought to promote the feasibility of industrial integration among all

lithium resource countries in Latin America.

In terms of regional cooperation, the governments of Chile, Argentina, and Bolivia have strengthened communication and negotiation under the framework of the "Lithium Triangle" to promote the joint development and management of lithium resources. Other Latin American countries such as Brazil, Mexico, and Peru are also closely monitoring the development trends of the "Lithium Triangle" and actively seeking to join this organizational framework. In April 2022, Mexican President Lopez announced "joint action" with the governments of the lithium triangle countries on lithium resource exploration and development. In May of the same year, the Argentine Foreign Minister visited Mexico, and the two countries reached a consensus on promoting cooperation in the lithium value chain. In March 2023, Bolivian President Arce called for major lithium-producing countries such as Chile, Argentina, and Peru to strengthen multilateral negotiations and cooperation and to establish a lithium-producing country organization led by Latin American countries as soon as possible.

In terms of think tank support, the Center for Geopolitical Strategy of Latin America (CELAG) released a report in May 2022 outlining the basic plan for the establishment of a production alliance among the six major lithium resource countries in the region. In the short term, countries should sign a founding agreement or treaty, specifying prerequisites, roadmaps, operating rules, etc. In the medium term, efforts should be made to sign a multilateral agreement or treaty, establish a permanent institution for regional interest coordination, and register with the United Nations Secretariat for international organizational recognition. (CELAG, 2023)

In terms of legal action, the Chilean government submitted a bill to parliament in the second half of 2023 to create a national lithium company. Chilean President Boric stated that Chilean state-owned enterprises must have a controlling stake in public-private partnerships. (Xinhuanet, 2023) The Argentine government seeks to redefine the strategic status of lithium mines. In May 2023, an Argentine leftist parliamentary group submitted a bill to the lower house, calling for the declaration of lithium as a strategic mineral and amendments to mining laws and mining investment laws. (Ebaiyin, 2023)

II. Official Discourse Strategies on the Governance of Lithium Resources in Three Latin American Countries and the Shaping of National Identity Behind Them

After sequentially analyzing the policies, models, and trends of lithium resource governance in Latin America represented by Argentina, Bolivia, and Chile, in order to further explore the social construction and ideological factors behind them, it is necessary to start from a new perspective of discourse strategy and national identity shaping, and conduct relevant discourse analysis on the official speeches of the leaders of these three countries on the topic of lithium.

For the study of official discourse on lithium resource governance, this paper selects Argentina, Bolivia, and Chile as case studies. This paper first establishes a small corpus, including public speeches by the presidents of these countries on lithium resource governance-related topics from 2022 to 2023. They are the speeches of former Argentine President Alberto Fernández at the opening ceremony of the 39th ECLAC meeting in 2022 and the 77th China-Cuba Summit of the Group of 77 in Havana in

2023; the speeches of Bolivian President Luis Alberto Arce Catacora at the United Nations General Assembly in New York in 2022 and at the commemorative meeting of the 198th anniversary of the founding of the Plurinational State of Bolivia in 2023; the speeches of Chilean President Gabriel Boric Font at the 9th Summit of the Americas in 2022, the 77th session of the United Nations General Assembly in 2022, and the National Forum of Business Leaders (ENADE) in 2023. The above corpus consists of 7 pieces in total, sourced from the official websites of the respective presidential palaces.

1. Analysis of Official Discourse Strategies on the Governance of Lithium Resources in Three Latin American Countries

Discourse Strategy is typically defined as the conscious selection and use of certain linguistic forms, styles, or content by individuals or groups in verbal communication to achieve specific communicative goals and social impacts. It encompasses the entire process of linguistic practice, including the production, distribution, reception of discourse, and negotiation of social meaning. Teun A. van Dijk, who primarily engages in discourse structure research, believes that discourse strategy not only reflects the cognitive structure of the speaker but also serves as a tool for power, ideology, and social control. (van Dijk, 1993)

From the perspective of discourse strategy, former Argentine President Fernández elaborated on the importance of lithium as a strategic mineral, especially its crucial role in global energy transition and the development of renewable energy, emphasizing the significance of lithium resources. By mentioning lithium resources, Fernández attempted to enhance the position of Southern Hemisphere countries in the global economy, emphasizing their critical role in the global supply chain. Furthermore, by emphasizing the importance of lithium resources for the development of the Latin American region, he promoted the recognition of the common interests brought by lithium resources, which helps strengthen regional cooperation. Therefore, he advocated for enhanced unity and cooperation among Southern Hemisphere countries to collectively utilize these resources to enhance the development level of the entire Latin American region.

Bolivian President Arce emphasized Bolivia's sovereignty over its lithium resources in his discourse strategy. Firstly, he mentioned Bolivia's possession of the world's largest lithium reserves, which are an important part of the national wealth and strategic resources. Secondly, he opposed resource plundering and did not want Bolivia's lithium resource development to follow the path of other natural resources, which only increase wealth for a few while plunging the majority into poverty. Thirdly, President Arce rejected any form of international intervention, especially those attempting to control Bolivia's lithium resources, and called on the United Nations to take measures to protect national sovereignty and the principle of non-interference. Finally, he mentioned cooperation agreements signed by the country with large lithium companies from Russia and China, emphasizing cooperation based on respecting national sovereignty and people's ownership of natural resources. Additionally, by mentioning the traditional concept of "Madre Tierra" (Mother Earth), the president cleverly integrated Bolivia's indigenous culture and history, emphasizing the traditional values of coexistence with

nature that should be emphasized in lithium resource development. The president's discourse included the concepts of unity and common interests, which help construct Bolivia's image as a responsible country and seek support from the international community. Compared to Fernández, the discourse of the Bolivian president also included the concepts of unity and common interests, which help construct Bolivia's image as a responsible country in lithium resource development and actively seek support from the international community.

In terms of discourse strategy, Chilean President Boric mentioned the country's advantages in lithium, copper, and other important resources, as well as renewable energy such as solar and wind energy, showcasing Chile's economic potential and importance in the global supply chain, thereby emphasizing Chile's lithium resource endowment and potential. He also mentioned regional cooperation projects such as the Bioceanic Canal, aimed at strengthening connections and cooperation among Latin American countries.

2. National Identity Shaping Reflected in the Discourse of Lithium Resource Governance in Three Latin American Countries

Analyzing the national identity shaping behind the discourse, former Argentine President Fernández's discourse reflects Argentina's willingness to play a leading role in regional cooperation related to lithium resources, promoting the common progress of Latin America and the Caribbean in new energy and sustainable development, thereby establishing an image of a regional leader in the field of new energy and attempting to reshape Argentina from a traditional resource-exporting country into a potential participant in technology and innovation. He also conveyed Argentina's image as a responsible global participant by emphasizing environmental sustainability, social justice, and addressing global challenges such as climate change and energy security.

Using the discourse strategy of resource sovereignty, Bolivian President Arce constructed a three-dimensional image of a firm defender of national sovereignty and a responsible resource manager, including resource sovereignty, by rejecting external interference, emphasizing national sovereignty, and demonstrating his determination to make decisions as a sovereign state. In addition, based on the discourse strategy of cultural identity, he stated that Bolivia is committed to sustainable development and environmental protection, striving to create a positive image of Bolivia as an advocate for sustainable development. Finally, the president's discourse also reflected Bolivia's desire to transform from a simple resource-exporting country to an industrialized country with a complete industrial chain, reflecting a significant demand for identity reshaping from a resource-exporting country to an industrialized country.

From the perspective of national identity shaping, Chilean President Boric stated that Chile is part of Latin America and is willing to play a leading role in regional cooperation. This helps shape Chile's national identity as a regional leader in the field of new energy. He also positions Chile as a key participant in the global economy, especially as an active participant in the new energy economy, by mentioning the country's rich lithium resources and renewable energy. Finally, by proposing initiatives to protect the ocean and promote renewable energy, emphasizing environmental

protection and the development of green energy, Chile is portrayed as a sustainable development advocate committed to environmental protection and active participation in global environmental governance.

By summarizing the content of the above official speeches, the discourse strategies and national identity shaping demonstrated by the three presidents in the topic of lithium resource governance each have their own emphasis (see Table 1). Based on its identity as a "Southern country", Argentina emphasizes unity and cooperation among the global South in lithium resource development and seeks regional leadership in the field of new energy, attaching more importance to gaining technological autonomy in lithium resource-driven economic development. Based on its identity as a "peripheral developing country", Bolivia emphasizes resource sovereignty and national sovereignty, demonstrating a stronger demand for shifting from a resource-exporting country to an industrialized country. Chile, based on its identity as an "open emerging economy", emphasizes its good endowment and huge potential in lithium resource development, seeking regional leadership in the field of new energy and international status as a key participant in the global economy.

Although the leaders of the three Latin American countries demonstrate different discourse strategies and national images in their official discourse, they also share some commonalities, reflecting the common understanding and convergence of interests of the three countries in the field of lithium resources. In terms of discourse strategy, the three presidents all emphasize the common interests and regional cooperation in lithium resource development. In terms of national identity shaping, the three countries all strive to create the image of active global participants in lithium resource development: Argentina tends to carry out international cooperation in the fields of climate change and energy security; Bolivia emphasizes international cooperation within the framework of international law and multilateralism; Chile focuses on participating in international cooperation with an open attitude in energy transformation and climate change fields.

Table 2 Official Discourse Strategies of the Leaders of the Three Latin American Countries on the Topic of Lithium and Their National Identity Shaping

	Argentina	Bolivia	Chile	Common Points
Discourse Strategy	Emphasizes the importance of lithium resources; emphasizes the status of Southern Hemisphere countries; emphasizes common interests; emphasizes unity and cooperation	Emphasizes resource sovereignty; emphasizes historical and cultural identity; emphasizes unity and common interests	Emphasizes resource endowment and potential; emphasizes regional cooperation	All emphasize common interests and regional cooperation

	among the Global South			
National Identity Shaping	Regional leader in the field of new energy; shifting from a resource-exporting country to a technology-independent nation; responsible global leader	Defender of national sovereignty; responsible resource manager; advocate for sustainable development; shifting from a resource-exporting country to an industrialized nation	Regional leader in the field of new energy; active participant in the global economy; advocate for sustainable development	All strive to create the image of active global participants in the lithium resource sector

III. Multiple Lags in the Governance of Lithium Resources in the Latin American "Lithium Triangle"

The Cultural Lag Theory proposed by American sociologist William F. Ogburn in 1922 is primarily used to explain the inconsistency in the development rate between material culture (e.g., technology, economy, infrastructure, etc.) and non-material culture (e.g., values, beliefs, customs, etc.) in the process of social change, resulting in the relative lag of the latter. (Ogburn, 1989) Since Ogburn's Cultural Lag Theory, subsequent scholars have borrowed the concept of lag to describe the social phenomenon where there exists a Lag between institutional execution and institutional goals. For instance, Xin Qiushui proposed the concept of "institutional lag" concerning village autonomy, which refers to the Lag between the ideal state of institutional design and the actual implementation in village autonomy practices. (Xin Qiushui, 2004) Scholar Zhu Jinghui and others introduced the new concept of "governance lag" when studying the challenges posed by new public health events such as the COVID-19 pandemic to modern governance systems, which refers to the phenomenon where existing governance systems fail to timely and effectively transform into the expected emergency governance capacity. (Zhu Jinghui & Xiong Wansheng, 2020) This article also adopts the concept of "lag" to delve into the deep-seated dilemmas in the governance process of lithium resources in the Latin American "Lithium Triangle".

1. Institutional Lag between Collective Expression and Collective Action

"Institutional Lag" refers to the Lag between the ideal state of institutional design and the actual implementation. In the collaborative cases of the Latin American "Lithium Triangle" countries, this Lag is particularly evident. Although the three countries collectively express the importance of lithium resource development and the significance of regional cooperation in official discourse, in practice, significant

differences exist in their respective national interests, policy orientations, and strategies for resource control, thereby leading to the dilemma of collective action.

On one hand, despite Argentina, Bolivia, and Chile expressing a positive attitude towards lithium resource cooperation in official discourse, there are considerable differences in the actual policy implementation regarding the development model and governance strategy for lithium resources in each country. Argentina tends towards a market-driven model, encouraging foreign direct investment, while Bolivia adopts a model of national control, emphasizing national sovereignty over resources. Chile seeks to strike a balance between national interests and private investment. These policy differences make it difficult to form a unified cooperation mechanism and action plan in practice.

On the other hand, the Latin American "Lithium Triangle" countries also face international political and economic pressures in lithium resource cooperation. The global lithium market competition is increasingly fierce, especially from countries like China and Australia, which forces these countries to consider the reactions of the international market and their key trading partners while safeguarding their national interests. This external pressure may lead to more conservative or short-sighted strategies in international lithium resource competition, conflicting with the long-term goals advocated by the " OPEC for lithium".

It can be seen that the institutional Lag faced by the Latin American "Lithium Triangle" countries in lithium resource cooperation not only stems from internal policy and legal inconsistencies but also is influenced by the international political and economic environment. These factors work together, resulting in significant lags between the collective expression and collective action of the three countries in the governance of lithium resources. In the future, these countries urgently need to narrow this institutional Lag by strengthening communication and coordination, unifying policy standards, enhancing environmental and social responsibility, and addressing challenges in the international market.

2. Technical Lag between Resource Reserves and Resource Extraction

In the lithium resource cooperation among the Latin American "Lithium Triangle" countries, the technical Lag is a significant issue that cannot be ignored. The technical Lag refers to the Lag between resource reserves and resource extraction technology, manifested in low mining efficiency, significant environmental damage, and low resource utilization efficiency in lithium resource development. For example, although Bolivia has the world's largest lithium reserves, the actual extraction level of its lithium resources is much lower than that of Chile and Argentina. This phenomenon is partially due to Bolivia's lagging behind in lithium resource extraction technology. While Chile and Argentina are relatively mature in lithium extraction technology, they still face the dual challenges of improving mining efficiency and reducing environmental negative impacts in the face of the growing global demand for lithium. This technical Lag not only limits the maximal utilization of lithium resources in the three countries but also affects their competitiveness in the global lithium market.

Furthermore, the technical Lag is also reflected in downstream processing and value

chain extension of lithium resources. The high value-added part of lithium resources is often realized in the production and application of lithium-ion batteries, which requires highly specialized technology and industrial foundations. Currently, the Latin American "Lithium Triangle" countries are relatively backward in lithium battery manufacturing and related technology research and development, which restricts their position in the global lithium industry chain. For instance, although Chile has advantages in lithium extraction, it relies on foreign technology and investment in lithium battery production and battery recycling. This technical Lag puts the three countries in a relatively passive position in the global supply chain and value chain of lithium resources, making it difficult for them to transition from resource-exporting countries to high-tech industrial countries. To narrow this technical Lag, the Latin American "Lithium Triangle" countries need to increase investment in lithium resource extraction and processing technology research and development, enhance the technical level of domestic industries, introduce advanced technology and management experience through international cooperation, and provide support for technological innovation and industrial upgrading at the policy level to promote the sustainable development and utilization of lithium resources.

3. Synergistic Lag between Self-organization and Reorganization

Regarding self-organization, Eleanor Ostrom proposed the concept of polycentric governance in the theory of self-organized governance, emphasizing that the self-organizing social structure within a system can effectively address public affairs issues. (Ostrom, 1990) Henry Mintzberg, as an authoritative scholar in the field of organizational theory, proposed various organizational structure models around reorganization, emphasizing that organizations should make appropriate structural adjustments based on factors such as their strategy, environment, and technology. (Mintzberg, 1979)

In the process of lithium resource cooperation among the Latin American "Lithium Triangle" countries, the phenomenon of synergistic Lag between self-organization and reorganization is particularly evident. Self-organization emphasizes the process where elements within a system generate orderly structures through local interactions without external guidance or central control. In the governance of lithium resources, this is manifested in the three countries attempting to form a unified mechanism for lithium resource development and pricing through internal negotiations and cooperation without external coercion. However, this process is not without challenges. Firstly, there are significant differences among the three countries in lithium resource development strategies, national interests, and attitudes towards external investors. For example, Bolivia tends towards a state-led development model, while Chile leans more towards market-driven private enterprise participation. These strategic inconsistencies lead to a synergistic Lag in the self-organization process, meaning that the three countries lack effective internal coordination and unified action in achieving common goals in lithium resource governance.

Reorganization involves adjusting organizational structures and processes to adapt to new challenges and opportunities. In the context of lithium resource cooperation, this

requires the three countries to reposition themselves in the existing international lithium market landscape, adjust national policies and legal frameworks to promote sustainable development and utilization of lithium resources. However, this process also faces multiple dilemmas. Firstly, the global supply chain of lithium resources is highly complex, involving many countries and companies. This requires the three countries to consider compatibility with the global market while promoting the reorganization of lithium resource governance. Secondly, the impact of lithium resource development and utilization on the environment and society is increasingly attracting international attention. This requires the three countries to balance economic benefits with international commitments and obligations to environmental protection. For example, in 2011, affected by mining projects, 33 communities in Argentina formed a "Community Union" and appealed to international organizations such as the United Nations, demanding protection of their land and water resources. Community representatives submitted complaints to the Special Rapporteur on Indigenous Peoples' Rights of the United Nations Human Rights Council. Eventually, the "Community Union" successfully revoked multiple contracts with companies involving the transfer of land and water resources. (Fornillo et al., 2019) These challenges exacerbate the Lag in reorganization, meaning that the three countries face tensions between internal policy adjustments and external environmental pressures in achieving modernization and internationalization goals in lithium resource governance.

In summary, the Latin American "Lithium Triangle" countries face deep-seated dilemmas such as institutional Lags, technical Lags, and synergistic Lags in lithium resource cooperation, implying that the three countries must overcome internal disagreements and external challenges while pursuing common interests. This process not only requires in-depth dialogue and coordination among the three countries but also requires them to demonstrate greater unity and leadership on the international stage. If the three Latin American countries can demonstrate strong internal coordination and bargaining capabilities in lithium resource governance cooperation, it will help enhance their discourse power and influence in global lithium resource governance.

References

Altomonte, H., & Sánchez, R. J. (2016). *Hacia una nueva gobernanza de los recursos naturales en América Latina y el Caribe* [Towards a new governance of natural resources in Latin America and the Caribbean]. Comisión Económica para América Latina y el Caribe (CEPAL). Santiago de Chile: Naciones Unidas.

Azamar Alonso, A. *Litio en América Latina: Demanda global contra daño socioambiental*. México: Secretaría de Medio Ambiente y Recursos Naturales (Semarnat) y Universidad Autónoma Metropolitana, 2022.

CELAG. *Hacia una Organización Latinoamericana de Países Exportadores de Litio*. https://www.celag.org/hacia-una-organizacion-latinoamericana-de-paises-exportadores-de-litio-olpel/

D&H Law Firm. *Legal Guide on Foreign Investment and Mergers & Acquisitions in Peru.*(2023-01-20)[2024-03-14]. https://www.dehenglaw.com/CN/tansuocontent/0008/027732/7.aspx?MID=0902

Ebaiyin. *Argentine Legislators Propose Designating Lithium as a Strategic Mineral.* (2023-05-09) [2024-03-11]. https://www.163.com/dy/article/I4A8PPNI0518P0K0.html

Fornillo, B. (coordinador), Argento, M., Gamba, M., Kazimierski, M., Puente, F., Romeo, G., ... & Slipak, A. *Litio en Sudamérica: Geopolítica, energía y territorios.* Buenos Aires: El Colectivo; CLACSO; IEALC - Instituto de Estudios de América Latina y el Caribe, 2019.

León, M., Muñoz, C., & Sánchez, J. (Eds.). *La gobernanza del litio y el cobre en los países andinos.* Santiago: Comisión Económica para América Latina y el Caribe (CEPAL), 2020.

Lu Siheng. Resource Dependence and Development Dilemma of Latin American Countries under Populism Transmission. *Journal of Southwest University of Science and Technology (Social Sciences Edition)*, 2020, 37(03): 10-16.

Lu Siheng. *Study on the Impact of International Lithium Pricing Power and Strategic Adjustment of Supply from Latin American Countries on China.* China Price,2023(09).

Lu Siheng. The Development Paradox of Resource States in the Perspective of Institutional Transmission: "Resource Curse" and "Path Dependence". *Academic Exploration*, 2019(08): 59-66.

Mintzberg, H. *The Structuring of Organizations: A Synthesis of the Research*. Prentice-Hall,1979.

[US] Ogbonn. *Social Change: On the Essence of Culture and Innate Characteristics.* Translated by Wang Xiaoyi and Chen Yuguo. Hangzhou: Zhejiang People's Publishing House, 1989. Page 265.

Ostrom, E. *Governing the Commons: The Evolution of Institutions for Collective Action.* Cambridge: Cambridge University Press,1990.

Taquiri J, Ruete M. *Three Emerging Policy Trends for Critical Minerals in Latin America.* International Geological and Mining Finance Institute (IGF Mining) Blog. (2021-08-09)[2024-03-14]. https://www.igfmining.org/three-emerging-policy-trends-for-critical-minerals-in-latin-america/

Tessone, M., Etcheverry, R., Kruse, E., & Moreira, P. El interés del Estado por el Litio. *Su rol en los países que componen el "Triángulo del Litio.* El litio en la Argentina: Visiones y aportes multidisciplinarios desde la UNLP: Universidad Nacional de La Plata, n.d.

van Dijk, T. A. Principles of Critical Discourse Analysis. *Discourse & Society*, 1993, 4(2), 249-283. https://doi.org/10.1177/0957926593004002006

World Bank: *Mineral production has surged alongside increasing demand for clean energy.* (2020-05-11)[2024-03-14]. https://www.shihang.org/zh/news/press-release/2020/05/11/mineral-production-to-soar-as-demand-for-clean-energy-increases

Xinhuanet. *Chile Releases National Lithium Resource Development Strategy.* (2023-

04-27) [2024-03-11]. https://www.ndrc.gov.cn/xwdt/ztzl/zlcnyutzhz/202304/t20230427_1355025.html

Xin Qiushui. Institutional Decay and Institutional Improvement: A Research Report on Questionnaire Survey of Villagers' Autonomy in Twelve Villages of Five Counties in Anhui Province. *Fujian Forum (Humanities and Social Sciences Edition)*, 2004(09): 107-110.

Zhu Jinghui, Xiong Wansheng. Governance Lag: Challenges of New Public Health Events to the Modern Governance System. *Exploration and Contention*, 2020(04): 224-231.