

A New Paradigm for Managing Mineral Trade Routes in Africa

By Baba Freeman

Abstract

The African Copper belt is a major supplier of key minerals such as Copper, Nickel, and Cobalt to the world economy. Extracting and transporting these minerals to market will be essential to the success of the energy transition as demand for solar and wind energy, and battery metals soar exponentially over the next three decades. In contrast, the dismal state of road infrastructure for transporting the minerals from mine to port creates a major impediment to the commercial competitiveness of miners in the region and threatens economic rents accruable to host countries and communities. This commentary describes a new paradigm that could radically transform the design of solutions to ease logistics problems in the region.

Importance of mineral exports to south African economies

The southern African region contributes substantial quantities of key minerals such as Copper, Nickel, Cobalt, and Lithium whose demand is expected to grow rapidly over the next two decades due to global economic growth and rapid adoption of electric vehicles and clean energy technologies. The Democratic Republic of Congo (DRC) and Zambia currently produce about 13 percent of global Copper while the DRC alone produces about 63 percent of global Cobalt mine output. South Africa, Zambia, and Zimbabwe together account for about 2.5 percent of global Nickel production for which demand is forecasted to grow 19x by 2040 relative to 2020. Cobalt demand is expected to rise 21x over the same period. African lithium reserves comprise about 5 percent of global reserves, and its demand is forecasted to rise 42x by 2040 relative to 2020. Copper demand is also expected to rise from 6 million metric tons (MT) per year to between 11 million and 16 million MT by 2030 with copper production forecasted to be in a deficit of about 9 million metric tons by 2030.¹ Figure 1 below highlights the significance of southern African mineral production and its growth potential.

¹ USGS (2022), The British Geological Survey (2021), International Energy Agency (IEA) 2021, 2022, S&P Global 2022.

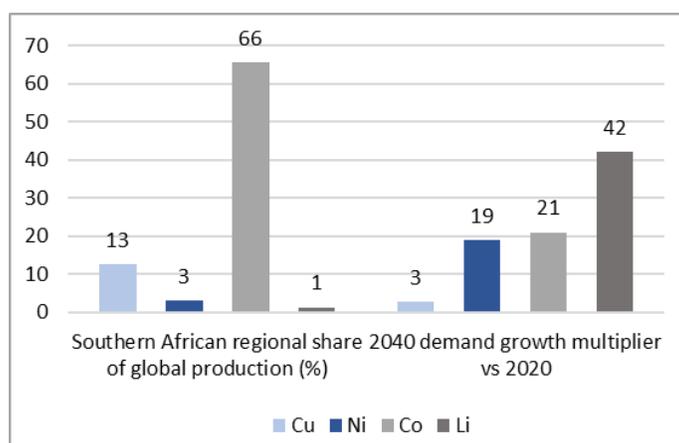


Fig.1: Southern African regional share of global production and 2040 demand multipliers vs. 2020.²

Table 1 below shows some socio-economic metrics of the countries along the transport route from the copper belt to the port of Durban (excluding South Africa). The region is defined by low per capita GDP ranging from about \$584 in the DRC to \$7348 in Botswana, and low growth rates averaging less than 2.5 percent per year between 2017 and 2021. The latter metrics along with the low penetration of electricity in the region, about 19 percent in the DRC and 53 percent in Zimbabwe, are indicative of widespread poverty and economic underdevelopment. Mining activities, however, contribute substantially to the regional economy, for example, ores and metals exports contribute about 45 percent to the total merchandise exports of Zimbabwe and more than 74 percent of the total merchandise exports of Zambia and the DRC.³

Table 1: Socio-economic overview of countries along the mine-to-port route.

	Botswana	DRC	Zambia	Zimbabwe
Population in 2021 (millions)	2.4	92.4	18.9	15.1
% of population living under \$2.15/day	15%	64%	61%	40%
GDP per capita in 2021 (current US\$)	7348	584	1121	1737
Ores & metals (% of merchandise exports)	1.6	74.2	78.8	44.8
2017-21 average GDP growth (%/yr)	2.8	4.3	1.9	0.6
Access to electricity (% of population)	71.99	19.10	44.52	52.75

Given their relatively low developmental status, southern African countries face an urgent need to revitalize and accelerate economic growth. Transformation of their transportation infrastructure will be essential to increasing the economic contributions of mining activities in the copper belt to regional economies.

² Note: 2040 Demand growth multiplier based on top of the range for 2030 IEA forecasts i.e., 16 million MT/yr.

³ World Development Indicators 2021, The World Bank. Accessed 11/09/22.

The current state of mine-to-port transportation in southern Africa

Figure 2 below illustrates the major transport routes from the African copper belt to the main export terminal in Durban, South Africa. The journey, a distance of about 1900 miles, currently takes up to a month.⁴ Recent accounts describe inefficient border processes and poor road infrastructure that have led to severe road congestion and weeklong delays at border crossings along the route. These conditions can adversely impact the economic prospects of extraction projects in the copper belt by increasing operating costs and delaying cash receipts. In addition, mine operators face the risk of disruption if inputs such as spare parts are delayed in transit or lost due to theft and other criminal activity. The overall picture shows heightened challenges to the development prospects of communities along the route and calls for better management and increased investment in infrastructure.

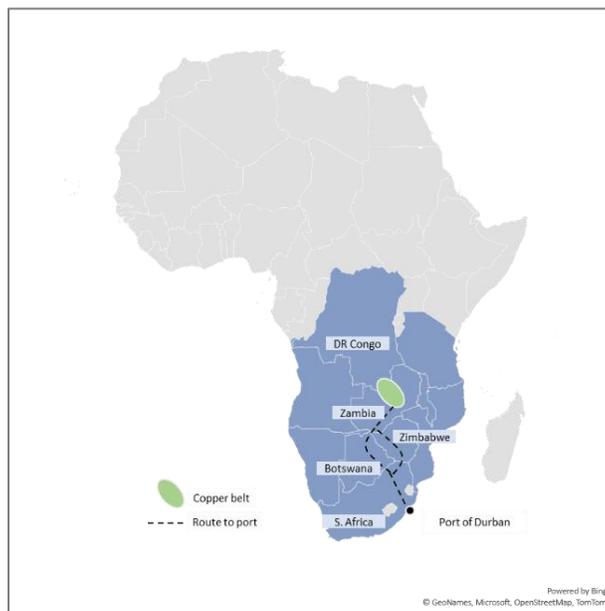


Fig.2.: Evacuation route from the copper belt to the main export terminal.

A new paradigm for managing mine-to-port routes

To address the delays caused by customs processes at the borders and the dismal state of road infrastructure between the mines of the copper belt and the export terminal, the governments of the DRC, Zambia, Zimbabwe, Botswana, and South Africa should consider expanding the role of the private sector in managing these transportation assets. Historically, the private sector has played a major financial and operational role in the extraction of mineral resources in the copper belt, and without their participation, it is unlikely that countries in the region could have achieved the same level of mining output as they do today. In contrast, it is remarkable that the private sector has not been welcome to partake in the management of mine-to-port transport routes in the region. Private sector participation can increase the institutional capacity and managerial skills needed to build, operate, and

⁴Hill, Matthew, *The Metals for Your EV are Stuck in a 30-Mile Traffic Jam*, Bloomberg, 11/03/2022.

maintain the roads and bridges along the route resulting in efficiency improvements and shorter transit times between the mines and the marketplace. Thus, the case can be made that private sector participation can enhance the economic rewards from the region's mineral endowments for greater benefit to host countries and communities.

Consequently, national governments should consider establishing special-purpose corporate entities to own and operate international transportation routes from mines to export terminals. This proposed operating entity should be governed by principles consistent with public-private partnerships and reflect the following attributes.

- **Ownership and control:** Ownership of the special purpose entity should comprise the major stakeholder groups such as the corporate entities which have active economic stakes in the upstream extraction activities, national host governments of the DRC, Zambia, Botswana, Zimbabwe, and South Africa. To enhance management decision-making, state and local government interests should be represented and conveyed through the participation of each national government in corporate governance decisions such as those relating to strategy, investment levels, and operating philosophy.
- **Commercial mindset:** For financial and commercial sustainability, the special purpose entity should operate on commercial terms and adequate definition and clarification should be made regarding tariff rates, revenue-sharing formulae, corporate taxes, and royalty rates across all operational jurisdictions. Embedding a commercial mindset may also encourage alignment between operational management processes and the economic and social needs of other stakeholders.
- **Transparency:** The special purpose operating company would produce annual management and audited financial reports according to international financial disclosure standards and thus promote openness and transparency for improved governance and accountability for mining activities in the region.
- **Security:** In addition to transportation, the special purpose entity should also be responsible for security along the route from the mine to the port. The nature of security arrangements regarding the geographical jurisdiction around the right of way, security personnel levels, funding levels, and the demarcations of responsibility boundaries with national security agencies would need to be agreed upon in detail. Incorporating security into overall network operations management may help to reduce the total costs of security for both the mining companies that rely on the road network and the host governments along the route. Improved security can also help lower insurance rates and attract more investment into the sector.
- **Open access:** The special purpose entity should operate the road network on an open access basis, i.e., it should ensure that no group of users is privileged over others, and act without prejudice to other road users.
- **Issue resolution and legal jurisdiction:** Disagreements amongst stakeholders and other disputes in the management and operations of the road network should be settled in international law courts with supranational jurisdiction. Emphasis should be given to equality of access by any aggrieved stakeholder and to maintaining neutrality in the adjudication process.

- **Sustainability and corporate social responsibility:** Where feasible, the special purpose entity should be mandated to incorporate some corporate social responsibility activities within its operational areas. While care should be taken not to burden the entity with excessive non-core obligations, at the minimum, it should commit to an operating philosophy that emphasizes respect for the sustainability of food production and the maintenance of adequate water quality levels for communities along the route.

It must be noted, however, that private participation in the proposed special purpose entities for managing the mine-to-port transport routes may face substantial political backlash if the arrangement is perceived as a loss of sovereignty by national governments and a ceding of economic control to overseas business interests. Therefore, a robust stakeholder management strategy should be considered integral to the success of this policy thrust.

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