

FROM ORE TO MORE: MINERAL PARTNERSHIPS FOR AFRICAN INDUSTRIALISATION

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SUMMARY

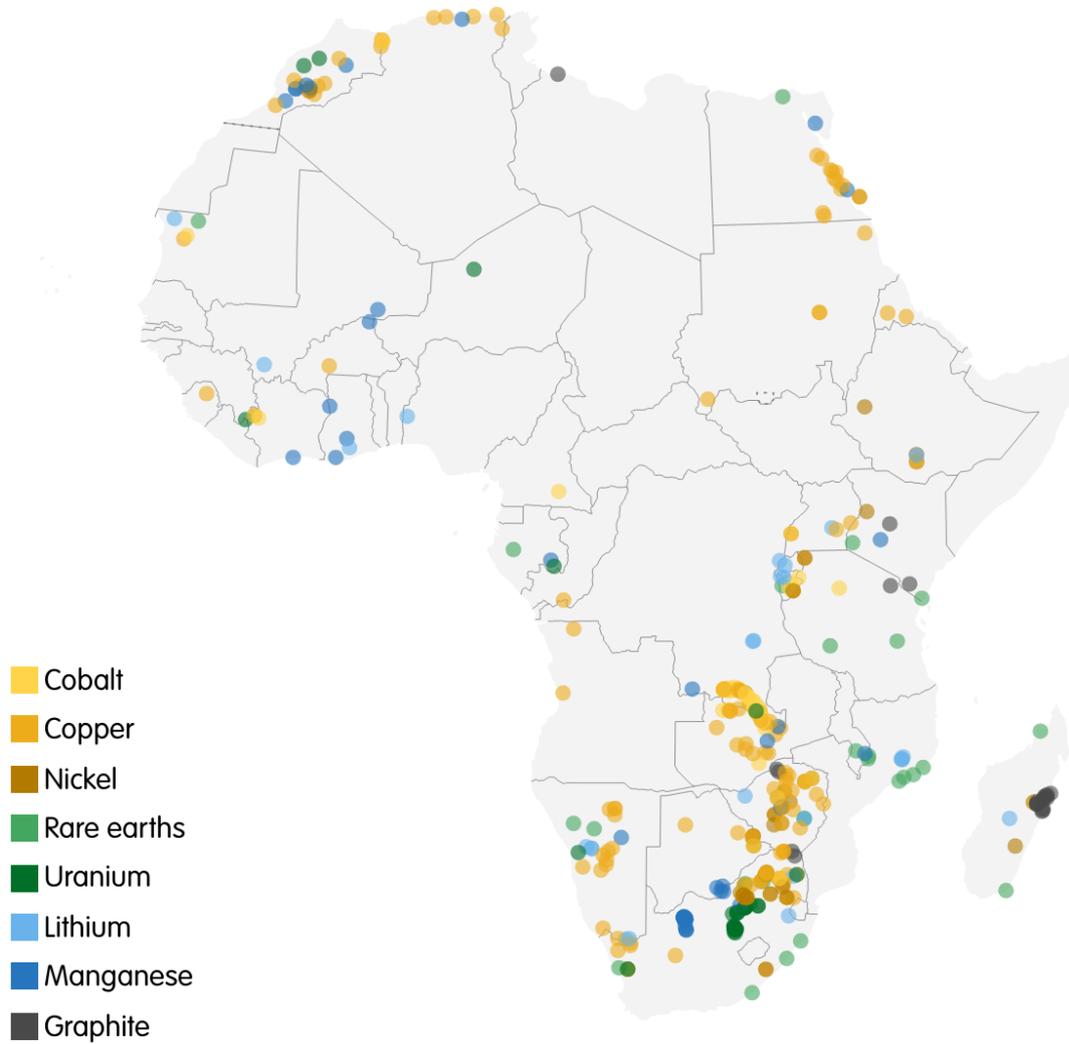
- The future of European energy and military security depends on secure and diversified sources of critical minerals. Currently, however, the EU heavily relies on supply from China—its strategic rival.
- Direct sourcing from African countries presents an alternative. But after a long history of seeing minerals simply extracted and exported, African governments are keen to keep more stages of mineral processing and manufacturing, known as value addition, on home soil.
- The EU has signed critical mineral agreements with several African countries, yet progress on local value addition projects has been slow. And while African countries have ambitious agendas to produce consumer goods, EU authorities see Africa’s role as more limited to mineral processing.
- To help realise their ambitions, African governments are imposing export restrictions on unprocessed minerals. But to make local value addition economically viable and attractive for foreign investment, more on-the-ground reforms and investments are needed.
- To be better partners, Europeans should make policy adjustments to encourage European participation in African mineral value chains. In a sector crowded with other powers, most notably China, a genuine commitment to supporting local value addition in African partner countries will make the European offer stand out.

A critical moment

Despite possessing around one-third of the world's mineral resources, African countries have little to show from decades of mining. From Europe to America, China to the Gulf, global powers have taken huge volumes of valuable minerals from Africa to power their own industrial growth. In Zambia, for example, after nearly a century of copper production, the country's industrial capabilities are still largely limited to producing copper wires and cables. Similar stories echo across the continent: between 2016 and 2022, 73% of the announced greenfield foreign direct investment (FDI) projects in sub-Saharan Africa went towards extraction. Only 26% were for processing and manufacturing.

Burgeoning global demand for critical minerals has given African governments leverage to change this. They are now pushing to unlock more domestic value addition: the more stages of mineral processing that happen locally, the more their economies can industrialise. Local value addition can create direct and indirect jobs, increase the scale and sophistication of industry, raise foreign currency earnings and bring governments higher tax revenues. To guide these efforts, in December 2024 the African Union launched the African Green Minerals Strategy, which aims to build key value chains by “ensuring industrialisation through local beneficiation, green technology manufacturing, and mineral-based economic transformation”. A growing number of African governments share the strategy's goals and are implementing national policies designed to keep more of the processing of their resources on their soil.

Selected critical and low carbon minerals in Africa. Known mineral occurrence sites and deposits (2021)



Source: USGS
ECFR · ecfre.eu

Things are changing for Europe's minerals industry, too. Its historical involvement in Africa's mining sector has diminished in recent years. European companies are now struggling to compete with a growing crowd of other powers surging ahead in securing access to Africa's critical minerals, not least China. Yet the future of Europe's industries relies on a secure supply of critical minerals, which are core components in everything from solar panels to electric batteries, smartphones to military equipment. If they are to stay in the race, European governments need to work with their African counterparts to realise the latter's value addition ambitions.

Europeans cannot afford to miss out on this chance to diversify their supply chains. As geopolitical tensions grow with Beijing, European countries' heavy reliance on China for processed critical minerals puts their energy and military value chains at risk. To protect them, Europeans need to secure their own supply from other resource-rich countries. China has already demonstrated it is willing to use its mineral supply chain dominance as a geoeconomic weapon. Retaliating against President Donald Trump's tariffs in April, Beijing restricted its rare earth exports, hitting US companies hard. Beyond de-risking, there is a strong business case for European firms to establish midstream processing and downstream manufacturing facilities in Africa rather than Europe. The cost of establishing and operating a 10,000 tonne battery precursor facility in the Democratic Republic of the Congo (DRC), for example, would be 40% lower than in Poland, given Europe's higher energy, labour and land costs.

Recognising the need to partner with mineral-rich African countries, the EU has signed mineral and energy strategic partnerships with the DRC, Namibia, Rwanda and Zambia. As our previous brief details, these partnerships include EU commitments to support more mineral value addition being done in these countries, in the hope this will make its offer more favourable than that of its competitors. These agreements also aim to encourage Europe's private sector to participate in mining and local value addition to create new and more diverse sources of critical minerals. To date, however, European participation in these activities has been negligible, although there are some European suppliers of mining equipment and services. For Europe's industries to have the minerals they need from reliable and diversified sources, European policymakers will need to invest more and partner effectively with their African counterparts.

Mineral-rich African countries share many of the same structural challenges in getting value addition off the ground. To understand the opportunities, prospects and difficulties of local mineral value addition in African countries, we look at two promising countries the EU has partnered with: Namibia and Zambia. Both governments have stated ambitions to increase

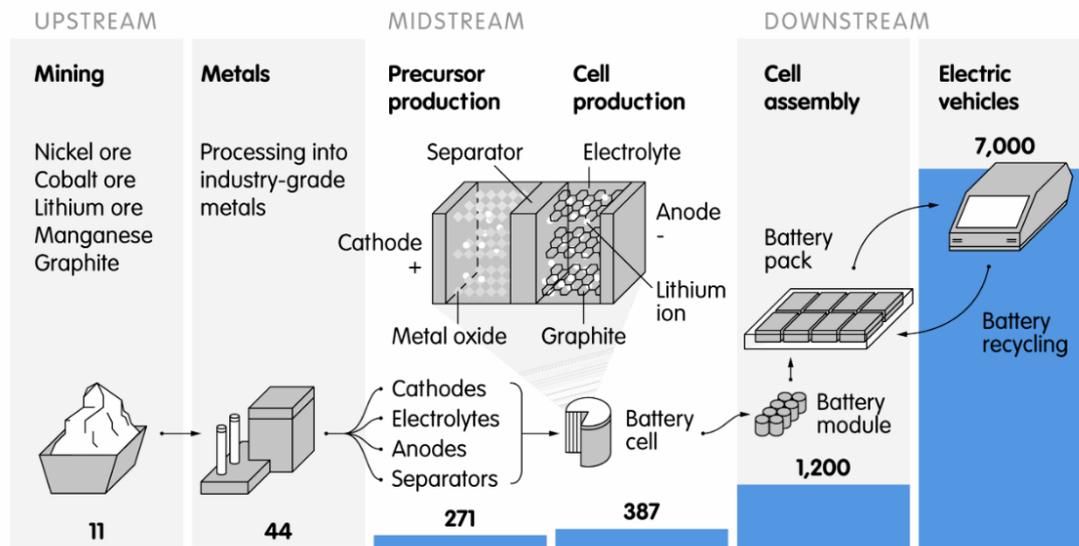
domestic value addition. Unlike the other African countries the EU has agreements with, they also offer a degree of political and economic stability and do not pose risks arising from conflict (as in the DRC) or supply chain challenges associated with potential illegal smuggling of minerals (like in Rwanda). As such, they provide a relatively safe entry point for risk-averse European firms.

This paper's findings are based on focus groups, interviews and workshops conducted in Namibia and Zambia between September 2024 and February 2025. As well as revealing how Europeans can collaborate with these countries to achieve more local value addition, it sheds light on how their offer compares with that of other powers. It concludes with recommendations for how European and African policymakers can work together to achieve more mineral value addition in African countries, and in turn, give Europe a chance to sustainably diversify its mineral supply chain.

The value of addition

Value addition in mining refers to when minerals like nickel, cobalt and lithium are processed and used to manufacture intermediate and final products such as battery precursors, electric vehicle battery cells, and electric vehicles themselves. As shown below, manufactured consumer products require many steps across multiple value chains.

Estimated value of the battery mineral and electric vehicle value chain by 2025. In \$bn



The value chain outlined here represents the value addition stages that culminate in the production of consumer goods; it does not encompass activities upstream of mining.

Source: Heinrich Böll Foundation; L.E.K.; Argonne National Laboratory.
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Value addition operations require different processing and manufacturing technology, processes and expertise and must be done by specialised firms. Mining companies' specialisation, on the other hand, is limited to mineral extraction and varying degrees of mineral processing of the ore grades. Expanding local value addition capabilities therefore needs a healthy ecosystem of processors and manufacturers, as well as firms to supply them with goods and services. This requires conditions that support industry, including: available raw materials, adequate and competitively priced electricity and other utilities, affordable financing, a stable regulatory environment, good transport infrastructure, a skilled workforce, and either sufficient domestic demand for mineral products or easy access to export markets.

Like many resource-rich African nations, Namibia and Zambia fall short of meeting some of these conditions. But creating more value addition in these countries is not an impossible task. While challenging, there are opportunities for these governments and their European partners to create the right conditions for such industry to thrive.

If European governments are to succeed in their ambitions to expand Europe's participation in critical mineral supply chains, they need more than the mineral resources of African countries. They will also have to unlock midstream and downstream processing capabilities in African countries. This would achieve a win-win outcome: it could help African countries industrialise, give European countries access to a secure supply of more cost-competitive mineral products, and strengthen economic and political ties between the two continents.

Local content—the participation of local firms in supply chains for both mining and value addition operations—is explored [in a previous ECFR paper](#). Here, we focus on the prospects of local value addition, rather than on who owns the companies participating in these activities. Together, these papers argue that processing more minerals locally and a greater involvement of African companies are key to boosting the value that resource-rich African countries can retain from the extraction of their minerals.

Mind the expectations gap

The details of the strategic partnerships the EU has signed with Namibia and Zambia give the impression the parties are reading off the same script on increasing local value addition. Beneath the bureaucratic language, however, there is little consensus on how the two sides define and approach it.

The Namibian and Zambian stakeholders we spoke to for this research said they want domestic value addition to extend to the manufacturing of consumer goods. In their view, mineral processing steps such as crushing, separating, leaching, smelting and refining minerals into concentrates do not suffice as full value addition. [1] This perspective takes the broadest definition, representing a highly ambitious agenda that aligns with these countries' wider development goals. However, it is also an agenda that lacks realism unless the conditions for industrial growth are improved—neither country has the necessary industrial ecosystem to make this a reality yet. They would need to take a pragmatic approach of gradually ascending the value chain, building the necessary skills, capabilities and infrastructure with each step.

The EU has not advanced a definition of value addition as such, but the scope of its partnerships conveys which steps in the value chain it is willing to support taking place in African partner countries. The strategic partnership with [Namibia](#), for example, covers the “exploration, extraction, processing, refining, recovery, and recycling” of minerals in the country. Although some degree of manufacturing semi-finished and consumer products is foreseen under the partnership, it is framed as part of establishing integrated value chains

that connect local value addition in Namibia to industry abroad. This presumably envisions that the more advanced steps in the value chain would take place in Europe. Similarly, while the strategic partnership with Zambia also includes “end product value addition” in its scope, it pays considerably more attention to earlier stages in the value chain. This narrows the scope for value addition in African partner countries mainly to processing, although the reality is that processing currently has a low base and would need to be expanded before further value addition will be possible. The EU has recently granted “strategic project” status to a cobalt processing plant in Zambia, operated by Kobaloni Energy Zambia Limited, which indicates support for mineral processing in the country. Projects further along the mineral value chain are yet to be seen, however.

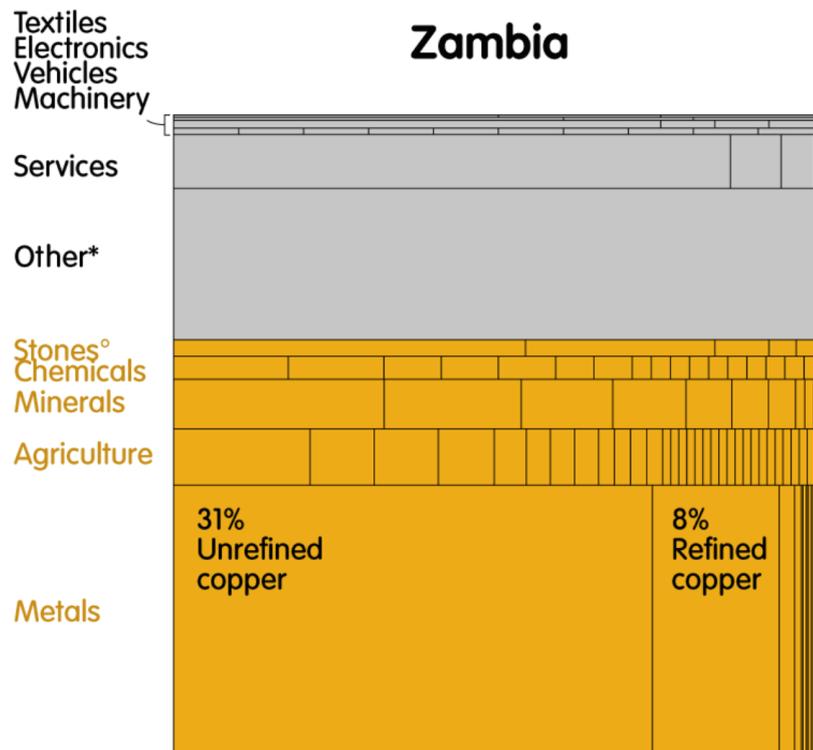
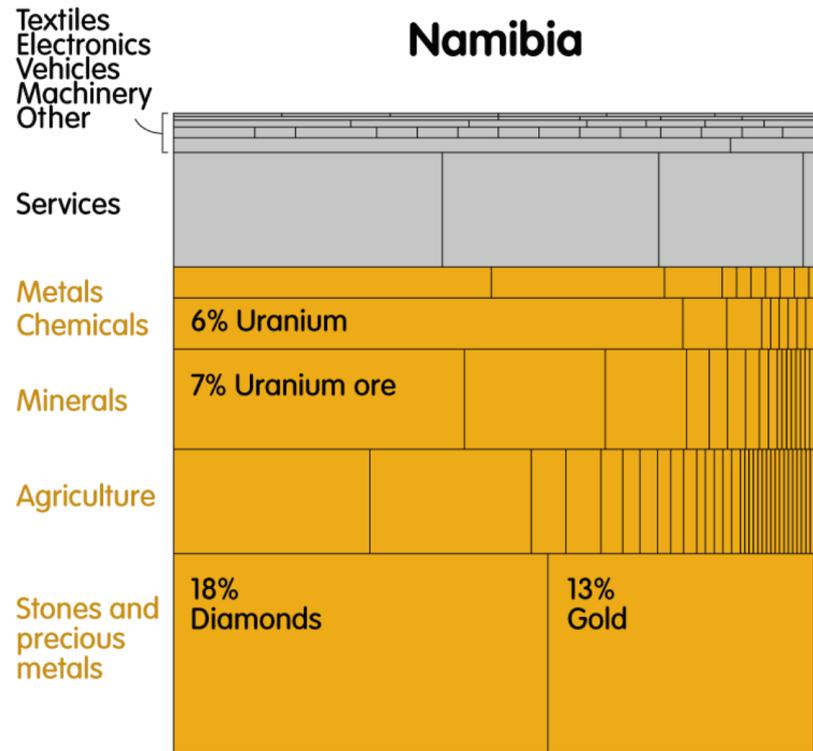
The EU’s approach therefore limits these countries mostly to upstream mineral processing, while potentially reserving midstream and downstream processing and manufacturing opportunities for Europe. This is a clear misalignment with broader Namibian and Zambian ambitions. However, as Europe’s mining and value addition footprint in both countries remains small, the discrepancy has rarely been encountered in practice. When it has, Europe’s actions have fallen far short of the industrial advancement that Namibia, Zambia, and other Africa countries are seeking.

When ambition meets reality

Namibia’s and Zambia’s exports are dominated by unprocessed materials, following a long history of mineral extraction. In the past, European companies were active in mining and exporting raw materials out of these countries. While the presence of European mining companies is now negligible, Australian, Canadian, Chinese and Gulf companies continue to extract and export mainly raw materials from both countries.

Namibia and Zambia export baskets. 2023, in %

● Commodities



° Stones and precious metals

* 23.58% of Zambia exports are classified as "Trade data discrepancies" due to reporting differences between country partners and countries reporting in different product classification systems.

Source: Export Complexity, Harvard Growth Lab (2023)
ECFR · ecf.eu

Even with government policies aimed at supporting value addition, Namibia and Zambia have struggled to move beyond smelting, some refining and limited manufacturing of consumer goods. This is largely owing to poor enabling conditions locally and a weak local ecosystem of firms needed for more advanced value addition.

In Zambia, government representatives, civil society figures and researchers are deeply disappointed over how little the country has achieved beyond extraction after nearly a century of mining copper.[2] There is a relatively small industrial base for value addition in the country: smelting is done locally to produce copper anodes (impure copper), as is some refining to produce cathodes (pure copper), and several local companies (often subsidiaries of foreign parent companies) produce various types of copper wiring and cabling for domestic and regional markets.

To give its industry a boost, the Zambian government has set its sights on manufacturing electric vehicle batteries. In 2022, it signed a cooperation agreement with the DRC to establish a special economic zone dedicated to battery precursors and electric vehicle battery manufacturing. Zambia has also signed a memorandum of understanding with the DRC and America to develop an electric vehicle battery industry. However, the most advanced effort is a battery plant being constructed by Chinese company, Airumi New Energy. More broadly, the Zambian government has launched its National Critical Mineral Strategy 2024-2028 which aims, among other things, to promote beneficiation and value addition.

Likewise, Namibia's economy is largely dependent on mining, but local mineral processing is limited. Its uranium is made into yellowcake, a powered uranium concentrate. There is also the Tsumeb smelter facility, which processes copper from countries such as Bulgaria, Chile and Peru into blister copper (98.5% copper) before it is further refined in Europe and Asia. This copper contains arsenic and lead, with Tsumeb being one of the few smelters globally that is able to process complex copper concentrates. But it comes at a higher environmental cost, producing dangerous byproducts. In other words, producing countries have offshored potential environmental damage to Namibia.[3] In June, Tsumeb was temporarily closed as smelter treatment charges collapsed as a result of expanded smelter capacity worldwide. The future is looking slightly more promising. Chinese company Sinomine intends to upgrade the facility to enable it to process multiple critical minerals, including zinc and germanium. Meanwhile, Namibia seeks to develop downstream mineral industries through the implementation of its 2021-2030 Mineral Beneficiation Strategy. The country also has a nascent green hydrogen sector, which has the potential to power green value addition, an ambition outlined in its Green Hydrogen and Derivatives Strategy.

Government efforts

Both governments have adopted export restrictions on unprocessed minerals to encourage more local value addition. Zambia applies a 15% levy on the export of copper concentrates, but this approach has had limited success as mining companies frequently request waivers, claiming that local processing is not possible due to issues like limited refinery capacity and electricity shortages.[4] Zambia also uses fiscal incentives to motivate companies to undertake local value addition—for example, a lower corporate income tax rate is applied to companies that specialise in gemstone value addition. [5]

In 2023, Namibia’s cabinet approved an export ban on certain unprocessed minerals, including lithium, and although it has not yet become law, enforcement is under way to prevent the export of any raw lithium ore. So far, success appears limited: a lithium refinery is reportedly being established by a Chinese company, but it is unclear whether this is operational.[6] Uranium exports, on the other hand, have not been banned as Namibia is not well placed to process it beyond producing yellowcake.

Export bans such as Namibia’s have the effect of lowering the price of mineral products in the local market. While this can benefit local processors and manufacturers, it hurts mining companies in the country. As a result, export bans tend to disincentivise investment in a country’s mining sector over time—especially when local conditions do not support significant value addition—causing the mining sector to decline.

While not perfect, Namibian and Zambian government policies are nonetheless taking steps in the right direction. But companies will still only set up value addition activities where these operations can be profitable. Some companies intend to produce goods highly demanded by advanced economies, such as electric vehicle batteries and green hydrogen. Local civil society representatives in Namibia and Zambia, however, conveyed reservations about projects that seek to produce energy and mineral products solely for export markets, indicating that this would merely be an extension of the extractivism that has long blighted African countries. [7] In contrast, projects aimed at manufacturing products for domestic and regional markets (at least in part) garner more local support. [8] These operations often face profitability challenges, though, as they aim to serve smaller markets with lower purchasing power.

The promise of regional cooperation

Many of Namibia’s and Zambia’s goals of value addition emphasise developing their domestic economies—less attention has been paid to the benefits of collaborating on regional

processing. Some efforts are in early stages, however, such as the DRC-Zambia cooperation agreement to jointly manufacture electric vehicle batteries and the electric mobility initiative recently launched by Morocco, the DRC and Zambia, aimed at manufacturing more of the automotive components needed in electric vehicle battery value chains.

There are also several regional economic corridor initiatives in southern Africa that could facilitate regional cooperation on value addition. For Namibia, key developments include the upgrading of the Walvis Bay Corridor and the construction of warehouses, container capacity and green fuel handling capabilities at Walvis Bay. On the Zambian side, there is a potential extension of the Lobito Corridor railway into Zambia—which is being led by the African Finance Corporation with support from America, the EU, the African Development Bank and others. Moreover, China has committed to funding a rehabilitation of the TAZARA railway. These developments promise to improve Zambia’s connection to Africa’s west coast at Lobito in Angola and the east coast at Dar es Salaam in Tanzania, respectively.

These corridors could facilitate the aggregation of mineral products for processing and enable greater efficiencies that come with increased processing volume, known as economies of scale . They could also open up access to larger, regional markets and lower local manufacturers’ costs of importing and exporting, thereby making local manufacturers more competitive. But first, regional cooperation needs to get off the ground.

Partnering up

Governments around the world are increasingly aware that critical minerals are vital for industry. Their rising importance means different powers—America, China, European countries and Gulf states, among others—are racing to deepen their diplomatic, political and economic ties with mineral-rich African countries to better position themselves in these countries’ mineral value chains. But as the previous section detailed, Namibia and Zambia are yet to see this bring the hoped-for benefits to their local industries and economies.

To date, Chinese companies have shown themselves to be the most responsive to African countries' development ambitions when it comes to value addition. In recent years, they have demonstrated their willingness to build local refineries for some critical minerals in Namibia, Zambia, Zimbabwe and elsewhere. They have also cooperated on projects to expand local manufacturing capabilities, as evidenced by their backing of a planned electric vehicle battery factory in Zambia. The vertically integrated nature of some Chinese companies—meaning that they combine mining, processing and manufacturing of intermediate products—has likely better positioned them to extend their mining and mineral processing activities into midstream processing.

Mining companies from most other countries are not structured in this way and tend to specialise only in extraction and basic upstream processing, being unequipped to extend their activities into midstream processing. Some Chinese value addition efforts may also be more motivated by objectives other than profitability in comparison to other powers. Securing reliable access to critical minerals and enhancing diplomatic and political influence in host countries are sometimes as important as profitability for Chinese actors.

Apart from Chinese entities, companies from a number of other countries are also active in mining in Namibia and Zambia, including America, Australia, India, Qatar, Saudi Arabia and the UAE. It is difficult to gauge their commitment to local value addition as few have made as clear pledges on the issue as China and the EU. However, there is reason to think they might do as little local value addition as possible unless it makes financial sense for them to locate such activities in African countries. Gulf countries, for example, have the advantages back home of cheap conventional energy, developed infrastructure and easy access to export markets. Many of them, including the UAE and Saudi Arabia, also have ambitions to expand their own domestic industrial capabilities, including in the green energy and defence technology sectors, which will likely see them reserving most value addition opportunities for their home industries.

Europe's underwhelming offer

Aside from China, the EU is the only other power to loudly support local value addition in Africa. However, the EU's ambition to process 40% of its critical mineral needs domestically by 2030, as outlined in the Critical Raw Materials Act (CRMA), has raised scepticism among African minerals experts about the sincerity of the bloc's commitment to supporting value addition in African countries. It creates an impression that European actors will primarily seek to protect their own mineral processing opportunities, particularly given the significant task that reaching 40% domestic processing will involve. Perceptions of European

protectionism weaken the bloc's attractiveness as a partner in Africa's value addition agenda and undermine its goal to secure access to Africa's critical minerals. [9]

European firms may offer potential as technology and equipment providers for mining and some value addition operations, but there is often a mismatch between the price of European technology and what local companies are willing and able to pay. [10] Chinese and Indian companies provide lower-cost technology and equipment options, better meeting African commercial needs. Based on our interviews, there is also a perception in Zambia and Namibia that Chinese and Indian companies are more willing to invest in African countries because they better recognise their market potential, which is generally overlooked by European companies focused predominantly on serving European markets. [11] African stakeholders also feel that European investors' perceived risks of investing in Africa are disproportionately high compared to what investors from other countries see. Because of their different approach, Chinese and Indian companies more frequently identify viable "bolt on" opportunities to develop products or services for domestic and regional markets in Africa—and have created thousands of local jobs while expanding these operations. [12]

Being a better partner

Ultimately, African governments favour working with external partners who can help them address the hurdles to expanding local value addition over external actors who see their limitations simply as risks and an excuse not to enter their market. Too often, Europeans fall into the latter category and are seen as lacking sufficient risk appetite and financial resources to support investments that tangibly ease constraints on African industrial growth in the short term, particularly infrastructure investments. [13]

In contrast, government officials and local business actors often see Chinese and Gulf actors as more constructive partners who are willing to support infrastructure development in African countries and impose less bureaucracy on investment decisions. The difference can be seen clearly in the fact that, although European firms possess expertise and experience in large-scale infrastructure and renewable energy projects, it is PowerChina that has constructed a 100 megawatt solar plant to power Canada-based First Quantum Minerals' operations in Zambia.

The EU's backing of the Lobito Corridor railway development project potentially changes this dynamic. The proposed greenfield railway extension connecting Zambia to the Lobito port in Angola could significantly reduce transport and logistics costs and open up easier market access to Europe for Zambian producers. However, perceptions towards the corridor are clouded by the view across Zambian civil society and research entities that it is intended

primarily to facilitate mineral extraction; there is little trust in claims that that it is intended as a multi-user facility.[14]

If the Lobito Corridor project fails to achieve anything but more efficient mineral extraction, it could further entrench Europe's reputation of extracting from Africa. Many African and international analysts also doubt the economic feasibility of the Zambian extension segment, particularly in light of Chinese commitments to rehabilitate the competing TAZARA railway to Dar es Salaam, which would undercut the cargo volumes (and therefore the economic viability) of the Lobito extension.[15] As the majority of Zambia's mineral exports are destined for China, it would make logistical sense to move more mineral exports eastwards on TAZARA rather than westwards on the Lobito railway. The questionable economic viability of the Lobito Corridor's greenfield railway extension into Zambia means it could be substituted for a less costly option, such as upgrading the road infrastructure network, either as a short-term solution pending later railway development or as a permanent alternative solution. [16] The European Commission has made countless pronouncements about the railway extension, so it stands to lose some face if it is switched out for a road network upgrade.

The challenges of boosting local value addition

Building local value addition capabilities in Namibia and Zambia requires an ecosystem of processors and manufacturers and their suppliers. This is currently held back by a lack of adequate infrastructure, affordable finance, reliable and competitively priced utilities (especially electricity), a skilled workforce, a stable regulatory environment and economies of scale. When these enabling factors are missing, production costs for local manufacturers rise, making their products more expensive and less competitive.

Critically, value addition projects will only be pursued if they are economically viable. This is difficult to achieve in a highly competitive sector where Chinese manufacturers enjoy the advantages of established processing and manufacturing facilities (that have established supply chains and may have already recouped their capital costs), economies of scale, co-location of different mineral value chains and lower production costs (including as a result of state support in the form of cheap finance or subsidised electricity).

Companies active in mineral processing and manufacturing face challenges competing with Chinese firms, and Namibia and Zambia are not unique in struggling to establish viable mineral processing and manufacturing operations amid Chinese processing dominance. Despite these broader trials, Namibia and Zambia, alongside other resource-rich African countries are still keen to boost their industries—and their governments are implementing policies to make sure this can happen. Europe would benefit from having close mineral

partnerships with African countries; therefore, Europeans should have a key interest in improving the health of African industrial ecosystems so that European actors can gain access to a more cost-effective and reliable supply of processed minerals.

European companies currently struggle to compete with China's mineral processing prowess and its ability to support infrastructure development in African countries. But Europeans are nonetheless well positioned to help Namibia and Zambia tackle some of the obstacles to unlocking local value addition. Five key challenges are outlined below.

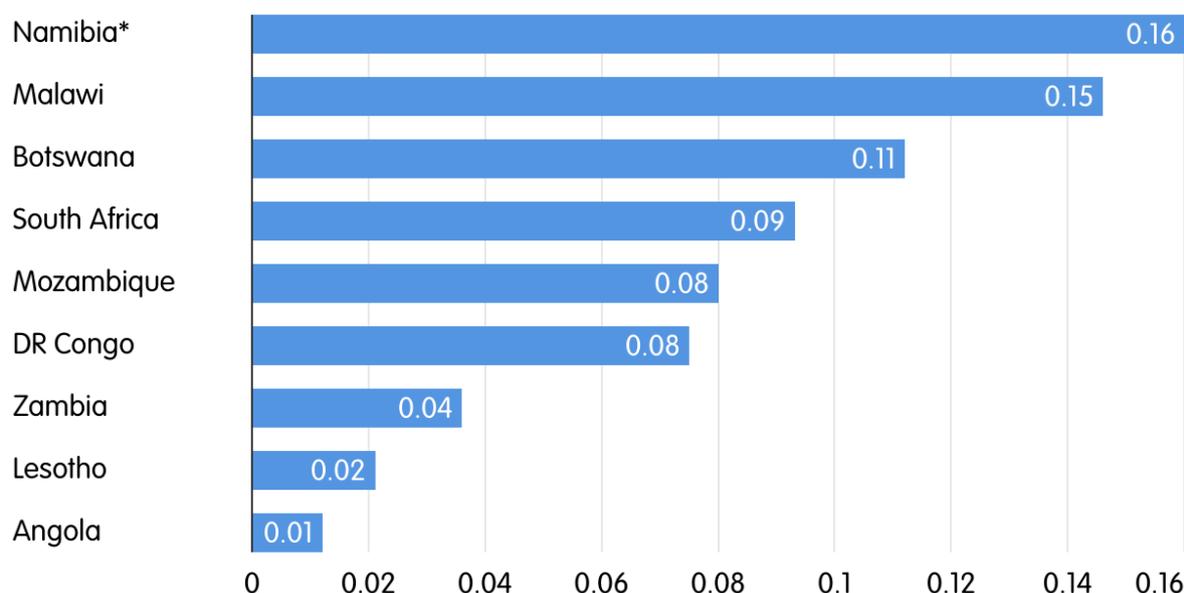
1. A lack of affordable and reliable utilities

Poor electricity supply and high tariffs hold back value addition in African countries, especially as mineral processing requires significantly more energy than extraction. Zambia's mining sector uses a staggering 51% of the country's electricity, for example. Increasing mineral processing in Zambia would consume a substantially larger share. Severe electricity shortages have forced companies to invest in off-grid energy solutions—which can have high capital costs (such as constructing a solar power plant) or high operating costs (such as diesel generators)—and can undermine their economic viability. Indeed, electricity supply constraints in recent years in Zambia have led to the shelving of several processing projects, including a planned nickel refinery. [17] A factor contributing to electricity shortages is that Zambia's government has set electricity tariffs below the cost of supply, dissuading private sector investment in electricity generation. [18]

Companies in Namibia also report challenges with electricity, water and transport logistics, citing them as impediments to large-scale processing and further value addition. Unlike Zambia, Namibia has a cost-reflective tariff regime, but it imports around 60% of its energy needs. The higher cost of imported electricity means commercial consumers in Namibia pay among the highest tariffs for grid-provided electricity in southern Africa. However, the cost of electricity in Namibia is likely to decline in coming years as several planned large-scale renewable energy plants come online. Water scarcity is also a major difficulty in arid Namibia and has led to some mining companies having to build desalination plants to produce sufficient clean water for their operations. The need to desalinate water adds to mining companies' costs.

Commercial electricity rates for select southern African countries.

2023-2025 average, in \$/kWh



*Data for Namibia based on the GIZ report's 2022 estimate

Source: Globalpetrolprices; Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
ECFR · ecfre.eu

2. Scarcity and high price of mineral inputs in local markets

Scarcity of pure copper (copper cathode) in Zambia's local market is also restricting the country's local value addition. Of the 763,550 tonnes of copper produced in 2022, about 350,000 tonnes was refined into copper cathode form—of this, 95% was exported to overseas buyers. Only around 15,000 tonnes of copper cathode was available for purchase by local wiring and cabling manufacturers, a volume below their operational needs, necessitating that they either operate below capacity or import copper cathode. [19];[20]

The government has mandated Mopani Copper Mines (MCM) and Konkola Copper Mines (KCM) to reserve 20% of their production for the local market. Yet their low production in recent years has created local market scarcity. [21] KCM has operated at minimal production for several years amid a legal dispute with the Zambian government, making MCM's 20% local reserve quota the main source of copper cathode for the local market—which falls far short of local demand.

Second to scarcity is the issue of the price of copper cathode in the local market. The London

Metals Exchange (LME) copper price includes insurance and freight costs associated with transporting the copper to an LME-approved warehouse, which are all located outside Africa near high consumption markets in Europe, Asia or America. In theory, local manufacturers should be able to buy copper cathode directly from mines at the “mine gate” price, which does not include insurance and freight costs. In practice, however, the discount that local buyers in Zambia get is much lower than the expected insurance and freight savings, with the discount being \$11-44 per tonne (depending on the copper quality) rather than the \$165-198 per tonne that is estimated for shipping costs. (These prices have been converted from ton, as used in the source, to tonne.)

Why local buyers cannot access copper cathodes at the true mine gate price is not clear, although some analysts ventured it could be due to them being unable to commit to minimum order quantities or long-term contracts, which mining companies and smelters require, leading to them being disfavoured over foreign buyers. Since copper cathodes represent around 85% of the operating costs of producing copper wire, the lack of access to competitively priced raw materials severely undermines the competitiveness of local wiring and cabling manufacturers.

3. Skill scarcity in the workforce

In African countries, challenges often arise in securing adequate skilled labour for more advanced mineral processing and other local value addition activities. These difficulties are aggravated in countries with small populations, such as Namibia, which has around 3 million people. There is a significant shortage of trained technicians and artisans in the country, especially at higher vocational levels. This puts a lot of pressure on the labour market and could lead to widespread delays if multiple large-scale projects are developed simultaneously. The skilled labour shortage will be a particular concern for Namibia if several green hydrogen projects move to scale up at the same time as construction begins for oil and gas projects. [22]

Foreign investors and local stakeholders often disagree about the extent of skills shortages in Namibia. Mining companies like Rio Tinto and Namdeb made significant investments in local skills and expertise in the mining sector years ago. [23] However this investment has not been maintained. Additionally, with little mineral processing and value addition taking place in the country, companies have paid less attention to the skills needed for these activities. No comprehensive skills survey has been undertaken for several years, so it is unclear what specific skills gaps exist. Anecdotal evidence suggests that 40% of vocational training centre graduates in Namibia are working in areas they did not train in because they cannot find jobs in their fields. [24] This is indicative of serious misalignments between skills training programmes and market needs.

4. Failure to reach economies of scale

The economic viability of value addition projects in African countries is often limited by not reaching economies of scale. This means they are not achieving the efficiency advantages that come with larger production volumes. In many instances, the smaller scale of African operations means that production costs per output unit will be high, making product prices more expensive and uncompetitive. This is a major worry when compared to the significant aggregation of mineral processing that China has achieved over the last two decades, which means it is possible for Chinese firms to process minerals at far lower per output unit cost than most processors elsewhere.

In Namibia, most minerals, including lithium and rare earth elements, are not currently produced in large enough volumes to make downstream processing facilities economically viable. [25] Further compounding relatively low volumes of lithium in Namibia is the purported low-grade of Namibia's deposits, around 1% compared to the 6% global standard grade. Namibia would need to either significantly increase its production volumes or aggregate minerals produced from neighbouring countries to warrant developing mineral processing facilities in the country. The latter is an option as Namibia could establish itself as a regional mineral processing hub by leveraging the cheaper and more abundant electricity it may have in coming years—either from its newly discovered hydrocarbon resources or the large-scale renewable energy and green hydrogen projects it has in the pipeline.

5. Weak regional cooperation

To get around the poor economies of scale achievable on a country level, regional facilities offer a more economically viable way to add value by aggregating mineral ores and concentrates from multiple countries. In general, however, most African countries are not

sufficiently cooperating on mineral value addition, and many lack the infrastructure and trade logistics of regional economic corridors needed to facilitate it.

The idea of regional processing facilities is far easier said than done and several challenges arise. First, many local stakeholders support the idea—as long as the regional processing hub is located in their country. It loses traction if it is envisioned that another country will host the processing facilities.[26] African governments want the potential benefits that processing facilities promise (such as job creation) and are loth to forgo these benefits to a neighbour. Second, governments cannot control where and to whom mining companies sell their mineral products. The companies would therefore need to cooperate to shift at least a share of mineral products away from overseas buyers and to regional processing facilities. For private sector buy-in, regional projects would need to operate on market principles without government interference.[27] Third, thinking around where to locate regional facilities continues to favour proximity to minerals over more essential determinants for industry, notably adequate electricity, trade infrastructure that facilitates the aggregation of mineral products to raise economies of scale, and easy access to ports for export to regional and global markets. These factors are far more important for the economic feasibility of value addition projects than proximity to mineral production. Unless locations for regional processing facilities are selected based on their strategic advantages, value addition opportunities will continue to be lost to locations outside Africa.

Recommendations

Boosting local value addition in Namibia, Zambia and other African countries is a formidable but not impossible task. European public funding and the expertise of European firms could go a long way towards helping their African counterparts address the above obstacles to local value addition.

It would be strategic for EU institutions and European firms to do this: it could unlock more economically viable processing and manufacturing opportunities for European companies compared to what is possible in Europe. A business case exists to integrate mineral value chains and locate more processing and value addition activities in African countries rather than in Europe where costs of energy, land and labour are significantly higher. It would also benefit European authorities by diversifying access to critical minerals and strengthening economic ties with African countries, which could in turn support greater geostrategic alignment between Europe and Africa.

For African countries like Namibia and Zambia, the socioeconomic benefits of keeping more stages of value addition on their soil could be sizeable, not least job creation and

industrialisation. Cooperating with Europeans in particular will not only give them access to strong industry expertise and European markets, but it will also mean they are less dependent on Chinese investments.

There is potential for a win-win arrangement for Africa-Europe cooperation on mineral extraction, processing and value addition. But European and African stakeholders are currently talking past each other. More is needed from both sides if tangible progress is to be made.

For African policymakers

On the African side, more realism is needed in value addition strategies to ensure that progress is made in advancing up the mineral value chain. African governments cannot avoid the hard reforms and investments needed to improve the infrastructure and business environments of their local markets. As this paper has shown, **value addition activities, like other industrial activities, require adequate electricity, affordable finance, a stable regulatory environment, availability of raw materials and good transport infrastructure**. Export restrictions can supplement, but not substitute, these factors, which are vital for increasing African countries' attractiveness as investment destinations and improving the competitiveness of local processing and manufacturing operations.

Given the significant competition and continual technological advancements of manufacturing products like electric vehicle batteries, **African countries may have a more competitive edge focusing on products that are less prone to technological evolution, and which have domestic or regional demand** like energy storage batteries that provide backup during power blackouts and two- and three-wheeled vehicles. Local manufacturers should consider intermediate products, such as precursors, in the short and medium term, and should undertake research and development to identify products that African countries can produce most competitively. [28]

When considering whether to provide fiscal incentives to value addition projects, **African governments need to undertake rigorous cost-benefit analyses**, factoring in both positive and negative impacts to the broader economy. Even where a value addition project is economically viable, the predicted benefits may not justify the cost of forgone government revenues. Rather, governments should also weigh these opportunities against the possibility of using revenues from the mining sector to support more labour intensive or less environmentally damaging industries.

Importantly, the processing of many critical minerals is both highly energy intensive and

environmentally polluting. **Value addition strategies should explicitly provide for enhanced monitoring and enforcement capabilities** so that governments can ensure that refining, processing and manufacturing activities are undertaken in accordance with environmental and social regulations. Governments need to determine whether the purported benefits of value addition projects outweigh the costs they occasion. One 2024 study found that Indonesia's drive to increase local nickel processing has resulted in costs to public health, ecology and livelihoods that will exceed the economic gains of the initiative. In Zambia, there is a proliferation of informal, small-scale copper smelting and refining operations, including some in residential areas without required authorisation and operating in an unregulated and environmentally harmful manner. [29] This is not the type of value addition that African countries should aspire to as much more is lost than gained. Government should put strong safeguards in place to ensure that efforts to expand value addition do not make African citizens worse off.

Finally, regional processing facilities are far more likely to be economically viable than attempting to establish mineral processing facilities in each African country. Locations for regional facilities should be determined strategically based on the advantages they have in offering electricity and other utilities, infrastructure, and easy access to markets as well as the existence of trade routes that could aggregate mineral products from multiple African countries to reach economies of scale. **African governments need to become more open to cooperating with one another on value addition**, or else opportunities will continue to be lost to other continents. To start with, governments should explore how the benefits of regional processing facilities could be shared among participating countries.

For European policymakers

For their part, European policymakers need to recognise that making progress on de-risking their critical mineral supply chains from China means building effective partnerships with mineral-rich countries. And this will require concessions. The EU and its member states cannot take a protectionist approach while expecting others to favour them as partners. European policymakers should therefore better align European policies with the interests of African partner countries.

To do so, **the EU should reassess the strategic partnerships it has already signed with mineral-rich African countries** as these largely limit their role to mineral processing, which is far short of the industrial advancements that African countries seek. Rather, this should be communicated as an initial step, with commitments it will later enable more advanced manufacturing to take place in the partner country. If Europe is to be seen as a better alternative to other powers in this highly important sector, it will need to concede more value

addition activities to African countries so there is a fairer division. To achieve this, the EU should expand the scope of the 40% domestic processing target in the CRMA to include processing done outside Europe with the involvement of European companies. Extending the target's geographical scope would better encourage integration of mineral value chains between Africa and Europe and allow for more processing to be undertaken in Africa.

Beyond enacting policies and signing partnerships, **Europeans need to put real money into mining, processing and value addition activities in Africa** if they are to secure access to Africa's mineral wealth. The European Commission could do this by establishing a fund that invests directly in existing mining and value addition operations, either through the European Investment Bank or a new financing mechanism. Investees would not be limited to European companies but would be tied to commitments to supply European buyers. This would create scope for Europe to partner with others and develop trilateral Europe-Africa-other partnerships. This fund could also provide tangible financial support for selected strategic projects in African countries. Additionally, as argued in our previous policy brief, Europe could unlock more financing for mining and value addition if these activities were included under the EU Sustainable Finance Taxonomy.

Finally, as Europeans move to make a better offer to African countries, they should also **be aware of the factors that limit the viability of mineral processing and value addition activities in African countries**. Some relate to the conditions needed to support local industry—while improving these is the responsibility of African governments, Europeans should make a realistic assessment of how their offer can support these efforts. Not only would this increase the economic viability of potential European ventures in African partner countries, but it would also offer further mechanisms to more closely collaborate with African counterparts in a sector where other powers, not least China, are more successful at making their influence felt.

Mining for the future

The global drive for access to critical minerals has upended geopolitical and geoeconomic dynamics in Africa, thrusting the continent and its European partners into new spheres of power wrangling. Amid a host of powers, not least China, vying for Africa's resources and leaving less than hoped-for economic gain, both continents could sink or swim. They stand the best chance at swimming if they cooperate better with one another—especially on value addition—by integrating African and European critical mineral value chains and locating more of them in African countries. This would support African industrialisation while also making more value addition projects economically viable for European companies.

Challenges remain on both sides, but they are surmountable. Close cooperation in this sector offers a valuable route to strengthening economic ties and geopolitical alignment between the two continents.

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[1] Windhoek focus group, November 18th 2024; Lusaka focus groups November 27th and 28th 2024.

[2] Lusaka focus group, November 28th 2024.

[3] Interview with Rowland Brown, Cirrus Capital, November 22nd 2024.

[4] Interview with representatives from Zambia Revenue Authority, November 27th 2024.

[5] Interview with representatives from Zambia Revenue Authority, November 27th 2024.

[6] Interview with representatives from the Namibia Investment Promotion and Development Board, August 22nd 2024.

[7] Windhoek focus group, November 18th 2024; Lusaka focus group November 27th 2024.

[8] Windhoek focus group, November 18th 2024; Lusaka focus group November 27th 2024.

[9] Discussions at the 2025 Ibrahim Governance Weekend, June 1st-3rd, Marrakech, Morocco.

[10] Lusaka focus group, November 27th 2024.

[11] Interview with Sokwani Chilembo, Zambia Chamber of Mines, December 17th 2024.

[12] Interview with Sokwani Chilembo, Zambia Chamber of Mines, December 17th 2024.

[13] Interview with Ian Mwiinga, Zambia Extractive Industry Transparency Initiative, October 28th 2024.

[14] Interview with official at Zambia Extractive Industry Transparency Initiative, October 28th 2024.

[15] Interview with Centre for Trade Policy and Development, November 28th 2024; Lusaka focus group, November 28th 2024; interview with EU official, May 27th 2025.

[16] Interview with EU official, May 27th 2025.

[17] Interview with official at Zambia Extractive Industries Transparency Initiative, October 28th 2024.

[18] Interview with Roseta Chabala, Zambian independent expert, December 9th 2024.

[19] Interview with official at Zambia Extractive Industry Transparency Initiative, October 28th 2024; Interview with Zambian independent expert, Roseta Chabala, December 9th 2024.

[20] Solwezi focus group, December 3rd 2024; Lusaka workshop, February 10th 2024.

[21] Interview with Zambian independent expert, Roseta Chabala, December 9th 2024.

[22] Windhoek focus group, November 18th 2024.

[23] Windhoek focus group, November 18th 2024.

[24] Windhoek focus group, November 19th 2024.

[25] Interview with Rowland Brown, Cirrus Capital, November 22nd 2024.

[26] Lusaka focus group, November 27th 2024.

[27] Interview with Ian Mwiinga, Zambia Extractive Industry Transparency Initiative, October 28th 2024; Interview with Charles Simwanza, Southern African Institute for Policy and Research, November 13th 2024.

[28] Interview with Sokwani Chilembo, Zambia Chamber of Mines, December 17th 2024; Lusaka focus group, November 28th 2024; Solwezi focus group, December 3rd 2024.

[29] Interview with Charles Simwanza, Southern African Institute for Policy and Research, November 13th 2024.

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