

# Strategic Approaches to Critical Minerals and Korea-Africa Cooperation

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## I. Introduction

The green transition and shifts in industrial paradigms have intensified the global competition for critical minerals essential to renewable energy systems and electric vehicles.

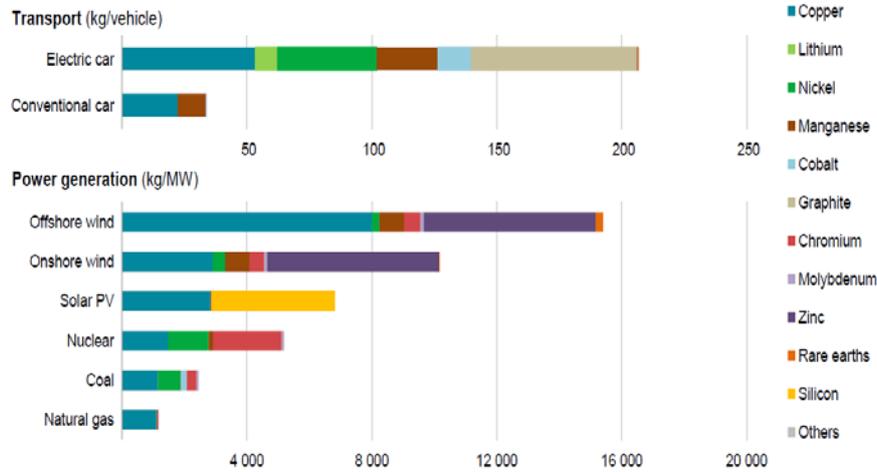
An electric vehicle requires six times more minerals than a conventional vehicle, while constructing an onshore wind power plant demands nine times more minerals than a gas-fired power plant. This highlights how the global transition toward clean energy technologies is driving a shift from a fuel-intensive system to one increasingly material-intensive.

The demand for critical minerals such as lithium, cobalt, nickel, graphite, and rare earth elements (REEs) has recently surged. Between

2017 and 2022, the market size of copper increased by 1.5 times, lithium by 6.7 times, nickel by 3.1 times, cobalt by 1.9 times, and rare earth elements by 2.5 times.

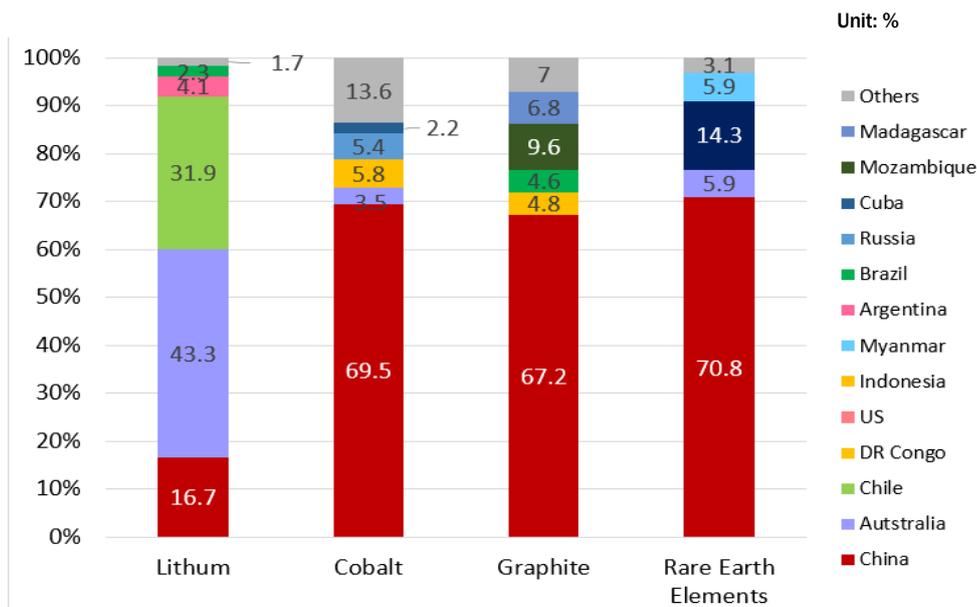
The rising demand for critical minerals has created more complexities in global supply chains because the supply of these critical minerals is highly concentrated. A few countries dominate production and processing—most notably China, which processes over 60% of global lithium and nearly 90% of rare earth elements. This concentration poses significant risks to global economic stability, exposing supply chains to geopolitical tension, export restrictions, and market manipulation.

Figure 1. Demand for Minerals by Technology



Source: IEA(2021)

Figure 2. Main Producers of Critical Minerals



Source: Federal Ministry of Finance, Austria (2024)

## II. Status of Africa’s Minerals and Global Cooperation

Africa, with its abundant reserves of these minerals, is emerging as a key partner for economic diversification. Africa holds approxi-

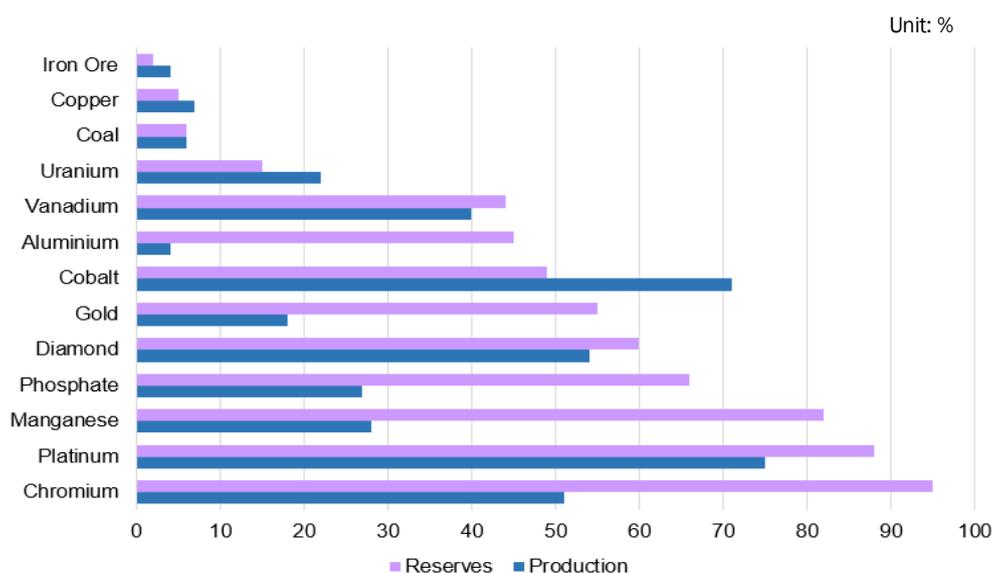
mately 20% of the world’s reserves of minerals essential for electric vehicle production and energy transition.

Africa’s strategic importance in future critical mineral supply chains is underscored by its vast resource endowment, being home to 95% of global chromium reserves, 88% of platinum,

82% of manganese, 66% of phosphate, and 49% of cobalt, among others. Additionally, more than 70% of the world's cobalt, over 60% of manganese, 25% of bauxite, 15% of copper, and a significant share of natural graphite are

produced in African countries such as South Africa, the Democratic Republic of the Congo, Tanzania, Mozambique, Zimbabwe, Madagascar, Morocco, and Guinea.

**Figure 3. Share of Africa's Minerals to World Production and Reserves**



Source: Deloitte (2024)

**Table 1. African Producers by Mineral (2022)**

Mineral	Producers
Lithium	Zimbabwe, Nigeria
Nickel	Madagascar, South Africa, Cote d'Ivoire, Zimbabwe, Zambia, Morocco
Cobalt	DR Congo, Madagascar, Morocco, Zambia, South Africa, Zimbabwe
Manganese	South Africa, Gabon, Ghana, Cote d'Ivoire, Zambia, Kenya, Morocco etc.
Graphite	Mozambique, Madagascar, Tanzania
Rare Earth Elements	Madagascar, Burundi, Tanzania etc.
Platinum	South Africa, Zimbabwe
Copper	DR Congo, Zambia, South Africa, Morocco, Botswana, Eritrea etc.
Bauxite	Guinea, Sierra Leon, Ghana, Tanzania, Mozambique
Titanium	Mozambique, South Africa, Madagascar, Kenya, Senegal etc.
Chromium	South Africa, Zimbabwe, Madagascar, Sudan, Ethiopia

Source: World Mining Data (2024)

African mineral-producing countries have been reforming their mining laws to strengthen state ownership of mineral resources. Governments have enhanced control over mining activities through licensing systems and expanded their role in mining operations through institutionalizing royalty collection. At the same time, tax incentives have been introduced to attract investment and improve the overall business environment.

Despite its abundant mineral reserves, Africa has often been sidelined in global dialogue on mineral partnerships, trade, and investment. While the continent holds significant potential driven by its critical mineral wealth, growing population, regional integration, and industrialization, it faces significant challenges stemming from commodity price volatility, rising mineral development costs, poor infrastructure, and weak governance. Addressing these challenges through coordinated and strategic measures is essential to unlocking Africa's potential in global critical mineral supply chains.

### III. Global Cooperation with Africa

Global players, including the U.S., European Union, Canada, China, and Japan, have been intensifying their engagement with African countries to secure supplies of critical minerals and enhance resilience in their mineral supply chains. Their approaches to cooperation differ based on factors such as regional resource endowments, the nature of private sector involvement, and priority industries.

#### 1. European Union

As part of its digital and green transitions, the EU has prioritized cooperation on critical raw materials for clean technology. The EU has launched initiatives such as the European Raw Materials Alliance (ERMA) and enacted the Critical Raw Materials Act (CRMA) to provide comprehensive support for securing stable raw material supplies, establishing responsible supply chains, promoting resource recycling, and advancing a circular economy.

While enhancing its domestic production and processing capacity for critical minerals, the EU is also pursuing import diversification. In this context, it is expanding cooperation with Africa as part of its efforts to reduce dependence on China. Particularly, the EU is strengthening its cooperation with Africa in developing infrastructure through the EU-Africa Global Gateway investment package and joint communication “Towards a Comprehensive Strategy with Africa,” aiming to build sustainable value chains for the green transition.

#### 2. United States

The United States prioritizes stabilization of mineral supply chains as a strategic imperative to safeguard industrial competitiveness and national security. Facing competition from China's dominance in the upstream and mid-stream segments of the global minerals supply chains, the U.S. is actively promoting domestic investment to revitalize its critical mineral manufacturing sector, while simultaneously working to diversify its international sources of supply.

The U.S. has taken a proactive role in multi-lateral partnership for critical minerals through the Minerals Security Partnership (MSP), launched in 2022 with partners including the EU, Japan, and South Korea. This alliance seeks to bolster the resilience of global supply chains by supporting investment in responsible mining and processing across partner countries including African mineral-rich countries.

However, current U.S. mineral imports from Africa are largely limited to manganese, natural graphite, and cobalt. The involvement of U.S. private companies in the region remains modest compared to their counterparts from the EU and Chinese.

Recently, the U.S. has advanced infrastructure initiatives, including the Lobito Corridor railway project, to strengthen supply chains for copper, nickel, and cobalt in Africa. This effort aims to improve the region's logistics and establish a transport route to the Atlantic Ocean, thereby enhancing access to African critical mineral resources.

### 3. Canada

As a mineral-rich country, Canada has focused on strengthening its domestic mineral industry, while actively engaging in international cooperation. The Canadian government prioritizes policies that promote domestic infrastructure development and attract foreign investment, while emphasizing respectful engagement with Indigenous communities. Indigenous participation has been formalized in

mineral policy-making and project assessments.

Canada has cultivated a business-friendly environment through a range of tax incentives that support the growth and competitiveness of its domestic mineral companies. Canadian private sector participation in Africa's mining sector has grown significantly, with more than 100 Canadian companies active in the region. In recent years, Canadian investment in African mining has significantly increased, thereby strengthening Canada's presence on the continent.

### 4. China

China, as both a major supplier and consumer of critical minerals, holds a dominant position in the mid- and downstream segments of the global critical mineral supply chains, particularly in refining. It sources raw ores from overseas mines, refines them domestically, and subsequently exports the processed products to global markets.

China has been actively expanding its investments in overseas mineral resources including those in Africa. China's model of large-scale investments and infrastructure-based trade deals led by the government and state-owned enterprises has enabled it to secure long-term access to mineral resources.

Africa is a strategically vital region for China to secure both industrial minerals such as aluminum, copper, and iron ore, and critical minerals including cobalt and lithium. Between 2007 and 2023, the mining sector accounted

for 42.6% of China's total investment in Africa. To facilitate this investment, the Chinese government has laid the groundwork for mineral investment through multilateral cooperation platforms and bilateral agreements, with state-owned enterprises taking the lead in implementation.

However, a recent shift has been seen toward increased investments by private Chinese companies. Zimbabwe, a main lithium-producing country with substantial untapped lithium reserves, has become a main destination of these investments.

In turn, mineral-producing African countries are calling on China to contribute local value addition in the mining sector. In response, China has pledged to expand mineral processing activities within Africa and support the broader industrial development of host countries.

## 5. Japan

Japan, as a net importer of critical minerals, has steadily advanced its resource diplomacy, while actively supporting private sector investment through joint funding and targeted support measures.

Historically, Japan's mineral investment in Africa has been concentrated in South Africa, focusing on platinum group metals, chrome, and manganese. However, the growing global demand for battery minerals has prompted Japan to expand its diplomatic and investment efforts across the continent.

These activities are primarily led by the Japan Organization for Metals and Energy Security (JOGMEC), which provides comprehensive support to private companies. This includes financial instruments such as equity participation, loans, and debt guarantees alongside non-financial assistance such as technical support, data collection, and geological surveys.

## IV. Challenges in Africa

In Africa, the so-called "resource curse" has become evident, with the abundance of natural resources in some cases impeding rather than promoting economic growth. African countries lacking significant resource endowments have made notable strides in diversifying their economies, whereas those heavily dependent on resource exports continue to struggle with economic structural transformation. This contrast underscores the importance of how resource wealth is governed and managed.

The rising demand for critical minerals driven by the global green transition has expanded mining activities, often resulting in various environmental and social challenges that impact human security. Environmental issues include increased greenhouse gas emissions, biodiversity loss, hazardous waste generation, and water scarcity. Social challenges involve land loss and displacement of indigenous peoples, poor labor conditions, human rights violations, and child labor. In addition, countries where mineral exports dominate the economy often experience higher levels of corruption and governance vulnerabilities.

In response to these risks, ESG standards in the mining sector are being strengthened through international initiatives that stress corporate transparency, environmental accountability, and enhanced technological cooperation across supply chains. However, recent trends indicate a potential softening of ESG compliance in critical mineral supply chains as companies face mounting cost pressures, and concerns over greenwashing. This trend is likely to persist in the near term.

## V. Policy Recommendations

Korea can advance its comprehensive cooperation with Africa across the entire value chains including geological research, mineral exploration and development, refining and processing, and the construction of transport and energy infrastructure. This cooperation should also encompass capacity building in the mining sector, promoting ESG compliance, and exploring opportunities in emerging areas such as deep-sea mining.

Korea's cooperation with African countries in critical minerals can be strengthened through the following three strategic policy directions: i) tailoring cooperation to the evolving policy contexts of African regions and countries, ii) strengthening resource diplomacy and enhancing multilateral and bilateral cooperation, iii) expanding financial, fiscal, and non-financial support to promote greater private sector engagement.

First, Korea's engagement must be grounded in a deep understanding of Africa's evolving

policy landscape and local conditions. Many mineral-producing countries are revising their policies to attract foreign investment and shifting away from the traditional export of raw materials toward strengthening domestic value chains. This includes developing processing and beneficiation facilities, and ultimately industrial upgrading into sectors such as electric vehicle manufacturing as part of a comprehensive value chain strategy.

To foster value chain development, African countries are seeking cooperation in building transport and logistics infrastructure, advancing economic integration through the African Continental Free Trade Area (AfCFTA), and capacity building in the mining sector.

Given Korea's comparative advantage in infrastructure development over overseas resource development, its cooperation model should be designed as integrated packages combining mineral development with infrastructure construction. Additionally, Korea should support green industrialization in Africa by promoting the adoption of clean technologies and assisting in the development of ESG policies and technical standards.

Second, provided that mineral resources are often state-owned and strategically managed, sustained government-level resource diplomacy is crucial. Korea should institutionalize high-level platforms such as the "Korea-Africa Critical Minerals Dialogue" launched during the first Korea-Africa Summit in 2024. Regular multilateral and bilateral dialogue will ensure continuity, policy coherence, and mutual trust in cooperation on critical minerals.

**M**ineral development projects typically involve long lead times, averaging around 17 years from exploration to production. In the African context, constraints such as inadequate infrastructure and high market entry risks further underscore the need for sustained and long-term support at the government level.

**T**hird, expanding financial and non-financial support will be essential to incentivize the private sector to engage in mineral resources and infrastructure development in Africa. The mineral development projects are inherently capital-intensive and high-risk, making it difficult for Korean companies to participate in early project stages or in large-scale consortiums. To overcome these barriers, the Korean government should improve the enabling environment for private investment into overseas resource development by diversifying funding sources, offering incentives, and enhancing financial de-risking mechanisms through policy finance, export credit, and ODA-linked instruments.

**G**iven the substantial capital required for overseas mineral and infrastructure development projects, the Korean government should collaborate with major development finance

institutions (DFIs) and export credit agencies (ECAs) to provide co-financing, facilitate private capital inflows, and strengthen risk monitoring systems for high-risk investments. As part of its broader efforts, the government has established the “Supply Chain Stabilization Fund” in 2024, which can be used to prioritize projects that integrate overseas resource development with infrastructure construction. This should be strategically aligned with official development assistance (ODA), policy finance, and export credit instruments.

**I**n parallel, bolstering the operational capability of support institutions and fostering a skilled workforce in the mining sector will be instrumental in expanding the ecosystem of resource development in Korea.

**T**o secure stable and diversified critical mineral supply chains, Korea should take strategic and long-term approach to its cooperation with Africa. This involves not only acting as a resource and infrastructure developer but also as a partner in building sustainable value chains and advancing a just transition. **KIEP**