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The Geopolitics of Critical Minerals in Africa

Redefining the Continent's Role in the E-mobility Value Chain.

A REPORT JOINTLY COMMISSIONED BY ENZI IJAYO AFRICA INITIATIVE AND AFRICAN FUTURE POLICIES HUB

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EXECUTIVE SUMMARY

Africa stands at a pivotal moment in the global energy transition. With approximately 30% of the world's critical mineral reserves "including 70% of global cobalt production, 36% of manganese, and 80% of platinum group metals" the continent has shifted from a peripheral player in commodity markets to a strategic focal point in an intensifying geopolitical scramble for resources essential to electric vehicle batteries, renewable energy infrastructure, and digital technologies. This transformation creates unprecedented opportunities for African nations to capture value beyond raw material extraction, yet it also exposes the continent to competitive pressures from established powers seeking to secure supply chains amid the global transition to clean energy.

The current competition for African critical minerals revolves around three distinct blocs: China, which dominates downstream processing and controls 58% of global lithium refining, 65% of cobalt processing, and 95% of manganese processing; the United States and Western allies, actively seeking to diversify supply chains away from Chinese dominance through initiatives such as the Minerals Security Partnership; and African nations themselves, increasingly resolved to capture more value from their mineral endowments through domestic processing and manufacturing rather than remaining locked in commodity export cycles.

This geopolitical competition is physically concentrated along two competing transport corridors that serve Africa's most mineral-rich regions. The Lobito Corridor represents Western infrastructure investment, backed by over $10 billion in multilateral funding from the US, EU, and African Development Bank. By contrast, the TAZARA railway embodies China's decades-long strategic commitment to African infrastructure, with $1.4 billion in rehabilitation investment aimed at quadrupling freight capacity from 500,000 to 2 million tons annually. Both corridors serve identical mineral-rich regions, yet their opposing geographic orientation reflects fundamentally different visions of Africa's integration into global critical mineral value chains.

The Three-Part Strategic Framework

This series deconstructs these competing geopolitical visions across three dimensions. Part One examines the investment strategies and competitive dynamics through which Western powers and China compete for dominance in Africa's critical minerals sector, with particular attention to how China's long-term, resource-for-infrastructure deals contrast sharply with the more project-focused Western approach. Part Two shifts perspective entirely to center African states themselves, examining their individual mineral endowments, their emerging ambitions for value addition and e-mobility development, and the institutional frameworks through which they are positioning themselves as manufacturers rather than mere resource suppliers. Part Three concludes the analysis by synthesizing recommendations on how African countries can strategically leverage both the Lobito and TAZARA corridors as dual catalysts for transformation from extractivism toward regionally integrated hubs for value addition and African-controlled battery manufacturing.

The Case for African Agency and Regional Integration

The critical insight underlying this series is that Africa's participation in the global energy transition is not predetermined. African countries possess not only the mineral resources upon which global decarbonization depends, but also the capacity to structure the terms on which those resources enter global supply chains. The African Union's recently launched **Africa's Green Minerals Strategy** (AGMS)" alongside national strategies from Zambia and South Africa" signals a continental shift toward proactive value capture. However, realizing this potential requires moving beyond individual national strategies toward coordinated regional industrialization, underpinned by transport infrastructure that enables seamless flows of materials, technology, and investment across borders.

The report identifies six African countries - the Democratic Republic of Congo, Zambia, Namibia, Kenya, South Africa, and Tanzania - as central protagonists in this reorientation. Each possesses complementary critical mineral endowments: the DRC controls 70% of global cobalt reserves and is developing its first integrated cobalt and copper refinery; Zambia, Africa's second-largest copper producer, is pursuing an EV component manufacturing hub strategy; Namibia is positioning itself as a processing center for lithium and rare earth elements; Kenya is emerging as East Africa's EV

manufacturing center; South Africa is leveraging its mature automotive sector to transition into battery component production; and Tanzania is establishing itself as an eastern anchor for value addition along the TAZARA corridor through rare earth element processing and port infrastructure development.

Critical Minerals and the E-Mobility Revolution

A typical electric vehicle requires approximately 9 kilograms of lithium, 13 kilograms of cobalt, 40 kilograms of nickel, 25 kilograms of manganese, and 66 kilograms of graphite. The demand for these materials is accelerating exponentially. A 2023 report by the Faraday Institution estimated that Africa's demand for battery storage alone will reach 7 gigawatt-hours by 2030, driven primarily by electric two- and three-wheelers and stationary battery energy storage systems essential to grid stabilization as the continent transitions to renewable energy. This surge in continental demand for batteries presents a profound opportunity: rather than exporting raw minerals to Asian or European processors and then reimporting finished batteries at vastly inflated prices, African nations can capture the entire value chain by coordinating regional processing, manufacturing, and assembly.

The Dual-Corridor Opportunity and the Imperative of Connection

The report's most strategic recommendation is not Lobito or TAZARA alone, but rather the connection and integration of both corridors into a transcontinenta network spanning from the Atlantic to the Indian Ocean. Currently operating as separate systems, these corridors create an artificial scarcity of value-addition nodes and limit African bargaining power. A unified Lobito-TAZARA system would enable the establishment of strategically positioned regional processing hubs - rare earth refineries in Angola, cobalt and copper refineries in the DRC and Zambia, and lithium refineries in Zimbabwe - interconnected through integrated rail and port infrastructure that collectively reduce transport costs, enable economies of scale for processing facilities, and create integrated supply chains impossible for individual nations to achieve alone.

Addressing the Seven Critical Barriers

Yet moving from aspiration to reality requires confronting seven interconnected implementation challenges. These include deficiencies in specialized human capital for hydrometallurgy and advanced materials processing; fragmented and misaligned regulatory frameworks across multiple countries; severe energy infrastructure constraints (mining operations consume 52% of Zambia's and 55% of the DRC's national electricity generation); water scarcity and treatment requirements that rival energy demands in intensity; limited financial capital with Southern Africa attracting less than 10% of global mining exploration spending despite holding 30% of known reserves; technology transfer barriers imposed by countries like China that restrict export of high-end processing technologies; and inadequate regional supply chains for industrial chemicals essential to mineral processing.

The report argues these barriers are not insurmountable but rather reflect the absence of coordinated regional action. Solutions exist "hybrid renewable energy systems combining solar, wind, and battery storage can reduce diesel dependence by 30-75%; blended finance mechanisms from development finance institutions can de-risk renewable energy and water infrastructure investments; joint ventures with mandatory technology transfer provisions can enable access to processing technologies while building domestic capabilities; and the African Continental Free Trade Area (AfCFTA) provides a legal framework for harmonizing customs, regulatory, and environmental standards across borders.

The Path Forward: From Extractivism to Industrialisation

Africa's transition from extractive commodity supplier to manufacturer of high-value battery components and EV systems is neither inevitable nor automatic. It requires deliberate policy choices, coordinated regional action, and strategic infrastructure investment. The Lobito and TAZARA corridors are not mere transport infrastructure; they are competing visions of Africa's future. By connecting them into an integrated network and establishing complementary regional processing hubs supported by harmonized policies under the AfCFTA framework, African countries can transform minerals into jobs, increase continental GDP by an estimated 12%, and position Africa as a crucial player in the global energy transition while ensuring that the benefits of mineral wealth remain on the continent.

The window for this transformation is rapidly closing. Global supply chain pressures are intense, competition for processing capacity is fierce, and the energy transition timelines are compressed. The question before African leaders is not whether to participate in the global critical minerals economy, but on what terms and for whose benefit. This series argues that coordinated continental action offers the only pathway toward African-controlled, African-benefiting value chains that capture the full economic potential of Africa's mineral endowments.

PART ONE

The global energy transition has fundamentally shifted Africa from a peripheral player in commodity markets to the proverbial goalkeeper of a new geopolitical scramble for critical minerals.[4]

With about 30% of the world's critical mineral reserves, including 70% of global cobalt production, 36% of manganese, and 80% of platinum group metals, the continent has become the focal point of intensifying competition between the United States, China, European countries, and Middle Eastern powers.[5]

This report explores the geopolitics of critical mineral value addition in Africa. Specifically, it considers how partnership and cooperation along the Lobito and TAZARA corridors (and others) could increase Africa's share of the windfalls from the exploitation of critical mineral deposits.[6]

1.1. Foundational Principles

Before turning to geopolitics, it is helpful to establish some foundational principles. Critical minerals are materials essential to economic security and technological advancement but are vulnerable to supply chain disruptions. They are the building blocks of modern battery technology, powering everything from smartphones to electric vehicles (EVs). A typical EV requires approximately 9kg of lithium, 13kg of cobalt, 40kg of nickel, 25kg of manganese, and 66kg of graphite.

The global race for these minerals revolves around three main blocks:

- China, which currently dominates processing capabilities, controls 58% of global lithium refining, 65% of cobalt processing, and 95% of manganese processing
- The US and its Western allies, who are actively seeking to diversify supply chains away from Chinese dominance through initiatives like the Minerals Security Partnership
- African nations that hold the raw materials are increasingly determined to capture more value beyond extraction.

Geographically, competition is concentrated in Africa's mineral-rich regions: the DRC's Lualaba Province (70% of global cobalt reserves), Zambia's Copperbelt (copper and cobalt), Namibia's emerging lithium sector, and South Africa's manganese and platinum group metals. These regions are connected by critical transport infrastructure that has become central to geopolitical strategy: the Lobito Corridor linking Angola, the DRC, and Zambia to the Atlantic Ocean, and the TAZARA railway connecting Zambia to Tanzania's Indian Ocean port of Dar es Salaam.

The Lobito Corridor stretches 1,300 km from the Port of Lobito on Angola's Atlantic coast through the mineral-rich provinces of the DRC and into Zambia's Copperbelt region. By contrast, the Tanzania-Zambia Railway Authority (TAZARA) corridor runs 1,860 km and connects Zambia's Copperbelt to Tanzania's port of Dar es Salaam on the Indian Ocean.

Both corridors serve the same mineral-rich regions essential to EV batteries and renewable energy infrastructure. Their geographic orientation, however, offers distinct market advantages: Lobito enables westward flows to Europe and North America, while TAZARA provides eastward access to Asian markets, aligning with China's Belt and Road Initiative. The corridors are not merely transporting infrastructure; they are competing visions of Africa's integration into global critical mineral value chains.

This report is divided as follows:

- Part One explores competition between Western powers and China through the investment patterns of the Lobito and TAZARA corridors.
- Part Two examines the role of African states in the value chain and their ambitions for e-mobility.

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5 Jason Mitchell (October 9,2024), "Africa's critical role in the global battery mineral value chain"

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MO IBRAHIM FOUNDATION (2022), "Africa's critical minerals place it at the heart of a global low-carbon future" minerals-resource-governance.pdf

6 Nosmot Gbadamosi (June 26,2024)," Africa's Critical Mineral Race Heats Up" Africa's Critical Minerals Spark U.S.-China Competition Over Railway Export Corridors

- Part Three concludes with recommendations on how African countries can use these corridors as catalysts to move from extractivism toward regional hubs for value addition.

1.2. China: Entrenched Dominance Through Long-term Investment

China's approach to Africa critical minerals reflects decades of strategic investment and relationship building[7] TAZARA embodies China's historic and renewed commitment to African infrastructure development. Originally built in the 1970s under Mao Zedong's government, the line fell into decline, operating at just 9% of its designed capacity. Now, under a 30-year concession with the Chinese Civil Engineering Construction Corporation, Beijing has committed $1.4 billion to rehabilitate the railway, with projections to quadruple freight capacity from 500,000 to 2 million tons annually.

Chinese companies control significant portions of mining operations across the continent, including 72% of cobalt and copper mines in the DRC. This dominance extends beyond extraction: China refines 58% of global lithium, 65% of cobalt, and 95% of manganese. China's strategy combines infrastructure development with mining rights. The $1.4 billion TAZARA rehabilitation is part of a broader Chinese engagement totaling $21.7 billion under the Belt and Road Initiative in 2023 alone. This approach creates integrated supply chains that are difficult for competitors to displace. The Chinese model emphasises resource for infrastructure deals, exemplified by the DRC's $3 billion agreement in 2007, which laid the groundwork for deeper supply chain integration.[8] This long-term thinking contrasts with Western approaches that often focus on individual projects rather than comprehensive economic partnerships.

The Lobito Corridor exemplifies the Western approach, with Swiss commodity giant Trafigura positioned as the primary beneficiary[9]. Trafigura holds a controlling 49.5% stake in the Lobito Atlantic Railway consortium, which was awarded a 30-year concession by Angola in 2022 to operate the railway.[10] Beyond its operational control, Trafigura has secured the largest allocation of export capacity on the corridor, up to 450,000 tonnes annually as of 2025, effectively guaranteeing the company privileged access to transport critical minerals at reduced costs.[11] The firm also owns the Muthosi copper and cobalt mine in the DRC's Lualaba province.[12] It has established long-term offtake agreements to market production from multiple mines in the region. This vertical integration, combining mining assets, transportation infrastructure, and commodity trading operations, positions Trafigura to capture value at multiple points along the supply chain. At the same time, Western governments provide public financing and geopolitical backing for the infrastructure that enables these operations. The echoes of colonial extractivism in this deal are not lost on us, but that issue is beyond the scope of this three-parter.

1.3. United States: A Late but Strategic Entry

The US's approach to African critical minerals is reactive rather than proactive, aimed at countering China's dominance. The policy shift came in 2022, when the US signed a trilateral memorandum of understanding with the DRC and Zambia to develop the EV battery value chain, toward viewing Africa as a strategic partner rather than merely a resource supplier.[13]

Still, US investment remains modest.[14] While China invested $8-10 billion in critical mineral projects in 2023 alone, Us

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12 John Zadeh (July8,2025), "Trafigura Secures $200 Million Congo Copper Deal with Ivanhoe" Trafigura Secures $200M Deal for Ivanhoe's Congo Copper

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critical investment totaled approximately $300 million, a mere 4% of total US investments on the continent.[15] However, the US International Development Finance Corporation is finalising over $500 million in financing for the Lobito Corridor, indicating increased commitment. The Lobito corridor is an initiative that serves as an alternative to the TAZARA railway, connecting the port of Lobito in Angola with the resource-rich but landlocked DRC and Zambia.[16]

The US strategy leans on leveraging existing multilateral institutions and partnerships rather than direct bilateral investment. The Minerals Security Partnership, bringing together 14 nations and the European Commission, has launched a financing network to support African mining projects, aiming to reduce dependence on Chinese-controlled supply chains.[17]

1.4. European Union: Critical Raw Materials Strategy

The European Union's approach to African critical minerals balances strategic autonomy objectives with development partnership principles.[18] The EU has signed a critical mineral partnership with Angola, the DRC, Namibia, and Zambia, and has committed €4.7 billion to South Africa to support raw material value addition and green hydrogen production[19].

The EU'S Global Initiative emphasises sustainable and transparent mining practices, often requiring higher environmental, social, and governance standards than those required by[20] Chinese investments. This approach appeals to African governments seeking to improve governance frameworks, but it may result in slower implementation timelines than those of Chinese projects.

The Corridors

The Lobito Corridor: Western Alternative to Chinese Dominance?

The Lobito corridor, a flagship initiative under the G7's Partnership for Global Infrastructure and Investment (PGII) and the EU's Global Gateway, is the most ambitious Western infrastructure initiative in Africa's mining sector.[21] This $2.3 billion project is backed by over $10 billion in multilateral investments from the US, EU, and African Development Bank. It aims to provide an alternative to Chinese-controlled supply chains.[22]

The strategic importance of this corridor cannot be overstated.[23] For Zambia and the DRC, it offers the shortest route to international markets, potentially reducing transportation costs by two-thirds compared to existing routes through South African or East African ports. The Canadian mining company Ivanhoe Mines has already tested the corridor's viability by shipping 10,000 tonnes of copper

Resources: How the US and China Invest in Critical Minerals • Stimson Center

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21 OECD (April10,2025),"Making Connectivity Work for Resilient Global Value Chains" Panel 2_OECD EMF Background Note - The Lobito Corridor.pdf

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23 Lena Group (2024),"Lobito Corridor: What It Is & Why It Matters" Lobito Corridor History & Background

concentrate from its Kamoa-Kakula complex in December 2023, demonstrating both cost-cutting and logistical ease. Regionally, the corridor aligns with the AfCFTA goals of regional integration, increased intra-African trade, infrastructural development, and the facilitation of the green energy transition.[24]

However, the Lobito Corridor faces significant operational and policy challenges. Rising transport costs, weak regulatory alignment across the three countries, inadequate soft infrastructure, and legacy issues, including landmine contamination, pose substantial risks to its sustainability[25]. Effective implementation will therefore require consistent political will and policy harmonisation, which Part Two and Part Three will explore further.[26]

TAZARA: China's Eastern Response

China has committed $1.4 billion to rehabilitate the Tanzania-Zambia Railway Authority (TAZARA), widely seen as a response to Western initiatives, originally built by Mao Zedong's government in the 1970s.[27] This long-neglected 1,860-kilometer railway connects Zambia's Copperbelt to Tanzania's port of Dar es Salaam, offering an eastern route for mineral exports to Asian markets.

TAZARA's rehabilitation represents more than infrastructure investment; it symbolises China's determination to maintain its dominance in African critical mineral supply chains. [28]The Chinese Civil Engineering Construction Corporation will receive a 30-year concession to operate the railway, projections to quadruple freight capacity from 500,000 to 2 million tons annually.[29] This strategic move ensures continued Chinese access to copper and cobalt exports while countering Western influence in the region.

But TAZARA faces its own substantial challenges. Decades of underinvestment have left the railway operating at just 9% of its designed capacity, with worn-out infrastructure, limited rolling stock, and chronic financial difficulties[30]. The railway's debt burden exceeds $45 million, and its operational reliability has been severely compromised, making it less attractive to commercial users.[31] As such, alternatives such as the Nacala corridor , the Beira corridor, South African ports, and the previously mentioned Lobito Corridor are often used as substitute routes by commercial users.[32]

Amidst all the geopolitical noise surrounding critical minerals in Africa, the perspectives and ambitions of African countries have often been sidelined or overlooked in the discourse on critical minerals and their role in the Just Transition. The next part of the report highlights African countries and their roles in the value chain, as well as their ambitions to secure critical minerals to fuel e-mobility growth.

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30 Conred K Simuchile (Sep 04,2024), *"Infrastructure challenges at TAZARA"* Infrastructure challenges at TAZARA | TAZARA

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32 The World Bank (updated 09 July 2018), *"Project Information Document/ Integrated Safeguards Data Sheet (PID/ISDS)"* World Bank Document

PART TWO

A 2023 report by the Faraday Institution estimated that Africa's demand for battery storage will reach 7 GWh by 2030, primarily driven by electric two- and three-wheelers and stationary battery energy storage systems (BESS).[33] Value addition to critical minerals is therefore crucial for meeting the continent's e-mobility development needs. The battery revolution presents African countries with a significant opportunity to retain windfalls from natural resources. However, this opportunity must be addressed with caution as the continent has important lessons to learn from past commodity booms.

A key lesson is the vital importance of intra-country cooperation. To be sure, one of the main challenges for African countries is that, individually, they lack the human capital, financial capital, and geopolitical heft to incentivize local investments and are easily persuaded by the 'quick cash' of raw commodity exports. Another challenge is that the region lacks connected industrial ecosystems, from transport, to power, to harmonized policies, that would be needed to develop a critical minerals value chain. Both of these challenges, combined with domestic and international politics, leave countries vulnerable to short-term approaches unlikely to achieve the long-term goal of developing a regional supply chain.

In response to these challenges, the African Union (AU) launched its Africa's Green Minerals Strategy (AGMS), providing a roadmap for Africa to leverage its mineral wealth for value addition, regional industrialisation, and climate resilience.[34] The AGMS is a global multilateral effort to promote value addition of critical minerals in developing countries, similar to the Compromiso de Sevilla.[35] Before the AGMS, Zambia and South Africa launched their national strategies, which provided isolated roadmaps for critical minerals.[36] Part Two of this report unpacks the strategies and policies of several African countries that rethink Africa's participation in geopolitics around critical minerals.

2.1. The DRC: From Cobalt Extraction to Battery Manufacturing

The DRC, which controls 70% of global cobalt production and possesses substantial coppper reserves, stands at the centre of value addition opportunities in the electric vehicle battery supply chain.[37] In 2024, a significant development occurred when the DRC government provided $ 3.5 million to the Buenassa company for developing the country's first integrated copper and cobalt refinery[38]. The hydro-metallurgical plant in Lualaba Province, scheduled to open in 2027, is expected to produce 30,000 tonnes of copper cathodes and 5,000 tonnes of cobalt sulfate annually, a crucial step toward domestic processing.

But progress is uncertain. Escalating militia activity across eastern DRC, where armed groups have seized control of major mining operations (including the world's largest coltan mine near Rubaya), threatens stability. While Lualaba is less affected than North and South Kivu, the risk of conflict spillover poses serious challenges for security and investor confidence.

The DRC's potential, however, goes far beyond raw mineral extraction.[39] A UNECA feasibility study found that building a battery precursor plant in the DRC would cost a third as

33 Faraday Institution (June 2023) *"Battery Storage In Developing Countries"* https://www.faraday.ac.uk/wp-content/uploads/2024/03/Battery-Storage-in-Developing-Countries.pdf

34 African Union (March18,2025), *"Africa`s Green Minerals Strategy (AGMS)"* Africa`s Green Minerals Strategy (AGMS) | African Union

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39 TRADE (2024), *"Congo, the democratic republic of the Country Commercial Guide"* Democratic Republic of the Congo - Mining and Minerals

much as in the US. The World Bank has also outlined opportunities in copper-based manufacturing, such as cables and copper foils for EV batteries, which could generate $112 million in additional exports and create 1,300–2,000 jobs annually[40]. The EV battery value chain could unlock even greater rewards, potentially quadrupling the value of minerals mined in Africa.

2.2. Zambia: Positioning as an EV Component Hub

Zambia, Africa's second-largest copper producer with over 2.1 billion metric tons of reserves, is actively pursuing activities to transform a raw material exporter into an EV component manufacturing hub[41]. Finance Minister Situmbeko Musokotwane has confirmed ongoing discussions with global manufacturers to establish production plants near copper mines, with components potentially shipped to South African factories for global export.[42]

The Economic rationale is compelling; Currently, only 20% of Zambia's copper is refined domestically. Scaling local processing could retain billions annually.[43] The country's strategic diplomacy allows it to leverage both major transport routes: the US-backed Lobito Corridor to the west and China's TAZARA railway to the east. This dual approach maximises export options while reducing reliance on a single corridor.

Zambia and the DRC have also partnered on an EV battery initiative to add value to their critical minerals and participate in regional and global supply chains.[44] Morocco has joined the initiative, supported by UNECA, linking North Africa's e-mobility industry with Southern Africa's resource base[45]

2.3. Namibia: Emerging Critical Minerals Producer and Processing Hub

Namibia is emerging as a key player in Africa's critical minerals landscape, possessing significant deposits of uranium, lithium, rare earth elements, and other strategic minerals. [46]The country is the world's fourth-largest uranium producer and second-largest uranium exporter, with uranium mining contributing approximately 10% to GDP and providing substantial foreign exchange earnings.[47] However, it is the lithium sector that holds Namibia's promise of joining the e-mobility value chain.

Namibia's lithium sector presents significant opportunities despite being smaller than Zimbabwe's deposits. In 2023, the government banned exports of unprocessed lithium, cobalt, manganese, graphite, and rare earths to encourage domestic processing.[48] While this policy has created short-term challenges, with companies stockpiling ore while awaiting processing plants, it signals a clear commitment to local value addition.[49]

Namibia's rare earth sector also demonstrates innovative approaches to value chain development. Namibia Critical Metals Inc[50]. is developing the Lofdal Heavy Rare Earth Project, which contains globally significant deposits of dys-

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45 TAZARA(2025), "Freight Logistics" Freight Logistics | TAZARA

46 Elizabeth Khumalo (April 2025), *"Namibia Moves to Boost Local Ownership in Mining Sector"* Namibia Moves to Boost Local Ownership in Mining Sector - FurtherAfrica

Carl Endenberg(October 2024), "Namibia: Dimensions of the Lithium Opportunity" Namibia: Dimensions of the Lithium Opportunity - Copper Quail

47 Namibia Uranium Association website *"Uranium Mining in Namibia"* https://world-nuclear.org/information-library/country-profiles/countries-g-n/namibia and https://www.namibianuranium.org/uranium-mining-in-namibia/

48 Elizabeth Khumalo (April 2025), *"Namibia Moves to Boost Local Ownership in Mining Sector"* Namibia Moves to Boost Local Ownership in Mining Sector - FurtherAfrica

Nyasha Nyaungwa (June8,2023), "Namibia: Govt. bans unprocessed critical minerals export including lithium to encourage local value addition" Namibia: Govt. bans unprocessed critical minerals export including lithium to encourage local value addition - Business & Human Rights Resource Centre

49 Julien Karambua (October 2024), *"Navigating Namibia's mining sector challenges: Strategies for growth and stability"* Navigating Namibia's mining sector challenges: Strategies for growth and stability

50 Partner News (October 2024), *"Namibia Critical Metals secures key environmental approval for Lofdal Heavy Rare Earth Project"*

prosium and terbium essential for EVs and wind turbines.[51] The company has joined forces with E-Tech Resources and Ondoto Rare Earth to form Rare Earth Alliance Namibia (REAN), pooling resources to establish a rare-earth separation facility that will serve multiple projects.

2.4. Kenya: Emerging as East Africa's EV Manufacturing Centre

Kenya is demonstrating a rise in e-mobility, offering a unique value-add opportunity in East Africa's burgeoning electric vehicle sector.[52] The country has experienced a fivefold growth in the EV sector, increasing from 475 vehicles in 2022 to 4,163 by February 2024.[53] This rapid adoption, supported by government policy incentives and the National E-Mobility Strategy, creates demand for local manufacturing of EV components and battery systems.

Kenya's Draft National Energy Policy 2025–2034 prioritises local hubs for renewable energy technologies, with backward linkages to critical minerals. Kenya's ambition is to serve regional markets while cutting import dependence, leveraging its policy frameworks, renewable energy bases, and growing consumer market.[54]

2.5. Tanzania: Eastern Anchor for Regional Value Addition

Tanzania emerges from the shadow of its neighbours to claim a distinctive role in Africa's critical minerals value chain. While often overshadowed in regional narratives by the DRC's dominance in cobalt, Zambia's copper prowess, and Namibia's lithium potential, Tanzania possesses a diversified and strategically valuable portfolio of critical minerals essential to the global energy transition. According to Tanzania's Geological Survey and the Ministry of Minerals, the country is endowed with significant reserves of rare earth elements (REEs), graphite, nickel, cobalt, lithium, niobium, and heavy mineral sands. A complementary mix that positions Tanzania not as a single-commodity exporter but as a multi-mineral processing hub capable of serving multiple segments of the EV battery value chain simultaneously.

The critical strategic advantage Tanzania possesses, however, extends beyond its mineral reserves themselves. As the terminus of the TAZARA railway and host to the port of Dar es Salaam, East Africa's primary maritime gateway, Tanzania occupies a geographic position of unparalleled regional significance. Dar es Salaam handles approximately 24% of its total throughput as transit cargo, with 70% of that transit cargo originating from the TAZARA corridor, serving not only Tanzania but also Zambia, Malawi, Zimbabwe, and the Democratic Republic of Congo. This logistical reality transforms Tanzania from a peripheral mineral producer into a central logistics hub for mineral flows across the entire Southern and Central African region.

Tanzania's emergence in rare earth element extraction and processing represents perhaps its most significant opportunity for value addition and regional integration. To be sure, Tanzania's graphite sector demonstrates even more advanced development than its rare earth ambitions, with multiple commercial operations already producing battery-grade graphite at scale. The graphite sector represents an immediate, scalable opportunity for value addition precisely because commercial production is already operational. The strategic imperative is threefold: first, to upgrade existing operations to produce not merely ore concentrate but refined, battery-grade graphite meeting the stringent quality specifications demanded by battery manufacturers; second, to establish downstream linkages to graphite foil and anode coating manufacturers that can produce intermediate products for battery makers; and third, to leverage Tanzania's position along the TAZARA corridor to establish itself as a primary graphite supplier for processing facilities in Zimbabwe, Zambia, and the DRC that are developing battery precursor and cathode manufacturing capabilities.

2.6. South Africa: Regional Battery Manufacturing Hub

South Africa's role in the critical mineral value chain extends beyond its dominant position in manganese (36% global supply)and platinum group metals[55]. It's a mature automotive sector, home to original global equipment man-

Namibia Critical Metals secures key environmental approval for Lofdal Heavy Rare Earth Project

51 Namibia Critical Mineral Inc. website "Metals for the World's FutureIn NAMIBIA" https://www.namibiacriticalmetals.com/

52 Sustainable Energy For All (May 2025), *"Renewable Energy and Electric Vehicle Manufacturing in Kenya: Policy and Investment Pathways to Maximize Benefits"* *Renewable Energy and Electric Vehicle Manufacturing in Kenya: Policy and Investment Pathways to Maximize Benefits | Sustainable Energy for All*

53 Yunus Kemp (Feb 2025), "Kenya: E-mobility growth shines spotlight on EV batteries sector" Kenya: E-mobility growth shines spotlight on EV batteries sector - ESI-Africa.com

54 Sustainable Energy For All (May 2025), *"Renewable Energy and Electric Vehicle Manufacturing in Kenya: Policy and Investment Pathways to Maximize Benefits"* *Renewable Energy and Electric Vehicle Manufacturing in Kenya: Policy and Investment Pathways to Maximize Benefits | Sustainable Energy for All*

55 Sakhile Dube (Sep 2024), "South Africa Has the Critical Minerals But Is That Enough To Become a Global Battery Storage Powerhouse" South Africa Has the Critical Minerals, But Is That Enough to Become a Global Battery Storage Powerhouse? | Earth Journalism Network

Sakhile Dube (Sep 2024), "South Africa Has the Critical Minerals But Is That Enough To Become a Global Battery Storage Powerhouse" South

ufacturers, that provides a strong foundation for transitioning into EV component and battery manufacturing.[56]

South Africa's Critical Minerals and Strategy 2025 outlines plans to establish lithium-ion battery assembly plants, vanadium redox flow battery manufacturing, and special economic zones for processing and refining.[57] South Africa is also positioning itself to take advantage of trade arrangements such as the EU Partnership Agreement and the US AGOA, while AfCFTA's rules of origin (requiring 40% local African content) can help anchor regional supply chains.

The Challenges

Ambitions to move beyond extraction toward refining and manufacturing, and to position both the Lobito Corridor and TAZARA as catalysts for comprehensive regional e-mobility value chain development, face several challenges. Recognising the ambitious intentions of moving beyond extraction to refining critical minerals and leveraging the two corridors requires addressing these challenges and exploring possible solutions.

1. Human capital: Africa's shift to higher-value activities requires specialised expertise in hydrometallurgy, electrochemistry, and advanced materials processing. Governments must invest in technical education, training programs, and technology transfer partnerships to support the development of innovative solutions. The DRC and Zambia, for example, could develop skills hubs near mining operations to retrain workers for processing and manufacturing roles, with support from international technical institutions.

2. Governance frameworks: Regulatory alignment, reduced political risk, and governance are as important as physical infrastructure. Harmonised standards for quality, environmental safeguards, and labour protections are essential to meet global supply chain requirements. AfCFTA provides a foundation for regional certification systems, investment protections, and coordinated policies to attract responsible investors. Transparency and community engagement are also vital to ensure revenues benefit local populations rather than fuel inequality.

3. Energy infrastructure and supply reliability: Critical minerals refining is extraordinarily energy-intensive, with mining operations consuming 52% of Zambia's and 55% of the DRC's national electricity generation[58]. Processing facilities require both electrical power and specific thermal energy from fossil fuels for chemical and metallurgical manufacturing[59]. Current energy vulnerability centers on hydropower dependence (61.8% in Angola, 96% in DRC), making operations susceptible to climate variability.[60] In this regard, hybrid renewable resources may be a viable solution.[61] Mining operations across Africa are implementing solar-wind battery hybrid configurations that reduce diesel dependence by 30-75% while providing 24/7 reliability. Successful implementations include B2Gold's Fekola Mine in Mali, First Quantum's operations in Zambia, and Syrah Resources' Balama Mine in Mozambique.

   Regional Power Pooling presents another solution. For example, the Southern Africa Power Pool enables cross-border electricity trading. These value addition centers can also consider modular power to mine as a setup for solutions[62]. These integrated systems combine solar, wind, battery storage, and smart grid management under digital control, with a modular architecture that enables flexible implementation scaled to meet specific

Africa Has the Critical Minerals, But Is That Enough to Become a Global Battery Storage Powerhouse? | Earth Journalism Network

56 Yael Shafrir (26 September 2023) Africa lays the groundwork for a future of electric vehicles" https://www.webberwentzel.com/News/Pages/Africa-lays-the-groundwork-for-a-future-of-electric-vehicles.aspx

57 Mineral and Petroleum Resources*(2025), "CRITICAL MINERALS AND METALS STRATEGY SOUTH AFRICA"* Critical Minerals and Metals Strategy South Africa 2025

Mineral and Petroleum Resources(2025), "CRITICAL MINERALS AND METALS STRATEGY SOUTH AFRICA" Critical Minerals and Metals Strategy South Africa 2025

Yael Shafrir (Sep 2024), "Africa lays the groundworks for a future of electric vehicles" Africa lays the groundwork for a future of electric vehicles | Webber Wentzel

58 Africa Center for Strategic Studies (May 2025), *"Africa's Critical Minerals at a Critical Juncture"* Africa's Critical Minerals at a Critical Juncture – Africa Center

59 Ryan Alimento Seaver Wang (June 2025), "*Sub-Saharan Africa Needs Fossil Fuels to Process Its Critical Minerals"* Sub-Saharan Africa Needs Fossil Fuels to… | The Breakthrough Institute

60 United Nations Zambia (October 2024) "Potential Impact of the Lobito Corridor and Support to the Regional Transformation Agenda" https://www.undp.org/sites/g/files/zskgke326/files/2024-10/lobito-corridor-policy-brief.up_.pdf

61 MUFLIH HIDAYAT (October 21, 2025), "Transforming Africa's Minig worth Renewable Energy Solutions in 2025

62 Jean Marias (October 2025), "*Powering Predictability — Hybrid Energy Strategies for Reliable African Mines"* Powering Predictability — Hybrid Energy Strategies for Reliable African Mines - Mining Doc

mine requirements. Investment ranges from US$20-150 million, depending on capacity, with 20–25-year operational lifespans providing predictable energy costs.

Lastly, countries may look to development finance institutions for blended finance for energy infrastructure [63] Development finance institutions are providing concessional capital to de-risk renewable energy investments. The IFC-Appian U$1 billion critical minerals fund, announced in October 2025, targets infrastructure, including power systems.

4. Water infrastructure requirements: Mineral processing is exceptionally water-intensive. Mining requires an integrated approach to water management, encompassing supply, treatment, storage, and discharge.[64] Several possible solutions exist, including reverse osmosis with multi-stage recovery, high-density sludge (HDS) treatment, zero liquid discharge (ZLD) systems, desalination for coastal mining operations, tailings water recovery, regional water treatments, and real-time automated monitoring. However, all of these solutions require substantial investment.[65]

5. Financial capital and investment barriers: Southern Africa attracts less than 10% of global exploration spending despite holding 30% of known reserves. SMEs face an acute funding shortage, with 50% of African SMEs lacking access to the capital they need. Policy instability, regulatory uncertainty, and lengthy development timelines deter long-term capital commitments.[66] Governments and financiers may explore blended finance structures, partial risk guarantees, or first-loss provisions, subordinated development capital, and technical assistance grants.[67] In this regard, the Development Bank of Southern Africa, in partnership with the World Economic Forum, has developed a comprehensive playbook showcasing investment pathways specifically for Southern African critical minerals.[68]

Public-private partnership also offers an innovative approach to financing.[69] The Lobito Corridor exemplifies transformative PPP implementation, with multi-stakeholder collaboration (EU, US, Angola, DBSA) achieving economies of scale impossible for individual nations. Success elements include multi-jurisdictional regulatory coordination, risk allocation between sovereign guarantors and private operators, long-term revenue certainty through offtake agreements, and integrated infrastructure approaches.

Similarly, risk mitigation instruments such as credit guarantees, political risk insurance, and currency hedging instruments from institutions like the African Development Bank reduce investment barriers.[70] The US$6 billion committed to the Lobito Corridor and China's US$1.4 billion TAZARA investment demonstrate scaled commitments.

6. Technology transfer and processing capabilities: Just three countries control 80-99% of processing capacity for lithium, cobalt, and rare earth elements, with China alone controlling 58% of lithium, 65% of cobalt, and 87% of rare earth processing. Beijing's policies restrict

63 Rters (2025), "IFC, Appian launch $1 billion critical minerals fund in Africa, Latam" IFC, Appian launch $1 billion critical minerals fund in Africa, Latam | Reuters

64 Perrine Toledano and Clara Roorda (March 2014) "Leveraging Mining Investments in Water Infrastructure for Broad Economic Development: Models, Opportunities and Challenges" CSI Policy Paper https://ccsi.columbia.edu/sites/ccsi.columbia.edu/files/content/docs/publications/CCSI-Policy-Paper-Leveraging-Mining-Related-Water-Infrastructure-for-Development-March-2014.pdf. Also see "The global race is on to secure critical minerals. Why do they matter so much?" (October 20, 2025) https://theconversation.com/the-global-race-is-on-to-secure-critical-minerals-why-do-they-matter-so-much-267416. Black & Veatch "Designing, Developing and Managing Mine Water Infrastructure" https://www.bv.com/perspectives/designing-developing-and-managing-mine-water-infrastructure.

65 Meena Sankrena, "*Maximizing Water Recovery in Mining Operations*" *Maximizing Water Recovery in Mining Operations - KETOS*. *Fluence, "Desalination in Mining" Desalination in Mining | Fluence*

Water Security Africa, "Making Mining-Influenced Water a Driver for Change to Improve Water Security in South Africa" MAMDIWAS - Water Security in Africa

66 MUFLIH HIDAYAT, "*Southern Africa's Path to Unlocking Critical Minerals Investment Funding*" *How Southern Africa Could Unlock Critical Minerals Funding*

Energy Transition (Aug6,2025), "Why investing in Southern Africa's critical minerals is key for the global energy transition" Investing in Africa's critical minerals is key for net zero | World Economic Forum

67 MUFLIH HIDAYAT, "*Southern Africa's Path to Unlocking Critical Minerals Investment Funding*" *How Southern Africa Could Unlock Critical Minerals Funding*

68 Planet Gold report "Access to Finance Options for Artisanal and Small-Scale Mining" (May 2020) https://www.planetgold.org/sites/default/files/2020-06/Access-to-Finance-Options-for-ASM_FV.pdf

69 Muflih Hidayat(October 17,2025), "*Southern Africa's Critical Minerals Investment Funding Opportunities 2025*" *Critical Minerals Investment Funding Southern Africa*

70 Judy Hofmeyer (May 2025), "*A game changer in flux: recent developments and risks in the Lobito corridor*" *A game changer in flux: recent developments and risks in the Lobito corridor - APRI – Africa Policy Research Institute*

the export of high-end processing technologies, particularly those for heavy rare earth elements with dual-use applications.[71] Without economies of scale and integrated regional supply chains, processing projects risk becoming white elephants.

7. Joint Ventures, with technology transfer provisions, offer a strategic solution. These JVs can enable access to processing technologies while building domestic. For example, Livium and Mineral Resources formed a 50:50 joint venture for LIENA lithium processing technology commercialisation, including licensing to third parties[72].

   Mining companies can also partner with equipment manufacturers, renewable power companies, and battery supply chain firms to access specialized expertise.73 While government-company JVs, such as Barrick Gold's JV with Tanzania's government, provide the government with complete visibility and participation in decision-making, they also establish sustainable operations with shared economic benefits.74 In fact, technology transfer can be made mandatory in mining contracts.75 The African Green Minerals Strategy emphasises transforming technology transfer agreements to support Africa's green industrialization.

   Ultimately, African countries must be more decisive in exploring South-South cooperation. These engagements prove useful to all countries involved—for example, Indonesia's success in requiring mineral processing before export provides replicable models.[76] African countries can learn from Indonesia's special economic zone approach, which attracted US$20+ billion in downstream investments.

8. Industrial chemicals and supply chain integration: Value-additive processing requires reliable industrial chemical access at scale.[77] Local chemical manufacturing capacity remains limited, with most chemicals imported.[78] Therefore, countries must consider exploring regional chemical manufacturing development, co-locating sulfuric acid production facilities with smelting operations, or developing specialised zones near processing hubs. Alternatively, countries may negotiate long-term supply agreements with guaranteed pricing to reduce volatility. Lastly, the African Continental Free Trade enables harmonized chemical standards, reduced tariffs on industrial inputs, and coordinated development of chemical manufacturing hubs serving regional markets.[79] This reduces the 30-40% cost premium that inadequate infrastructure currently adds to intra-regional trade.[80]

71 Herbert Smith Freehills Kramer (2025), *"Financing the Energy Transition – Critical Minerals Processing"* Financing the Energy Transition – Critical Minerals Processing | Herbert Smith Freehills Kramer | Global law firm. Obert Bore (May 14, 2025) "Ignoring China Won't Help African Countries Move up the Critical Mineral Value Chain" https://chinaglobalsouth.com/analysis/africa-critical-minerals-china-value-addition/

72 Diane Peters (2024), *"Joint Ventures, M&A Ramp Up in Critical Minerals Space"* Joint Ventures, M&A Ramp Up in Critical Minerals Space | INN

Matthew Johnson, Lachlan Poustie and Cynthia Urda Kassis (Jan 2025), *"Miners explore next-gen joint ventures in pursuit of sustainability"* Miners explore next-gen joint ventures in pursuit of sustainability - A&O Shearman

Mining Technology(Aug11,2025), *"Livium and Mineral Resources form JV for LieNA lithium processing technology"* *Livium and Mineral Resources form JV for LieNA lithium processing technology*

73 Matthew Johnson, Lachlan Poustie and Cynthia Urda Kassis (Jan 2025), *"Miners explore next-gen joint ventures in pursuit of sustainability"* Miners explore next-gen joint ventures in pursuit of sustainability - A&O Shearman

74 Eric Lung, Leanne Krawchuk, and Kendal Allemekinders (June 8, 2020)"Joint Ventures in the Mining industry" https://www.dentonsminiinglaw.com/joint-ventures-in-the-mining-industry/

75 Muflih Hidayat (October 13, 2025) "Africa's Strategic Role in Green Tech Minerals Development" https://discoveryalert.com.au/news/africa-green-technology-mineral-revolution-2025/. Also see Kudakwashe Manjonjo, Federico Tassan-Viol, Karabo Mokgonyana, and Lorena Stella Martini (1 October 2025) "Reimagining Africa's Critical Mineral Value Chains: From Extraction to Equitable Green Industrialisation in a Multipolar World" https://t20southafrica.org/publications/reimagining-africas-critical-mineral-value-chains/

76 Efcon Agency, *"Mineral Processing: What Can Africa Learn from Indonesia?"* Mineral Processing: What Can Africa Learn from Indonesia? - Ecofin Agency

77 "Mining And Industrial Chemicals" https://kakachemicalsafrica.com/mining-and-industrial-chemicals/. Also see Boxx Chemical Distributor website "Solutions for Gold Processing, Flotation, and Lithium Extraction" https://boxxchemdistributor.com/mineral-processing/

78 KemCore website "Our role in Key Battery Mineral supply chain" https://kemcore.africa/

79 "Africa has critical minerals but needs a unified strategy" https://futures.issafrica.org/blog/2025/Africa-has-critical-minerals-but-needs-a-unified-strategy

80 African Union *"The African Continental Free Trade Area"* *The African Continental Free Trade Area | African Union*. *Also see VIRUSHA SUBBAN (Jan,2023), "Africa: The impact of the African Continental Free Trade Area on the continent's mining sector"* *Africa: The impact of the African Continental Free Trade Area on the continent's mining sector - Global Compliance News*. Ede Ijjasz-Vasquez, Landry Signé, and Vera Songwe (September26,2025), *"Strength in numbers: Regional action for Africa's positioning in critical minerals"* *Strength in numbers: Regional action for Africa's positioning in critical minerals | Brookings*

By addressing these constraints, African nations can transform the Lobito and TAZARA corridors from simple export routes into the backbone of a genuinely African-owned e-mobility ecosystem. It has the potential to capture value, create jobs, and drive sustainable development.

Africa is clear on its ambitions to move beyond extracting and refining critical minerals. With strategies such as AGMS and national roadmaps, and with the Lobito and TAZARA corridors serving as anchors, the continent has an opportunity to build regional e-mobility value chains. The final part of this report will examine how these corridors can be leveraged as catalysts for transitioning from extractivism to vibrant regional hubs that add critical mineral value.

PART THREE

As outlined in parts one and two of the report, the countries along the Lobito and TAZARA corridors possess complementary critical mineral endowments that could be strategically leveraged to create integrated value chains for lithium-based technologies, not only for electric vehicles but also for the broader battery storage industry. By establishing complementary processing hubs along integrated regional value chains, these countries can accelerate EV battery value addition.

3.1. Corridors as Catalysts

The Lobito Corridor provides crucial infrastructure for mineral transport and value addition. With coordinated planning, it could anchor an integrated regional value chain, with four major central nodes: a rare-earth mineral refinery in Angola, a cobalt refinery in the DRC, a copper refinery in Zambia, and a lithium refinery in Zimbabwe. By linking these processing capabilities, the region could lay the foundation for an integrated battery-electric vehicle value chain in Southern Africa.

The TAZARA Corridor significantly enhances regional integration and supply chain efficiency by providing landlocked Zambia and the DRC with a route through connected infrastructure. It is a vital export route for copper, cobalt, and other minerals crucial for battery manufacturing. The corridor enhances logistical flexibility, enabling regional minerals to reach Asian, European, and American markets and reducing dependence on Western or southern African ports alone.

Leveraging both the Lobito and TAZARA Corridors enables member countries to diversify their export routes, minimize geopolitical risk, and optimize transport costs. The Lobito Corridor strengthens west-flowing logistics from the DRC and Zambia to Angola's Atlantic coast, while the TAZARA Corridor facilitates eastbound flows to the Indian Ocean. This dual-corridor system increases bargaining power with external partners and investors, stimulating the development of processing hubs at key railway junctions. Thus, connecting the Lobito and TAZARA corridors represents a pivotal infrastructure strategy that could reshape the continent's economic trajectory. These two major transport arteries, currently operating as separate systems, have the potential to create an integrated network that maximises the economic benefits of Africa's mineral wealth while laying the foundation for comprehensive regional industrialisation.

The artificial boundary separating these corridors is more than a mere infrastructure gap. It represents a fundamental limitation on Africa's ability to leverage its vast mineral resources for sustained economic development. As established in Part One, the Lobito Corridor currently handles significant copper and cobalt exports, with transit times reduced by 68% compared to traditional routes.[81]. Meanwhile, the TAZARA railway provides an alternative route to the Indian Ocean.[82] However, these corridors operate independently, limiting their collective potential to support comprehensive value addition activities. Connecting these systems would create a transcontinental network spanning from the Atlantic to the Indian Ocean, enabling the establishment of strategic processing hubs at key nodes along the integrated route. Such centres could transform raw minerals into battery-grade materials, refined metals, and eventually finished products like electric vehicle components. This infrastructure integration would support the development of specialized economic zones focused on critical mineral processing, where copper from Zambia and the DRC could be refined alongside cobalt, lithium from Zimbabwe's reserves, and rare earth elements from regional deposits.

The strategic value of eliminating artificial boundaries extends beyond the Lobito and TAZARA corridors to encompass broader continental integration.[83] Similar connectivity projects, such as the proposed Beira-Lobito transcontinental road network spanning 3,523 kilometres, demonstrate the transformative potential of integrated transport infrastructure. These connections would enable the creation of "regional industrial policy leading to African-based value addition", where processing and manufacturing capacities break the continent's dependence on raw material

81 Anthony Davis(September12,2025), "*Lobito Corridor Set to Transform African Mining and Trade*"

82 MUFLIH HIDAYAT (Sep30,2025), "*China Signs $1.4 Billion Railway Deal with Zambia and Tanzania*" *China Seals $1.4B Deal to Revitalize Zambia-Tanzania Railway*

83 United Nations Zambia (October 2024) "Potential Impact of the Lobito Corridor and Support to the Regional Transformation Agenda" https://www.undp.org/sites/g/files/zskgke326/files/2024-10/lobito-corridor-policy-brief.up_.pdf

exports.[84] The integrated corridor system would facilitate the movement of materials between different processing stages, allowing bauxite from Guinea to be processed in Ghana, copper concentrate from Zambia to be refined in Angola, and lithium from Zimbabwe to be converted to battery-grade materials in specialized facilities along the route.[85] This approach mirrors successful regional integration models, in which shared infrastructure creates the economies of scale necessary for viable industrial development.[86]

Ultimately, the connected Lobito-TAZARA corridor system would serve as the backbone for establishing a comprehensive Electric Vehicle Battery hub across Southern and Central Africa.[87] The integrated network would position the region as a hub for battery manufacturing and processing, while facilitating the implementation of transboundary special economic zones, such as those proposed between Zambia and the DRC.[88]. By connecting Atlantic and Indian Ocean access points through a unified transport system, the integrated corridor would provide the logistical foundation for transforming Africa from a supplier of raw critical minerals into a global centre for battery production and clean energy technology manufacturing.[89] This transformation would create millions of jobs, increase the continent's GDP by an estimated 12%, and position Africa as a crucial player in the global energy transition, while ensuring that the benefits of its mineral wealth remain on the continent through comprehensive value addition activities.

3.2. Navigating Global Geopolitics

Part one of the report noted that the geopolitical landscape presents both opportunities and challenges that African countries must navigate collectively. China dominates global mineral processing, controlling 58% of lithium, 65% of cobalt, and 40% of copper processing globally. In response, the US and EU are working urgently to diversify their supply chains, creating opportunities for African producers to offer reliable, ethically sourced alternatives.

The African Continental Free Trade Area offers opportunities for African nations to collaborate to enhance the beneficiation of critical minerals, pool resources, share expertise, and develop regional value chains. By harmonising customs, trade, and transport rules across Angola, Zambia, and the DRC, AfCFTA can reduce regulatory fragmentation that currently slows corridor efficiency. Its provisions on progressive trade liberalisation, transparency, and administrative cooperation build accountability and make cross-border investment more attractive. Bilateral projects, such as the Zambia–DRC EV battery initiative, demonstrate what's possible: pooling resources, sharing expertise, and positioning Africa not just as a raw material supplier but as a manufacturer of high-value components for its own e-mobility needs and for the global energy transition.

Ultimately, collaboration would solve a constellation of interconnected problems that currently undermine the continent's ability to capitalise on its critical mineral endowments and achieve meaningful economic transformation.[90] The most immediate challenge is fragmented national markets and policies, which prevent the emergence of economies of scale necessary for viable value-addition infrastructure. Without regional collaboration, individual countries lack the market size to justify investments in sophisticated processing facilities[91]. Establishing a battery-grade lithium refinery or an electric vehicle component manufacturing plant requires supply and demand networks that transcend national borders. This fragmentation results in Africa exporting 85% of its mineral wealth in raw form while importing finished goods, thereby forfeiting an estimated 60% of the potential revenue from these resources.

Furthermore, inadequate and duplicated infrastructure remains a critical barrier that cross-border collaboration would address directly.[92] Transport costs in Africa can

84 Nii Simmonds (January 28, 2025) "Proposing Sustainable Development in Africa Through Local Value-Addition of Critical Minerals: A Blueprint" https://www.linkedin.com/pulse/proposing-sustainable-development-africa-through-local-nii-simmonds-6kvue

85 Policy Brief, "*Reimagining Africa's Critical Mineral Value Chains: From Extraction to Equitable Green Industrialisation in a Multipolar World*" *Reimagining Africa's Critical Mineral Value Chains: From Extraction to Equitable Green Industrialisation in a Multipolar World - T20 South Africa*. *Also see ecdpm website* (04 July 2022) "On transport corridors: People, profits, politics and patience" https://ecdpm.org/work/transport-corridors-people-profits-politics-patience

86 The World Bank website "Regional Integration" https://www.worldbank.org/en/topic/regional-integration/overview

87 Energy Transition (Aug6,2025), "*Why investing in Southern Africa's critical minerals is key for the global energy transition*" *Investing in Africa's critical minerals is key for net zero | World Economic Forum*

88 ECA (April 2024), "*Zambia and DRC to implement an Innovative transboundary battery and Electric vehicle Special Economic Zone*" *Zambia and DRC to implement an Innovative transboundary battery and Electric vehicle Special Economic Zone | United Nations Economic Commission for Africa*

89 UNDP Zambia website "Southern Africa Must Process Its Own Critical Minerals" https://www.undp.org/zambia/blog/southern-africa-must-process-its-own-critical-minerals

90 ECA (December22,2024), *"Africa's critical mineral resources, a boon for intra-African trade and regional integration"* *Africa's critical mineral resources, a boon for intra-African trade and regional integration | United Nations Economic Commission for Africa*

91 FRANÇOIS BAIRD (Nov 28,20240*),"Africa's continental free trade ambition"* *Barriers to African trade AfCFTA should address GIS Reports*

92 Ziwei Kang "The Impact of Transport Infrastructure Development in Africa on the Development of Regional Integration in Africa" vol. 16 (2023) *Highlights in Business, Economics and Management* WTED 2023.

reach 30-40% of intra-regional trade values due to disconnected road, rail, and port systems, with inadequate transport infrastructure adding $50-90 billion annually to the continent's development costs.[93] Countries currently build separate, underutilised infrastructure corridors rather than integrated networks, resulting in costly duplication and inefficient logistics systems that make African mineral processing uncompetitive compared to Asian and European alternatives.[94] Regional collaboration would enable coordinated regulatory frameworks.[95] Currently, individual frameworks impose divergent national standards on local content, taxation, environmental compliance, and licensing.[96] Thus, it creates a complex patchwork that discourages cross-border investment and prevents the optimization of production centers across multiple countries. Additionally, collaboration would address the skills and technology deficit by enabling the pooling of expertise across borders.

Finally, unified regional action would address power asymmetries in global negotiations, allowing African countries to collectively bargain for better terms on technology transfer, infrastructure financing, and market access rather than competing against each other in bilateral arrangements with external partners.[97] By presenting a coordinated continental strategy rather than 54 separate national approaches, Africa could leverage its collective control over approximately 30% of global mineral reserves to secure meaningful participation in downstream value chains and ensure that economic benefits remain on the continent.[98]

3.3. Value Chain Integration and Policy Coordination

The AfCFTA provides a crucial framework for harmonising customs, trade, and transport regulations across Angola, the DRC, and Zambia. It emphasises progressive trade liberalisation and regulatory balancing. Its protocols specifically promote administrative cooperation by eliminating quantitative restrictions on imports and by encouraging mutual administrative assistance with customs authorities. The agreement facilitates cross-border investment and technology transfer, directly addressing the regulatory fragmentation that currently constrains corridor efficiency.

The AfCFTA's transparency clauses further require state parties to publish trade requirements, taxes, and barriers to entry, creating the accountability mechanisms necessary for sustained political commitment to regional integration. By leveraging these existing frameworks, corridor countries can accelerate the regulatory alignment required for seamless integration of the mineral value chain.

Through enhanced regional collaboration, these countries can present a stronger bargaining position to external partners and avoid competing with them and a race to the bottom. Success requires harmonised mining codes, shared infrastructure development, and coordinated policies that enable the seamless flow of materials, skills, and investment across borders, ultimately transforming Africa from a supplier of raw materials to a manufacturer of high-value battery components for its e-mobility industry and the global energy transition.

3.4. Building Resilience Through Regional Hubs

Integrating the Lobito and TAZARA Corridors would unlock investment in local refining and manufacturing, helping Africa capture a greater share of value in the global battery supply chain. By creating regional value-addition hubs, African countries can reduce their dependence on raw exports, strengthen economic resilience, and respond to surging global demand for transparent and traceable battery materials.

Strategic regional value-addition hubs should be established at key nodes along the integrated Lobito and TAZARA Corridors to unlock investment in local refining and manufacturing, enabling Africa to capture a greater share of value in the global battery supply chain. Kolwezi in the Democratic Republic of Congo, already the world's cobalt capital with significant copper production, should be developed as a premier cobalt and copper refining hub, building upon existing operations and establishing integrated hydrometallurgical processing facilities and special economic zones that advance beyond hydroxide production to bat-

93 Adam Straker (September 25, 2025) "Bridging Africa's Infrastructure Gap: Unlocking Economic Potential Through Innovative Procurement" https://www.edgeworthbox.com/bridging-africas-infrastructure-gap-unlocking-economic-potential-through-innovative-procurement/

94 Peter Clearkin, Tycho Möncks, Lindokuhle Shongwe, and Milan Chibabhai (August 22, 2025) "Harnessing Africa's Critical Mineral Opportunity: Africa Unleashed" https://www.bcg.com/publications/2025/harnessing-africas-critical-mineral-opportunity

95 Afreximbank website (14 February 2025) "EVP Awani sees Africa's critical minerals as pathway to continent's industrial development" https://www.afreximbank.com/evp-awani-sees-africas-critical-minerals-as-pathway-to-continents-industrial-development/

96 The Southern African Times (November 4,2025) *"Africa's Fragmented Approach Stalling Critical Minerals Beneficiation and Industrial Growth"* *Africa's Fragmented Approach Stalling Critical Minerals Beneficiation and Industrial Growth*

97 Africa Center for Strategic Studies (May20,2025), *"Africa's Critical Minerals at a Critical Juncture"* *Africa's Critical Minerals at a Critical Juncture – Africa Center*

98 Ana Munoz Padros and Jean-Michel Bos (September 15, 2025) "Critical minerals could supercharge Africa's future" https://www.dw.com/en/critical-minerals-could-supercharge-africas-future/a-73210311

tery-grade materials.[99]. Ndola and Lubumbashi in Zambia[100] and the DRC's[101] Copperbelt regions, respectively, should host complementary copper-refining and cathode-production facilities, leveraging their established metallurgical infrastructure and proximity to mining operations to process concentrate into refined copper for battery applications. [102]

Along the Lobito Corridor, Longonjo near Huambo, Angola, which hosts one of the world's largest undeveloped rare-earth deposits, should anchor a rare-earth processing complex producing mixed rare-earth carbonates for battery magnet materials, capitalising on its direct rail access to the Lobito port and abundant hydropower.[103] Harare in Zimbabwe should be positioned as a lithium refining hub, where the country's vast lithium reserves can be processed from concentrate to lithium sulfate and ultimately battery-grade lithium hydroxide or carbonate, with multiple facilities already under construction by international investors.[104] Finally, Dar es Salaam port in Tanzania should serve as an Eastern anchor for value addition along the TAZARA corridor, establishing battery materials storage, blending, and logistics facilities that consolidate processed minerals from the DRC and Zambia Copperbelt for regional and international markets.[105]

These strategically positioned regional hubs, interconnected through the Lobito and TAZARA railway corridors and supported by the AfCFTA framework, would reduce Africa's dependence on raw mineral exports. Processed battery materials from these regional value-addition hubs would primarily serve three major market destinations representing 80% of projected global battery demand by 2035: China, the United States and North America, and the European Union, with emerging demand from South Korea, Japan, and other Asia-Pacific manufacturing centers. And, with the establishment of the African Union's coalition of critical mineral-producing countries, these hubs would be able to strengthen economic resilience through regional integration and respond to surging global demand for transparent, traceable, and sustainably sourced battery materials essential to the clean energy transition.

99 C. Iacò , C. Bansal, *"BUILDING THE VALUE CHAIN: FROM EXTRACTION TO CELL MANUFACTURING"* Opportunities and Challenges of Lithium Battery value chain in Africa - Bonsai Technology

100 Adekunle Agbetiloye (July 2025),*" Zambia plans $1.1 billion oil refinery in copperbelt to cut fuel imports"*
Zambia plans $1.1 billion oil refinery in copperbelt to cut fuel imports | Business Insider Africa

101 ECA (May3,2025), *"BEV Initiative: the DRC government and Buenassa company to set up a cobalt and copper refinery in Lualaba"* BEV Initiative: the DRC government and Buenassa company to set up a cobalt and copper refinery in Lualaba | United Nations Economic Commission for Africa

102 United Nations Zambia (October 2024) "Potential Impact of the Lobito Corridor and Support to the Regional Transformation Agenda" https://www.undp.org/sites/g/files/zskgke326/files/2024-10/lobito-corridor-policy-brief.up_.pdf

103 DFC, *"Supporting development of a rare earth processing facility in Angola"* Supporting development of a rare earth processing facility in Angola | DFC. *Also see* John Zadeh (August 28, 2025)
"The Lobito Corridor: Africa's Strategic Gateway to Critical Minerals" https://discoveryalert.com.au/news/lobito-corridor-africa-2025-gateway-critical-minerals/
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John Zadeh (August1,2025), *"Africa's Critical Minerals: Powering the Global Battery Race"* Africa's Critical Minerals: Key to Global Battery Race

104 Efcon Agency, *"Zimbabwe: Four Major Firms Plan Lithium Processing Plants"* Zimbabwe: Four Major Firms Plan Lithium Processing Plants - Ecofin Agency
bne IntelliNews (March 2025), "*Global metal giants consider Dar es Salaam Port for African expansion"*

105 bne IntelliNews (March 25, 2025) "Global metal giants consider Dar es Salaam Port for African expansion" https://www.intellinews.com/global-metal-giants-consider-dar-es-salaam-port-for-african-expansion-373337/


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