DEVTECH

The Imperative for Increased Investment in Cuban Mines

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The Association for the Study of the Cuban Economy

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July 31st, 2025

Arlington, Virginia

Introduction

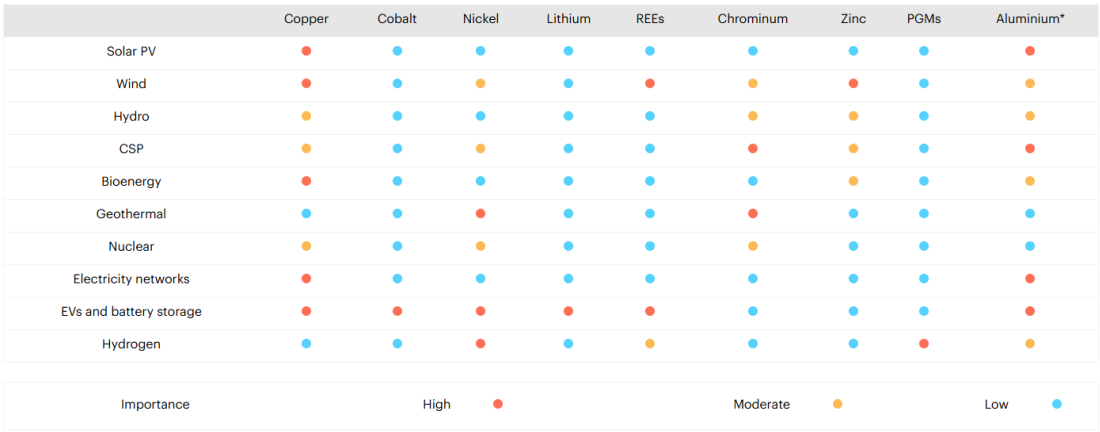
The global landscape is undergoing significant transformation, driven by increasing calls for sustainability. Yet underlying this push for green energy lies another crucial demand: the need for critical minerals. These minerals, such as lithium, cobalt, and nickel are indispensable for the green energy transition, from electric vehicles to advanced energy storage systems. Against this backdrop, Cuba, a nation with a rich mining history, finds itself at a pivotal moment, possessing substantial yet largely underexploited mineral reserves. Historically a significant player, Cuba's mining sector has struggled to keep pace with global demand and technological advancements. Furthermore, Cuba's mining industry has caused detrimental damage to the environment and communities surrounding these mines, further complicating the development of a potentially pivotal sector. Despite possessing substantial, underexploited reserves of critical minerals essential for the global energy transition, Cuba's mining sector remains significantly underdeveloped due to persistent capital shortages and restrictive economic policies. Unlocking its full potential, while addressing global supply chain concerns and mitigating environmental and social impacts, hinges on attracting strategic foreign investment.

Significance of Critical Minerals

As previously stated, the demand for cleaner energy and more sustainable technologies has shifted the world's markets towards critical minerals and rare earth elements. They are imperative for producing carbon-free and low-carbon technologies such as electric cars, wind turbines, solar panels, and batteries. According to the International Energy Agency (IEA), the demand for these minerals will need to triple by 2030 and quadruple by 2040 if the globe is to achieve net-zero emissions.[1] This presents a plethora of new challenges, including sustainably extracting these minerals, ensuring secure and affordable supplies, and addressing their production and refining. Although the metals go towards products will have a smaller carbon footprint compared to their counterparts, the production and extraction has the potential to have large environmental and social consequences.

[1] International Energy Agency. *The Role of Critical Minerals in Clean Energy Transitions*. Paris: International Energy Agency, 2021. https://iea.blob.core.windows.net/assets/ffd2a83b-8c30-4e9d-980a-52b6d9a86fdc/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf.

Figure 1: Critical Minerals Needs for Clean Energy Technology (IEA)



The figure above demonstrates the robust need for these minerals to achieve comprehensive green energy efficiency. The following section will delve into the key minerals produced by Cuba.

Note: The Sustainable Development Scenario (SDS) is a climate-driven scenario developed by the International Energy Agency (IEA) in their *World Energy Outlook* reports. It outlines a path for the global energy system to achieve climate change goals consistent with the Paris Agreement, along with improving air quality and providing access to modern energy. The SDS specifically assumes that countries and companies successfully meet their announced net-zero emissions targets, mostly by 2050, leading the world as a whole to reach net-zero before 2070. This scenario serves as a key benchmark for the IEA's analysis of future mineral requirements and the deployment of clean energy technologies.

Zinc:

Zinc is a naturally abundant, versatile, 100% recyclable, and essential metal.[2] Zinc is a crucial metal for a low-carbon economy, being the fourth most used globally. It's vital for green technologies like solar panels and wind turbines and is primarily used in galvanizing to protect steel from rust.[2] Zinc-ion batteries are also a safer alternative to lithium-ion batteries.[2] Zinc is also used for electricity networks, as the protective coating against corrosion in wind turbines, and extensively in geothermal power plants. For instance, a 10 MWh offshore wind turbine alone requires 4 metric tons of zinc, while a 100 MWh solar panel park demands 240 metric tons.[2] Zinc is energy-intensive when it comes to

[2] World Economic Forum. "Why Zinc Is a Critical Mineral for the Low-Carbon Economy and Construction." April 2022. https://www.weforum.org/stories/2022/04/zinc-low-carbon-economy-construction/.

production and processing; the production of Zinc has relatively high average GHG emissions compared to other minerals (such as iron and steel). [3]

Cobalt:

Traditionally, Cobalt has been used for coloring ceramic and glassware. In the 20th century, its use expanded to aircraft turbines due to its high wear resistance, temperature strength, and magnetic properties.[4] Now, cobalt is imperative for the performance, longevity, and energy density of batteries used in electric vehicles and energy storage. A typical electric car requires about six times the mineral inputs of a conventional car, including cobalt for its battery.[3] The IEA forecasts 200 million electric vehicles across the globe by 2030, which roughly translates to an increase in cobalt demand from 160,000 tons in 2021 to 250,000 tons.[4]Furthermore, electric vehicles and batteries are projected to account for 60-70% of total cobalt demand in 2040.[3] In climate-driven scenarios, cobalt demand for use in EVs and battery storage is expected to grow by around 20-25 times. Importantly, cobalt is recyclable, allowing for its repeated use and reinforcing its vital role in developing a sustainable, green energy future.[5]

Cobalt is also used in batteries for portable devices due to their high energy density and long runs times. It is also used in various alloys for aerospace and in cutting and grinding tools.[4] While efforts have been made to reduce cobalt content in batteries by increasing nickel content due to past price spikes and ethical mining concerns, a delayed shift to nickel-rich chemistries could result in nearly 50% higher cobalt demand by 2040 compared to the base case.[3] As cobalt is primarily produced as a by-product of copper and nickel mines, its supply is inherently linked to the market dynamics of these other minerals.

Geographically, the world's top three cobalt-producing nations control over three-quarters of global output. As seen in the figure below, mine production is dominated by the Democratic Republic of Congo (DRC). While most of this is extracted from large-scale operations, around 10-20% of cobalt production in the DRC comes from ASM, which presents social challenges like unsafe conditions and child labor.[4] Unlike many other producers, Cuba extracts cobalt from its nickel-cobalt laterite deposits.[4] As with most

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[3] International Energy Agency. *The Role of Critical Minerals in Clean Energy Transitions*. Paris: International Energy Agency, 2021. https://iea.blob.core.windows.net/assets/ffd2a83b-8c30-4e9d-980a-52b6d9a86fdc/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf.

[4] Technology Metals Observatory. "Cobalt." Accessed July 31, 2025. https://techmetalsobservatory.org/technology-metals-components-and-products/technology-metals/cobalt.html.

[5] Kavulich, John S. "Cuba's Mining Sector: A Critical Player in the Global Energy Transition?" Cuba Trade, November 7, 2024. https://www.cubatrade.org/blog/2024/11/7/2lizbha0idq6tby3xi64wlm7ma21gu.

industries, China is a dominant role player in cobalt processing, accounting for 50-70% of global refining capacity as shown in the chart below.[4]

Figure 2: Global Distribution of Cobalt Reserves Expressed as Tons of Cobalt from UK Technology Metals Observatory

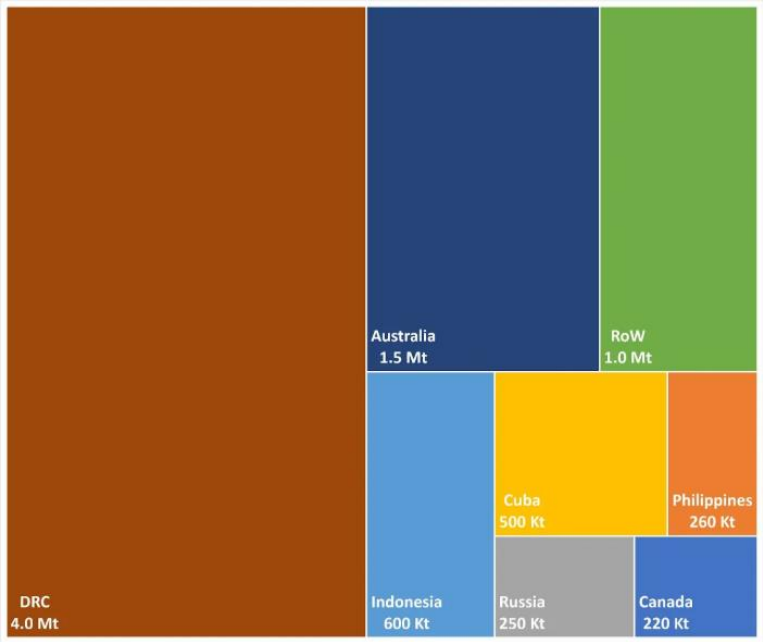
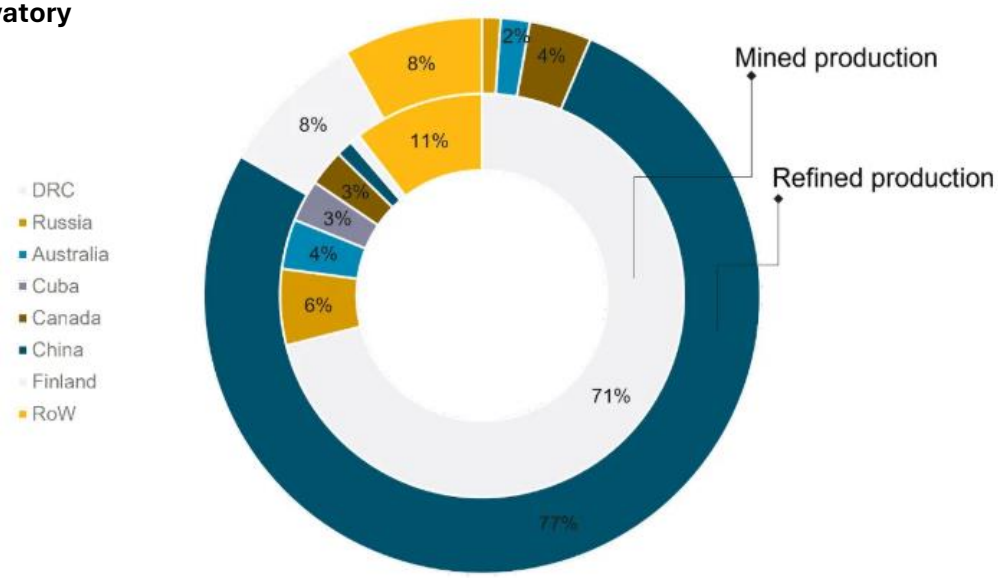


Figure 3: World Mine and Refine Cobalt Product in 2021 from UK Technology Metals Observatory



Nickel:

Similarly to cobalt, nickel is crucial for battery production: it is a key ingredient in the cathodes of lithium-ion batteries.[6] By 2040, in the Sustainable Development Scenario (SDS), electric vehicles and battery storage are projected to displace stainless steel as the largest end-user of nickel.[3] In the same scenario, nickel demand is projected to increase by 41 times to 3,300 kilotons (kt) by 2040, driven by the ongoing shift towards nickel-rich cathode chemistries in batteries.[3] However, the future of demand is ultimately dependent on the development of alternative technologies such as Lithium iron phosphate (LFP) and sodium-ion batteries as these do not use nickel. Nevertheless, nickel will continue to be used in wind and solar energy.[6] Beyond batteries, nickel is also utilized in hydrogen electrolyzers and fuel cells: alkaline electrolyzers currently requires over one ton of nickel per megawatt (MW).[3] Furthermore, the emissions intensity of producing Class 1 nickel (sulfide) can be three to ten times higher than producing a ton of steel, primarily due to the lower metallic concentration in nickel ore. Also, future nickel production is also expected to increasingly rely on more energy-intensive pathways, such as extraction from laterite resources.[3] Lastly, nickel is also used to manufacture high-quality steel and other energy, telecommunication, food equipment, and medical-related products and machinery.

Economic Overview

Cuba's economy exhibits a significant reliance on primary product exports, with agricultural products, other commodities, and metals and minerals collectively dominating its export basket. In 2023, metals and minerals constituted approximately 23% of total exports. The nation's standing in global trade and economic sophistication is notably low, evidenced by its 141st ranking in exports and 125th in the Economic Complexity Index in 2023, representing a considerable decline of 96 positions over the preceding decade.[7] Moreover, Cuba ranked 85th (of 132) in trade complexity, 96th (of 96) in technology complexity, and 121st (of 137) in research complexity.[8]

This economic profile suggests a limited degree of industrial diversification and value-added production. The substantial drop in the Economic Complexity Index indicates a

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[6] World Economic Forum. "Critical Minerals for the Energy Transition: How to Overcome Supply Chain Challenges." May 2025. https://www.weforum.org/stories/2025/05/critical-minerals-energy-transition-supply-chain-challenges/.

[7] The Atlas of Economic Complexity, Harvard University, Growth Lab. "Cuba: Export Basket." Accessed July 31, 2025. https://atlas.hks.harvard.edu/countries/192/export-basket.

[8] The Observatory of Economic Complexity. "Cuba (Country Profile)." Accessed July 31, 2025. https://oec.world/en/profile/country/cub?yearSelector1=exportGrowthYear25&selector343id=Export&selector345id=2023&selector2432id=5.

weakening of Cuba's ability to produce diverse and sophisticated goods, which are typically associated with higher economic growth and resilience.

The composition of the export basket and economic complexity demonstrates the significance of the mining and mineral production industry within Cuba. Thus, supporting the notion that Cuba should develop its mining and production capabilities to both emerge as a powerhouse in the global mineral and metal market and to boosts its own struggling economy.

Figure 4: Cuba Exports by Type of Goods and Services, 2023

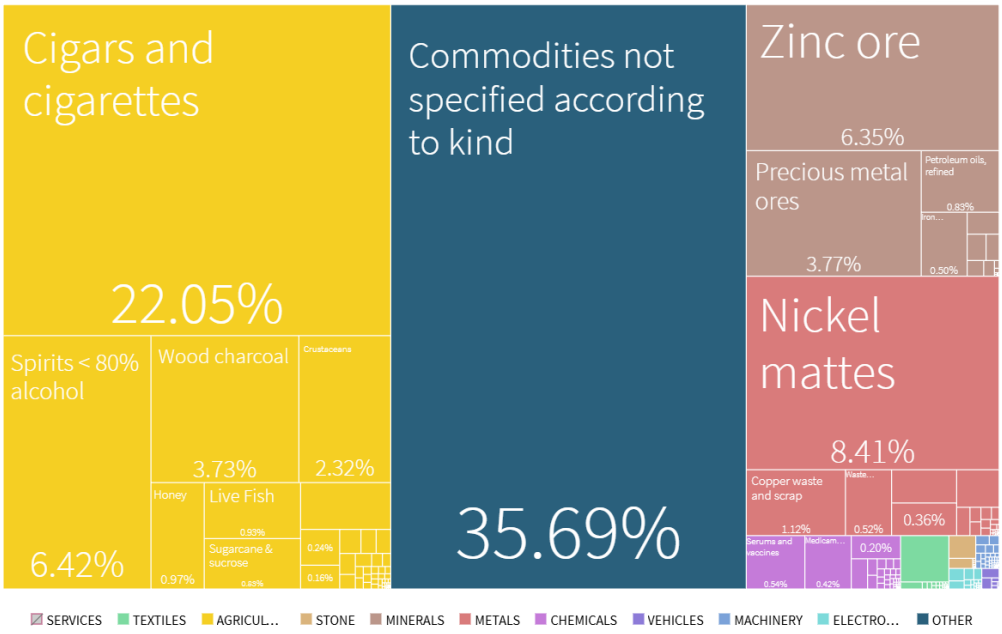
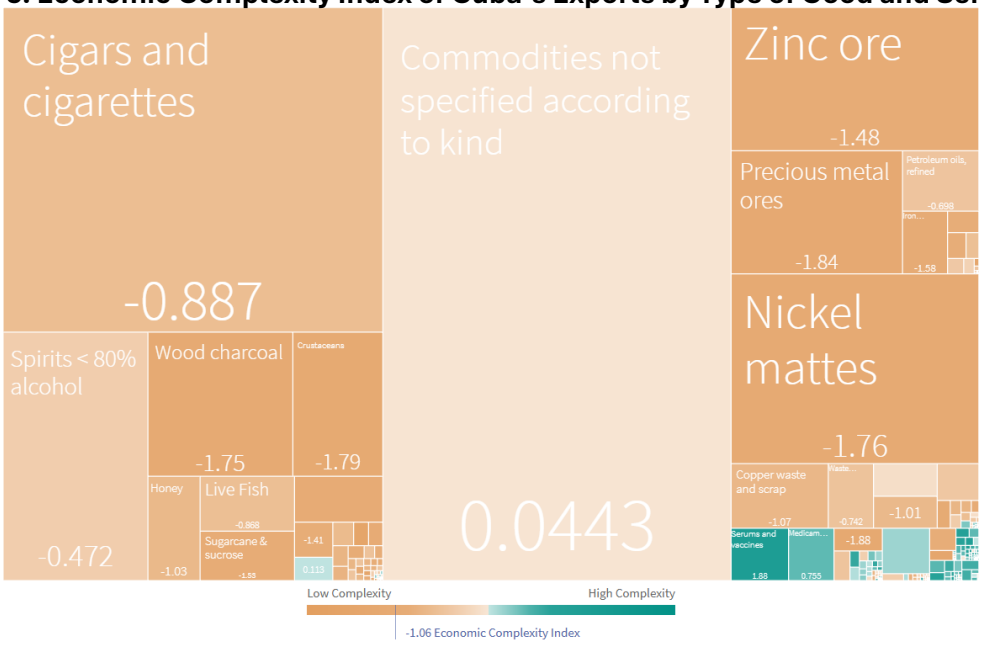


Figure 5: Economic Complexity Index of Cuba's Exports by Type of Good and Services, 2023



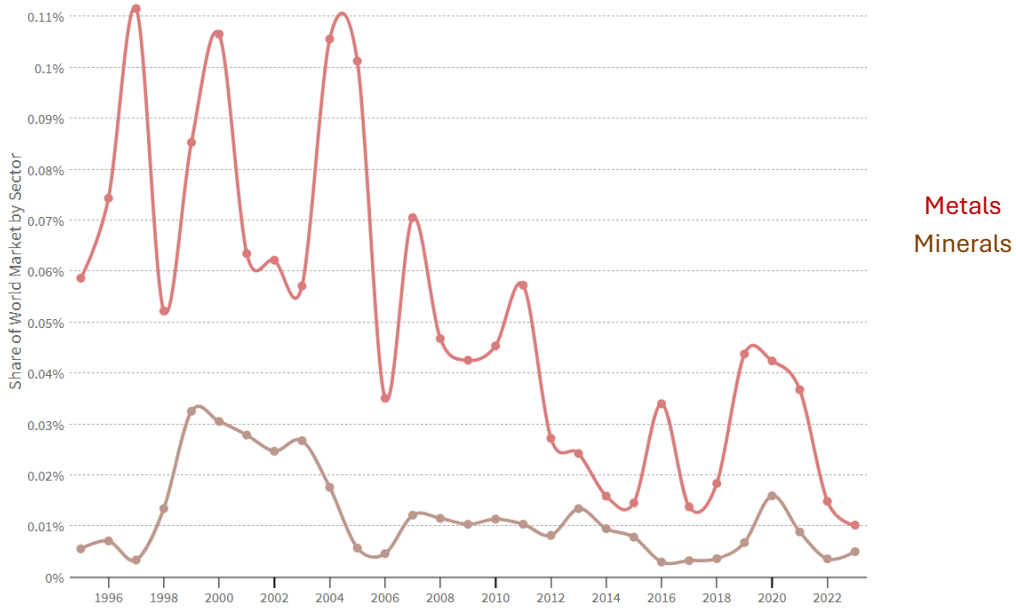
Cuba's Mining: Colonization to Today

Cuba's rich mining history, dating back to 1492, has evolved significantly over centuries, from early Spanish gold prospecting to a state-controlled industry with a current focus on nickel and cobalt.[9] Historically, Spanish colonization-initiated mining activities, initially for gold, then shifting to copper with the discovery of the El Cobre deposit in 1534.[9] The 19th century saw British and American investment in copper and iron mining. However, foreign control of mineral wealth largely ended with the 1959 Revolution, which nationalized assets and established state control, aligning with Soviet trade agreements.[9] This had immediate negative effects with Cuba dropping from the third-highest producer of nickel in 1958 to sixth in 1963. The collapse of the USSR in 1991 further severely impacted Cuba's mining sector, leading to a decline in production and investment.[10] For example, Cuba's global nickel production ranking dropped to tenth in 2013, and copper production ceased to be reported after 2001.[10] Furthermore, the graph below from Harvard's Atlas of Economic Complexity shows that Cuba's export market share of metals and minerals, although volatile, has gone down significantly over the past 30 years. [7]

[9]Dam, Samudrapom. "Cobalt Mining: An Overview of the Mining Process." AZoMining, July 9, 2024. Accessed July 31, 2025. https://www.azomining.com/Article.aspx?ArticleID=218.

[10] U.S. Geological Survey. *Recebt Trends in Cuba's Mining and Petroleum Industries*. 2015. https://pubs.usgs.gov/fs/2015/3032/fs20153032.pdf.

Graph 1: Growth in Global Market Share of Metals and Minerals, Atlas



Today, Cuba holds significant Cobalt reserves: The U.S. Geological Survey (USGS) concluded that Cuba has around 6,000,000 tons in reserves.[11] Our World in Data states that Cuba holds 4.55% of global cobalt reserves (only behind the DRC and Australia – tied with Indonesia) in 2023.[12] Cuba, however, lags in production of cobalt, contributing only 1.39% of the global total in 2023.[12] While total mine production numbers are not unanimous and often change year-to-year (due to the complexity of tracking and data updates), they generally cite 2023 mine production between 3,100 and 3,000 metric tons and 2024 between 3,500 and 3,600.[13] The range of estimates for 2019 and beyond are far less conclusive but also tend to be in 3,500-4,000 range. It is extremely evident that Cuba has the potential to be a pivotal player in the global cobalt market but severely lags behind.

Cuba also boasts a significant nickel reserve, approximately 5.5 million tons of nickel (making it the ninth largest producer in 2021).[14] However, Cuba's estimated production of these minerals is notably lower than its reserve potential. In 2020, Cuba produced only an estimated 49,000 tons of nickel; despite historically producing around 70,000 tons

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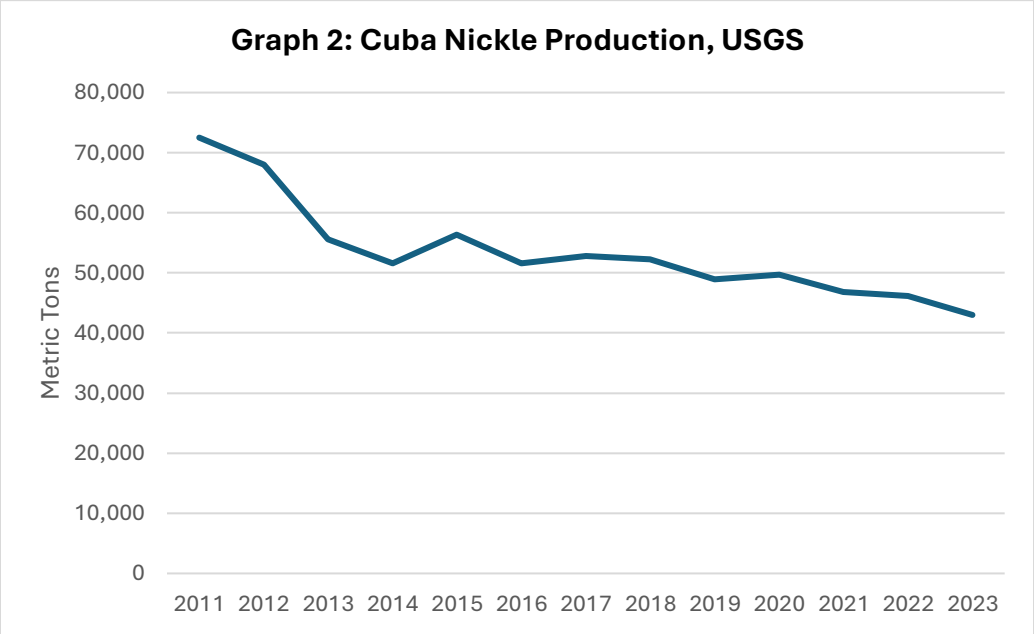
[11] U.S. Geological Survey. *Mineral Commodity Summaries 2025*. 2025. https://pubs.usgs.gov/periodicals/mcs2025/mcs2025.pd

[12] Our World in Data. "Countries That Produce the Critical Minerals Needed for the Energy Transition." June 20, 2024. https://ourworldindata.org/countries-critical-minerals-needed-energy-transition.

[13] Energy Institute. *Statistical Review of World Energy*. 74th ed. London: Energy Institute, 2025. ISBN 978-1-78725-474-9.

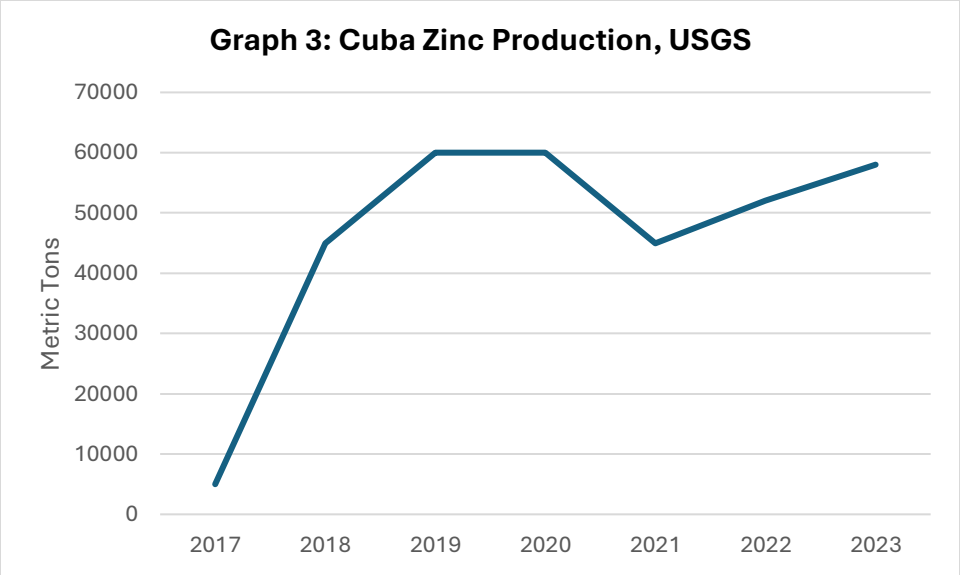
[14] University of Navarra, Global Affairs. "Cuba quiere aumentar su producción de níquel y cobalto y aprovechar el alza de precios" [Cuba wants to increase its nickel and cobalt production and take advantage of rising prices]. June 15, 2022. https://en.unav.edu/web/global-affairs/cuba-quiere-aumentar-su-produccion-de-niquel-y-cobalto-y-aprovechar-el-alza-de-precios.

annually between 2000 and 2010.[14] According to the USGS, production numbers continue to drop with 46,200 metric tons produced in 2022 and 43,000 metric tons in 2023.[15]



Data on how Cuba fits into the global Zinc production picture is less available than cobalt and nickel. The chart below does show, unlike the minerals previously discussed, that Zinc production has gone up. It's important to note that the USGS did not have any data before 2017.

[15] U.S. Geological Survey. "Nickel Statistics and Information." Accessed July 31, 2025. https://www.usgs.gov/centers/national-minerals-information-center/nickel-statistics-and-information.



Current Investment Landscape and Opportunities

Legal Framework:

In 1995, Cuba reopened international investment with law No.77 (Foreign Investment Act).[10] This allowed for foreign direct investment to return to the country, and as a result, economic growth rebounded slightly. However, due to the country's small economy, government control over PDI, pricing, and the labor market, growth remained constrained and limited. In 2014, Cuba passed law No.118 which abrogated law No. 77. This new foreign investment act provides a comprehensive framework to attract foreign investment in its mining and critical minerals sector by enabling access to financing, technologies, and new markets. Investment can be direct (joint ventures, wholly foreign-owned companies, or international economic association agreements) or via securities, with specific approval requirements from the Council of State or Council of Ministers for non-renewable natural resources.[16] The law offers guarantees and protections such as legal security, protection against expropriation (with compensation at commercial value in freely convertible currency), and safeguarding against extraterritorial application of other states' laws.[16] Investors benefit from the right to freely transfer abroad dividends, profits, and other earnings in freely convertible currency, free from taxes. It is important to note that while joint ventures and international economic association agreements generally face a 15% profit tax after an eight-year exemption, this rate can increase to 50% for natural resource exploitation, directly impacting mining operations.[16] Other tax benefits include 50% discounts on sales and services taxes (with a full exemption in the first year), exemption

[16] Republic of Cuba. *Law No. 118: Foreign Investment Law*. 2014. https://cdn.prod.website-files.com/601b3fe900f2a66ff84d23e2/6164eb160f35b3080e6cad03_cuba-investment-law-yzf8tinw.pdf.

from labor force taxes, and customs taxes on imported equipment during the investment process.[16] The Special Development Zones offer even more favorable conditions, such as a 10-year profit tax exemption and a 12% profit tax rate thereafter, along with exemptions from labor force tax and reduced sales/services taxes.[16] Environmental protection and rational use of natural resources are prioritized, with mandatory environmental suitability reviews. Conflict resolution mechanisms are stipulated, often involving the Economic Division of the People's Provincial Court, and Cuba's participation in 39 bilateral investment treaties offers additional avenues for international arbitration.[16]

Key Players and Joint Ventures:

The Cuban mining industry, while state-controlled, has a recent history of engaging with foreign companies through joint ventures to leverage international expertise and capital. The state-owned company Cubaniquel is the primary entity responsible for operating plants like the Che Guevara plant in Moa.

Sherritt International (Canada):

In 1994, the Cuban state-owned General Nickel Company established a 50/50 partnership, Moa Nickel S.A (Moa JV), with Sherritt International. The Moa JV involves mining and processing in Moa, Cuba, where a mixed sulfide intermediate is prepared. This intermediate is then refined into high-purity nickel and cobalt powder and briquettes at a refinery near Fort Saskatchewan in Alberta, Canada

Recently, Sherritt announced intentions to increase nickel and cobalt production by 15-20% from the 34,876 metric tons produced at the Pedro Soto Alba plant in 2020. The mineral production of the JV reflects the general trends observed by Cuba. The Moa JV has an annual capacity of up to 35,000 tons of nickel and 3,800 tons of cobalt (on a 100% basis). In 2023, Sherritt's total reported production of refined nickel and cobalt from imported Mixed Sulfide Precipitate (MSP) from Cuba was 28,672 metric tons and 2,876 metric tons, respectively, compared to 32,268 metric tons and 3,368 metric tons in 2022. This dropped in 2024, with the company producing between 30,331 metric tons of refined nickel and 3,206 metric tons of cobalt (again reflecting the same noted previously).[17] Impressively, in 2019, Moa JV supplied approximately 2.5% of the world's primary cobalt, making it the fourth-largest producer of refined cobalt metal and powder. Further demonstrating the potential of Cuba to be a dominant force in the global market.

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[17] Sherritt International Corporation. "Sherritt Reports Fourth Quarter and Full Year 2024 Results; Strong Operational Performance at Metals and Power; Provides Guidance for 2025." Business Wire, February 4, 2025. https://www.businesswire.com/news/home/20250204075788/en/Sherritt-Reports-Fourth-Quarter-and-Full-Year-2024-Results-Strong-Operational-Performance-at-Metals-and-Power-Provides-Guidance-for-2025.

Sherritt is undertaking an expansion program to increase Moa Nickel's MSP production capacity by 20% from its current capacity of contained nickel and cobalt. This program includes the construction of a new slurry preparation plant completed in Q4 2023, and the expansion of the Moa processing plant, expected to be completed by year-end 2025.[18]

Trafigura Group (Singapore):

In January 2015, the Cuban government and Trafigura Group Pte. Ltd. formed the 49/51 Emincar joint venture. Emincar oversees a USD $278 million Castellanos mine that, in 2017, was projected to produce 100,000 metric tons of zinc concentrate and 50,000 metrics tons of lead concentrate.[19] The mine is reported to hold reserves for 11 years of exploitation. In addition, the nearby Santa Lucia deposit adds 14 years of reserves and will be exploited after the Castellanos mine is exhausted.[20]

Antilles Gold Limited (Australia):

Antilles Gold has agreement with GeoMinera, a Cuban government-owned entity, for two key projects. First, the Nueva Sabana Project: a gold and copper mine based on the El Pilar gold-copper oxide deposit, with construction commencing in mid-2024.[21] Antilles Gold has signed a non-binding letter of intent (LOI) with Chinese mining and engineering giant Shandong Xinhai Mining Technology Equipment for a potential $26 million engineering, procurement, and construction (EPC) contract at Nueva Sabana. Xinhai intends to provide $16 million in project financing.[22] Second, La Demajagua Project is expected to produce gold, antimony, and silver, with construction anticipated to begin in late 2024.[21]

Barriers to Growth

Cuba's mining sector faces substantial hurdles, primarily stemming from a chronic lack of capital and restrictive government policies. These interconnected issues hinder the industry's ability to modernize, expand, and fully capitalize on its potential.

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[18] Sherritt International Corporation. "Sherritt Reports Second Quarter 2025 Results and Updated Guidance; Moa JV Expansion Phase Two Ramp-Up Commencing; Further Cost Reductions." August 1, 2025. https://sherritt.com/sherritt-reports-second-quarter-2025-results-and-updated-guidance-moa-jv-expansion-phase-two-ramp-up-commencing-further-cost-reductions/.

[19] Frank, Marc. "Cuba Seeks Foreign Investment to Boost Nickel, Cobalt Output." Reuters, July 24, 2017. https://www.reuters.com/article/us-cuba-mining-idUSKBN1A70K3/.

[20] EcuRed. "Empresa Mixta Minera del Caribe Santa Lucía (Emincar S.A.)." Accessed July 31, 2025. https://www.ecured.cu/Empresa_Mixta_Minera_del_Caribe_Santa_Luc%C3%ADa_(Emincar_S.A.

[21] Investing News Network. "Investing in Cuba's Mining Industry." August 29, 2023. https://investingnews.com/investing-in-cubas-mining-industry/.

[22] Mining Technology. "Antilles Gold Signs Agreement with Xinhai for Cuba Mine." July 11, 2024. https://www.mining-technology.com/news/antilles-gold-xinhai-cuba-mine/.

One of the most pressing challenges is the lack of capital for new mining initiatives and for modernizing existing infrastructure.[14] This directly impacts the acquisition of modern machinery and the implementation of advanced mining techniques, both of which are crucial for efficient and competitive operations.[14] For example, as mentioned, even with extensive nickel reserves, Cuba mines less nickel than expected. The rise in prices for resources like nickel and cobalt could improve the Cuban state's income, but the lack of capital prevents a greater economic impact from the sector.[14] This difficulty in mobilizing necessary capital may detract from Cuba's potential strategic importance in supplying these indispensable minerals for technology companies.

Restrictive policies and geopolitical factors further exacerbate the capital shortage. Mining remains a state-controlled activity in Cuba, requiring foreign companies to engage in joint ventures with government-owned entities like Cubaniquel or GeoMinera.[14] While Law No. 118 (Cuba's Foreign Investment Act of 2014) provides a legal framework for foreign direct investment, it still maintains state oversight.[16] Although the law allows for 100% foreign ownership in some cases, the Cuban government has generally sought a 51% or greater share in joint ventures since 2011.[16] Consequently, FDI inflows have yet to make a substantive impact. Furthermore, workers in foreign investment activities are typically hired through an employing entity authorized by the Ministry of Labor and Social Security Payments are made in Cuban pesos, even if the foreign firm pays the agency in hard currency, significantly devaluing wages.[16]

The long-standing U.S. trade embargo stands as a significant external barrier. Imposed in 1962, the embargo prohibits U.S. investments in Cuba's mining sector and has discouraged many other international entities from establishing operations.[21] This, combined with the perceived risk of a state-controlled sector, makes potential investors wary.[21] Even with recent efforts by the Cuban government to attract foreign investments, geopolitical concerns and economic sanctions continue to deter a wider influx of capital. The lack of a double taxation treaty with the United States is another factor that can disincentivize investment from that region.[15]

The impact of these barriers is evident in the mining sector's contribution to the national economy. In 2023, while mining products accounted for about 23% of Cuba's total exports, the mining and quarrying sector only made a minor contribution of approximately 0.4% to the country's GDP.[23] This underscores the gap between export potential and actual economic impact due to underdevelopment and lack of investment. Experts believe that

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[23] U.S. Geological Survey. "The Mineral Industry of Cuba." In *Minerals Yearbook Volume III: Area Reports—International—Latin America and Canada*. 2023. https://pubs.usgs.gov/myb/vol3/2023/myb3-2023-cuba.pdf.

due to the lack of state investment and significant foreign development funds, many of Cuba's mineral reserves will remain unexploited, leading the country to "miss out on the next global step-change in demand" for nickel and cobalt.[24]

Considerations Before Increased Investment

Before throwing money at further developing Cuba's mining sector, there are a variety of nuances that should be considered. The following is not comprehensive of everything that should be taken into account but does offer a starting point.

First, environmental and social concerns are critical considerations. Cuba's nickel mining, particularly in provinces like Holguín and Moa, has led to significant environmental degradation, including the destruction of vegetation, wildlife, and natural landforms, as well as extensive air, soil, and water pollution.[9] Local communities have experienced serious health issues, with studies indicating an elevated risk of mortality from lung and cardiovascular diseases due to emissions from nickel processing facilities.[9] Over the last 30 years, mining activities have decimated forests and marine ecosystems, impacting traditional local industries and driving up food prices.[9] Cuba's foreign investment law emphasizes sustainable development and requires environmental suitability reviews and impact assessments Therefore, investors must be prepared to address the historical and ongoing environmental impact and could be required to re-establish the previous environmental situation, repair damage, or pay compensation.[16]

Second are social and labor concerns. Ethical and supply chain concerns surrounding cobalt production from the Democratic Republic of Congo, which dominates global production and has been linked to human exploitation.[4] This offers Cuba a potential upper hand to become a more dependable and ethically sourced supplier.

Conclusion

Cuba stands at a crucial juncture, possessing significant yet largely untapped reserves of critical minerals such as nickel, cobalt, and zinc, which are key to unlocking and furthering the global green energy transition. Despite this immense potential and a rich mining history, the sector remains significantly underdeveloped, primarily constrained by a persistent lack of capital and restrictive economic policies. Cuba's economic profile,

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[24] Mining Technology. "Cuba Courts New Mining Investment: Can It Compete?" June 10, 2024. https://www.mining-technology.com/features/cuba-courts-new-mining-investment-can-compete/.

marked by a low Economic Complexity Index and a decline in its global market share of metals and minerals, underscores the urgent need for revitalization.

Key joint ventures like Moa Nickel S.A. with Sherritt International demonstrate the capacity for substantial production when foreign expertise and capital are involved. However, the lingering effects of the U.S. embargo, coupled with domestic regulatory hurdles and the need for significant infrastructure modernization, continue to deter the necessary influx of foreign direct investment.

Unlocking Cuba's full potential in the critical minerals market, therefore, hinges on attracting strategic foreign investment. This investment is not merely about capital injection but also about facilitating the transfer of advanced technologies, fostering sustainable mining practices, and adhering to high environmental and social standards. Addressing the historical and potential future environmental degradation, ensuring fair labor practices, and navigating the complexities of state-controlled enterprises will be paramount for any successful long-term partnerships.

By proactively fostering a stronger investment environment, transparently addressing environmental and social concerns, and leveraging its substantial mineral wealth, Cuba has a unique opportunity to emerge as a reliable and ethically sourced supplier of critical minerals, thereby contributing significantly to global energy security and its own economic development in the era of green transition.

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