Role of Uzbekistan in the Rare Earth and Critical Minerals Economy

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In the 21st century, critical raw materials (CRM) and rare earth elements (REEs) have emerged as strategic resources for global energy transition and digital transformation. The worldwide demand for critical minerals, such as lithium and cobalt, is expected to increase by more than 500% over the next 30 years to meet global climate targets.[1] The rising demand for these minerals has created significant geopolitical risks, as the supply of the minerals originates from only a few nations. The supply monopoly and rising demand led countries such as the U.S. and EU to reevaluate their supply chain dependencies and develop resilience strategies.[2]

Such global realignment has somehow positioned Central Asian countries, including Uzbekistan, as key suppliers of critical minerals for the future.[3] In recent years, Uzbekistan, as a country rich in rare earth elements, has been advancing its exploration and extraction efforts with substantial investments in mineral projects. The geostrategic competition for these minerals has made Uzbekistan a crucial player in addition to its role as a supplier. This paper examines current global trends in critical minerals and their strategic implications for Uzbekistan, while offering practical policy directions for the country to responsibly utilize its mineral wealth in sustainable economic development.

Global landscape and national policies

The critical minerals, such as lithium, cobalt, rare earth elements, and copper, have become the "new oil" of the current time.[4] The vital role of these minerals in the production of modern technologies has triggered a worldwide competition for these resources. They now stand as a central element of 21st-century geopolitical dynamics, industrial policy, and climate transition planning. Major powers have developed national strategies to obtain vital resources through

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[1] Hund, K., La Porta, D., Fabregas, T.P., Laing, T. & Drexhage, J. (2020). *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition*. Washington, DC: World Bank. Available at: https://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition.pdf

[2] Kalantzakos, S. (2020). 'The Race for Critical Minerals in an Era of Geopolitical Realignments', *The International Spectator*, 55(3), pp. 1–16. Available at: https://doi.org/10.1080/03932729.2020.1786926

[3] Gonzalez, G., Ogletree, C., & Mouton, C. (2024). *Critical Minerals: Present and Future Supply Challenges*. RAND Corporation. Available at: https://www.rand.org/pubs/research_reports/RRA2914-1.html

[4] IRENA (2023) *Energy Transition and Geopolitics: Are Critical Minerals the New Oil?* Abu Dhabi: International Renewable Energy Agency. Available at: https://www.irena.org/publications/2023/Jan/Energy-Transition-and-Geopolitics

stable, resilient, and autonomous means in this evolving geopolitical landscape.[5] Succinctly stated, two fundamental imperatives seem to shape the national strategies: 1) the minerals serve as critical components for green and digital technologies, and 2) China's dominance in rare earth processing and refining poses systemic vulnerabilities for other economies.[6] The national strategies that major powers developed as a response to these risks can be broadly organized into three strategic typologies, shown in Table 1:[7]

1. Resource nationalism and supply control that focus on securing and controlling upstream extraction and processing capacities through often state-led initiatives.
2. Industrial policy and onshoring that emphasize domestic value addition through processing, refining, and manufacturing capabilities.
3. Strategic partnerships and diversification that focus on building international alliances and investing in supply chains beyond national borders with environmental consideration.

These categories help us to understand how different countries have responded to the strategic pressures of critical minerals based on their political and economic priorities and resource availability. China, for instance, implements a state-led resource nationalism model through its control of 85% of rare earth refining operations by consolidating state-owned enterprises, implementing export controls, and backing Belt and Road investments globally.[8] China appears to have successfully employed minerals as geopolitical tools in this approach. In contrast, the U.S. addresses its heavy import dependence through industrial policy and domestic onshoring initiatives, which the Inflation Reduction Act and the CHIPS Act have made possible.[9] The EU focuses on diversification and sustainability due to its limited reserves, as outlined in the Critical Raw Materials Act, which sets targets for domestic extraction, recycling, and ethical partnerships in Central Asia and Africa.[10]

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[5] Barteková, E. and Kemp, R. (2022) *Critical raw material strategies in different world regions*. Maastricht: United Nations University - Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT). Available at: https://www.merit.unu.edu/publications/working-papers/abstract/?id=8472

[6] Goble, P. (2024) 'Rare-Earth Reserves in Central Asia Sparking Intense Geopolitical Competition', *Eurasia Daily Monitor*, 13 June. Available at: https://jamestown.org/program/rare-earth-reserves-in-central-asia-sparking-intense-geopolitical-competition/

[7] Nakano, J. (2021) *The Geopolitics of Critical Minerals Supply Chains*. Washington, DC: Center for Strategic and International Studies. Available at: https://www.csis.org/analysis/geopolitics-critical-minerals-supply-chains

[8] Andrews-Speed, P. and Hove, A. (2023) *China's Rare Earths Dominance and Policy Responses*. Oxford: Oxford Institute for Energy Studies. Available at: https://www.oxfordenergy.org/publications/chinas-rare-earths-dominance-and-policy-responses/

[9] Baskaran, G. and Wood, D. (eds.) (2025) *Critical Minerals and the Future of the U.S. Economy*. Washington, DC: Center for Strategic and International Studies. Available at: https://www.csis.org/analysis/critical-minerals-and-future-us-economy

[10] European Commission (2024) *Critical Raw Materials Act*. Available at: https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act_en

Table 1. National strategies of the U.S., the EU and China on critical minerals

Country	Strategic Focus	Policy Instruments	Approach Type	Key Features
United States	Resilience, reindustrialization, security	Inflation Reduction Act (IRA), CHIPS Act, Defense Production Act, Minerals Security Partnership (MSP)	Industrial policy and strategic partnerships	Bipartisan push for onshoring supply chains, incentivizing mining & refining
European Union	Strategic autonomy, green industrial transformation	Critical Raw Materials Act, Strategic Projects list, international raw material alliances	Sustainability and diversification	Focuses on ethical sourcing, recycling (15% target), and partnerships with Africa and Central Asia
China	Global dominance, vertical integration	Belt and Road Initiative, Made in China 2025, export restrictions, state reserves	Resource nationalism and industrial planning	Controls >85% of REE refining, consolidates SOEs, leverages minerals as a geopolitical tool

Source: Author's compilation based on Nakano (2021)

Uzbekistan's position in the global minerals economy

Assets and actors

The global competition for clean energy resources has made Central Asia a strategic "swing region" in global critical mineral supply chains.[11] The combined mineral reserves of Central Asia contain 38.6% manganese ore, 30.1% chromium, 20% lead, and 12.6% zinc, which establishes the region as a key supplier for the global energy transition.[12] Uzbekistan is rapidly asserting itself as a key player, holding over 30 types of minerals, including copper, molybdenum, selenium, lithium, cadmium and rare earth elements.[13] Country's proven copper reserves rank 11th globally, while

[11] Mukhamediya, N. and Ubaidolla, D. (2025) 'Risk and Reward in Central Asia's Critical Raw Materials Boom', *The Diplomat*, 14 May. Available at: https://thediplomat.com/2025/05/risk-and-reward-in-central-asias-critical-raw-materials-boom/

[12] Vakulchuk, R. and Overland, I. (2021) 'Central Asia is a missing link in analyses of critical materials for the global clean energy transition', *One Earth*, 4(12), pp. 1678–1692.

[13] Ministry of Mining Industry and Geology of the Republic of Uzbekistan (2024) *Annual Mining Report 2023*. Tashkent: Ministry of Mining Industry and Geology. Available at: https://api-portal.gov.uz/uploads/15cc8922-2c58-829b-bc3a-4ab208da4812_media_6716.pdf

its silver and molybdenum deposits make it the second most mineral-rich nation in Central Asia, after Kazakhstan.[14] The Uzbek government classifies rare metals as strategic resources essential for high-tech industries and the clean energy transition. The country has various rare metals and minerals deposits, including a tungsten deposit in Ingichka in the Samarkand region.

As of 2022, 6 raw materials out of 23 produced in the country are classified by the EU as critical. Although the country currently has 71 identified critical mineral deposits, only 16 are actively mined by two major state-owned enterprises, Almalyk Mining and Metallurgical Complex (AGMK) and Navoi Mining and Metallurgical Combine (NGMK).[15] AGMK mines copper and zinc, while NGMK, which historically focused on gold and uranium, explores rare and critical metals. Nonetheless, critical minerals now account for over 11% of Uzbekistan's export volume, with copper and zinc ranked among the top export commodities.[16]

Government strategy

For decades, the government of Uzbekistan maintained strict control over the minerals sector, which restricted the growth of the sector and international engagement. Since 2016, following the new government's economic reforms, Uzbekistan has made substantial efforts in repositioning itself within the global minerals market.[17] While foreign investment was closely controlled by the government in mining, the post-2016 government now aims to liberalize the sector by attracting foreign investment and integrating Uzbekistan into global clean energy value chains.[18] This includes prioritizing the development of critical minerals and rare earth elements.

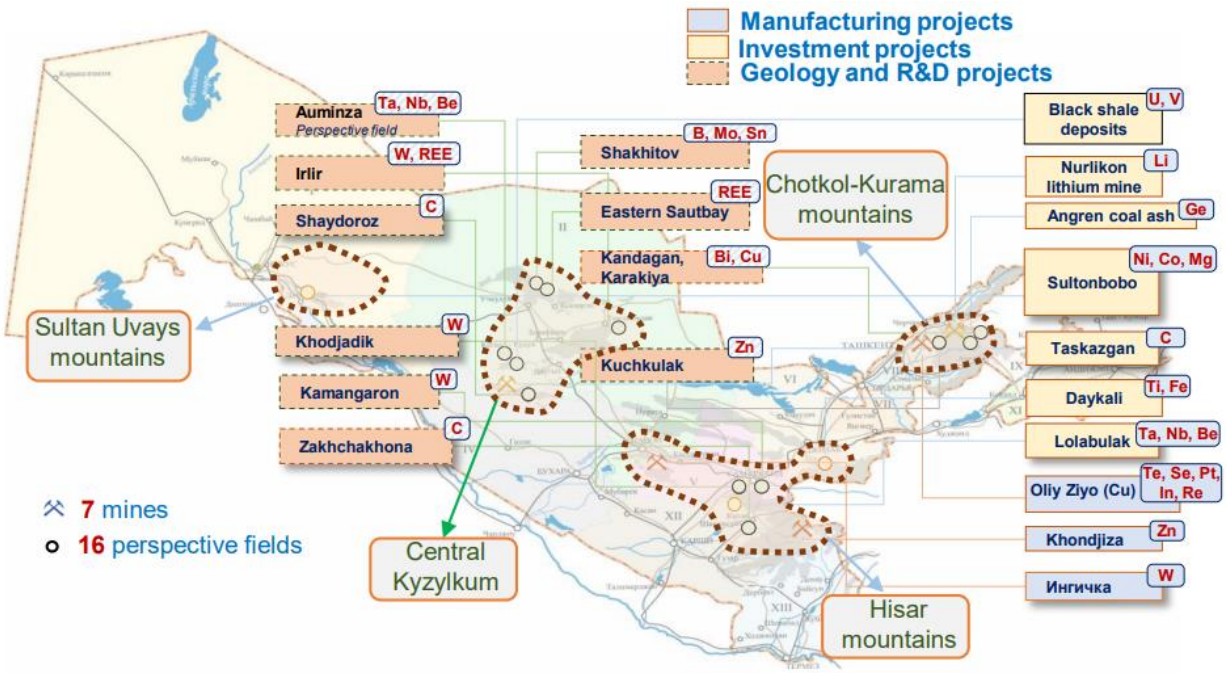
In 2024, the government adopted a new law, "On Subsoil", while the president issued a directive to invite foreign-backed projects, with a focus on rare earths.[19] In the same year, the government established the "Uzbekistan Technological Metals Combine" (UzTMK), a subsidiary of AMMC, as a new critical minerals mining group with a fully integrated approach to mining, processing, and industrial production. UzTMK leads Uzbekistan's critical raw material sector by managing all state-owned assets of the sector under a coordinated national strategy, focusing on the entire

[14] Vakulchuk, R. and Overland, I. (2021) 'Central Asia is a missing link in analyses of critical materials for the global clean energy transition', *One Earth*, 4(12), pp. 1678–1692.
[15] Saparova, D. and Walter, W. (2024) *Good Prospects for Uzbekistan's Raw Materials Sector*. Newsletter No. 32, September–October. Berlin: German Economic Team. Available at: https://www.german-economic-team.com/wp-content/uploads/2024/10/GET_UZB_NL_32_2024_en.pdf
[16] Vakulchuk, R. and Overland, I. (2021) 'Central Asia is a missing link in analyses of critical materials for the global clean energy transition', *One Earth*, 4(12), pp. 1678–1692.
[17] Daly, J.C.K. (2024) 'Uzbekistan to Increase Rare-Earth Production', *Eurasia Daily Monitor*, 21(90), 12 June. Available at: https://jamestown.org/program/uzbekistan-to-increase-rare-earth-production/
[18] Daryo.uz (2023) 'В Узбекистане разработан новый проект о недрах', *Daryo.uz*, 8 November. Available at: https://daryo.uz/ru/2023/11/08/v-uzbekistane-razrabotan-novyj-proekt-o-nedrah
[19] President of the Republic of Uzbekistan (2024) 'Plans on Geology, Mining and Metallurgy Reviewed', *president.uz*, 29 April. Available at: https://president.uz/en/lists/view/7188

value chain from raw extraction to high-value products, such as lithium-ion batteries and advanced alloys. UzTMK is actively marketing CRM exploration and processing projects to international investors, with key projects including lithium in Nurlikon mine.

Current and projected budgetary spending underscores the government's commitment to developing the critical minerals across the industry value chain. In 2023, the government allocated 2.23 trillion sums (approximately $200 million) to geological exploration, with 44.5% from the state budget, focusing on underexplored territories to identify new reserves.[20] In 2025, the government initiated a $2.6 billion, three-year national program to develop 76 critical mineral projects across 28 elements.[21] This initiative emphasizes not just extraction but expands the value chain through "raw materials – processing – science and technology – finished products". This initiative includes organizing technology parks in the Tashkent and Samarkand regions. The government wants to transform production methods and enhance mineral purity standards to produce high-value, domestically sourced products.

Graph 1. Defined fields of critical minerals in Uzbekistan, 2023



Source: Ministry of Mining Industry and Geology (2024)

[20] Ministry of Mining Industry and Geology of the Republic of Uzbekistan (2024) *Annual Mining Report 2023*. Tashkent: Ministry of Mining Industry and Geology. Available at: https://api-portal.gov.uz/uploads/15cc8922-2c58-829b-bc3a-4ab208da4812_media_6716.pdf

[21] President of the Republic of Uzbekistan (2025) 'Information Presented on Critical Minerals Essential for Industry', *president.uz*, 7 March. Available at: https://president.uz/ru/lists/view/7930

The policy change represents a significant departure from past practices. For the first time, the government introduced a historic change by allowing international investors to access more than 50 mineral deposits in the country. Reforms in licensing procedures, geological exploration and regulatory transparency support this initiative. The State Committee for Geology and Mineral Resources (*Goskomgeo*), Uzbekgeology and the newly reorganized Ministry of Mining Industry and Geology are now at the forefront of managing this transformation. [22] Additionally, institutions like the Ministry of Ecology, Environmental Protection and Climate Change and the Scientific-Practical Center for Localization and Development of Industrial Cooperation in the mining sector support environmental governance and local content promotion.

Table 2. The mineral resources in Uzbekistan, as of 2023

Mineral	*Global Share (%)*	*Global Rank*	*Reserves (metric ton)*	*Note*
Copper	5.3% (reserves)	11th (reserves)	741,200	Large-scale deposits, growing reserves
Lead	20% (regional)	High	413,000	Major regional player
Zinc	12.6% (regional)	High	4,549,000	Key industrial input
Lithium	0.4% (reserves)	Emerging	8,334	Under development
Tungsten	—	8th (reserves)	130,000	8,500 tons to be added (2024 projection)
Molybdenum	5.2% (reserves)	Moderate	139,000	Used in clean energy technologies
Nickel	1.2% (reserves)	Low	3,700	Minor volumes
Graphite	0.3% (reserves)	Low	7,600,000	Active mining despite low rating
Tin	0.9% (reserves)	Minor	9,500	Limited data
Tellurium	9.16% (production)	8th (production)	1,098	Small reserve base

Source: Ministry of Mining Industry and Geology (2024), Vakulchuk, R. and Overland, I. (2021), Gonzalez, G., Ogletree, C., and Mouton, C. (2024).

The growing opportunities in Uzbekistan have attracted the interest of global powers, who seek to build resilient and diversified supply chains for critical minerals.[23] Historically, China and Russia were the dominant actors in Uzbekistan's minerals trade. In particular, China has become deeply

[22] Ministry of Mining Industry and Geology of the Republic of Uzbekistan (2024) *Annual Mining Report 2023*. Tashkent: Ministry of Mining Industry and Geology. Available at: https://api-portal.gov.uz/uploads/15cc8922-2c58-829b-bc3a-4ab208da4812_media_6716.pdf

[23] Goble, P. (2025). 'Competition for Control of Rare Earths Triggering Great Power Conflict in Central Asia', *Eurasia Daily Monitor*, 22(17). The Jamestown Foundation. Available at: https://jamestown.org/program/competition-for-control-of-rare-earths-triggering-great-power-conflict-in-central-asia/

embedded in Central Asia's critical minerals infrastructure, trade, and logistics, aligning with its broader Belt and Road Initiative (BRI) ambitions and desire to consolidate its rare earth processing capacity.[24] China continues to focus on upstream extraction in Uzbekistan, with an increasing pace of investment, as shown in Table 3. In contrast, Russia, once a dominant partner due to historical ties, now plays a diminished role as Uzbekistan shifts its economic focus.

Yet, the geopolitical situation has given rise to rapid changes at present. In light of rising supply chain vulnerabilities and China's dominance in mineral processing, countries such as the European Union, the United States, and Japan are intensifying their engagement with Uzbekistan and the broader Central Asian region to diversify their sourcing of critical minerals.[25] The Russian-Ukrainian war and China's control of rare earth supply chains have accelerated this transition, positioning Central Asia as a vital alternative to these sources.[26] The EU utilizes the Global Gateway and the Critical Raw Materials Act to promote regulatory alignment, whereas the U.S. employs the Mineral Security Partnership to enhance supply chain resilience.[27] These partnerships, which combine investment with capacity-building and regulatory cooperation, present an opportunity for Uzbekistan to pursue a multipolar strategy and create a competitive, sustainable, and transparent critical minerals sector.

Strategic challenges and governance risks

Despite reforms since 2016 and the launch of ambitious state-led initiatives to unlock the potential of critical minerals, Uzbekistan continues to face several pressing challenges. One of the foremost concerns is the weak governance and inconsistency in the regulatory framework, especially regarding foreign investment terms.[28] While a few mineral deposits have been offered to international partners, licensing procedures remain opaque, and contract enforcement lacks predictability, which deters broader investor confidence. Analysts note that "internal governance gaps" and the "absence of consistent, long-term regulatory frameworks" leave mining policy

[24] Gonzalez, G., Ogletree, C., and Mouton, C. (2024). *Critical Minerals: Present and Future Supply Challenges*. RAND Corporation. Available at: https://www.rand.org/pubs/research_reports/RRA2914-1.html

[25] Meirkhanova, A. (2025). 'Can Central Asia Secure Growth with Rising Critical Minerals Investments?', *Carnegie Politika*, 27 January. Available at: https://carnegieendowment.org/russia-eurasia/politika/2025/01/central-asia-crm-offers?lang=en

[26] Imamova, N. (2024). 'Central Asia Seen as Key to Breaking China's Rare Earth Monopoly', *Voice of America*, 25 January. Available at: https://www.voanews.com/a/central-asia-seen-as-key-to-breaking-china-s-rare-earth-monopoly/7457583.html

[27] Gazeta.uz (2025). 'EU to Invest €12 Billion in Central Asia to Boost Connectivity, Critical Raw Materials, and Water Management', *Gazeta.uz*, 5 April. Available at: https://www.gazeta.uz/en/2025/04/05/ca-eu/; Eurasianet (2025). 'Uzbekistan launches drive to develop minerals & mining sector', *Eurasianet*, 10 March. Available at: https://eurasianet.org/uzbekistan-launches-drive-to-develop-minerals-mining-sector

[28] Yunis, S. (2025). 'China's Central Asia Play: China and Uzbekistan's Uneasy Mining Partnership', *The China-Global South Project*, 15 April. Available at: https://chinaglobalsouth.com/analysis/chinas-central-asia-play-china-and-uzbekistans-uneasy-mining-partnership/

unpredictable.[29] According to local insiders, licensing rules and contract enforcement are often subject to ad hoc decrees, with limited transparency.

Environmental and social safeguards are similarly underdeveloped. The Syr Darya and Aral Sea disasters serve as a warning sign. There are some warnings that expanding mineral extraction "without strict environmental safeguards could turn this golden opportunity into an environmental disaster".[30] The government requires strict environmental regulations to guide mining operations, yet it lacks sufficient enforcement capabilities. Without robust controls on water use, tailings disposal, and emissions, the mining boom risks causing irreversible damage to shared resources.

Table 3. Increasing Chinese investment in the mining sector in Uzbekistan, 2022-2025

No.	*Investor*	*Amount*	*Country*	*Product*
1	Limaomaoli Metal Company	$50 million	China	Ore, Syurenata mining complex in the Parkent district.[31]
2	China Baoli Technologies	$200 million	China	Non-ferrous metal plant in Ipak Yuli Free Economic Zone[32]
3	China Mining Energy Group	$200 million	China	Copper mining and processing project in the Chust district of Namangan[33]
4	Unnamed Chinese investors	$2.7 billion	China	Copper and silver deposits in the Bobotog area[34]
5	Boi Yi Da	$40 million	China	Copper processing plant in Namangan region[35]

Source: Author's compilation

[29] Agybay, Z. (2025). 'Kazakhstan and Uzbekistan Can't Ignore the Geopolitics of Critical Minerals', *The Diplomat*, 28 May. Available at: https://thediplomat.com/2025/05/kazakhstan-and-uzbekistan-cant-ignore-the-geopolitics-of-critical-minerals/

[30] Ruzmatov, N. (2025). 'Striking Gold or Courting Disaster in Uzbekistan's Mining Boom', *East Asia Forum*, 21 March. Available at: https://eastasiaforum.org/2025/03/21/striking-gold-or-courting-disaster-in-uzbekistans-mining-boom/

[31] Kun.uz (2024) 'Chinese company to invest $50 million in new mining complex in Tashkent region', *Kun.uz*, 23 July. Available at: https://kun.uz/en/53684904

[32] Daryo.uz (2024) 'China Baoli to build $200mn non-ferrous metal plant in Uzbekistan', *Daryo.uz*, 25 November. Available at: https://daryo.uz/en/VQCNW5WT

[33] Times of Central Asia (2024) 'China Mining Energy Group to partner in Uzbek copper project', *Times of Central Asia*, 28 June. Available at: https://timesca.com/china-mining-energy-group-to-partner-in-uzbek-copper-project/

[34] Kun.uz (2024) 'China proposes $2.7 billion investment in copper and silver mines in Surkhandarya', *Kun.uz*, 23 November. Available at: https://kun.uz/en/news/2024/11/23/china-proposes-27-billion-investment-in-copper-and-silver-mines-in-surkhandarya

[35] UzDaily (2024) 'Chinese investor plans to build a copper processing plant in Namangan', *UzDaily*, 9 September. Available at: https://www.uzdaily.uz/en/chinese-investor-plans-to-build-a-copper-processing-plant-in-namangan/

Financial capital, expertise, and market access also constrain the development of minerals, particularly in exploration, extraction, and processing. Despite rich mineral deposits, many key sites remain undeveloped due to a lack of investment.[36] According to the First Deputy Minister of Mining Industry and Geology, only a third of the country's territory has been geologically explored.[37] The government's new $2.6 billion initiative to build infrastructure, exploration capacity, and processing technology is a step toward closing that gap. However, Uzbekistan's reliance on foreign financing, especially from China, is already high. By mid-2023, Uzbekistan owed Chinese banks at least $3.8 billion for various projects.[38] While Chinese partnerships have accelerated some projects, they have also led to opaque deals, such as a 2023 lithium deal that bypassed local environmental review.[39] A heavy reliance on China as a single partner can risk an outsized influence over the country's resources and policies.

Conclusion and recommendations

The global minerals market presents Uzbekistan with a strategic decision point. The country's mineral deposits draw interest from Chinese, Russian, and Western investors, making mining a geopolitical asset. The absence of a robust domestic strategy enables foreign powers to use exports as an instrument of influence. Also, Uzbekistan might remain in a passive position as a resource provider unless it strategically manages foreign involvement in its mineral sector and strengthens regional cooperation. By adopting a balanced, multipolar approach, Uzbekistan can gain more control over its mineral wealth.

Although Uzbekistan is endowed with various critical minerals, the minerals sector still faces structural barriers due to weak governance, inadequate environmental standards, and an underdeveloped financial system. The government needs to improve its investment environment by implementing stable and transparent policies, enhancing transparency, developing local processing capabilities for value addition, and broadening the investor base. Specifically, the government needs to adopt a strategic plan to maximize its critical minerals potential by integrating the sector into broader goals of green industrialization and economic diversification.

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[36] Sukhankin, S. (2024). 'Central Asia: An Emerging Battlefield for Strategic Minerals', *The Interpreter*, Lowy Institute, 7 November. Available at: https://www.lowyinstitute.org/the-interpreter/central-asia-emerging-battlefield-strategic-minerals

[37] Ministry of Investments, Industry and Trade of the Republic of Uzbekistan. (2025). 'Uzbekistan and Saudi Arabia discuss expanding cooperation in energy and infrastructure', 14 August. Available at: https://gov.uz/en/miit/news/view/60510

[38] Pannier, B. (2025). 'China's Big Push into Uzbekistan', *bne IntelliNews*, 3 March. Available at: https://www.intellinews.com/pannier-china-s-big-push-into-uzbekistan-369758/

[39] Agybay, Z. (2025). 'Kazakhstan and Uzbekistan Can't Ignore the Geopolitics of Critical Minerals', *The Diplomat*, 28 May. Available at: https://thediplomat.com/2025/05/kazakhstan-and-uzbekistan-cant-ignore-the-geopolitics-of-critical-minerals/

This requires setting clear targets for domestic value addition and investing in mineral processing technologies. The government needs to strengthen governance through transparent licensing, align with EITI and ESG standards, and design environmental and community engagement frameworks to attract sustainable investment. Geopolitically, Uzbekistan should diversify partnerships beyond a few countries, while fostering regional collaboration to harmonize standards and enhance bargaining power. These reforms can help Uzbekistan become a key player in the critical minerals value chain, while avoiding the resource-driven “curse” of environmental damage and corruption.