# Africa Unleashed: Harnessing Africa's Critical Mineral Opportunity

A Strategic Blueprint for Sovereign, Sustainable, and Scalable Growth





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### **Executive Summary**

The global economy is entering a new era—one powered not by fossil fuels, but by critical minerals. These materials are the foundation of the 21st-century industrial transition, enabling clean energy, digital infrastructure, advanced manufacturing, and other technologies. From electric vehicles and power grids to semiconductors and smartphones, the technologies shaping the future increasingly depend on secure, sustainable access to these essential resources.

By 2040, global demand for critical minerals<sup>1</sup> is expected to more than double. Yet today's supply systems are slow, fragile, and heavily concentrated. In response, governments and industries are racing to build more diversified and resilient value chains—turning mineral access into a strategic priority with geopolitical and economic consequences.

For Africa to fully unlock its mineral opportunity, it must move beyond fragmented efforts and advance a shared agenda across the entire mining value chain, from exploration and extraction to infrastructure, processing and higher-value exports. As a continent, it should act deliberately and collectively to advance regional coordination, build value chains that reflect mutual benefit and industrial depth, create institutions that enable investment, develop talent and embed ESG excellence.

The choices made in this decade will determine whether Africa remains a supplier of raw inputs or becomes a strategic actor in a new industrial order.

<sup>1.</sup> A critical mineral is one that is (a) strategically essential to modern energy systems, digital technologies, or infrastructure; and (b) subject to a large and growing supply-demand imbalance (globally, or regionally) - driven by underinvestment, concentration risk, and geopolitical tension—which inflates prices and amplifies its economic value.



# Africa has the opportunity to sit at the center of the critical minerals transformation

Africa, the home of some of the world's largest production hubs for cobalt, copper, platinum group metals and manganese—as well as vast undeveloped reserves of lithium and rare earths—is uniquely positioned to emerge as a critical node in global supply chains. Despite this dual advantage, most African countries remain stuck in the past: heavily reliant on (stagnating) upstream extraction of legacy materials, while failing to advance the development of future-facing reserves or move down the

value chain. The result is a cycle of underutilization, in which finished goods, high-quality jobs, and technological capabilities are imported, and opportunity is exported.

This report sets out a strategic blueprint to unlock Africa's full value chain advantage: a path to sovereign, sustainable, and scalable growth. It outlines three key levers for transformation:

#### Levers to unlock Africa's full value chain advantage



**Attract** investment through credibility and consistency

Clear regulations, streamlined approvals and embedded ESG standards will make African countries more attractive for long-term, sustainable investment

Namibia is leading by example: Policy reforms and ESG commitments have spurred major investments in rare earths and lithium, including EU-backed supply deals.



Forge global alliances and catalvze ecosystem development Strategic alliances with offtakers can bring concessional finance, technical know-how and long-term buyers, de-risking, investment and boosting capabilities

Morocco is leading by example: Positioning itself as a global hub for phosphate-based battery materials and green industrial exports through established partnerships across the EU and China.



**Build regional** value chains through intra-African collaboration

Intra-African collaboration enables distributed value chains—where countries specialize across extraction, processing and manufacturing to maximize shared value

DRC & Zambia are leading by example: Co-developing infrastructure and policy alignment to link cobalt and copper extraction to regional processing and export, through the Battery Minerals Corridor initiative.



**Attract investment through** credibility and consistency:

Investor confidence is built on clarity and predictability. Africa must lower factual and perceived barriers to investment through streamlined regulations, accelerated and responsible permitting, and standardized incentives—including access to concessional finance.



**Build regional value chains** through intra-African collaboration:

No single country can master the entire mining-tomanufacturing continuum alone. Together, African nations can build integrated, distributed value chains.



Forge global alliances and catalyze ecosystem development:

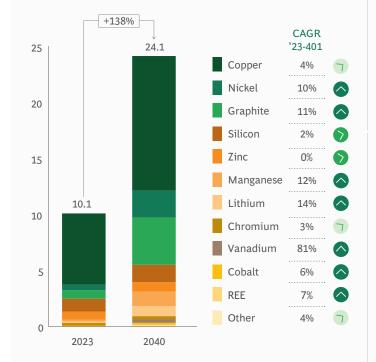
Africa needs more than capital—it needs partners. By forming strategic alliances with offtaker nations, Africa can secure long-term demand and gain access to concessional financing, technology, and expertise.

Africa has the minerals. It has the momentum. And, for the first time in generations, it has the leverage. If it acts decisively, the continent can shape—not just serve—the next global industrial era.

## Global critical minerals demand and prevalence of critical minerals in Africa



#### Global critical minerals demand Mineral demand from green energy tech (Mt)



1. Compound Annual Growth Rate (CAGR) using demand figures from the IEA stated policies scenario Source: International Energy Agency

..positioning Africa as a key region due to the high prevalence of critical minerals

Prevalence of critical minerals across African countries<sup>2</sup> Non-Exhaustive

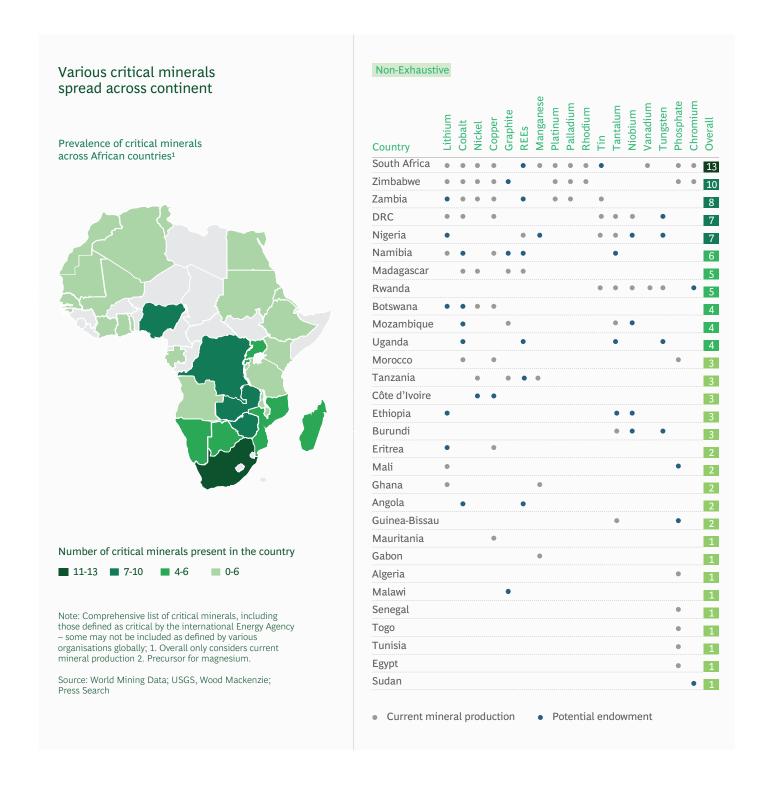


Number of critical minerals present in the country

**■** 11-13 **■** 7-10 **■** 4-6 **■** 0-6

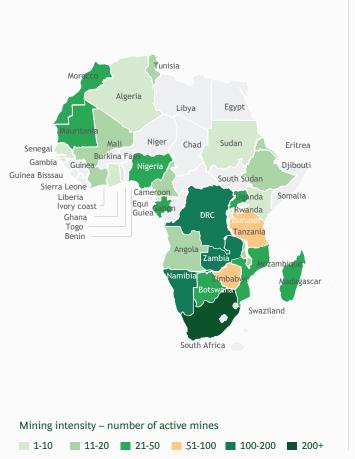
2. Critical minerals include current mineral production and potential endowment 3. Total list of critical minerals includes: cobalt, copper, graphite, lithium, magnesite, manganese, nickel, niobium, palladium, platinum, rhodium, phosphate, rare earths, tantalum, tin, tungsten, vanadium. Source: S&P Global, USGS and Wood Mackenzie

#### Critical minerals production and endowment across African countries



#### Mining and processing activity in the African continent

Africa has yet to realize its full geological potential in both mining and processing. Mining activity is concentrated in the SADC and processing is comparatively limited



Mining intensity illustrated by number of active

mines - activity concentrated largely in SADC

Processing illustrated by number of active processing sites – large proportion of processing activity concentrated in DRC, Zambia & South Africa



1. South Africa; 2. Democratic Republic of the Congo
Note: Minerals tracked by S&P include platinum, copper, graphite, vanadium, tin, nickel, potash, iron ore, phosphate, lithium, lanthanides, manganese, tungsten, zircon, zinc, cobalt, chromium, niobium, tantalum, palladium, titanium.Sources: CapitallQ Pro; Mo Ibrahim Foundation: Africa critical minerals; PIIE: Building Downstream Capacity for Critical Minerals



## A new global order: the mineral race reshaping the world

The 21st-century global economy is undergoing a foundational shift. As nations move to decarbonize energy systems and digitize infrastructure, a new class of strategic resources has emerged at the center of global ambition: critical minerals.

These minerals are not niche commodities—they are enablers of transformation. They power electric vehicles and solar panels, underpin data centers and other

new technologies, and form the backbone of cleantech supply chains and advanced manufacturing. In this new industrial order, control over mineral inputs increasingly determines industrial resilience, technological competitiveness, and geopolitical influence.

So, what makes a mineral "critical"?

- **1** Strategically essential to modern energy systems, digital technologies, or infrastructure; and
- 2 Subject to a large and growing supply-demand imbalance (globally, or regionally) driven by underinvestment, concentration risk, and geopolitical tension—which inflates its price and amplifies its economic value.

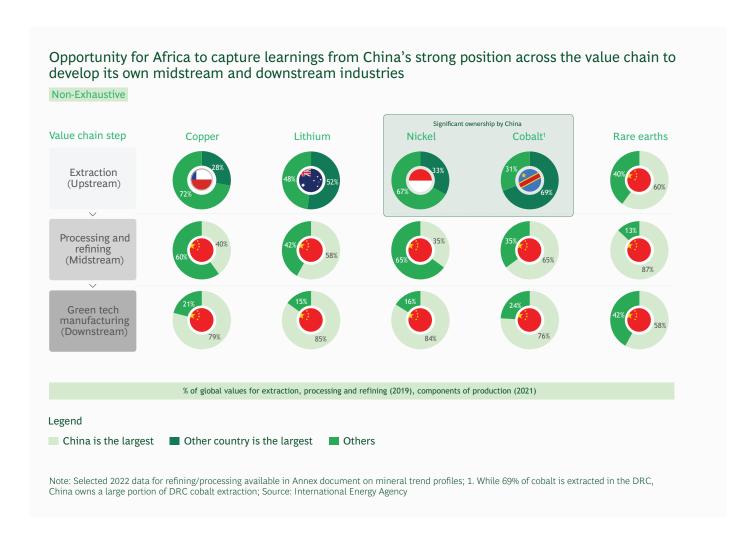
By 2040, demand for these minerals is expected to more than double. But supply is not keeping pace. Mines are slow to develop. Environmental permitting is complex. Critically, refining and processing capacity is heavily concentrated in a few markets—creating a structural vulnerability in global value chains. Today, a single country dominates the midstream of many critical minerals, from refining to component production.

In response, countries are rethinking industrial policy with a renewed focus on self-sufficiency and strategic resilience. In the US, both the Inflation Reduction Act and the protectionist rhetoric re-emerging around the Trump administration reflect a bipartisan push to secure clean energy supply chains and rebuild domestic manufacturing. The EU has introduced its Critical Raw Materials Act to reduce reliance on imported processing and increase autonomy. Japan, Korea, India, and others are forging strategic partnerships, investing in upstream and midstream capacity, and reshoring supply wherever possible. These shifts are not just about cost or efficiency—they are about sovereignty and security.

This is no longer a commodity cycle. It is a global realignment of economic power around the materials that will shape the future. In this race, Africa is no longer on the sidelines. It is already on the map—and increasingly has the opportunity to position itself in the middle.

#### **EXHIBIT 5**

#### Major players across selected critical minerals value chains





## **Africa's natural endowment:** the world's most strategic geological reserve

Africa is more than a mineral-rich continent it is a strategic force in the global energy and industrial transition.

With vast, high-grade, and largely untapped reserves, Africa owns a disproportionate share of the world's critical

minerals. These resources are not only essential to clean energy, electrification, and digital infrastructure, they are also becoming increasingly valuable due to intensifying global competition, supply bottlenecks, and rising geopolitical pressure.

What sets Africa apart is not just the scale of its endowment, but the timing, geography, and leverage it offers.

As countries across Europe, North America, and East Asia accelerate efforts to decarbonize and reindustrialize, demand for these minerals is surging. At the same time, global buyers are under pressure to reduce their dependence on a handful of dominant processing and production hubs. This is opening a unique window of opportunity: Africa is increasingly seen not just as a source of raw materials, but as a potential strategic partner in reconfigured supply chains.

This growing demand creates leverage, opening up new pathways to:

- Attract long-term capital through offtakebacked investments and concessional finance;
- Negotiate stronger terms on infrastructure, technology transfer, and local content;
- Partner globally to build capabilities, advance traceability, and share in downstream value.

In short, Africa has what the world needs—but it must move quickly to convert this moment of strategic relevance into durable economic and industrial gains.

Unlike regions constrained by legacy infrastructure or sunk industrial pathways, African nations have the

opportunity to leapfrog by building modern, transparent, and digitally-enabled value chains from the ground up. They can include Environmental, Social and Governance (ESG) and traceability systems in designs from the start, rather than retrofitting them under pressure.

Some countries are already moving ahead. The DRC is formalizing artisanal mining, investing in local refining, and exploring a landmark minerals-for-security partnership with the US that would link critical mineral access to regional stability. Namibia has signed strategic mineral agreements with the EU and the US, including a deal to support clean energy supply chains. Rwanda is pioneering digital traceability in tantalum exports. Zimbabwe is introducing value-added export requirements on lithium. These are not isolated efforts—they are early signals of a continental shift towards long-term positioning.

But to turn a geological advantage into sustained economic value and strategic influence, ambition must be matched with action. The reserves are real. So is the opportunity.



## From extraction to transformation: breaking structural barriers across the value chain

Despite its vast geological wealth, Africa remains constrained at both ends of the mineral value chain. Many countries struggle to scale sustainable upstream production, hampered by fragmented regulation, weak infrastructure, and high capital costs, while simultaneously capturing little value beyond extraction. Refining, processing, and manufacturing activities largely occur elsewhere, leaving the continent exposed to price volatility and missing out on industrial and strategic gains.

This dual constraint—stagnating upstream development and limited on-continent processing capacity—is not rooted in a lack of ambition. It stems from a set of interlocking structural barriers that prevent African countries from moving up the value chain and transforming their mineral endowments into lasting economic power.

Infrastructure gaps are a foundational constraint. Many producing regions lack reliable energy, industrial water, efficient roads, or access to ports, which limits the viability of investment across the value chain.

Regulatory fragmentation and uncertainty discourage long-term capital. Mining codes, permitting timelines, and fiscal terms often shift without warning. Weak institutional capacity further undermines investor confidence, even when policy intent is strong.

Finance is scarce and expensive. High upfront capital requirements, long project timelines, and political risk premiums combine to make Africa one of the most challenging regions for mineral-linked investment, particularly in value-added activities.

Workforce readiness lags behind the opportunity. While Africa has the world's youngest population, the specialized skills required to operate advanced industrial, energy, and logistics systems are in short supply, especially for downstream manufacturing and technology-based sectors.

ESG concerns, including those tied to artisanal and small-scale mining, affect market access. Without systems for verification and traceability, African minerals risk exclusion from premium global markets that now demand full compliance and accountability.

These challenges are deep-rooted, but the opportunity cost of delay is rising fast. As demand for critical minerals accelerates, the question is no longer whether Africa will participate in global value chains, but at what level, and on whose terms.

Addressing these barriers requires more than national reform. It demands regional coordination, global engagement, and a new model of development—one that enables countries to move from extraction to transformation, and from resource providers to value creators.

#### **EXHIBIT 6**

#### Structural challenges across the African continent





## From stagnation to transformation: Africa's strategic pivot

The global race for critical minerals presents Africa with a pivotal choice: remain a supplier of raw inputs, or become a full participant in the industries they power.

Across the continent, a strategic pivot is taking shape. It is guiet in some places, bold in others—but the direction is clear. Growing numbers of African countries are moving to capture more value across the full mineral chain: from responsible extraction, to local processing and refining, to the manufacture of components and the export of higher-value, compliant products.

This pivot is not about abandoning extraction. It is about transforming it, by embedding it within a broader industrial strategy that creates jobs, builds capabilities, and strengthens negotiating power.

Governments are beginning to act:

- **1** Some are formalizing informal mining to improve social outcomes and supply chain credibility.
- 2 Others are investing in logistics corridors, grid upgrades, and energy access to unlock industrial zones.
- 3 Several are signing long-term agreements with global buyers that include provisions for local beneficiation, skills transfer, and infrastructure development.

These are not isolated efforts—they are signals of a broader shift. Africa is no longer satisfied with supplying inputs to other countries' transitions. It is positioning itself as a strategic actor in a new global economy: one that demands cleaner, faster, and more resilient value chains.

The opportunity to leapfrog is real. Many African countries are not locked into legacy infrastructure, sunk industrial costs, or entrenched technologies. This allows for cleaner, digital-first approaches to mineral development, where traceability, sustainability, and inclusivity are designed in from the start.

Regional integration is also advancing. Initiatives like the African Continental Free Trade Area (AfCFTA) and transnational logistics projects, such as the Lobito Corridor, are beginning to stitch together fragmented markets and enable scale. These platforms can support distributed industrial ecosystems: one country extracts, another processes, a third manufactures—sharing value while building collective competitiveness.

Ultimately, this is not just a policy shift. It is a mindset shift. It reflects a recognition that Africa's minerals are not just a source of short-term rents, but a platform for long-term industrial transformation, energy leadership, and economic sovereignty.

#### **EXHIBIT 7**

Case studies outlining how African countries have progressed their critical minerals industries

In response to global trends, African countries are localising and upgrading critical mineral value chains through policy, investment, ESG and other innovative solutions Industrial policy and Strategic partnerships ESG innovation and local value capture and corridor models market credibility Introduced new rules in 2023 Launched joint industrial Rolled out blockchain to encourage local processing zones in 2022 to process tracking in 2021 to verify that cobalt and copper into battery 100% of tin and tantalum of critical minerals, leading to a \$20M rare earth project materials, supported by exports from LuNa Smelter with Japan African development banks are responsibly sourced Required new lithium, Signed a \$1.2B deal with Launched a vanadium battery graphite, and rare earth a local firm to build a bauxite plant in 2022 producing 8M mine and alumina refinery. litres per year for energy projects to include local processing, with a \$130M storage, through a \$20M helping grow domestic public-private partnership graphite plant now underway aluminium production Tightened controls on raw Renegotiated its diamond Partnered with a Chinese lithium exports in 2022, deal with De Beers in 2023, firm to build a \$1.2B battery attracting \$1.1B in investgaining more local sales rights factory that will process local ment, including a major and securing a \$712M fund for cobalt and manganese for battery-grade plant jobs and skills electric vehicles

Source: Namibia and Japan Sign Rare Earths Agreement - rawmaterials.net, JV Article: Namibia Critical Metals advances Lofdal heavy rare earth project with Japan's JOGMEC – The Northern Miner, Epanko Graphite Project Completes Processing Plant Design and Secures Key Debt Financing – Tanzanialnvest, Zambia and DRC Sign Cooperation Agreement to manufacture electric batteries | United Nations Economic Commission for Africa, Ghana signs \$1.2 billion deal to develop its bauxite resources - MINING.COM, LuNa Smelter partners with Minespider, Google, RMB to pilot blockchain technology in Rwanda, Turning South Africa into a global battery storage powerhouse - ESI-Africa.com, China's Gotion High Tech to set up \$1.3 billion EV battery gigafactory in Morocco | Reuters



## The case for investment: socio-economic benefits

Mining is already a core pillar of Africa's economic landscape. It contributes an estimated 5-10% of GDP in many countries and over 40% of total export value across the continent. In some of the largest producing economies, mining also accounts for a substantial share of government revenue and formal employment.

But the opportunity today extends far beyond maintaining the status quo. By investing in capability and competitiveness across the entire mining value chain, from responsible exploration and extraction to processing, infrastructure, logistics, and end-use manufacturing, Africa can unlock transformational socio-economic gains:



#### 1 GDP Growth

Expanding value-added activities across the chain increases the total economic output of mineral development. Each step, from geological surveys and mine construction to logistics, processing, and component production, adds new sectors and multipliers to national economies.



#### 2 Job Creation

The full mining value chain supports a wide range of employment, from mine operators and geologists to engineers, construction workers, transporters, technicians, and industrial managers. This diversity of roles offers both low- and high-skills opportunities, particularly in rural and industrializing areas.



#### 3 Infrastructure Investment

Development across the value chain requires major upgrades in energy, transport, water, and communications systems. These investments also benefit local communities and broader economic development.



#### 4 Government Revenues

Mining already plays a major role in fiscal stability across Africa. By increasing domestic participation in higher-value segments, such as contracting, services, and logistics, governments can expand their tax base and reduce reliance on volatile commodity royalties.

This is not about choosing between upstream and downstream. It's about building strategic capacity from end to end, ensuring that Africa's mineral wealth

## 5 Skills Development

A more integrated value chain demands new capabilities, ranging from environmental compliance and digital monitoring to materials handling and industrial design. This creates long-term demand for vocational education, technical training, and local innovation ecosystems.



#### 6 Economic Diversification

Expanding the ecosystem around mining, such as manufacturing inputs, engineering services, and supply chain management, helps countries reduce their dependence on raw mineral exports and builds resilience to global price shocks.



By formalizing artisanal activity, strengthening environmental and social safeguards, and encouraging community participation in planning and benefit sharing, value chain development can be a driver of equity, not just output.



#### 8 Global Relevance

Countries that invest in full value chain performance, not just volume, can position themselves as reliable, ethical, and efficient partners in global mineral markets.

This strengthens negotiating leverage and opens doors to long-term, premium-aligned buyers.

becomes a platform for structural transformation, inclusive development, and long-term prosperity.



Potential socio-economic benefits from investing in critical minerals mining and processing



1. Assumes a 60:40 split between developing a new mine and constructing associated processing facilities (beneficiation) – benefits assumed at steady state 2. Calculates 2023 mining GDP and estimated capital stock to estimate GDP uplift 3. Calculates company, personal income tax and royalties paid based on 2023 sector total income proportioned based on 1% of capital base 4. Assumes a typical large-scale mining and processing facility creates 1,000-2,000 direct jobs – indirect and induced jobs added through a 4-5X industry multiplier 5. Based on Impala Platinum's Waterberg project estimate

Source: MINCOSA Facts & Figures 2023, IFC Economic Impact Estimation Framework, Mining Indaba 2023 public statements, MINCOSA Integrated Annual Review 2023





## A continent-wide playbook: from potential to power

Africa has the mineral resources. The question now is whether it can build the systems, alliances, and institutional capability to turn that wealth into lasting economic and strategic power.

In the global race for critical minerals, success hinges not only on reserves, but on co-ordination, credibility, and capacity—the ability to align interests, attract long-term investment, and negotiate from a position of strength. For Africa to fully unlock its mineral opportunity, it must move beyond fragmented efforts and advance a shared agenda across the entire mining value chain, from exploration and extraction to infrastructure, processing, and higher-value exports.

#### Attract investment through credibility and consistency

Investor confidence is built on clarity and predictability. Africa must lower factual and perceived barriers to investment through streamlined regulations, accelerated and responsible permitting, and standardized incentives, including access to concessional finance..

Equally important is embedding ESG standards and traceability into the value chain from the outset. By embracing transparency and digital traceability tools, Africa can turn compliance into a competitive edge. Pan-African exploration strategies and openaccess geological data will further strengthen the investment case by reducing early-stage risk.

#### Build regional value chains through intra-African collaboration

No single country can master the entire mining-to-manufacturing continuum alone. But together, African nations can build integrated, distributed value chains, where one country extracts, another processes, and a third manufactures. Regional blocs such as the SADC, ECOWAS, and EAC offer immediate platforms for aligning policies, sharing infrastructure, and co-ordinating investment.

These regional hubs must be co-developed with global and private sector partners, underpinned by harmonized standards and joint planning. The goal is mutual benefit: accelerating industrialization while minimizing duplication and inefficiencies, as reflected in BCG's publication, "The mineral shortage is a growing problem - Hubs offer a solution".

#### Forge global alliances and catalyze ecosystem development

Africa needs more than capital—it needs partners. By forming strategic alliances with offtaker nations, Africa can secure long-term demand and gain access to concessional financing, technology, and expertise. These partnerships can include floor/ ceiling pricing mechanisms to provide revenue stability.

At home, governments must shift from regulators to enablers, establishing institutions that can derisk early-stage projects, structure cross-border agreements, and co-ordinate blended finance solutions. Talent development is a key differentiator: investing in technical education, vocational training, and digital skills will enable local transformation and reduce dependence on foreign expertise.

With political alignment, bold execution, and the right partnerships, Africa can shift from being a source of raw materials to a global leader in sustainable mineral value chains.



## Conclusion: Africa's critical decade

Africa stands on the cusp of industrial transformation. With its rich endowment of minerals that are essential to the world's energy, infrastructure, and digital future, the continent holds not just resources, but leverage.

This is not a story about what lies in the ground. It is a story about what Africa does next—with strategy, with scale, and with sovereignty.

The global race for critical minerals is already well under way. Governments are redesigning industrial policy. Companies are reshaping supply chains. Capital is moving fast. In this race, Africa is not a bystander—it is a focal point. The choices made in this decade will determine whether the continent remains a supplier of raw inputs or becomes a strategic actor in a new industrial order.

To succeed, Africa must act, deliberately and collectively. That means:

- Advancing regional co-ordination as a foundation for continental leadership
- **Building value chains that reflect** mutual benefit and industrial depth

This is a generational opportunity. If Africa aligns ambition with execution, it can capture far more than economic value. It can reshape its role in the global economy, owning more of the value it creates and setting the terms of its engagement with the world.

- **Creating institutions that enable** investment, not just oversee it
- **Developing talent and partnering globally** to accelerate learning and innovation
- **Embedding ESG excellence to** define—not chase—standards

The time to act is now. Africa's minerals are not just a competitive advantage. They are a strategic one.

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