T20 Policy Brief

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Task Force 02

SUSTAINABLE CLIMATE ACTION AND INCLUSIVE JUST ENERGY TRANSITIONS

Securing Electric Mobility with Responsible Extraction of Critical Minerals in Latin America

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Abstract

Although the Latin American region has significant reserves of minerals essential for battery manufacturing, in particular lithium and nickel, it lacks processing and refining facilities for these minerals, thus resulting in exporting lithium to China for processing and refining; in the end, the region becoming a net importer of Electric Vehicles (EV). The region needs the opportunity to add value locally, so the role and participation of Latin America in various stages of the lithium value chain can be strengthened to scale up electric mobility in the following years.

This document provides recommendations to foster collaboration between the G20 and Latin America to transition from fossil fuel-powered vehicles to electric mobility. Specifically, the focus will be on promoting a collaborative framework to facilitate a continuous dialogue between G20 and Latin America to consider the social and environmental impacts of mining; engaging the G20 in technology transfer and capacity building to Latin America related to critical minerals value chain; promoting a Blended Finance Facility for Latin America to mobilize investment for critical minerals, especially lithium; collaborate with the automotive industry in the G20 Latin American countries to scale-up electric mobility.

The G20 should consider a cooperative approach with Latin America regarding electric mobility advancements that recognize the need for deep, rapid, and sustained reductions in global greenhouse gas (GHG) emissions.

Keywords: critical minerals, electric mobility, decarbonization.

Diagnosis of the Issue

The road transportation sector accounts for over 15% of global energy-related emissions (IEA 2023a), and electric mobility has emerged as an alternative to transitioning away from fossil fuel-powered vehicles due to its potential to reduce GHG emissions and air pollution.

Thus, electric mobility is rapidly increasing and gaining momentum globally (EV sales grew by 55% in 2022, reaching a record of over ten million (IEA 2023b)), particularly with an increase in global demand for automotive lithium-ion batteries (which increased 65% in 2022 compared to 2021 (IEA 2023a)). Lithium is crucial for automotive Li-ion batteries due to their notable energy density-to-weight ratios, which allows them to outperform other battery technologies (Ralls et al. 2023). The lithium value chain for electric mobility comprises seven stages.

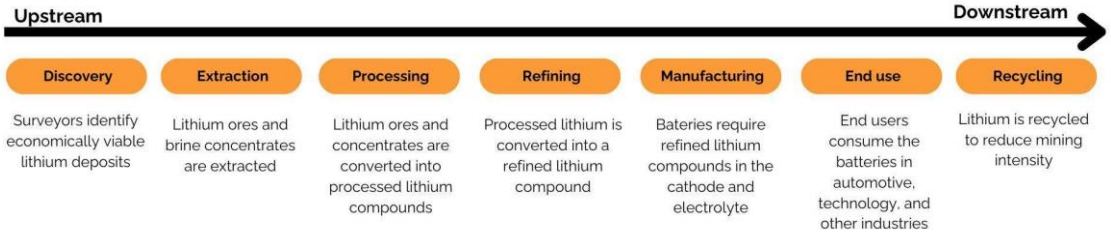

FIGURE 1 - Lithium value chain for electric mobility. Source: Own elaboration based on LaRocca (2020).

In 2022, about 60% of lithium demand was for EV batteries (IEA 2023a), which is expected to grow by over 40 times by 2040 (IEA 2021). This means this mineral's extraction, processing, and refining must rapidly increase to support the energy transition. Amidst this high lithium market demand, Latin America plays a pivotal role since Lithium

in Chile, Argentina, and Bolivia (the Lithium Triangle) has the potential to exploit over half of the world's lithium. However, lithium extraction risks and uncertainties have translated into social unrest hazards, biodiversity loss, and land degradation, for example in Argentina (Mongabay News 2019).

Although the region has the most significant potential lithium reserves, profound global inequalities exist in the various stages of the lithium value chain for electric mobility. While Latin America is well positioned in the upstream lithium value chain, specifically in the extraction of lithium (UNCTAD 2023), developed and powerful economies lead the midstream and downstream lithium value chain since manufacturing capacities for EVs batteries are disproportionately concentrated in China, Europe, and the United States (IEA 2023c). Therefore, limited lithium processing, refining, and manufacturing facilities in Latin America result in the export of lithium and the import of EVs into the region, thereby missing the opportunity to add value locally and strengthen the regional value chain.

As a result of the First Global Stocktake of the Paris Agreement, 198 governments agreed to deep, rapid, and sustained reductions in global GHG emissions of 43% by 2030 and 60% by 2035 relative to the 2019 level and reach net zero carbon dioxide emissions by 2050 to limit global temperature rise to 1.5°C, including by accelerating the reduction of emissions from road transport through the deployment of zero- and low-emission vehicles.

The G20 has committed to supporting supply chains for energy transitions, including critical minerals, to implement sustainable, just, affordable, and inclusive energy transitions, per the G20 New Delhi Declaration of 2023. In addition, some G20 and Latin American countries have announced plans to phase out fossil fuel vehicles, which highlights an alignment of the ambitions of both regions on the issue.

TABLE 1 - Countries to phase out fossil fuel-powered vehicles by year

Phase-out Date	G20 Countries	Latin American Countries
2030	Italy, United Kingdom	Antigua and Barbuda, Barbados
2035	Canada, European Union, Japan	Chile, Colombia
2040	France	
2050	Indonesia	Costa Rica, Mexico

Source: Own elaboration based on SLOCAT (2022).

This document brief seeks to move forward with Principle 3[1] of the Voluntary High-Level Principles for Collaboration on Critical Minerals for Energy Transitions proposed by the previous Indian G20 presidency (G20 2023) and motivate a collaborative nexus between the G20 and Latin America. It aims to build on the mineral resources available in Latin America and the capacity, knowledge, and technology available in G20 countries to boost the region's potential in the upstream and midstream lithium value chain to scale up electric mobility.

Securing electric mobility in Latin America and G20 countries to comply with the phase-out of fossil fuel vehicles entails a responsible and sustainable lithium value chain

[1] Support local value creation in the critical mineral supply chain through beneficiation and work towards technology diffusion, skill development and increased flow of public and private sector investments to resource rich countries to promote sustainable and responsible development of upstream supply.

in Latin America, boosting its potential to produce batteries and EVs in regional and global markets.

Recommendations

1. Create a collaborative framework to facilitate a continuous dialogue between G20 and Latin America

Collaborative frameworks are essential for the G20 to consider the social and environmental impacts of mining in Latin America. The production of critical minerals is associated with legal ambiguities, ecological hazards, political issues, and risks to human rights, particularly for those defending their territories, which can lead to social unrest.

The G20 should implement a collaborative framework within the Energy Transitions Working Group (ETGW) that comprises dialogues and roundtables and develop plans and agreements with Latin American countries to promote environmental and social safeguards and identify and lift barriers to diverse, responsible, sustainable, and resilient supply chains for critical mineral production, especially for the lithium value chain needed for renewable energy technologies and electric mobility in Latin America.

A successful case that could be used as a starting point to orient dialogues under the collaborative framework is Argentina's National Roundtable of the Strategic Plan for Mining Development (Ministry of Productive Development 2021), comprising government agencies, public institutions, scientific entities, trade unions, companies, academics, and civil society. This aims to elaborate on a shared strategy on how mining should be developed in the coming years to contribute to sustainable development in the country.

Therefore, the ETWG's collaborative framework should inform national debates about mining and guide governments on how to move towards this activity sustainably.

Promoting an informed discussion of mining and its impacts is critical to achieving public consensus and developing balanced policies.

2. Engage the G20 countries in technology transfer and capacity building to Latin America related to critical minerals value chain

Implementation should focus on technology transfer and capacity building through bilateral and multilateral agreements between the G20 and Latin American countries. In recent years, strategic alliances between G20 governments, such as the Australia-India critical minerals cooperation agreement, have been leveraged to strengthen cooperation in developing critical minerals assets and supply chains (PwC 2023).

For example, the G20 countries should reinforce cooperation with Chile, Brazil, Argentina, Mexico, Colombia, and Bolivia, where technology transfer and capacity building related to critical minerals are needed to boost their industrial policies where the energy sector plays a crucial role in their economic reactivation and development (Transforma 2024).

Collaboration between G20 and Latin American educational institutions and research centers with experience in assessing the different stages of the lithium value chain should be encouraged. Initiatives, such as the US Chips and Science Act (PwC 2023), offer grants to advance research on strategies and technologies for critical minerals mining that could be promoted across both regions. It is vital to potentiate training and scholarship programs for students and professionals who seek technical sharing related to critical minerals, especially lithium.

Also, G20 countries should move quickly to support the creation of knowledge centers such as the ARC Centre of Excellence for Enabling Eco-Efficient Minerals Beneficiation in Australia (COE Minerals n.d.), which develops methods to use fewer resources and

collaborates with the industry, technology services, and stakeholders. The G20 must encourage intra-regional centers between G20 countries and Latin America, including cooperation between universities, governments, and companies.

3. Promote a Blended Finance Facility for Latin America to mobilize finance and investment for critical minerals

The G20 should convene critical stakeholders to foster the creation of a dedicated Blended Finance Facility to support the added value of critical minerals, especially lithium mining, processing, and refining in Latin America. G20 countries allocating funds to finance projects related to critical minerals should promote the Facility and foresee that part of these funds will go to Latin America.

For example, Australia created the Critical Minerals Facility to cover shortfalls in private financing for critical minerals projects; it also allocates a portion of its $15 billion National Reconstruction Fund to critical minerals companies building processing, refining, or manufacturing capacity in the country; the U.S. Government provides significant domestic conditional funding for critical minerals projects in battery recycling, lithium, boron, and graphite processing projects (PwC 2023).

Based on these experiences, the Blended Finance facility should: establish a Multilateral Governing Body consisting of representatives from G20 member countries, MDBs, IFIs, and critical stakeholders from Latin America to oversee the strategic direction, ensure alignment with global sustainability standards, and coordinate among various funding and implementation partners; secure initial public financing of G20 governments, MDBs like the World Bank and Inter-American Development Bank, and IFIs such as the International Finance Corporation; begin funding selected critical

minerals, especially lithium mining, processing and refinement projects and establish monitoring systems that report on environmental, social, and financial performance.

4. Collaborate with the automotive industry in the G20 Latin American countries to contribute to the scale-up of electric mobility

The Latin American automotive industry concentrates on the region's three G20 countries: Argentina, Brazil, and Mexico. Representing approximately 7% of the global production in 2023 (OICA, 2024), the region holds significant potential for scaling up electric mobility in the region and globally. Fostering partnerships between governments and industry players is essential to achieve this. Public-private partnerships can drive the development of necessary infrastructure, technology, and skills for EV production. This will contribute to phasing out fossil fuel-powered vehicles by the dates Latin America and the G20 have committed to.

Existing partnerships and commitments between some G20 country companies in Latin America must be bolstered to enhance the region's potential to expand electromobility, meet current demand, and contribute to creating new value chains on a global scale. For example, China has signed a letter of intent with Brazil to establish three manufacturing companies there (Reuters 2022b); the German company BMW has declared its intention to manufacture EVs at its plant in Mexico (Reuters 2023); the North American complex, General Motors, will commence the production of the 2024 Chevrolet Blazer EV in Mexico (Reuters 2022a); and Tesla, the North American company, announced it will build its largest EVs manufacturing plant in the world in Mexico (BBC 2023). Finally, the Chinese company Chery, aims to produce 100,000 EVs by 2030 and intends to venture into battery production in Argentina (China Daily 2023).

Scenario of Outcomes

Scenario 1. Secure electric mobility in Latin America with a collaborative framework with the G20

Latin America has local solid mining, processing, and refining capacity for lithium, and the G20 is committed to regional technology transfer and capacity building related to critical mineral value chains, specifically lithium production, to scale up electric mobility. Being a global leader in the international trade of lithium, the region exports this processed and refined mineral and ventures into battery manufacturing to deploy electric mobility worldwide.

Due to the more robust development of the battery value chain, Latin America has been exposed to higher environmental and social risks. Latin America and the G20 have contributed jointly to a common definition of high-end social and ecological standards through a collaborative framework between governments, civil society, and the private sector, resulting in secure electric mobility through the responsible extraction of these minerals in Latin America.

A Blended Finance Facility for Latin America mobilizes funding for selected lithium mining, processing, and refining projects, establishes monitoring systems, and starts regular reporting on environmental, social, and financial performance. Finally, alliances between the G20 countries and the automotive industry, particularly in Argentina, Brazil, and Mexico, contribute to the scale-up of electric mobility globally and in Latin America.

Scenario 2. Mostly locally led electric mobility in Latin America with a poor collaborative framework with the G20

Although Latin America holds incipient local mining, processing, and refining capacity of lithium, the G20 has started discussions with Latin American countries about technology transfer and capacity building related to critical mineral value chains, specifically lithium production. However, these conversations have not translated into concrete collaborative framework actions.

Due to the weak development of the battery value chain, Latin America has exposed less of its lithium value chain to environmental and social risks. Consequently, Latin America has slight international pressure to urgently define environmental and social safeguards in the deployment of lithium. It only starts to look for national definitions of these standards but does not follow international benchmarks.

A Blended Finance Facility for Latin America mobilizes finance for selected critical minerals, especially lithium mining, processing, and refining projects. It establishes monitoring systems and starts regular reporting on environmental, social, and financial performance. However, translating financial support into implementing concrete actions that strengthen the EV battery value chain is challenging due to a lack of technical infrastructure.

Finally, although there are incipient agreements between the G20 countries and the automotive industry in Argentina, Brazil, and Mexico that could emerge as a scaling up of electric mobility in Latin America, other G20 countries still dominate in this issue both in terms of different parts of the value chain and in affordability.

Scenario 3. Insecure electric mobility in Latin America and absence of a collaborative framework with the G20

Latin America holds incipient local lithium mining, processing, and refining capacity. There is a lack of G20 commitment to regional technology transfer and capacity building related to critical mineral value chains, specifically lithium production. The region is mainly a producer of vital raw materials such as lithium by exporting them to advanced economies without the capacity to process and refine and not exploring its potential in battery manufacturing for EV deployment.

Although battery value chain development is lacking, Latin America has continued to expose the lithium value chain to environmental and social risks. This has exacerbated regional inequalities due to a need for new economic and social opportunities related to the lithium value chain.

The absence of support from the G20 to mobilize finance and investment to Latin America for selected lithium mining, processing, and refining projects has made electric mobility unaffordable. Finally, key Latin American countries such as Argentina, Brazil, and Mexico have unexplored potential to scale up electric mobility globally and regionally.

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