BRAZIL'S REGULATORY FRAMEWORK FOR CRITICAL MINERALS: NAVIGATING GEOPOLITICS

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Abstract: Brazil's policy of non-alignment affords room to engage competing geoeconomic poles while preserving strategic autonomy; its efficacy in the field of critical/strategic minerals, however, remains uncertain. This article evaluates Brazil's domestic and external readiness to translate mineral endowments into secure, value-adding supply chains. Empirically, it assembles an original dataset of ministerial e-Agendas (2022–2024) and triangulates these records with core policy instruments. Analytically, it introduces an inward–outward instrument matrix linking domestic tools to external instruments. Three findings emerge. First, governance is fragmented: cross-walking energy, climate, industrial, and mining policies reveals limited integration and under-specified implementation pathways. Second, the inward toolset remains skewed toward legacy minerals; beyond credit windows and a nascent Critical Minerals Fund, there are few operational instruments to build midstream capacity, scale recycling, or induce technology transfer. Third, the outward toolbox is underdeveloped: there is no critical-minerals FDI-screening regime or trade agreements that incentivise domestic-processing commitments. Stakeholder mapping indicates concentrated interactions among a narrow set of ministries and firms, while legislative caucuses, often acting in concert with industry associations, tilt policy design toward particularistic, private interests rather than economy-wide public objective.

Keywords: Critical Minerals; Brazil; Non-alignment; Geoeconomics; Energy Transition Policy.

Resumo: A política brasileira de não alinhamento cria espaço para dialogar com polos geoeconômicos concorrentes preservando a autonomia estratégica; sua eficácia em minerais críticos/estratégicos, porém, ainda é incerta. O artigo avalia a capacidade do país de converter suas dotações minerais em cadeias de valor seguras e com

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agregação de valor. No plano empírico, reúne um conjunto original de e-Agendas ministeriais (2022–2024) e triangula esses registros com os principais instrumentos da política minerária. No plano analítico, propõe uma matriz de instrumentos "domésticos–externos", conectando ferramentas e política interna e externa. Três achados se destacam. Primeiro, a governança é fragmentada: o cruzamento de políticas de energia, clima, indústria e mineração revela pouca integração e rotas de implementação pouco definidas. Segundo, o conjunto doméstico de instrumentos segue voltado a minerais "legados"; além de janelas de crédito e de um Fundo de Minerais Críticos ainda incipiente, faltam mecanismos operacionais para desenvolver a etapa intermediária (midstream), escalar a reciclagem e induzir transferência de tecnologia. Terceiro, o instrumentário externo é subdesenvolvido: não há triagem de IDE específica para minerais críticos nem acordos comerciais que incentivem compromissos de processamento no país. O mapeamento de atores indica interações concentradas entre poucos ministérios e empresas, enquanto frentes parlamentares, muitas vezes alinhadas a associações setoriais, tendem a direcionar o desenho das políticas para interesses privados em detrimento de objetivos públicos de alcance econômico mais amplo.

Palavras-chave: Minerais críticos; Brasil; Não-alinhamento; Geoeconomia; Política de transição energética.

1. Introduction

In August 2025, in the wake of the Trump Administration's tariff package on Brazilian exports, popularly known as the *tarifaço*, and amid speculation that U.S. interest in Brazil's rare earths could be leveraged in tariff-reduction talks, Finance Minister Fernando Haddad declared the approval of a national mining regulatory framework an urgent priority. He warned that Brazil cannot afford to miss the opportunity to add value to its critical minerals: "We cannot do with rare earths what we do with iron ore," he said, invoking the country's long-standing reliance on raw-material exports with limited domestic processing (UOL, 2025).

Recent US trade barriers revived Brazil's debate on a modern, public-interest mining regime, but the need long predates them. Globally, a race for technological supremacy (AI, 5G, IoT, energy-transition tech) has pushed critical minerals to the center of geoeconomic competition (González, 2018; Wu, 2018; Slawotsky, 2021). These inputs underpin

batteries, solar, and defense, analogous to oil's role in the 20th century, but their concentrated geography makes them geopolitical flashpoints and heightens supply-disruption risks. China's bid to command supply chains (e.g., via the BRI) has prompted major economies to publish critical-mineral lists and deploy industrial policies to secure and onshore supply (Kalantzakos, 2020; Gielen, 2021).

Brazil, possessing significant reserves of critical minerals (De Castro, 2022, et al), has found itself at the centre of this geopolitical tug-of-war. As major powers like the US, China, and the European Union (EU) compete to secure access to these minerals, Brazil has adopted a foreign policy of "active nonalignment," which theoretically allows it to engage with various global powers without fully aligning with any one bloc, maintaining a balanced foreign policy amid escalating geopolitical tensions.

However, Brazil lacks a holistic and integrated national policy for critical minerals and an institutional mechanism to monitor foreign investments in this sector. Stakeholders within the mineral sector are advocating for the establishment of such a framework. In this context, the country faces significant challenges in developing a comprehensive regulatory framework for critical minerals. While it has taken steps to attract foreign investment, it lacks a cohesive policy to manage these resources, particularly regarding foreign investments.

Unlike the US, China, Japan and the EU, which have more robust strategies for critical minerals,[2] Brazil is still in the process of formulating a coherent regulatory structure that balances its national interests with the opportunities presented by foreign investment. This regulatory gap leaves Brazil vulnerable to external and internal pressures and undermines its efforts to maintain geopolitical neutrality.

This lack of a fully developed framework and delay in governmental action to establish an operational policy has also created an opportunity for private sector actors, particularly mining companies, to step in and influence the regulatory process. Evidence suggests that companies are actively lobbying to shape the outcome of Brazil's critical minerals policy, often pushing for frameworks that prioritize their operational interests over the government's broader macroeconomic and developmental objectives. These lobbying efforts corroborate the idea that States are not the only actors playing a role in geoeconomics

[2] To explore the key features of these policies, see IRENA Critical Minerals Policy Tracker (IRENA, 2023).

(Choer and Wigell, 2022). The development of a national framework on critical minerals will therefore be influenced by ongoing negotiations between Brazil and major trading partners and the interest shown by companies in participating in Brazilian initiatives.

This paper analyses how the interaction between Brazil, state and corporate actors impacts governmental measures to regulate the sector and examines how the diverse interests of various stakeholders – foreign corporations, foreign governments, Brazilian companies, local communities, and the environment – are integrated into policy construction.

The paper begins by analysing the fragmented rules and policies applicable to critical minerals in Brazil, the country's definition of critical minerals and the current bill on a national policy for critical minerals currently under discussion on Brazilian Congress. It then examines how Brazil's foreign policy of nonalignment shapes its engagement with global powers like China, the US, and Europe, all of which have expressed strong interest in Brazil's critical minerals sector. The paper further explores ongoing negotiations between Brazil and these countries in critical minerals and analyses the role of corporate actors (i.e., companies and their associations) in shaping Brazil's regulatory framework on critical minerals. Finally, it discusses how these various interests are being integrated into the development of Brazil's policy and the potential consequences for the country within the new geoeconomic order.

This study employs a comprehensive analysis of primary sources and public data, focusing on Brazilian governmental plans, legislation, and bills related to critical and strategic minerals. This includes examining government initiatives on both domestic and international levels. Additionally, the study analyses data from the *e-Agendas* system, a public platform disclosing the schedules of key officials from the Ministries of Foreign Relations (MRE), Development, Industry, Commerce and Services (MDIC), and Mines and Energy (MME). Using targeted keywords, we examined the interactions and engagements recorded by these ministries around minerals. The research also integrates a review of literature on geoeconomics and the geopolitics of critical minerals to contextualize Brazil's position within global competition for these resources.

This article advances the debate on Brazil's governance of critical/strategic minerals in three ways. Methodologically, it compiles and codes a new dataset of official ministerial *e-Agendas*, triangulated

with primary policy documents (PNE, PNM, PNMC, PNTE, ENCTI, and *New Industry Brazil*). Analytically, it proposes an "inward vs. outward" policy-instrument matrix that connects domestic industrial, environmental, and innovation tools to external economic-statecraft instruments (trade, investment, and cooperation). Substantively, it diagnoses gaps and misalignments in Brazil's approach to critical minerals.

Guided by this framework, the paper addresses three research questions:

(i) (Which institutional and regulatory gaps constrain Brazil's ability to capture domestic value and manage social-environmental risks in the area of critical minerals?
(ii) How do interactions between state bodies and firms/industry associations shape agenda-setting, mineral prioritization, and instrument choice in Brazil's critical-minerals policy?
(iii) To what extent do outward-facing instruments (trade and investment policy, international partnerships, FDI-screening, diplomacy) complement inward tools to advance the national framework on critical minerals?

To avoid terminological drift across policy documents, we clarify that the notion of critical minerals is contested and context-dependent.[3] In this paper, we use "critical minerals" to encompass these perspectives and "strategic minerals" as the umbrella term used in Brazilian mining policy for its three sub-scenarios: (i) import dependence; (ii) rising technological demand (high-tech/energy transition uses); and (iii) comparative advantage (endowment/leadership in exports).

[3] Importer-centric taxonomies (e.g., the US, EU) define "critical" as minerals on which they depend and whose shortage would create supply-chain vulnerabilities (United States, 2020; United States, 2023; European Union, 2017). Other countries use "strategic minerals" alongside "critical," with the former designating minerals in which they have abundant endowments and that are in demand from strategic partners (e.g., Australia) (Australia, 2023). Still others classify as "critical" those minerals deemed essential to national economic development (e.g., India) (India, 2023). As a result, national lists vary with resource availability, economic interests, and technological priorities.

2. Brazilian framework for critical minerals: a work in progress

2.1. Plans and Policies

Brazil has at least twelve plans touching critical/strategic minerals, spread across the Ministry of Mines and Energy (MME, the Ministry of Development, Industry, Trade and Services (MDIC), the Ministry of Science, Technology and Innovation (MCTI), the Ministry of Environment, the Ministry of Finance, and others. The large number of plans is indicative of a fragmented and somewhat uncoordinated policy approach.

In brief, the various plans launched by the government do not adequately communicate or coordinate with each other, resulting in a fragmented policy approach and lacking a cohesive strategy that integrates critical mineral development with broader economic, environmental, technological, and international trade policies. In this context, we evaluate the inward and outward strategies mentioned in the plan. From the perspective of inward policies, we will analyse whether the plans address (i) concrete industrial policy tools to support critical minerals; (ii) mechanisms addressing climate change mitigation, environmental protection, and circular economy concerns; (iii) market intelligence instruments relating to geological surveys and demand analysis; and (iv) policies to stimulate innovation and technology transfer. From the outward perspective, we will examine the extent to which the plans touch concrete trade and investment policies.

From the perspective of inward strategies aimed at developing Brazil's critical minerals sector, we observe that the plans do not provide robust industrial policy tools to support the critical mining sector, except for the New Industry Brazil Plan, which includes the Critical Minerals Fund to finance research and extraction of minerals essential for clean energy batteries, and other low-interest financing initiatives.

Additionally, from a climate change mitigation and environmental protection perspective, the lack of integration between critical minerals and Brazil's National Policy on Climate and energy plans reflects a significant oversight, as these minerals are crucial for enabling the green technologies which are important for achieving climate goals.

The fact that Brazil does not integrate critical minerals into its climate change and energy policies, only addressing them in mining plans, demonstrates Brazil's deficient engagement in integrating a critical minerals policy within the broader context of transitioning to a low-carbon energy economy.

Even though the New Industry Brazil Plan and the draft PNM 2050 establish a connection between critical minerals and a low-carbon economy, Brazil's approach remains limited. This gap becomes more evident when examining the definition of essential minerals by Brazilian authorities, which includes minerals primarily relevant for the country's exports. As a result, the projects incentivized under selected public policies are often tied to traditional minerals like iron, gold, copper, and aluminium, rather than those critical for low-carbon technologies, as will be further elaborated in section 2.2 below.

Overall, the integration of critical minerals policies with environmental protection remains inconsistent. The draft PNM 2050, which is currently under discussion, attempts to address these issues by highlighting the challenges related to critical minerals exploration in preserved indigenous areas, Amazon regions, and deeper waters. However, it lacks specific mechanisms for managing potential conflicts with indigenous communities or mitigating environmental impacts. Regarding the circular economy, the MCTI Plan for Science, Technology and Innovation for Strategic Minerals 2018-2022 and the draft PNM 2050 recognize the need for circular economy practices, yet they fail to provide concrete tools or incentives for implementing these practices within the critical minerals sector.

Additionally, there is an insufficient emphasis on technological development in the critical minerals sector to foster technology transfer and innovation within Brazil, and there is no indication of concrete

policy instruments that could stimulate technology transfer (e.g., joint ventures with foreign companies). Although the MCTI plans address the need for research and collaboration in critical minerals, they do not specify the instruments that will be used to promote them or incentives to research centres and universities.

Finally, Brazil has yet to establish a clear strategy for attracting foreign investment specifically in the critical minerals sector. Current plans also lack mention of trade agreements to promote Brazilian exports or to secure supply chains for minerals Brazil cannot produce domestically. There is also an absence of initiatives for international partnerships or joint ventures to secure advanced technology. While the MCTI's Plan for Science, Technology, and Innovation for Strategic Minerals 2018-2022 recognizes the importance of international cooperation in research, it provides no actionable steps for achieving it. Additionally, the plans fail to outline strategic collaborations for mineral exploration abroad.

2.2. Legislation and regulation

2.2.1. Mining in the Brazilian Constitution

The 1988 Constitution frames mining within the economic-order principle of national sovereignty (Art. 170, I), grounding state control over subsoil and mineral resources (Union ownership: Arts. 20, IX; 176, caput) and a concession regime administered by the Union (Art. 176, §1) (Bercovici, 2011). In its original design, prospecting and exploitation were restricted to Brazilian companies with national capital (Arts. 176, §1; 171, II), reflecting concerns with foreign control and seeking endogenous development—broader domestic appropriation of surplus, domestication of decision centres, internal-market deepening, and technological upgrading (Bercovici, 2011). Part of the literature argued that the real economic significance of mining lies in industrialization, so the restriction worked as an incentive to mineral-based industrial development (Ribeiro, 2006; Machado, 1989).

In the early 1990s, under liberal reforms, Constitutional Amendment No. 6/1995 removed the capital-nationality requirement, allowing multinationals to operate if incorporated under Brazilian law; simultaneously, Vale's privatization advanced, part of a broader dismantling of state monopolies that, in practice, fostered private monopolies/oligopolies (Tavares, 1999). Vale's sale curtailed a key instrument of state economic policy and strategic capacity, and

multinational firms came to dominate exploration and exploitation (Bercovici, 2011). Since then, the state's regulatory leverage has remained weakened; the 1967 Mining Code was never overhauled, and specific rules on critical minerals reveal a limited state role in capturing rents, securing compensatory measures, driving midstream/technological upgrading, and promoting regional development.

2.2.2. Specific legislation on critical minerals

In 2021, Brazil issued the Decree No. 10.657, which establishes the Strategic Minerals Support Policy to facilitate the environmental licensing process for investment projects aimed at producing strategic minerals in Brazil. This policy aims to prioritize government efforts for implementing projects that are crucial for the country's development (Brazil, 2021).

Following the concept of strategic minerals defined in the National Mining Plan 2030 (PNM-2030), the decree specifies criteria for qualifying mining projects under this policy, focusing on minerals that (i) Brazil heavily depends on for vital economic sectors, (ii) are essential for high-tech products and processes, or (iii) hold comparative advantages and are crucial for the national economy by contributing to a positive trade balance.

The decree also establishes the Interministerial Committee for the Analysis of Strategic Mineral Projects (CTAPME), responsible for evaluating and approving relevant mining projects that align with the policy's objectives. CTAPME's duties include assessing which minerals are strategic, analysing projects against set criteria, and monitoring the performance of the Strategic Minerals Support Policy. Environmental authorities retain full responsibility for the licensing process and CTAPME's secretariat provides support.

CTAPME consists of representatives from various ministries: MME (which coordinates the committee), MCTI, Institutional Security, the Special Secretariat for the Investment Partnership Program (Office of the Chief of Staff), and the Strategic Affairs Secretariat. The decree specifies the committee's meeting schedule, decision-making process, and allows for the inclusion of non-voting representatives from other entities. Notably, the Ministry for Environment and Climate Change is not represented, highlighting the lack of integration of environmental policy into Brazil's critical minerals policy.

The list of minerals considered strategic for Brazil was defined by CTAPME in Resolution No. 2/2021. The document categorizes the strategic minerals into three groups, as mentioned above. In the first group (essential imports) are sulphur, phosphate, potassium, and molybdenum. The second group (high tech minerals) includes cobalt, copper, tin, graphite, platinum group metals, lithium, niobium, nickel, silicon, thallium, rare earth minerals, titanium, tungsten, uranium, and vanadium. The last group (trade balance contributors) includes aluminium, copper, iron, graphite, gold, manganese, niobium, and uranium.

As one can see, the definition of strategic minerals includes inputs for agriculture, energy transition, as well as traditional minerals in Brazil's export basket. It reflects a mix of Brazilian priorities, blending interests from the mining and agribusiness sectors. This approach is partly justified by the impacts of Russia's invasion of Ukraine and Brazil's dependency on fertilizer inputs (Política por Inteiro, 2024).

Given the broad scope of strategic minerals, as defined by CTAPME, most of the projects approved under the Strategic Minerals Support Policy involve iron and golden ore, since they are relevant for Brazilian exports.[4]

Considering the types of minerals selected in the projects under the Strategic Minerals Policy, one could raise concerns regarding their alignment with contemporary definitions of critical minerals, particularly those relevant for the global energy transition. Iron and gold, which collectively account for the most frequent project types (three projects each), are significant for Brazilian exports. However, they do not align with the current understanding of critical minerals essential for energy transition purposes, such as those necessary for renewable energy technologies, electric vehicles, and battery storage systems.

While the Strategic Minerals Support Policy outlines a procedure for prioritizing and expediting the environmental licensing process of projects, it falls short of establishing a comprehensive framework aimed at developing a critical minerals industry in Brazil that prioritizes local technological advancement and value addition. The policy also lacks economic instruments, such as tax incentives and other subsidies,

[4] The full list of approved projects is available at: https://www.gov.br/mme/pt-br/assuntos/secretarias/geologia-mineracao-e-transformacao-mineral/pro-minerais-estrategicos. Accessed on 25 Sep. 2025.

to stimulate industry growth. Moreover, it shows insufficient concern for the environmental impacts of these projects, which is surprising given that Brazil has experienced three major environmental and social disasters involving mining companies.[5] This oversight suggests a missed opportunity to integrate stronger environmental safeguards and promote sustainable mining practices.

Finally, as part of the legislative measures to stimulate the strategic mineral's sector, on July 6, 2022, Brazil issued Decree No. 11,120, which removed the requirement for prior authorization for the export and import of lithium and its derivatives. Previously, these activities required approval from state agencies such as the National Nuclear Energy Commission (CNEN). The decree aims to open and expand the Brazilian lithium market, aligning it with global supply chains and attracting investments in mineral research, production, processing, and battery manufacturing. It also seeks to support the development of the electric vehicle industry in Brazil, a sector closely tied to the broader automotive industry, one of the country's key economic drivers.

2.3. Bill

The lack of a robust legal framework on critical minerals led to the proposal of Bill no. 2780/2024, establishing the National Policy on Critical and Strategic Minerals (PNMCE). The bill aims to "promote the research, extraction, and processing of critical and strategic minerals sustainably, while fostering the development, distribution, trade, and consumption of related products" (BRAZIL, 2024c). It outlines principles such as maximizing the social, environmental, and economic benefits of these minerals; emphasizing their importance for the energy transition and Brazil's development; preserving national interest; and promoting sustainable development and socio-environmental responsibility. Other principles include attracting

[5] The Brumadinho and Mariana disasters are two of Brazil's most catastrophic mining tragedies, both involving the collapse of tailings dams owned by large mining companies. In Mariana, in 2015, the failure of the Fundão dam released approximately 60 million cubic meters of iron ore tailings, devastating the Rio Doce river, causing severe environmental damage, displacing communities, and leading to 19 fatalities (CNN, 2023). In Brumadinho, in 2019, the collapse of the Córrego do Feijão dam resulted in an even greater tragedy, with the release of toxic sludge killing 270 people and causing widespread ecological destruction (Globo, 2023). Both disasters highlighted critical issues in dam safety, corporate responsibility, and regulatory oversight within Brazil's mining sector.

investment, enhancing global competitiveness, and meeting domestic and international demands.

The bill proposes the formation of the Committee on Critical and Strategic Minerals (CMCE) to guide mineral sector development and policy formulation. It also introduces tools such as streamlining environmental licensing, prioritizing critical mineral projects, supporting R&D initiatives, incentivizing exploration and processing activities, and conducting relevant studies on production and demand.

Specific financial incentives include tax exemptions for foreign companies using patented technology and a requirement for large companies to invest 0.40% of their revenue in technological innovation related to critical minerals. Additionally, it mandates that the Federal Executive establish credit lines with favourable terms to support technological research and innovation.

Despite these measures, concerns remain about the bill's effectiveness and social impact.[6] The bill also lacks a mechanism for screening investments in critical minerals, a practice now common in countries such as US, Australia and Canada, among others (White and Case LLP, 2023). Implementing such a mechanism could provide the government with more detailed information about the nature of investments made in the country, thereby enhancing its ability to intervene when necessary.

Another shortcoming is the approach to technology development. The 0.40% investment requirement in P&D may be insufficient to drive significant technological advancements, and the emphasis on tax exemptions for foreign technology could perpetuate Brazil's reliance on international expertise, limiting domestic industry growth and innovation.

The bill's emphasis on foreign investment may boost growth but risks long-term consequences by prioritizing international involvement over local industry development. This could lead to foreign dominance, hindering Brazil's ability to control its technological and economic priorities.

[6] One key issue is the lack of concrete mechanisms to ensure local communities, especially those affected by mining, benefit from these initiatives. Although the bill promotes sustainability, it lacks provisions to guarantee the equitable distribution of wealth generated, raising concerns about potential environmental and social harm without corresponding benefits for local populations.

Furthermore, the provisions for fast-tracking licenses may weaken environmental oversight, increasing the risk of ecological damage and negative impacts on local communities.

2.4. BNDES

The Brazilian Bank for Economic and Social Development (BNDES) has traditionally played a central role in supporting industrial development across key economic sectors, promoting both infrastructure and private-sector growth. Recently, however, its approach has shifted from direct financial support to leveraging private investments, particularly through incentivized corporate bonds and market-based instruments (Silva, 2023). Increasingly, BNDES prioritizes the ESG impacts of the projects it supports, a trend that extends to its initiatives within the strategic minerals sector

In March 2024, BNDES and MME announced the creation of the Strategic Minerals Investment Fund (FIP) in Brazil. According to BNDES, FIP aims to enable the development of projects involving minerals considered strategic for energy transition, decarbonization, and sustainable food production. FIP is expected to invest in 15 to 20 companies with projects focused on mineral exploration, development, and the establishment of new strategic mineral mines in Brazil. BNDES will contribute up to R$ 250 million, capping its participation at 25% of the total, with additional national and international investors anticipated (BNDES, 2024a).

According to the notice published by BNDES for the initiative, a public call was approved to select companies with projects in mineral exploration, development, implementation, or mining operations aimed at energy transition, decarbonization, and soil fertilization, with the purpose of managing the investment fund. Among the selection criteria, the notice highlights ESG aspects to be considered both in the investment process and in monitoring the invested companies, and for measuring and managing the social and environmental impacts of their activities (BNDES, 2024b).

The notice also specifies that strategies for community engagement in areas where mining projects are located will be evaluated, in addition to divestment strategies aligned with the development of the Brazilian capital market and the monitoring reports to be submitted, including ESG reports. Additionally, FIP's investment decision in the target company will assess legal, environmental, and regulatory restrictions on mineral exploration or use in the area of the mining rights, as

well as any conflicts with priority land uses (e.g., energy projects, conservation units, protected areas, national heritage sites, indigenous lands, *quilombola* communities, third-party geotechnical structures), regardless of any existing block requests on the area (BNDES, 2024b).[7]

3. The interaction of different stakeholders in the development of Brazil's framework or critical minerals against the backdrop of its non-alignment policy

3.1 Brazil's non-alignment policy

As outlined in Section 2, Brazil's regulatory framework for critical minerals is still developing. This section analyses the influence of various stakeholders in shaping this framework, considering Brazil's non-alignment policy from an international perspective.

The concept of "Active Non-Alignment" (ANA), introduced in 2019 and developed further in 2020 and 2021, serves as a framework to interpret Latin American countries' responses to the US-China competition. It has been noted as the region's most significant foreign policy shift since the Cold War, particularly highlighted when the Trump administration's efforts to pressure Latin American states to reduce their ties with China found little traction (Heine, 2023).

ANA builds on the historical foundations of the Non-Aligned Movement (NAM), which emerged during the Cold War as a "third way" for nations aiming to avoid aligning with either the US or the Soviet Union. Established at the Bandung Conference in 1955, NAM provided a platform for countries from the Global South to assert

[7] The creation of FIP extends BNDES's support for the mining sector, which has received R$ 8.3 billion in financing over the past decade, benefiting approximately 1,800 companies (BNDES, 2024c). In August 2024, BNDES approved R$ 486.7 million in financing for *Sigma Mineração* to expand its lithium processing capacity sustainably, increasing production from 270,000 to 520,000 tons per year at the "Grota do Cirilo" project in Itinga, MG (BNDES, 2024d). BNDES also signed a R$ 200 million financing agreement with *Nexa Recursos Minerais* under the BNDES ESG Credit program, with terms tied to social and environmental improvements. Key commitments include developing a socio-environmental responsibility policy, implementing a social investment strategy focused on education and diversity, publishing a sustainability report, and obtaining a social responsibility certification for Nexa's Três Marias facility in MG (BNDES, 2024e).

autonomy. As the world shifts towards multi-polarity, NAM's relevance persists but requires adaptation to the new realities and challenges of the 21st century (Bhattacharya, 2024).

ANA mirrors these adjustments, applying the core principles of NAM to the contemporary Latin American context. It encourages governments in the region to focus on national interests and independently assess international dynamics, without adhering to any major power's position. This reflects the broader trend in the Global South, where issue-based alignments and flexible partnerships are becoming increasingly common (Heine, 2023).

The "active" element in ANA highlights the need for a dynamic foreign policy that evaluates emerging opportunities and risks in a rapidly evolving global environment. This approach parallels the multi-alignment strategies adopted by some NAM members, who balance relations with various powers while maintaining autonomy. ANA thus represents a continuation of NAM's principles, adapted to the specific geopolitical and economic context of 21st-century Latin America.

For the Global South in general, the purpose of non-alignment stance could be understood through several strategic objectives. First, it aims to facilitate economic growth by acquiring and integrating core technologies. Second, it enhances national security through the acquisition of advanced military equipment. Third, it strengthens their position in trade negotiations, particularly with Europe, which relies heavily on exports, and the US, which is seeking geo-economic allies in its stance against China and Russia. Fourth, it ensures access to critical resources, such as food, energy, metals, and fertilizers, through partnerships with the emerging Russian-Chinese bloc. Finally, it improves their negotiating power in restructuring debt with Western and Chinese creditors, especially during the ongoing global dollar debt crisis that poses risks to their sovereignty (Sahay, 2022).

Against this backdrop, the following section will first analyse Brazil's engagement in forming alliances and trade agreements related to critical minerals. It will then examine how various stakeholders have interacted with Brazilian institutions to influence the development of the country's legal framework on critical minerals.

3.2. Brazil's Involvement in Critical Minerals Agreements and Talks

Brazil's increasing focus on the critical minerals sector is reflected in its participation in global initiatives and trade negotiations

with various countries. However, as detailed below, much of Brazil's international cooperation is concentrated on bilateral efforts to enhance geological surveys, an area identified as lacking in the country, as acknowledged by the PNM 2050. No relevant trade or investment agreement on critical minerals has been signed by Brazil though it is currently negotiating with the US to access subsidies under the Inflation Reduction Act.

In April 2024, Brazil joined the UN's "Critical Energy Transition Minerals" Panel—co-chaired by South Africa and the European Commission—to help set global principles for sustainable, transparent, and rights-respecting critical-minerals supply. Represented by Gustavo Rosa, Brazil emphasized domestic value-addition and community benefits from mining, aligning with its goals of sustainable development and economic diversification (United Nations, 2024). (United Nations, 2024).

On a bilateral level, in 2024 Brazil expanded partnerships to bolster its critical-minerals agenda. It signed a technical agreement with the UK for third-party lab verification of geological data to improve transparency and attract UK investment, and deepened cooperation with Geoscience Australia and other producers; a revived China accord continues collaboration on geological assessment (Valor Economico, 2024). In September 2024, the Brazilian Geological Survey (SGB) and the U.S. Department of State agreed on a strategic plan for data sharing and fieldwork targeting the Borborema Province, Tin Province of Goiás, and Alto Paranaíba (MG), with field campaigns slated to begin late 2024 (Brazil, 2024d).

These geological assessment partnerships are crucial for Brazil, as the country has limited data on its mineral resources, with a limited portion of its territory mapped (IBRAM, 2024b). Understanding the location of mineral deposits is vital for attracting investment and aids in planning public investments in infrastructure, as well as research and development focused on the mining sector (Vásquez, 2024).

Brazil has also been engaged in negotiations with the US as part of a broader US effort to secure a preferential supply of critical minerals, such as lithium, nickel, and rare earth elements, as part of its strategy to reduce dependency on China. However, Brazil has taken a cautious approach, setting conditions that US investments in Brazil's technological and energy transition sectors be part of any agreement.

While the US government is eager to formalize this partnership, Brazilian officials express concerns about aligning too closely with US'

interests, fearing that such a move could be perceived as taking sides in the growing rivalry between the US and China. Brazil also seeks more concrete investment offers, particularly related to the Inflation Reduction Act's subsidies for energy transition projects. Brazil's involvement in other US-led initiatives, such as the Mineral Security Partnership[8], is also under discussion (Aragão, 2024).

Brazil's neutral stance reflects its careful diplomatic balancing between US and Chinese interests. While the US seeks to incorporate Brazil into its supply chain strategy, Brazil has also explored closer ties with China, including potential participation in the BRI. Although Brazil has not formally committed to the BRI, it continues to benefit from Chinese investments in infrastructure and mineral sectors, maintaining a delicate equilibrium between the two global powers.

In May 2024, Germany, via Foreign Minister Annalena Baerbock, signaled interest in Brazil's lithium, reflecting the EU's push to diversify critical-mineral supply; no formal deal was concluded (Casado, 2024). In July 2024, Saudi Arabia (Minister Bandar Alkhorayef) led a delegation to explore two-way investments aligned with Vision 2030, expressing interest in lithium and copper and inviting Brazilian firms to opportunities in the Kingdom (Brasil Mineral, 2024).

While Brazil's engagement in global, bilateral, and technical agreements within the critical minerals sector offer some opportunities to enhance Brazil's economic development and its role in global supply chains, the country is still navigating its position and approach in this evolving landscape. Brazil's strategy is not yet fully defined, as it seeks to balance competing international interests and align its domestic objectives relating to global sustainability and energy transition.

3.3. Influence of different stakeholder in the development of a Brazilian framework on critical minerals

This subsection analyses how different stakeholders have been engaging with Brazilian institutions to influence the construction of the

[8] The Mineral Security Partnership is a collaboration of 14 countries and the EU to catalyze public and private investment in responsible critical minerals supply chains globally. According to the US Department of State, the partnership aims to accelerate the development of diverse and sustainable critical energy minerals supply chains through working with host governments and industry to facilitate targeted financial and diplomatic support for strategic projects along the value chain (United States, 2024).

Brazilian framework for critical minerals. In particular, we examine the engagement of these stakeholders with three relevant ministries: (i) the MME, (ii) the MDIC and the (iii) MRE. These ministries were chosen for their crucial roles and specific competencies in shaping Brazil's critical minerals policy.[9]

As a proxy for analysis of the engagement of stakeholders with these instances, we conducted a search using the *e-Agendas* system, a platform that publicly discloses the engagements of federal executive branch officials. The analysis focused on the public schedules of members from those three ministries. We utilized targeted keywords, including "critical minerals," "strategic minerals," "lithium," "niobium," "mining," and names of key stakeholders such as countries ("China," "United States," "European Union"), organizations ("IBRAM" and "ABPM"), and companies active in the sector, including "Pilbara Minerals," "Sigma," "Companhia Brasileira de Lítio," "Pilbara Minerals," "Atlas," "AMG," "CBMM," "Comipa," "Niobras," "Minsur," and "Niobec."[10]

The selection of companies was intentional, focusing on those with known interests or involvement in the extraction of lithium and niobium in Brazil. Lithium was chosen due to its potential for development within the country and its strategic importance for energy transition technologies, such as electric vehicle batteries**.** Niobium was included because it represents an established and significant mineral resource for Brazil, with ongoing extraction activities.

It is essential to acknowledge the temporal limitations of this research. The *e-Agendas* system, mandated by Decree No. 10,889

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[9] MME oversees Brazil's mineral resources policy, including the management of mining activities and regulatory frameworks. It is directly responsible for planning, implementing, and monitoring policies related to the exploration, extraction, and commercialization of minerals, making it a central actor in the critical minerals sector. MDIC plays a crucial role in integrating Brazil's industrial and commercial strategies, working on developing and supporting industrial policies. MRE is responsible for negotiating international agreements and managing Brazil's foreign policy, including bilateral and multilateral engagements that impact the critical minerals sector. This ministry is pivotal in Brazil's strategy of "active non-alignment," balancing relationships with major global powers (e.g., the US, China, and the EU).

[10] The full results of this search can be found here: https://docs.google.com/spreadsheets/d/1-9ssNvfxYs5eMGlAR0YZZ4oBdtF1y3JZXLRcxd6IIXs/edit?usp=sharing.

of December 9, 2021, only became obligatory for federal public administration bodies and their associated entities from October 9, 2022, onwards. As a result, information prior to this date was less centralized, making it challenging to access and compile relevant data comprehensively. Thus, we searched information from Sept 2022 to Sept 2024.

Using this methodology, we could identify a total of 56 meetings involving the topic of critical or strategic meetings, most of which took place with the MME (46 meetings). The main stakeholders involve foreign governments and companies.

Table 2: Distribution of Meetings on Critical and Strategic Minerals by Stakeholder and Agency

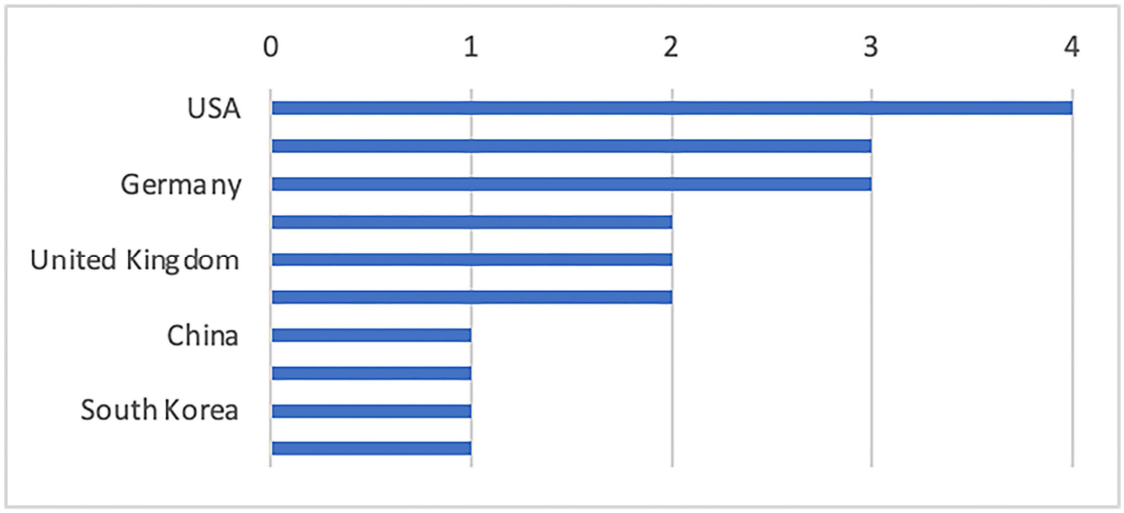
Relevant agency	Number of meetings
Ministry of Mines and Energy	46
Foreign government	17
Company	13
Interagency	9
Trade association	3
International organization	2
Company; Trade association; Foreign government	1
Legislative	1
Ministry of Development, Industry, Trade and Services	9
Company	3
Trade association	2
Foreign government	2
Trade association; Company	1
Research institute	1
Ministry of Foreign Relations and Ministry of Mines and Energy	1
Total	56

Elaboration: the author

Considering the interactions with MME and MDIC, it is possible to see below the list of countries/intergovernmental entities which have been interacting with Brazil, with the US at the top of the list followed by Saudi Arabia, Germany, Australia, UK, EU, China, Switzerland, South Korea and Japan. In fact, the US and European countries plus

the EU lead the number of meetings with those ministries. This reflects US and Europe's strategy in building critical minerals supply chains.[11]

Chart 1: Number of Interactions of Foreign Governments (MME + MDIC) (Sep 2022 - Sep 2024)



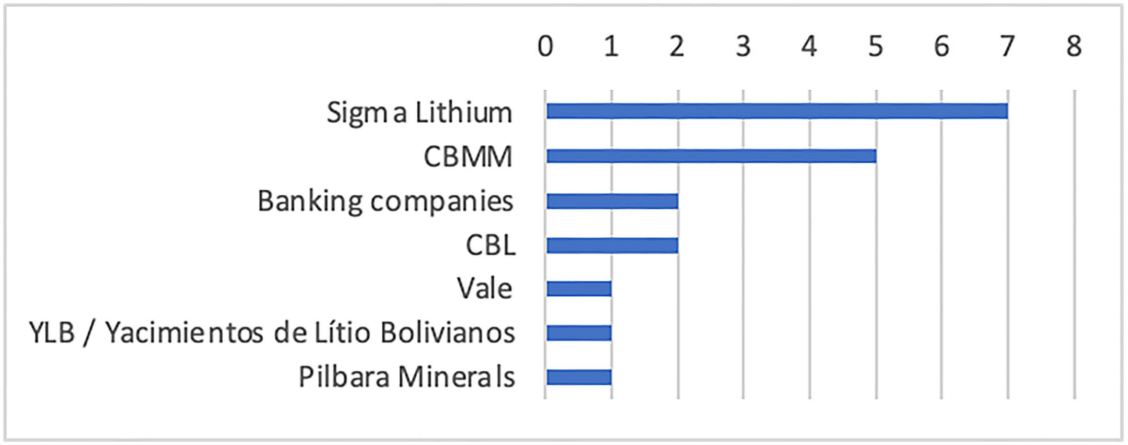
Elaboration: the author

Latin America and, in particular, Brazil are alternatives for these countries given their reserves of lithium, rare earths, cobalt, among others, and long-term trade relations with US and Europe, which are also major partners. Zhou et al also mentioned that other resource-seeking economies like the UK, Japan, South Korea have also emulated US and Europe's strategy. These countries also appear in the list of countries engaging with the Brazilian authorities, as one can note in the chart above.

When one considers the interactions of companies with the ministries, Sigma Lithium leads, followed by *Companhia Brasileira de Metalurgia e Mineração* (CBMM) and companies in the banking sector. Other companies also appear, including *Companhia Brasileira de Lítio* (CBL), *Vale*, *Yacimientos de Lítio Bolivianos* and *Pilbara Minerals*. Individually speaking, Sigma Lithium and CBMM had more meeting than any other country mentioned in Chart 1.

[11] As mentioned by Zhou et al (2024, p. 4), "[B]oth the US and the EU are developing multi-dimensional strategies to strengthen CMs [critical mineral] supply chains, targeting the geographic concentration of extractive and processing activities, particularly the dominant position of China. They seek to foster domestic mining and processing capabilities and partner with allies and like-minded resource-rich economies."

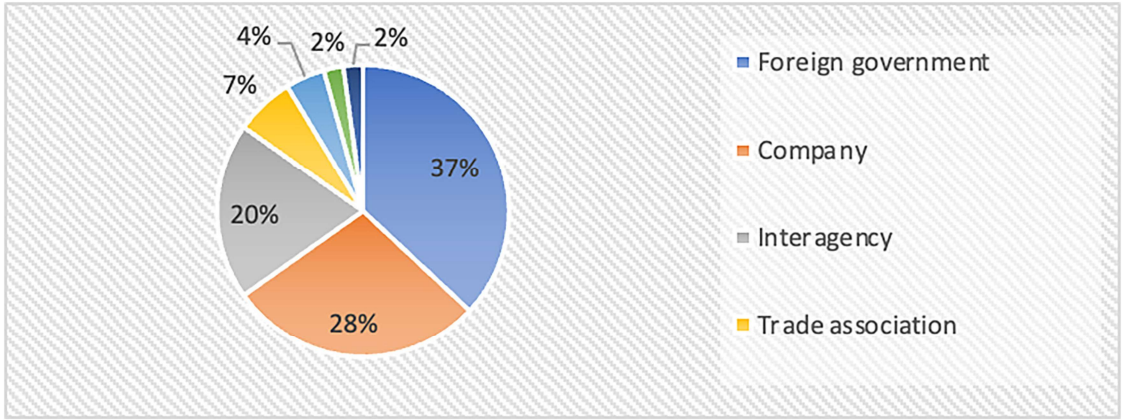
Chart 2. Number of interactions of companies (MME + MDIC) (Sep 2022 - Sep 2024)



Elaboration: the author

Turning specifically to the interactions within the MME, 37% of the interactions are made by foreign governments followed by 20% by companies. 20% of the meeting are interagency, that is, meeting within different departments, agencies, ministries and other authorities within the government (executive power at the federal, state or city level). Trade associations and international organizations also have some role in the interactions, with the former representing 7% of the interactions and the latter, 4%.

Chart 3: Interactions by Stakeholder Type with the Ministry of Mines and Energy (Sep 2022 - Sep 2024)



Elaboration: The Author

Table 3: Interactions by Stakeholder Type with the Ministry of Mines and Energy

Ministry of Mines and Energy	
Type of stakeholder	Number of interactions
Foreign government	17
Company	13
Interagency	9
Trade association	3
International organization	2
Company; Trade association; Foreign government	1
Legislative	1
Total	46

Elaboration: The Author

Regarding trade associations, IBRAM (the Brazilian Institute for Mining) plays a leading role. IBRAM consists of major industry players, including large mining companies, industry stakeholders, and technical experts, who work together to shape mining policies. The institute actively engages with government ministries through bilateral and multi-party meetings, promoting the development of a comprehensive critical minerals policy framework in Brazil. IBRAM has organized several events to facilitate discussions on how the country's regulatory structure for critical minerals should be designed, aiming to align it with global trends and sustainable practices.[12]

In May 2024, IBRAM released a Green Paper titled *"For a Critical and Strategic Minerals' Policy for Brazil and for the Future."* This document highlights the need for a unified and comprehensive regulatory framework to govern critical minerals, underscoring the importance of these resources for the global energy transition. The paper recognizes Brazil's potential due to its vast mineral wealth and renewable energy matrix, but it also points out the challenges posed by the absence of an integrated policy. The emphasis is on aligning federal and sectoral policies to create a stable and attractive environment for international investors and commercial partners (IBRAM, 2024a).

[12] IBRAM's events can be found in its webpage: https://ibram.org.br/eventos-do-setor/.

A central aspect of the Green Paper is its view on environmental licensing. It acknowledges the significance of licensing in regulating mining activities but suggests it should have a limited scope focused on mitigating direct and indirect environmental impacts in a transparent and efficient manner. The document proposes that broader socio-economic and historical challenges in mining regions should be addressed separately, through complementary policies like territorial development agendas, institutional capacity building, and financial mechanisms, coordinated through public-private partnerships (IBRAM, 2024a). This reflects a strategic approach by the mining sector to streamline licensing processes, potentially reducing regulatory burdens while promoting socio-economic initiatives outside the scope of licensing.

This stance is notable, considering that environmental licensing is often a contentious issue for mining companies, seen as a regulatory hurdle due to its complexity and costs. The recent disasters in Brazil, such as Mariana and Brumadinho, have heightened scrutiny over mining activities, making the sector's push for licensing reform appear as an attempt to expedite approvals and lower operational costs. The Green Paper's strategy may aim to limit the responsibilities of licensing bodies, advocating for their integration into broader multi-stakeholder policies designed to address historical and social issues separately.

Shortly after IBRAM's Green Paper release, members of the Parliamentary Front for Sustainable Mining (FPMin) introduced Bill No. 2780/2024, building on IBRAM's suggestions. This legislative effort highlights the close alignment between FPMin and the mining industry, with IBRAM and major companies playing a significant role in shaping the bill. FPMin reflects a right-wing, pro-business stance. The group's agenda aligns closely with economic and industrial interests, advocating for the modernization of mining legislation and the expansion of the sector's capacity under the guise of sustainability. This approach fits within the broader conservative economic strategy in Brazil, which emphasizes economic growth and seeks to minimize regulatory constraints.

FPMin's leadership and its right-wing allies have a history of supporting deregulatory measures aimed at facilitating business operations. For instance, they advocate for reducing bureaucratic obstacles in environmental licensing processes, which they view as impediments to economic development. While these measures are framed as necessary for sustainability, they often prioritize the acceleration of mineral exploration at the potential expense of environmental and social

safeguards. FPMin also collaborates with other conservative groups like the the Parliamentary Front for Agropecuary, forming a coalition of interests between the mining and agribusiness sectors. This partnership illustrates how these groups leverage their political influence to advance a pro-business legislative agenda, even when it raises concerns about environmental and social impacts.

The Observatory for Mining Conflicts in Brazil notes that FPMin is composed of 25 members, 11 directors and 14 thematic coordinators. all affiliated with right-wing and centre-right parties, many of whom have longstanding ties to mining companies. In the 2014 federal elections, when corporate campaign financing was still permitted, several current FPMin members received significant donations from major mining companies (Paixão and Giovanaz, 2024).

FPMin's leadership, such as Deputy Joaquim Passarinho (PL-PA), a loyal supporter of former President Bolsonaro, and Senator Zequinha Marinho (PSC-PA), who advocates for mining in protected areas, indicates the group's alignment with Brazil's conservative political factions. FPMin's agenda includes promoting the "simplification" of environmental licensing processes and expanding access to financial markets for mining companies, underscoring its alignment with business interests rather than prioritizing comprehensive socio-environmental protections (Paixão and Giovanaz, 2024).

4. Conclusions

Brazil's policy of non-alignment holds potential as a geoeconomic strategy, but its effectiveness in the domain of critical/strategic minerals depends on the presence of a coherent domestic institutional architecture and clear external operating principles. The evidence assembled from ministerial *e-Agendas* and assessed through the proposed inward-outward instrument matrix indicates that recent advances have concentrated on scientific cooperation and geological surveying, which are necessary steps given informational deficits, yet insufficient to generate trade, investment, and technology-transfer arrangements capable of securing supply, building midstream capabilities, and increasing domestic value addition.

The analysis further reveals (i) fragmented governance and limited integration across energy, climate, industrial, and mining policies; (ii) a policy instrument set oriented toward legacy minerals rather than energy-transition-relevant minerals; and (iii) an under-

specified external dimension, with no foreign direct investment (FDI) screening for critical minerals and few structured agreements.

In this configuration, non-alignment risks sliding into policy passivity. In the absence of standardized rules and procedures, Brazil is exposed to asymmetric bargaining, particularly in contexts where critical minerals are leveraged in wider commercial negotiations, and to heterogeneous treatment across partners, which ultimately undermines neutrality. Domestically, the influence of corporate lobbies and legislative caucuses contributes to policy dispersion, increasing the likelihood of enclave extraction, weak local value capture, and heightened socio-environmental conflict.

An "active non-alignment" requires translating strategic intent into operational design. The paper therefore advances five interlocking measures: first, adoption of national objectives for critical minerals: explicit targets for value addition and midstream processing, milestones for recycling and circularity, and their incorporation into PNTE, PNM-2050, and *New Industry Brazil*; second, establishment of a critical-minerals FDI screening regime (scope, tests, remedies) and standard offtake templates (local processing benchmarks, technology- and skills-development commitments, transparency and dispute-resolution clauses) applicable to all partners; third, creation of an interministerial governance committee (MME/MDIC/MCTI/Finance/Environment/ANM) with structured participation of indigenous peoples, affected communities, and independent experts; fourth, institutionalization of a permanent market-intelligence function (geology, demand, price, and risk monitoring) to inform licensing, procurement, and diplomacy; and fifth, dedicated financing windows (BNDES/New Climate Fund/Critical Minerals Fund) tied to measurable technology-transfer metrics, joint ventures/consortia, recycling, and other circular-economy investments.

Under these conditions, non-alignment can operate as an active hedging strategy evaluated not by the number of memoranda signed but by gains in domestic value added, technological upgrading, and the resilience and transparency of supply chains. If Brazil consolidates a standardized, partner-neutral framework, while advancing geological knowledge and strengthening socio-environmental safeguards, it has more chances of preserving strategic autonomy, attracting higher-quality investment, and converting its mineral endowments into durable and sustainable development outcomes.

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