



**AFRICA INSTITUTE FOR ENERGY
GOVERNANCE (AFIEGO)**



**BRIEF ON UGANDA'S CRITICAL
MINERALS**

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1. Introduction

The global demand for critical minerals has surged¹², largely driven by the demand for copper, cobalt, lithium, graphite, nickel and rare earth elements among others to drive the clean energy transition, digitalisation and militarisation agendas².

Critical minerals are defined as metallic or non-metallic elements that are essential for modern technologies, economies, national security and whose supply chain is at risk of disruption³.

The classification of critical minerals varies according to the needs and priorities of policymakers and industries, and often changes over time⁴.

In the context of the clean energy transition, critical minerals include copper, lithium, graphite, nickel, cobalt, and rare earth elements, all essential for the production of low-carbon technologies, such as wind turbines, solar panels, batteries, and electric vehicles⁵.

In the context of digitalisation and militarisation, critical minerals include copper, tungsten, rare earth elements, nickel and lithium among others.

While demand for critical minerals has exploded, entities such as the International Energy Agency (IEA) forecast that the demand is set to rise⁷.

1 <https://www.jpmorgan.com/insights/global-research/commodities/critical-minerals>

2 <https://www.visualcapitalist.com/cp/charted-the-explosive-growth-of-critical-minerals/>

3 <https://www.ga.gov.au/scientific-topics/minerals/critical-minerals>

4 <https://www.icmm.com/en-gb/mining-metals/critical-minerals>

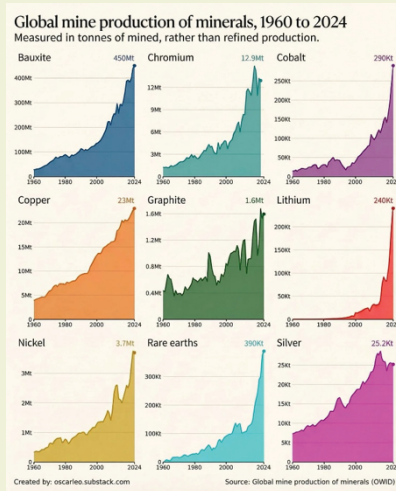
5 <https://www.science.org/doi/10.1126/science.aef6678>

6 <https://www.tandfonline.com/doi/full/10.1080/01495933.2025.2456427>

7 <https://www.iea.org/reports/global-critical-minerals-outlook-2025/overview-of-outlook-for-key-minerals>



Below is a graphic showing the global mine production of minerals between 1960 to 2024.



Source: Visual Capitalist

2. Key demand drivers for critical minerals

The key drivers of the increasing demand for critical minerals include: the clean energy transition toward low-carbon development⁸, the digital economy (Artificial Intelligence among others) and military defence demands.

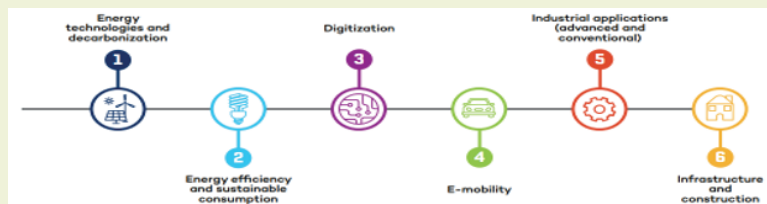
In 2023, global trade in raw and semi-processed minerals reached approximately \$2.57 trillion in imports and \$2.52 trillion in exports. This trade segment represented over 10% of total global exports⁹.

⁸ https://reports.weforum.org/docs/WEF_Accelerating_the_Energy_Transition_2025.pdf

⁹ <https://sdgpulse.unctad.org/critical-minerals/index.html>

Regionally, Asia emerged as the largest market for critical minerals, accounting for \$1.5 trillion in imports, more than half of the global total while exporting only \$825 billion. China accounts for roughly 40% of imports in Asia¹⁰.

The specific demand drivers can be classified into six pathways shown in the graphic below.



3. Uganda and critical minerals

Africa holds 30% of the world's supply of critical minerals¹¹ and several countries such as Zambia and the Democratic Republic of Congo (DRC) are already exporters of these minerals.

Other countries on the continent are readying themselves to become major exporters too.

Uganda is also positioning itself to become a major supplier of critical minerals. Through the National Development Plan (NDP) IV, the Ugandan government has identified the minerals sector as one of the seven priority areas that will be invested in to grow Uganda's economy tenfold by 2029/2030¹².

10 <https://sdgpulse.unctad.org/critical-minerals/index.html>

11 <https://futures.issafrica.org/blog/2025/Africa-has-critical-minerals-but-needs-a-unified-strategy>

12 <https://www.acode-u.org/uploadedFiles/Mineral-Value-Addition-Factsheet-November-2025.pdf>

According to the report, “Status of Domestication of the Africa Mining Vision in Uganda”, the country is endowed with over 50 minerals and ranks among African countries with the most significant number of minerals ¹³.

However, not all minerals found in Uganda are considered critical. In the country’s Energy Transition Plan (ETP)¹⁴, launched in December 2023 during the 28th Conference of the Parties (COP28) in Dubai, UAE, the country identified copper, graphite, cobalt, lithium, and rare earth elements (REEs) as its critical minerals.

These minerals support the production of clean energy technologies such as solar PVs, wind turbines, electric vehicles and battery storage as well as electricity transmission lines.

4. Uganda’s critical minerals and their geographical location

Uganda holds significant reserves of copper, lithium, cobalt, and rare earth elements. The minerals, their locations and status of exploitation are discussed below.

Rare Earth Elements (REEs): What they are and their uses

The REEs are a set of 17 metallic elements that are considered critical because of their properties. Unlike the name suggests, REEs are actually not rare¹⁵. In fact, they are relatively abundant and quite commonly available in the earth’s crust. What makes these materials rare is how difficult they are to extract and how complex it is to process them.

13 <https://trustafrica.org/wp-content/uploads/2024/09/TA-Uganda-Report-2024.pdf>

14 <https://nexusmedia.ug/uganda-launches-energy-transition-plan-to-promote-renewable-energy-at-cop28/>

15 <https://www.iisd.org/system/files/2023-09/critical-minerals-primer-en.pdf>

In Uganda, the 17 clusters of rare earth minerals are mainly located in the eastern region across the districts of Bugweri, Mayuge, Bugiri, and Iganga.

The REE in Uganda include, cerium dysprosium, erbium, europium, gadolinium, holmium and lanthanum. Each of these minerals is used for a purpose different from the other. The eastern region's mineral capacity is estimated at 532 million¹⁶ tonnes.

About the Makuutu REE project

The REE in Uganda are supposed to be extracted under the Makuutu Rare Earth Project¹⁶.

The project includes five licenses covering an area of 242 km². According to a feasibility study published in 2022, the Makuutu project has the potential to produce 40,090 tonnes of rare earth oxide over 35 years¹⁷.

The REEs are essential for the production of high-performance permanent magnets and advanced components used in wind turbines and other renewable energy technologies. Their unique magnetic and electrochemical properties make them foundational materials for decarbonisation pathways.

Graphite: Why it is important

As the world shifts toward electric vehicles (EVs) and accelerated renewable energy adoption, graphite has emerged as an indispensable mineral.

¹⁶ <https://ucem.ug/demand-for-ugandas-rare-earths-elements-expected-to-rise-as-miners-seek-to-diversify-supply-source/>

¹⁷ <https://www.ecofinagency.com/mining/0703-45261-rare-earths-uganda-to-soon-join-the-race-with-makuutu-project>

Every EV battery relies heavily on graphite using more¹⁸ of it by weight than lithium. The average electric vehicle contains between 50 and 70 kg of graphite. Natural graphite remains the preferred choice, comprising over 60% of anode materials in most batteries, outcompeting synthetic graphite on both cost and sustainability.

Uganda possesses significant, high-grade graphite deposits, estimated at over 2–3 billion tonnes of mineralised material¹⁹. The mineral resource is primarily located in Kitgum district, in the northern region. The mineral is being exploited under the Orom-Cross Graphite project, which is being developed by Blencowe Resources.

Copper and its relevance

The history of copper exploitation in Uganda began in the early 1950s with the Kilembe Copper Mines, located on the slopes of Mt. Rwenzori, Kasese district. These mines were the country's largest, holding Uganda's biggest deposits of copper and iron ore. Production peaked at 18,000 tonnes²⁰ of copper annually in the early 1970s. However, mining operations were halted later by the Canadian company, Falconbridge, due to a combination of low copper prices and political instability. In order to realise the aspirations of Vision 2040, in 2025, the Ugandan government signed its first mining production sharing agreement (PSA) to redevelop the above copper and cobalt mine in Kasese district. The Kilembe mine is estimated by government geologists to contain about 4 million²¹ metric tonnes of ore that is 1.98% copper and 0.17% cobalt, both of which are needed for the transition away from fossil fuels.

18 <https://www.linkedin.com/pulse/graphite-unsung-hero-energy-transition-jamie-hyland-qv31f/>

19 <https://ucem.ug/blencowes-orum-graphite-project-places-uganda-on-a-springboard-to-an-early-decarbonization-journey/>

20 <https://www.miningweekly.com/article/uganda-signs-maiden-production-sharing-deal-to-revive-copper-mine-2025-03-04>

21 <https://www.miningweekly.com/article/uganda-signs-maiden-production-sharing-deal-to-revive-copper-mine-2025-03-04>

Copper has many benefits because it is durable, conductive, ductile, and recyclable. It is a preferred solution in clean energy applications, including solar energy, wind turbines, and energy storage. By 2040, these types of renewable energy are expected to make up 61% of copper consumption.

Cobalt: Why it is important

Whereas the country's cobalt resources are predominantly found in the Kilembe mines, Kasese district, other areas of the country including Kiboga, Mityana, Mubende and Bunyangabo have also been found to be highly prospective for cobalt. Due to the role it plays in electronics and battery manufacturing for electric vehicles, cell phones and more, the value of cobalt has sky-rocketed in recent years.

Lithium deposits

Uganda's lithium deposits are mainly found in pegmatite formations across three geological regions including southwest, central, and northeast. In the southwest, Ntungamo district has drawn attention, particularly the Namherere Mine. In late 2023, President Yoweri Museveni approved a request from a London-based investment firm, Strand Hanson Limited, to begin mining lithium in Ntungamo²². Nearby districts such as Mitooma also have recorded lithium mines, often alongside other rare metals like beryllium, niobium, and tantalum.

In central Uganda, exploration and past surveys suggest potential in several districts, including Luny in Mukono district, as well as Nampeyo and Mbale Estate in Mubende district²³.

22 <https://ugandaradionetwork.net/a/archive.php?statusId=4&categoryId=3&authorOrUser=author&authorId=22206&userType=0&voucherMatch=%3D&page=1>

23 https://dgsms.go.ug/wp-content/uploads/2022/10/DGSM@100Final_Digital_eCopy-1.pdf

The northeast, especially Karamoja (including Moroto district), is also reported to hold high potential for lithium, along with other minerals like rare earth elements, copper, and cobalt, though development there remains at an earlier stage.

Demand for lithium is driven mostly by electric vehicles. Lithium-ion batteries are used in EVs because they offer high energy density, long cycle life, and efficiency²⁴. As carmakers pursue electrification and governments set emissions reduction goals, EV adoption continues to rise globally. Each electric vehicle requires much more lithium than consumer electronics, which keeps pressure on supply.

5. What risks does the mining of transition critical minerals present?

Although mining of critical minerals can sometimes have positive impacts such as creating job opportunities, income and services, mining activities also pose serious risks to nature and communities.

Environmental impacts: The extraction of minerals can cause adverse effects on the environment and open up biodiverse protected areas that are key to addressing the climate crisis to mining. There have also been many documented instances of environmental pollution caused by mining operations, which are often caused by clearance of vegetation for mines, use of chemicals in mining, poor waste management and others. For instance, lithium mining in Ghana has destroyed habitats, deprived communities and wildlife of fresh water, poisoned ecosystems and threatened species. Uganda's copper mining (1956-1982) activities also left a legacy of environmental damage, water pollution, soil contamination and others in Kasese district.

²⁴ <https://lithiumharvest.com/knowledge/energy-transition/from-batteries-to-electric-vehicles-the-importance-of-lithium-extraction/>

²⁵ <https://www.opendemocracy.net/en/how-the-lithium-rush-in-west-africa-is-harming-rural-communities/>

Climate change risks

Climate change is a global threat. It is having permanent and devastating impacts on our modes of consumption and production, with significant variations across the world. In Uganda, communities are already bearing disproportionate costs even though the country's contribution to global carbon emissions is marginal. Effects are being felt through extreme weather conditions, such as severe droughts, intense heat waves, devastating floods, disturbances of livelihoods, threats to food insecurity, and irreversible impacts on land and water, among other things. The mining and processing of critical minerals could worsen the climate crisis. Extracting, processing and shipping of the minerals is energy-intensive and results in high greenhouse gas emissions. The global mining industry already represents about 8%²⁶ of the world's carbon footprint, and emissions from critical mineral production are expected to grow alongside demand.

Health burden that falls hardest on women and children

Mining-related activities are creating serious public health emergencies for both workers and surrounding communities. For example, for every tonne of hard-to-extract rare earth minerals produced, about 2,000 tonnes²⁸ of toxic waste are generated. In 2024, global rare earth production created an estimated 707 million²⁹ metric tonnes of toxic waste, enough to fill roughly 59 million garbage trucks. In the DRC, a major cobalt producer, 72% of people living near mining sites reported skin diseases, and 56% of women and girls reported gynecological problems (UNU-INWEH Report 2026). Birth defect rates in maternal wards near DRC mining areas are significantly higher than in areas farther away. These include neural tube

26 <https://www.nature.com/articles/s43247-022-00346-4>

27 <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/sustainable-and-responsible-development-of-minerals>

28 <https://unu.edu/inweh/news/critical-minerals-water-insecurity-and-injustice>

29 <https://unu.edu/inweh/news/critical-minerals-water-insecurity-and-injustice>

defects (which can cause severe brain and spine damage in infants) at a rate of 10.9 per 10,000 births, and lower limb defects at 8.8 per 10,000 births³⁰. Additionally, about 30% of mining sites in the DRC employ children, who typically lack basic health and safety protections.

In Uganda, communities living around the copper mines in Kasese suffer from stomach ulcers, cancers and other conditions³¹ linked to the contamination of water and soils. The contamination occurred³² due to poor waste management during the copper mining period.

Free, Prior and Informed Consent (FPIC) concerns

Available information shows that over 50% of critical raw minerals projects are located in or near indigenous people's lands. These mineral deposits frequently overlap with indigenous territories, creating conflicts over land use and resource rights. Mining companies often proceed with extraction projects without obtaining free, prior, and informed consent³³ from affected indigenous communities. This violation of internationally recognised indigenous rights results in forced displacement, loss of traditional livelihoods, and destruction of sacred sites.

30 <https://unu.edu/inweh/news/critical-minerals-water-insecurity-and-injustice>

31 <https://observer.ug/news/kasese-grapples-with-copper-pollution/>

32 <https://news.mak.ac.ug/2018/05/policy-brief-the-impacts-of-kilembe-mine-and-tailing-sites-on-soil-and-water-quality-foods-forage-and-humans/>

33 <https://discoveryalert.com.au/risks-extracting-critical-minerals-environmental-challenges-2025/>

Human rights violations

The extraction of critical minerals occurs predominantly in regions with weak regulatory oversight, creating conditions where human rights violations flourish. The transition must work for people who live beside mines, workers carrying risks, indigenous peoples defending homelands, and communities. Notably, forced labour represents one of the most severe violations occurring in critical mineral extraction. Workers face dangerous conditions with inadequate safety equipment whilst receiving wages insufficient for basic subsistence. Africa seems to be hard hit by these violations. Between 2010 and 2024 for instance, the Global Transition Minerals Tracker recorded 178 allegations of abuse in Africa, making up more than 20% of global cases. These abuses include violations of workers' rights, disregard for community consent, environmental degradation, and attacks on human rights defenders. For the transition to be truly just, it must be centred on the rights and participation of Indigenous Peoples, frontline communities and workers. These rights-holders must be recognised not as obstacles, but as essential partners in making the transition fast, fair and sustainable.

6. Recommendations

As Uganda looks to become a major critical minerals producer, AFIEGO makes the following recommendations:

i). Government should mainstream responsible mining.

Responsible mining means extracting critical minerals in a way that safeguards the environment and respects people and communities.

34 <https://www.business-humanrights.org/en/from-us/transition-minerals-tracker/>

ii). The government must promote FPIC and respect communities' right to give or withhold consent for mining projects in line with the UN Declaration on the Rights of Indigenous Peoples. Government should also be transparent, sharing the true cost and disadvantages of mining projects, instead of exciting poor communities with promises of jobs so that they can accept what may turn out to be harmful projects.

iii). Government must ensure that mining companies adopt binding, long-term revenue sharing agreements that provide local communities with lasting income, paired with job training programmes and infrastructure investments. Effective community engagements require a permanent commitment to positive social and environmental outcomes, not just short-term consultations.

iv). Government should study countries that are suffering the resource curse characterised by insecurity, abuse of communities' rights, low value retention and others and avoid replicating the models in those countries.

v). In addition, government must strengthen the Environmental and Social Impact Assessment (ESIA) processes and implement Social and Environmental Strategic Assessments (SEA) to ensure effective planning at all levels regarding critical minerals processes. This will help to deal with the impacts.

vi). Finally, government must resist against corporations' push to weaken national environmental regulations to ostensibly support mining for critical raw minerals. The Ugandan government must reject these efforts and should enforce strong environmental laws to protect people and nature.

7. Conclusion

Uganda holds significant reserves of copper, lithium, cobalt, and rare earth elements that are key to the global energy transition. The Ugandan government is seeking to harness these minerals to generate revenue for the country.

However, without robust environmental safeguards, equitable revenue sharing, and binding community consent, the country risks repeating extractive crises undermining climate goals, local livelihoods and biodiversity protection.



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