Lithium-ion battery technology colombia

Latin America holds the world"s largest lithium reserves. The “lithium triangle,” consisting of Argentina, Chile and Bolivia, possesses 68% of the primary global reserves of this resource while Brazil, Mexico and Peru also have important deposits, though less extensive.

The era of fossil fuel energy dominance is reaching its limits, elevating lithium as a strategic resource essential for driving economic development. This shift creates an opportunity for value creation and economic gain through resource exploitation, productive and technological capacity building, and the knowledge that supports the global energy transition and structural transformation.

We are undergoing a profound and unprecedented transformation of energy infrastructure, focused on creating renewable and sustainable energy sources. This shift inevitably heightens tensions between the Global North and South - and between central and peripheral regions - over the distribution of benefits from transformative technologies and control of critical raw materials. Energy has long been at the heart of modern geopolitical dynamics and remains pivotal to global hegemonic power.

The conflict between Russia and Ukraine has disrupted global geopolitics, hastening decisions to push further into the energy transition. The resulting turmoil in trade flows has driven a significant rise in international fossil fuel prices, impacting the energy sector, various industries and consumers alike, with effects rippling through households, businesses and entire economies.

High fossil fuel prices pose significant challenges for many economies while generating unprecedented windfall profits for oil and gas producers. Countries lacking the resources to respond independently are the hardest hit in this prolonged climate of conflict.

Three main factors fuel the hegemonic drive for resource control and appropriation: rising demand, resource scarcity and depletion coupled with competition for dominance. As demand increases and resources like oil diminish, competition intensifies, opening new opportunities for energy alternatives that are reshaping the global power balance in today"s geopolitical landscape.

Lithium has become central to global geopolitics due to its essential role in the shift to a post-fossil fuel world. In response to the Sino-Russian strategic alliance, the United States is working to secure dwindling fossil fuel resources, leveraging its military influence as it faces new challenges in technology, industry and trade within the advancing energy transition.

This competition between the Global North and the Sino-Russian bloc centers on establishing a firm hold over lithium reserves, with South America playing a pivotal role in this power struggle. The region is key to establishing a new green industrial network, securing access to strategic raw materials, and consolidating

control over global trade within an emerging technological paradigm.

Latin America’s lithium-rich nations aim to capitalize on the demand surge for this crucial resource, yet their current output falls short of potential. Production remains modest, hampered by technical constraints and the region’s difficulty in keeping up with rapidly growing demand.

A key challenge is the lack of technical capacity to process lithium. When assessing mineral reserves - resources that can be economically extracted with existing technology - outlooks differ significantly across Latin American countries. Calculating reserves involves economic considerations, market conditions, financing, engineering methods, extraction techniques, and legal, environmental and social factors, all of which influence whether a resource can be fully utilized, beyond simply knowing its location.

Lithium deposits fall into three main categories: clay-based lithium, lithium rock deposits often linked with uranium, and lithium in salt flats. This classification matters because the environmental impact varies by deposit type, each presenting distinct technological challenges.

The most important deposits for lithium extraction are salt flats, as their natural conditions allow for more optimal development. This is evident in the concentrations of lithium mainly found in Bolivia (21 million tons – Mt), Argentina (18.3 Mt), and Chile (9.6 Mt). Chile has made the most progress in extraction and exportation. South America is among the top four lithium-producing regions, with Australia leading, followed by Chile, China, and Argentina.

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