



HOW CAN AFRICA MAKE THE MOST OF ITS TRANSITION MINERALS?

A pledge for enhancing value
addition for development and
prosperity
September 2024

This briefing is the short version of a longer report which
can be found [here](#)



PUBLISH WHAT
YOU PAY



**Just
Minerals
Africa**

Acknowledgements

Publish What You Pay (PWYP) would like to thank the main author of this research, William D. Davis, as well as the reviewers: Elvis Avenyo (University of Johannesburg), Charles G. Ofori (Africa Centre for Energy Policy), Stephanie Ngo Pouhe and Caroline Avan (Business & Human Rights Resource Centre), Eric Ngang, Alex Kopp and Colin Robertson (Global Witness), Davie Malungisa (Southern Africa Resource Watch), Isaac Agyiri and Nelly Busingye (Tax Justice Network Africa), Emmanuel Umpula (AFREWATCH), Elie Kabore (PWYP Burkina Faso), Silas Olan'g, Robert Pitman and Thomas Scurfield (Natural Resource Governance Institute), Alejandro Gonzalez (SOMO), Gilbert Jemwa.

We are also grateful to Global Witness and the Norwegian Agency for Development Cooperation (NORAD) for their support.

Table of content

0. Main Findings	4
1. Introduction	6
2. Building minerals value chains to transform the continent	10
2.1. What is value addition and to what extent is it happening in Africa?	11
2.2. Making the most of African transition minerals	13
3. Conditions for Africa to seize the opportunity	16
3.1. Industrial policies	17
3.2. Focusing on most competitive activities in energy transition technologies	18
3.3. Regional economic integration and preferential trade agreements	19
3.4. Transparency and accountability of government action	19
3.5. Strong safeguards for human rights, community participation and environment protection	20
3.6. Legal and policy frameworks	21
3.7. Increasing local content	21
3.8. Mobilising additional revenues	22
4. What role should development partners play?	23
5. Conclusion and Recommendations	25

Main findings

- ▶ **Industrial policies to promote trade in the materials needed for batteries, solar panels and other clean energy technologies could boost Africa's GDP by at least \$24bn a year and create at least an extra 2.3 million jobs on the continent.**
- ▶ **The vast majority of Africa's transition minerals are destined for manufacturing industries outside the continent.** Only 2% of the continent's exports of energy transition minerals are destined for other African countries. Africa is currently stuck at the bottom of energy transition value chains while most of the profits are made elsewhere in the world.
- ▶ Though some countries in Africa do process transition minerals to some extent, the continent remains almost completely excluded from downstream and often more lucrative segments of value chains for these minerals, such as design, manufacturing, marketing and sales. **This represents a major problem for the continent but African governments have the power to change the game.**
- ▶ African countries can make the most of their transition minerals by adding value to them: **transforming them into products that can then be exported at better prices, and/or using them to address Africa's own development needs, including building clean and affordable energy systems.**
- ▶ **DRC, South Africa, Sudan, Zambia and Republic of Congo** account for 90% of the continent's current opportunities to increase export of processed and transformed mineral products. **Madagascar, Egypt, Namibia, Morocco and Mozambique** also have opportunities for hundreds of millions of dollars in additional annual exports.
- ▶ African countries should be strategic in deciding how to increase their participation in value chains. They should focus on **specialising in the parts of the value chain in which they are most competitive**, even if it means importing minerals from other countries, rather than seeing it as a necessity to retain the entire value chain of minerals within their own soil. **Retaining value on the continent is possible through flexible and collaborative strategies among African countries.**

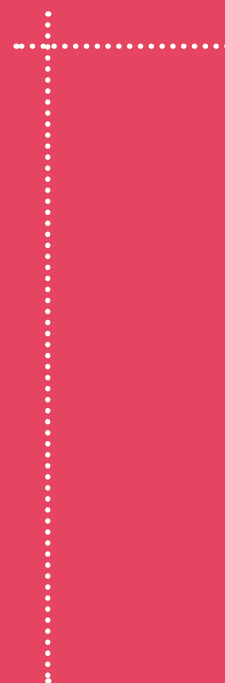
- ▶ Through this approach, there is also potential for Africa to **produce renewable energy technologies** for fostering an equitable access to energy on the continent, using its own transition minerals. Regional economic cooperation and preferential trade agreements are key to ensure African countries can trade minerals amongst each other and become competitive in the renewable energy market.
- ▶ Mining has a huge human and environmental cost with **devastating impacts, in particular for communities living in mining areas, Indigenous People, women, and rights defenders**. No-go zones and safeguards must be put in place to protect ecosystems and the rights of affected populations, including **a fair, ongoing process of Free, Prior and Informed Consent**—the Indigenous People’s right to give and withdraw consent to mining on their lands.
- ▶ Value addition has to go hand in hand with **strengthening accountability of the whole transition mineral value chain**. We want to see resource-rich states adopt comprehensive national and regional laws for due diligence, public participation, and benefit-sharing. **Investor-State Dispute Settlement (ISDS) mechanisms in Bilateral Investment Treaties undermine these efforts** by allowing companies to challenge government actions aimed at protecting public interests, preventing these countries from implementing essential measures. **Renegotiating such treaties are critical steps to empower states to implement regulations that ensure accountability in the transition mineral sector.**
- ▶ We need a **globally just energy transition that is truly transformative for mineral rich, poorer countries**. Consumer regions must play a role in supporting these countries’ ambitions to become more involved in value chains. Key development partners have promised to do so through “partnership agreements” like the EU’s Memoranda of Understanding with Namibia and Rwanda, and the MoUs the EU and US have with the DRC and Zambia. However, these promises are often contradicted by other policies undertaken by the same “development partners”. **Consumer regions should not pressure African countries to abandon industrial policies that support domestic mineral processing and transformation. Instead, they should focus on fulfilling their financial and technology transfer commitments**, fostering industrial capacity in partner countries, and bringing economic benefits to African citizens.



Section

01

Introduction



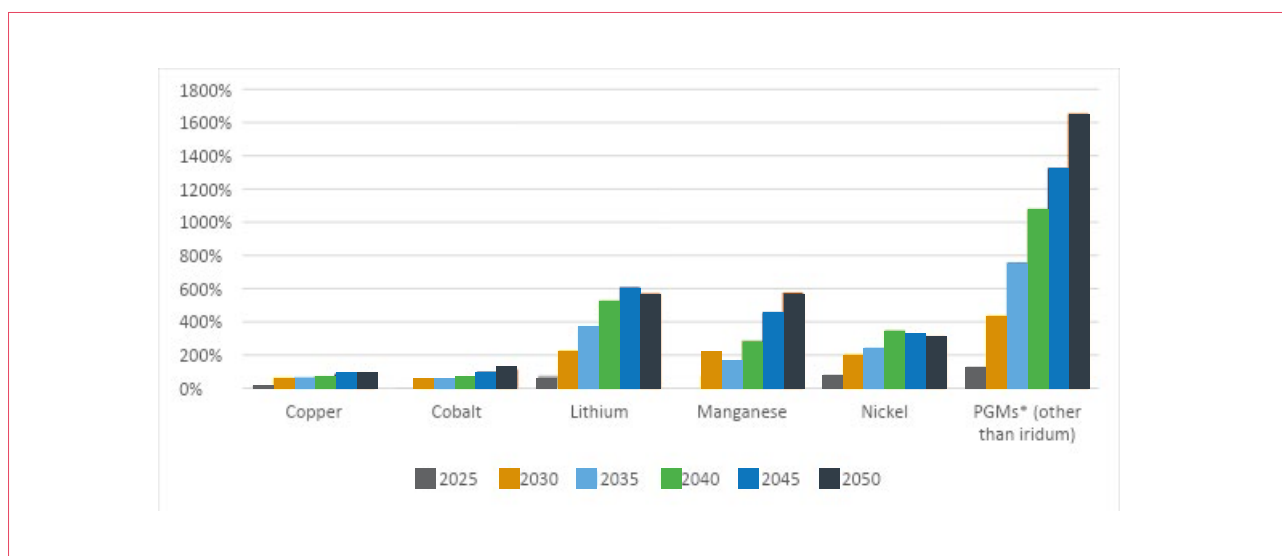
Introduction

“Transition minerals” are used in technologies linked to the transition to renewable energy. This includes minerals used to make renewable energy technologies, as well as those needed to help existing technologies (such as motor vehicles) to run on electricity. For the purposes of this project, we use the International Energy Agency’s [list](#) of “critical minerals” linked to the energy transition¹

Demand for Africa’s transition minerals has significantly increased over time since the arrival of cleaner, renewable energy such as solar and wind power in the 1980s. With the climate crises intensifying, the world needs to accelerate its transition to cleaner energy sources and the demand for some of the African transition minerals is expected to rise rapidly to 2050, as shown in Figure 1. If governments go further in climate mitigation than current policies and, for example, meet their announced emissions reduction targets, demand for transition minerals would be significantly greater. The continent [holds](#) more than 40% of the global reserves of key minerals for batteries and hydrogen technologies. The [Democratic Republic of Congo](#) (DRC) alone is home to 60% of the world’s cobalt reserves, a mineral whose production could [increase by nearly 500%](#) to meet the demand for cleaner energy technologies.

¹ Arsenic, Boron, Cadmium, Chromium, Cobalt, Copper, Dysprosium, Gallium, Germanium, Graphite, Hafnium, Indium, Iridium, Lanthanum, Lead, Lithium, Magnesium, Manganese, Molybdenum, Neodymium, Nickel, Niobium, Platinum Group Metals (other than iridium), Praseodymium, Selenium, Silicon, Silver, Tantalum, Tellurium, Terbium, Tin, Titanium, Total rare earth elements, Tungsten, Vanadium, Yttrium, Zinc and Zirconium.

Figure 1: Projected demand for selected energy transition minerals, as % of 2022 levels, under the International Energy Agency's Stated Policies Scenario²



* PGMs refers to platinum-group metals.

A significant proportion of these transition minerals are found in conflict zones as well as biodiversity hotspots and/or lands that are home to Indigenous peoples. The world's powerful countries, including China, the United States (US), the European Union (EU) and the United Kingdom, are rushing to secure their access to transition minerals via bilateral agreements with mineral rich countries in Africa. This could exacerbate impacts on biodiversity and communities rights.

Transition mineral production in Africa is currently highly uneven, and dominated by the DRC, Zambia and South Africa. While this represents important economic and development opportunities for these African countries, there is also a great risk that mineral extraction keeps on happening at the expense of local populations and the environment as it has been the case for decades.

The last major boom in demand for (and prices of) the commodities that the continent produces took place from 2004 to 2014, linked to the rise of China and that country's

rapidly increasing demand for raw materials.³ In spite of increased government revenues at that time in the producing countries, this has not led to sustained economic growth. Some of these mineral-rich countries have failed to invest in other sectors, to ensure economic diversification with the additional revenues. After the boom ended, they registered lower growth than the rest of the region.⁴ For instance in Zambia, the world's seventh largest copper producer, past copper booms never solved poverty and remains a deeply unequal nation.⁵

Why are African transition minerals not bringing prosperity to the continent? One of the main reasons is that a large share of them are currently leaving the continent in their raw form.⁶

² Author's analysis based on IEA, 'Critical Minerals Demand Dataset' (IEA website, July 2023),

³ James Cust and Albert Zeufack, Africa's Resource Future: Harnessing Natural Resources for Economic Transformation during the Low-Carbon Transition (World Bank Publications, 2023), 101.

⁴ Resource-rich countries that experienced slower growth after 2016 included Chad, Congo, Liberia and Nigeria. Author's analysis based on 'GDP Growth (Annual %)', The World Bank, Data, accessed 16 February 2024.

⁵ Nsama Chikwanka, 'Wanted: a common vision for transition minerals extraction in Africa' (Daily Maverick, January 2023).

⁶ Other reasons include corruption, illicit financial flows and poor controls on the negative environmental and social effects of mining, See e.g., Papa Daouda Diene et al., 'Triple Win: How Mining Can Benefit Africa's Citizens, Their Environment and the Energy Transition' (Natural Resource Governance Institute, 2 November 2022).

They are benefiting other countries that can transform them and use them to answer their own needs. As shown in figures 2 and 3, China is by far the largest importer of Africa's transition

minerals, accounting for more than half of the total. Only 2% of the continent's exports of energy transition minerals are destined for other African countries.

Figure 2: Transition mineral exports from Africa to the rest of the world, 2022 (\$ billions)⁷

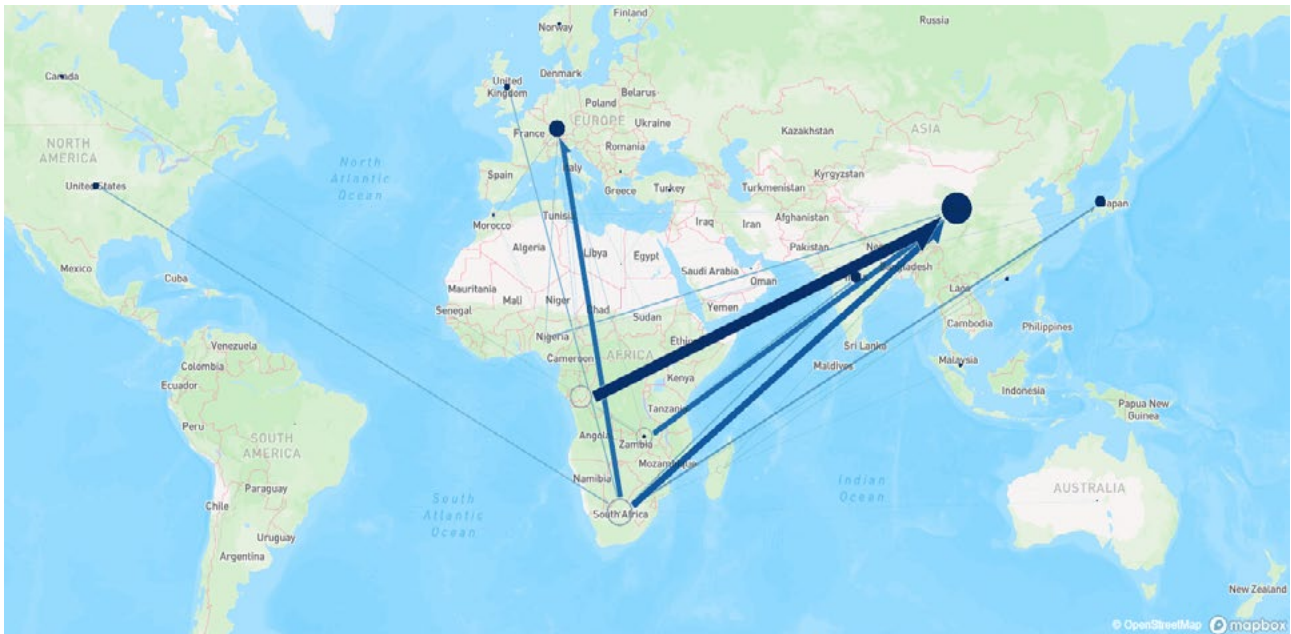
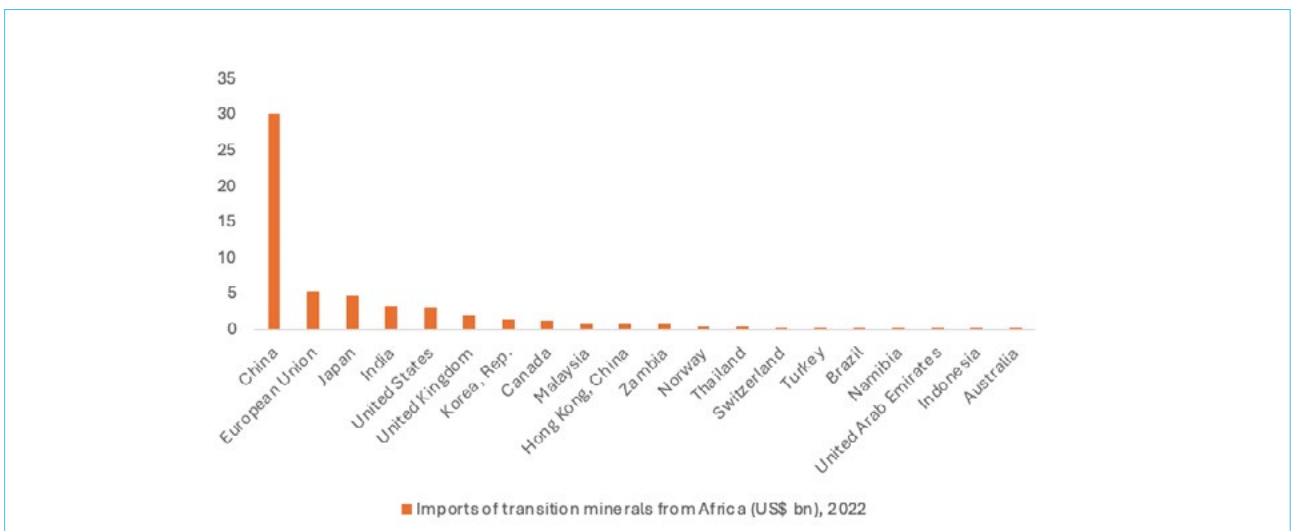


Figure 3: Imports of energy transition minerals from Africa (US\$ bn), 2022⁸, top 20 importers



Transition minerals exports account for less than 2 percent of Africa's GDP,⁹ with big discrepancies between countries. South Africa,

followed by the DRC and Zambia, had by far the most valuable exports of energy transition minerals in 2022.

We need to break with mistakes from the past.

⁷ United Nations, 'UN Comtrade Database'. Map developed using 'Homepage', [FlowmapBlue](#), accessed 8 January 2024. The thickness of arrows shows the value of imports from Africa. The arrow shown towards Belgium represents imports to the European Union as a whole.

⁸ Author's analysis based on United Nations, '[UN Comtrade Database](#)', accessed 5 January 2024 via World Bank's World Integrated Trade Solution.

⁹ Author's analysis based on United Nations, '[UN Comtrade Database](#)' and UNCTAD, '[UNCTADISTAT](#)', both accessed 9 January 2024.

This time, with this boom, African populations must truly benefit from their minerals. **To ensure a just energy transition, mineral wealth must unlock the continent's development, prosperity, resource sovereignty and energy autonomy.**

Africa's experience during the last commodity boom (2004-14) shows that simply extracting minerals from the ground and exporting them raw is not enough to fuel sustained development. The volume of minerals being exported outside of Africa in their raw form, without transformation, therefore represents a missed opportunity for African producing countries. Research shows that building the value chain around mining in African countries could create good jobs and diversify/stimulate other sectors of the economy.¹⁰ The minerals could also be transformed to answer the continent's own development needs, particularly in technologies aiming to foster clean electricity production and access, for example, through wind energy (as argued in this [case study](#)). African countries adding more value to their transition minerals could also cut the cost of producing renewable energy technologies around the world. **Making sure that Africa adds more value to its transition minerals can therefore support energy access to African populations and contribute to a more just energy transition for everyone.**

what extent is it happening in Africa?

Value addition means that minerals are being processed and transformed:

- ▶ first through processing including **smelting and refining** to turn them into a purer form that can be used in manufacturing.
- ▶ then through manufacturing or post-refinery processing: all other processes that the metal undergoes along the way to becoming a finished product that will be used in industry or by consumers.

Most of Africa's transition minerals are exported raw and value addition happens abroad, with China dominating the market,¹¹ and the US and EU strategising to catch up in recent years. This is problematic, as processing and transforming minerals allows increased economic output and job creation, in addition to government revenues. For instance in 2022, the refined copper that Africa exported earned twice the price per kilogramme (of copper content) than certain unrefined copper (copper mattes and cement copper) earned.¹² However, the initial processing stages (refining and smelting) contribute minimally to added value; most of the value is added during the manufacturing phase when minerals are transformed into finished products. This transformation is conducted by companies outside of the mining sector. For instance, the mining, smelting and refining of nickel, lithium and cobalt have only a 1.1% share in the total electric vehicles value chain.¹³

Africa does process some minerals on the

2.1. What is value addition and to

¹⁰ See e.g., Economic Commission for Africa, Making the Most of Africa's Commodities: Industrializing for Growth, Jobs and Economic Transformation, Economic Report on Africa 2013 (Addis Ababa, 2013). And Abhijit V Banerje and Esther Duflo, Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty, 2011.

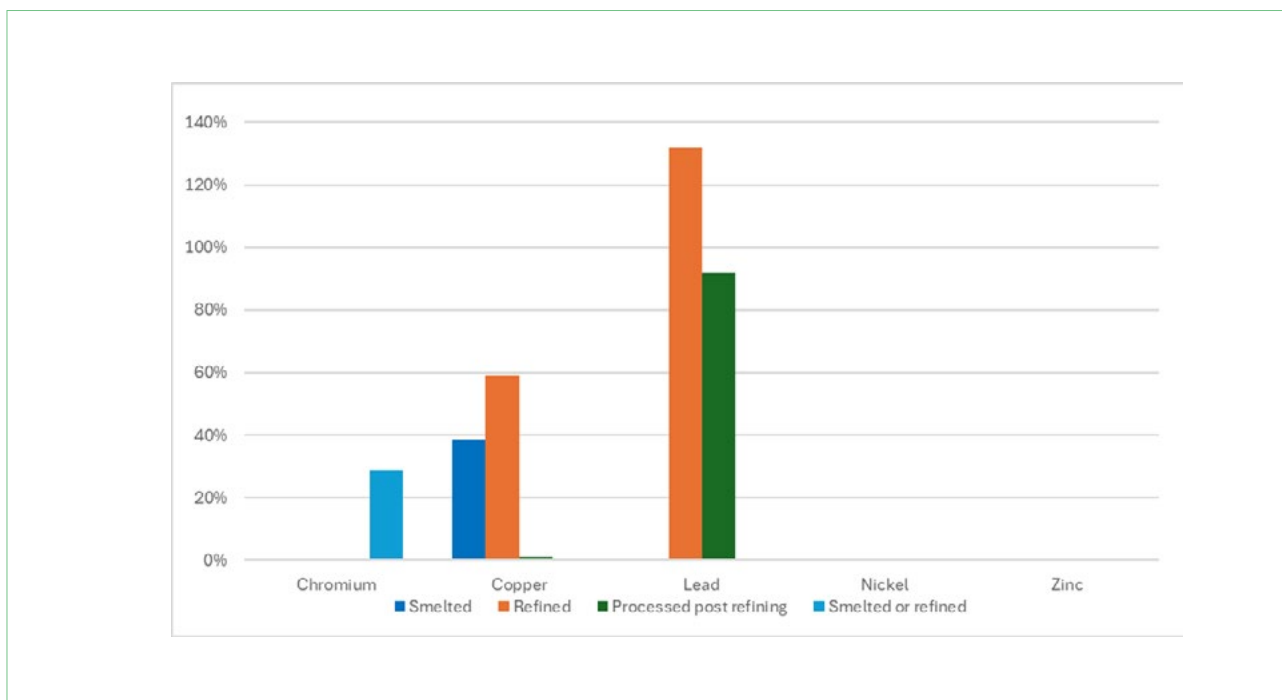
¹¹ For instance, 97% of the world's manganese in battery supply chains is processed into battery-grade manganese sulphate in China. And only China, Kazakhstan, the US and Vietnam can currently refine phosphorus into the form used into lithium-iron-phosphate electric vehicle batteries. Graphite is also exclusively refined in China.

¹² Author's analysis of United Nations, 'UN Comtrade Database' and 'Copper Mining and Processing'.

¹³ [Geopolitics of the Energy Transition: Critical Materials](#), IRENA, 2023

continent, mainly smelting and refining, as highlighted in Figure 4.^{14,15}

Figure 4: Share of Africa's transition mineral production that is processed on the continent, 2021^{14,15}
 In addition, most cobalt produced in Africa



undergoes at least some processing. While in the DRC (which accounts for over 90% of cobalt production in Africa) it undergoes basic processing, in Morocco and South Africa, cobalt is refined. Nevertheless, most cobalt undergoes further processing once it leaves Africa, even before starting to be manufactured into products. 99% of this processing and

transforming occurs outside Africa.¹⁶ Although intra-African minerals trade is very limited, some African countries import minerals from other African countries to process them. The main hub for importing transition minerals from within Africa is Zambia, which imports mainly raw copper and cobalt oxides and hydroxides for further processing. The country has a refinery that produces copper and cobalt.¹⁷

Beyond smelting or refining minerals, there are limited examples of further processing and transformation happening in Africa, including for energy transition technologies, such as the production of batteries for energy storage in South Africa; investments to produce battery cathodes (one of the stages in the value chain for producing electric vehicle and energy storage batteries) in Morocco; investments

¹⁴ These minerals are the only ones for which we were able to calculate the share of processing. Statistics for chromium are the author's estimate, inferred from trade and production data. It is unclear whether this is smelting or refining. Statistics for lead exceed 100% because Africa imported a significant amount of lead in 2021 for processing and as a result the amounts processed exceed the amount of raw lead mined. Despite being almost zero, statistics for nickel show the maximum proportion that is processed in Africa, i.e., the true level may be lower. It is unclear whether this is smelted or refined. Based on the data we have, no zinc was smelted or refined in Africa in 2021. Author's analysis based on 'World Mineral Statistics Data' (BGS MineralsUK Centre for sustainable mineral development), accessed 11 January 2024, Edmund Merriman Wise and John Campbell Taylor, 'Nickel Processing - Extraction and Refining', Britannica, accessed 11 January 2024, 'Superfund Research Center Copper Mining and Processing: Processing Copper Ores', The University of Arizona, 13 July 2020, and United Nations, 'UN Comtrade Database' (comtrade.un.org), accessed 10-12 January 2024. Accessed via World Bank World Integrated Trade Solution.

¹⁵ Contains Minerals UK Statistics Data courtesy of BGS © UKRI World mineral statistics data | Statistics & Commodities | MineralsUK (bgs.ac.uk)

¹⁶ 'Geopolitics of the Energy Transition'. Platinum Group Metals are also mostly processed on the continent. South Africa processes over 7% of the global supply of these metals, with Zimbabwe processing a further 8%. South Africa and Zimbabwe also together process 98% of the world's iridium.

¹⁷ Donna Slater, 'Jubilee Achieves Export-Grade Cobalt from Sable Refinery', Mining Weekly, 22 November 2022.

into significant quantities of electrical wiring production in Angola, Egypt, Ghana, South Africa, Tanzania and Zambia; and the production of primary cells, batteries and/or electrical accumulators, in several countries of the region¹⁸ though it is not clear to what extent these batteries may be used in energy transition technologies.

These examples underscore that value addition in Africa is possible under the right conditions.

2.2. Making the most of African transition minerals

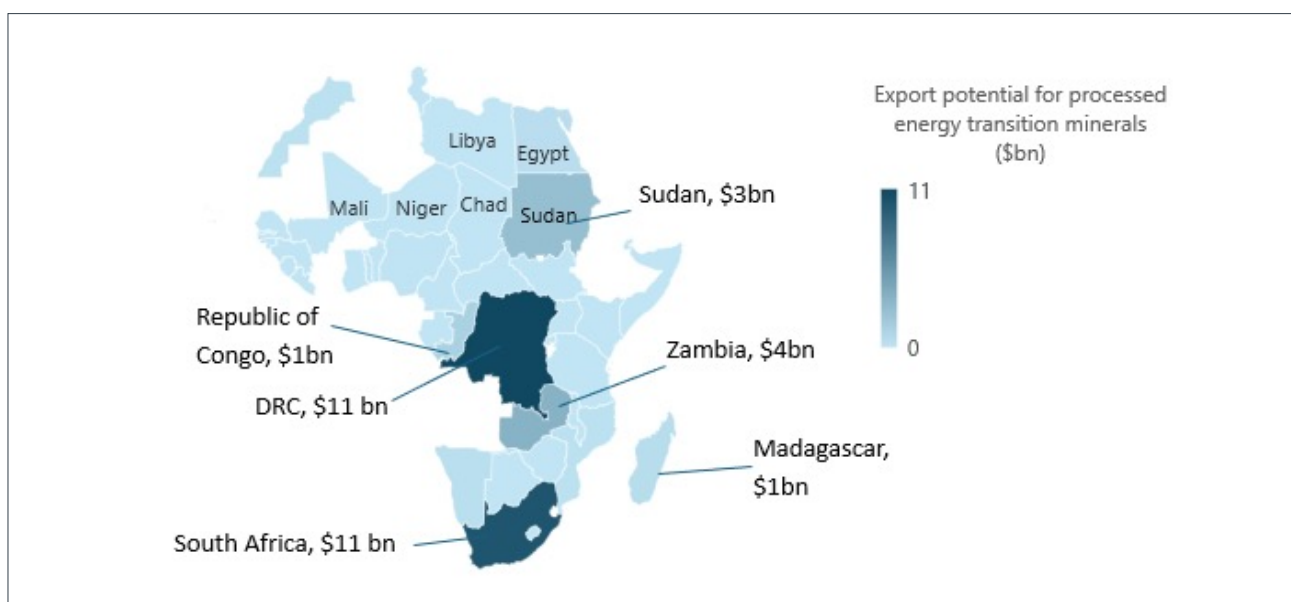
Based on our analysis, African countries have opportunities to add value to energy transition minerals on the continent and make significant social and economic benefits. These opportunities total \$32 billion in annual exports for the entire continent.^{19,20} There could

be even more opportunities if Africa boosts its competitiveness in different parts of transition mineral value chains.

Which countries have the most opportunities?

Different countries have different opportunities in this regard. While just a few countries - DRC, South Africa, Sudan, Zambia and Republic of Congo - account for over 90% of the continent's export opportunities, other countries may have different opportunities based on their particular strengths. Madagascar, Egypt, Namibia, Morocco and Mozambique also have opportunities for hundreds of millions of dollars in additional annual exports.

Figure 5: Potential for increased annual exports of products based on energy transition minerals in Africa, 2022-2028²⁰



¹⁸ Algeria, Angola, Egypt, Eritrea, Ethiopia, Madagascar, Morocco, Nigeria, Senegal, Tunisia, Tanzania and Zimbabwe. Source: UNIDO, 'INDSTAT 4 2023, ISIC Revision 4' (UNIDO Statistics Data Portal), accessed 26 January 2024; UNIDO, 'INDSTAT 4 2023, ISIC Revision 3' (UNIDO Statistics Data Portal), accessed 26 January 2024; Davie Malungisa, personal communication, 10 July 2024'.

¹⁹ Authors' analysis of ITC Trade and Market Intelligence Section, 'Export Potential', Export Potential Map Spot Export Opportunities for Trade Development, accessed 5 January 2024. This is based on analysis of markets where African countries might be able to increase their exports (i.e., where either a) they export less than expected to those markets, given the cost of trading with them and Africa's current market share in the product in question; or b) demand from those markets is expected to increase).

²⁰ Authors' analysis of ITC Trade and Market Intelligence Section, 'Export Potential', Export Potential Map Spot Export Opportunities for Trade Development, accessed 5 January 2024.

What minerals are involved?

Most of these opportunities are for exports of processed metal, primarily **copper (\$14 bn)** but also platinum group **metals (\$9bn)**, intermediate cobalt products (**mattes - \$4bn**), **lead (\$3bn)** and **nickel (\$1bn)**.

There are also opportunities for Africa to export more products with a greater degree of value addition beyond metal processing and semi-manufacture. The main among these are production of copper wiring and (copper-

based) coaxial cable, with \$5bn of annual export opportunities. The fact that these estimates are limited to only those products that the continent already exports **may conceal some opportunities for individual African countries to move into exporting new products that they do not currently produce**. The box below ‘How can Africa produce its own clean energy technologies?’ discusses some opportunities for African countries to move into manufacturing clean energy technologies that they do not currently produce.

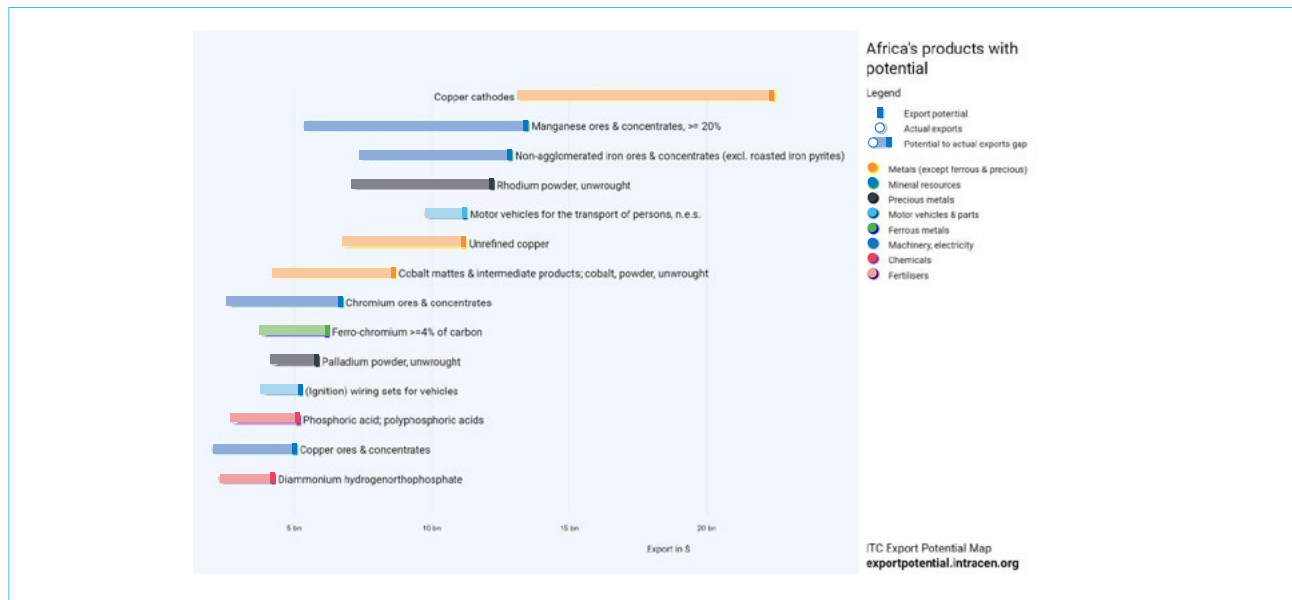


Figure 5: Potential for increased annual exports of products based on energy transition minerals in Africa, 2022-2028²¹

How does this translate into GDP and job creation?

According to our calculations, if Africa could seize all \$32 bn export opportunities mentioned above, this would increase the continent’s GDP by around \$24 bn and create 2.3 million jobs.^{21,22} The same countries with the largest export

potential (DRC, South Africa, Zambia, Sudan and Republic of Congo) also dominate the effects on the continent’s GDP.

DRC would see the highest level of job creation on the continent - our estimates suggest that almost half of these opportunities to create new jobs lie in that country.²³

21 ITC Trade and Market Intelligence Section, ‘Export Potential’, Export Potential Map Spot Export Opportunities for Trade Development, accessed 5 January 2024. N.B.: this graphic shows export potential based on ITC’s assessment of where individual African countries, that already produce these products, could increase their exports. It does not consider where countries could move into producing products that they do not currently produce.

22 See Annex I for the detailed methodology we have used to calculate this estimation.

23 For most countries, the data used to calculate the number of jobs created is missing, so we use averages across countries with data. As a result, we use the same multiplier to calculate numbers of jobs created from a given value of export opportunity for many countries. Exceptions are Egypt, Ethiopia, Mauritius, Morocco, South Africa and Zimbabwe. South Africa’s manufacturing sector appears to create fewer jobs for a given level of production than the average for African countries for which we have data (because its manufacturing workers are more productive), so these opportunities may create fewer jobs there relative to the size of the expected boost to GDP.

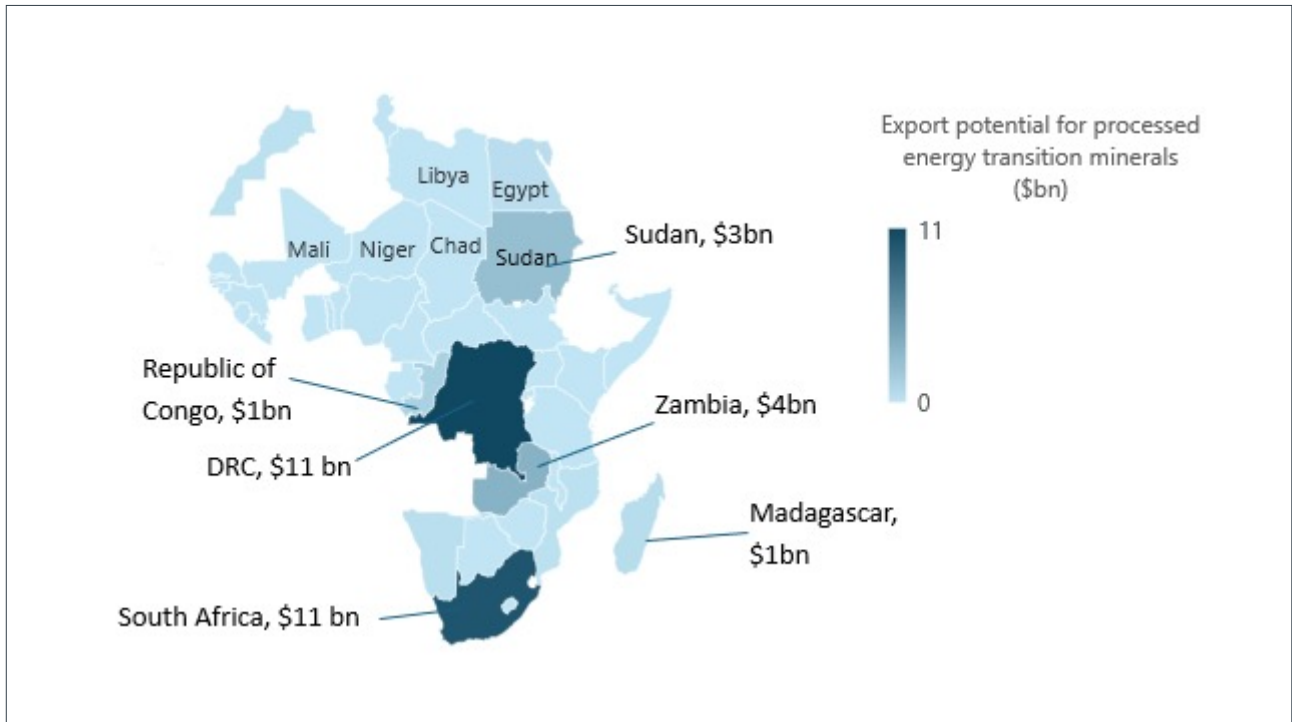


Figure 7: Potential increase in GDP from adding more value to transition minerals by country, 2022-28²⁴

Though the export opportunities themselves are highly concentrated, they could also **have positive economic effects for the rest of Africa**. This is because other African countries may supply inputs to the countries expected to have the greatest export opportunities. The Republic of Congo (at around \$ 1bn in indirect economic benefits) and Egypt (at around \$400 m) are among the African countries that could experience the greatest ‘indirect benefits’ from other African countries processing more energy transition minerals for export.

²⁴ Source: author’s calculations, based on GDP impacts estimated above and GDP data from ‘GDP (Current US\$)’, World Bank Group | Data, accessed 27 June 2024. We use 2022 GDP data as the denominator.

3.1. Industrial policies

To increase their participation in transition mineral value chains and ensure that doing so it benefits the economy, African countries **may need to maintain dialogue with the private sector, adapting regulations and taxes to encourage the development of these new activities.**²⁵ Governments will also need to monitor policies used to develop these new industries, and be ready to stop them when they are not working.²⁶ They will need to coordinate actions across several government ministries, and be able to call on a more senior government department, e.g., the President or Prime Minister's office, to resolve coordination problems or disputes between different parts of government.²⁷

In addition, successful policies to support industrial development ("industrial policies") typically provide incentives for firms to succeed, e.g., by making government support conditional, and/or looking for firms that have invested their owners' own resources and have something to lose if they fail to be competitive.²⁸ And they are more likely to succeed if they focus on supporting national firms to export, rather than protecting them from import competition.²⁹ Boosting firms' competitiveness, rather than mandating domestic processing (or penalising the export of raw minerals) is also usually more likely to succeed, except where producers have a high level of market power.³⁰

Further recommendations from the United Nations Industrial Development Organization for successful industrial policies are as follows:

- ▶ Ensure adequate infrastructure
- ▶ Combine "horizontal" policies (e.g., government efficiency, basic infrastructure) with interventions targeted at specific activities
- ▶ Co-operate regionally
- ▶ Strengthen firms' and workers' skills
- ▶ Plan industrial policies for the long term
- ▶ Provide adequate public financial support.³¹

²⁵ Dani Rodrik, Réka Juhász, and Nathan Lane, '[Economists Reconsider Industrial Policy](#)', Project Syndicate, 4 August 2023. United Nations, [Economic Report on Africa 2014](#) (United Nations, 2014). United Nations and Industrial Development Organization, 'Industrial Development Report 2024. Turning Challenges into Sustainable Solutions. The New Era of Industrial Policy' (Vienna: UNIDO, 2024), 48.

²⁶ Rodrik and Stiglitz, 'A New Growth Strategy for Developing Nations'; UNIDO, 'Industrial Development Report 2024', 48.

²⁷ Rodrik and Stiglitz, 'A New Growth Strategy for Developing Nations', 14; UNIDO, 'Industrial Development Report 2024', 48.

²⁸ Rodrik and Stiglitz, 14; UNIDO, 48.

²⁹ Reda Cherif and Fuad Hasanov, '[The Pitfalls of Protectionism: Import Substitution vs. Export-Oriented Industrial Policy](#)', IMF Working Papers 2024, no. 086 (2024): A001; United Nations and Industrial Development Organization, 48.

³⁰ Amir Lebdioui and Pavel Bilek, 'Do Forward Linkages Reduce or Worsen Dependency in the Extractive Sector?' (Natural Resource Governance Institute, March 2021), 28.

³¹ United Nations and Industrial Development Organization, 'Industrial Development Report 2024', 55.

3.2 Focusing on most competitive activities in energy transition technologies

ZOOM IN : How can Africa produce its own clean energy technologies?

Africa's opportunities are not limited to exporting more of the products that the continent already produces. The continent could also enter into new segments **of energy transition value chains. Some examples of these are related to solar and wind energy**, as highlighted in this [case study](#).

This study shows that some African countries have opportunities to become more involved in the value chain for solar and wind energy production, but producing from scratch could be challenging. **African countries should focus on developing activities that they can carry out competitively**, such as solar photovoltaic cells manufacturing based on imported materials. In time, they may be able to add other parts of the value chain.

Another opportunity is in the value chain for nickel-manganese-cobalt batteries. Both DRC and Zambia may be able to start producing cobalt sulphate. Battery precursor plants may be viable in the region if it has a sufficient supply of raw minerals,³² and the two countries have agreed to produce together.³³ Africa could also be well-placed to enter the value chain for lithium-iron-phosphate batteries by assembling batteries, using imported components for use in the African market, rather than trying to transform the minerals into battery components. Some African countries have already been able to manufacture batteries based on imported

components. South Africa is one example, entering the battery manufacturing value chain using imported cells.³⁴

These examples show that there is potential for Africa to produce renewable energy technologies for their own use on the continent, using their transition minerals. **Some opportunities may not necessarily involve adding value to producing countries' own minerals, but rather in entering the value chain at later stages.** African countries should then be collaborative, strategic and prioritise developing the parts of mineral (and other) value chains in which they are most competitive, even if it means importing minerals from other countries, rather than seeing it as a necessity to retain the entire value chain of clean energy technologies on the continent. They could then achieve the same level of economic benefits, but at a lower cost allowing the savings to go towards other priorities. Over time, African countries can expand to other parts of the value chain if they achieve the conditions to be competitive in those segments.

Additionally, although African countries may have opportunities to develop new industries linked to transition minerals, they might have even better opportunities in other parts of their economies. In addition, policies to promote greater participation in mineral value chains can come at a cost and African countries should consider whether this is worth the benefits. For example if African countries use scarce public funds for subsidies or tax breaks to promote greater participation in transition mineral value chains, they should ask themselves whether these funds could be better used elsewhere.

³² Bloomberg New Energy Finance, ['The Cost of Producing Battery Precursors in the DRC'](#) (Bloomberg New Energy Finance, November 2021).

³³ Political and practical challenges of agreeing where the plant will be located and sourcing enough raw materials for it to have sufficient scale cast doubt on the likelihood of success. Silas Olan'g and Thomas Scurfield, ['The DRC-Zambia Battery Plant: Key Considerations for Governments in 2024'](#) (Natural Resource Governance Institute, 20 December 2023).

³⁴ Antonio Andreoni and Elvis Avenyo, ['Critical Minerals and Routes to Diversification in Africa: Opportunities for Diversification into Batteries and Fuel Cells and Mining Equipment Technologies - The Case of South Africa'](#) (UNCTAD, August 2023).

3.3. Regional economic integration and preferential trade agreements

Renewable energy technology requires combining sets of minerals located in different countries. **Regional cooperation and preferential trade agreements among African countries are crucial for creating an environment conducive to industrial growth.** By collaborating, African countries can develop regional value chains that leverage various competitive advantages, share resources, and create larger markets for their products. This approach can help build competitive industries that are capable of adding significant value to transition minerals.

Regional economic integration notably within the Southern African Development Community (SADC) gathering most of the countries with substantial reserves, and preferential trade agreements among African countries as being negotiated within the African Continental Free Trade Area (AfCFTA) Framework, would allow minerals import and export within the continent at best price and enhance the continent's competitiveness. The measures that can increase this integration include: waiving export taxes on raw commodity exports to others within the region; investing in infrastructure to develop trade corridors; investing in joint processing and transformation facilities; cutting intra-African tariffs on products that would form part of intra-African value chains in renewable energy technology.

Deeper trade integration on the continent can be pursued within the AfCFTA, as well as through agreements between specific groups of African countries, such as the SADC, and bilateral trade agreements between neighbouring countries. The AfCFTA helps to reduce the complexity currently facing businesses within Africa, which have to navigate many different intra-African trade agreements, each with its own set of rules.

By covering the whole continent, the AfCFTA supports greater trade between all African countries, simplifying the trade landscape. At the same time, smaller regional groups like the SADC as well as bilateral agreements can complement the AfCFTA by **fostering closer economic ties among neighbouring countries, laying the groundwork for the much needed industrial cooperation** (see above). Additionally, civil society organisations have concerns that need to be addressed in the design and implementation of the AfCFTA. The overall process has lacked democratic participation, and it is essential to involve civil society organisations to ensure their concerns are addressed. This participation will help foster policies that benefit all stakeholders and support sustainable economic development across the continent. The African Union is currently developing an African Green Minerals Strategy to make the most of the continent's transition minerals. In line with the above, the Strategy should emphasise deeper regional economic integration and coordination of industrial policies to support the development of transition mineral value chains on the continent.

Finally, joint investments in infrastructure, research and development can further enhance the competitiveness of African industries. Working together, African countries can ensure that the benefits of the transition mineral boom are widely shared and contribute to sustainable economic development across the continent.

3.4. Transparency and accountability of government action

Transparency and accountability of government action in these areas are likely to be key to ensure that government officials use these policies to promote national economic interests and take into account the voices of marginalised groups such as women and Indigenous peoples. Good governance will also remain central to ensuring mining itself makes a positive contribution to the societies in which it occurs³⁵

In the interest of transparency and accountability around efforts to promote greater participation in mineral value chains, governments should publish:

- ▶ The reasoning behind the granting of measures designed to support specific industries, including cost-benefit analyses.
- ▶ Clear criteria used to decide whether support measures should remain in place and which firms can qualify. On top of providing transparency and accountability

around the use of these measures, publishing these criteria in advance and sticking to them will also make policy more predictable for business, which is helpful for attracting investment.

In addition, where governments use tax incentives (exemptions or reduced tax rates) to promote these industries, these should be tightly controlled, made public, authorised in law, time-limited and subject to cost-benefit analyses.

3.5. Strong safeguards for human rights, community participation and environment protection



Mining is already plagued with **corruption, governance issues, human rights abuses and environmental degradation**. Transition minerals mining and activities linked to value addition won't be different if strong safeguards are not in place. Many of the most valuable

sources of cobalt are located in environmentally sensitive areas such as forests.³⁶ For lithium, local environmental impacts can be significantly larger than other types of mining, depending on the technique used. Both cobalt and lithium

³⁶ Manley, Heller, and Davis, ['No Time to Waste'](#), 33–34.

mining can drastically reduce available water.³⁷ Transition mineral mining can also pollute the air and soil, harming local populations' health and livelihood, and undermining agriculture and food security.³⁸

The **social impacts** of energy transition mining could also be severe. Corrupt networks increase the poverty gap and the power asymmetry between government, companies and communities. It is notably impeding any chance of equitable redistribution of revenues. In addition, one study estimates that mining to meet the energy transition objectives of the EU alone could result in 15,000-89,000 Africans being forced into modern slavery.³⁹ Mining can also increase the cost of living for communities surrounding the mine and worsen gender inequities if mining opportunities lead men to reduce their support for household labour.⁴⁰

Although in theory environmental and social impacts can be managed, in practice mechanisms for doing so often fail to be effective. This can notably lead to mines being approved that would not have been if the environmental effects were properly accounted for.⁴¹ **The rush to transition minerals can increase pressure on African governments to fast track licensing and open up mining in sensitive and high risk areas.**

Transition minerals extraction and value addition must break with mistakes of the past. As highlighted below, value addition has to go hand in hand with **strengthening public institutions, policy development and implementation to ensure good governance, transparency,**

accountability⁴² of the whole extractive sector, as well as effective public participation and benefit sharing.

All communities affected by mining and value addition activities must be meaningfully consulted and empowered to participate. **No-go zones and safeguards must be put in place to protect ecosystems and the rights of affected populations, including a fair, ongoing process of Free, Prior and Informed Consent (FPIC)** as required by the International Labor Organization's Convention 169 on Indigenous and Tribal Peoples (ILO Convention 169). Extraction must happen following the highest international standards to avoid further environmental destruction and human rights violations, in line with the UN guiding Principles on Business and Human Rights. This should include consulting communities in their own languages.

3.6. Legal and policy frameworks

To achieve these measures, **African countries may wish to consider implementing the Africa Mining Vision to a greater degree.** The Vision emphasises adding value to Africa's minerals. Adopting country mining visions can be an effective way to put the vision into practice.⁴³

Furthermore, maintaining legal sovereignty is essential. Resource rich countries must retain the right to regulate and oversee the exploitation of their natural resources without undue interference from investor-state dispute settlements (ISDS) that prioritise corporate interests over public welfare.⁴⁴ This requires robust legal frameworks that empower governments to enact and enforce laws protecting the environment and human rights, ensuring that the benefits of resource extraction contribute to sustainable development and the well-being of all citizens.

³⁷ UN ESCAP, 'Implications of the Energy Transition on Sustainable Critical Minerals Development in Asia and the Pacific Aligning Extractive Industries with the Sustainable Development Goals', 2023, 32.

³⁸ UNEP, 'Soil Pollution a Risk to Our Health and Food Security', 12 April 2020.

³⁹ Berthet et al., 'Assessing the Social and Environmental Impacts of Critical Mineral Supply Chains for the Energy Transition in Europe'.

⁴⁰ UN ESCAP, 'Implications of the Energy Transition on Sustainable Critical Minerals Development in Asia and the Pacific', 36.

⁴¹ Papa Daouda Diene et al., 'Triple Win: How Mining Can Benefit Africa's Citizens, Their Environment and the Energy Transition' (Natural Resource Governance Institute, 2 November 2022).

⁴² Magali Dauvin and David Guerreiro, 'The Paradox of Plenty: A Meta-Analysis', World Development 94 (June 2017): 212–31.

⁴³ Antonio M. A. Pedro, 'The Country Mining Vision: Towards a New Deal', Mineral Economics 29, no. 1 (1 April 2016): 15–22.

⁴⁴ *Primer on International Investment Treaties and Investor-State Dispute Settlement*, Columbia Center on Sustainable Investment, 2022.

3.7. Increasing local content

“Local content” in the mining sector refers to the “Value that an extraction project brings to the local, regional or national economy beyond the resource revenues.”⁴⁵ It is often taken to mean the share of economic value created by mining itself (rather than adding value to minerals) that is paid to workers and businesses in the country where the mine is located.

Increasing local content in mining could have significant potential to contribute to African economies. Local procurement in mining typically accounts for 50-70% of mining companies’ spending in host countries,⁴⁶ outstripping payments to government and social investment. Yet in most developing countries, only an estimated 45% of supplies come from domestic companies, with most being supplied by foreign firms. The most significant opportunity is in manufacturing parts of mining equipment, where ITC estimates that the continent could increase its annual exports by over \$500m.

African countries can also try to boost local content in other parts of mineral value chains that input into the mineral processing sectors or other manufacturing activities that use transition minerals as inputs. This can increase the likelihood that transition mineral processing or other transition mineral-based manufacturing will be successful if it can competitively provide inputs to those activities.⁴⁷

3.8. Mobilising additional revenues

For the 15 resource-intensive economies in Sub-Saharan Africa, revenue from mining accounts for just 2% of GDP on average.⁴⁸ African countries should focus on **mobilising the much-needed additional revenues** from

their mining sectors. Countries can strengthen the mining fiscal regime and the institutions for public financial management to ensure that adequate resource revenues are collected and spent well. Royalty/tax concessions remain the prevalent fiscal regime in the mining industry in Africa. While the type of fiscal regime does not necessarily determine the financial outcomes for resource rich countries, the terms of royalty/tax concessions in African countries are often contained in bilaterally negotiated mineral agreements rather than being unilaterally determined and set in legislations. This undermines the development of an effective mining legal system and is prone to information asymmetries, to the benefit of private corporations.

Fiscal terms must be clearly and unilaterally defined in a general mining law and any conditions for any exceptions stated to curb abuse of discretion and subjectivity. African countries must also build capacity among various institutions to effectively monitor and accurately ascertain the production of transition minerals.

In addition, tax avoidance in the extractive sector is widespread. The International Monetary Fund (IMF) estimates around \$600 million per year in lost corporate tax revenues for sub-Saharan Africa, but their estimates imply it could be as much as \$1.5 billion per year.⁴⁹ Policies to address this problem could include “[S]implifying transfer pricing protection, limiting interest deductions, improving tax treaty practices, limiting tax incentives, and strengthening investment negotiation practices.”⁵⁰

Lastly, the governance framework of transition minerals in Africa must be **open for active civil society participation and community** engagement. This will ensure transparency in the mobilisation and use of taxes for the common good of society especially communities most impacted by mining activities.

⁴⁵ [‘Local Content Strengthening the Local Economy and Workforce’](#) (Natural Resource Governance Institute, March 2015), 1.

⁴⁶ Diene et al., ‘Triple Win’, 21.

⁴⁷ Lebdioui and Bilek, [‘Do Forward Linkages Reduce or Worsen Dependency in the Extractive Sector?’](#), A.

⁴⁸ Georgia Albertin, Dan Devlin, and Boriana Yontcheva, ‘Countering Tax Avoidance in Sub-Saharan Africa’s Mining Sector’, IMF BLOG (blog), 11 May 2021.

⁴⁹ Ms Georgia Albertin et al., [Tax Avoidance in Sub-Saharan Africa’s Mining Sector](#) (International Monetary Fund, 2021).

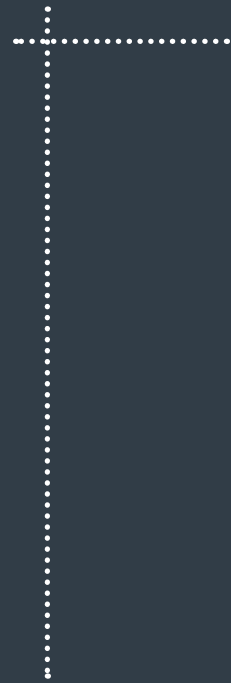
⁵⁰ Albertin et al., [Tax Avoidance in Sub-Saharan Africa’s Mining Sector](#).



Section

04

What role should
development
partners play?



Countries to which Africa sells its transition minerals can also play a role in supporting the continent's ambitions to become more involved in value chains. This is particularly true because, in some cases, (such as the EU and US Memoranda of Understanding (MoUs) with Zambia and DRC, and the EU's MoUs with Namibia and Rwanda) **development partners have promised to support African countries to process their transition minerals** domestically, as part of agreements designed to facilitate access to those minerals.⁵¹ **Where Africa's partners have made these promises, they should keep them.**

Partner countries can support greater participation in transition mineral value chains in Africa by cutting the barriers that they sometimes impose against imports from Africa. These can include tariffs on imports of processed transition minerals, as they may significantly add to the cost of processing in some cases.⁵² Most major trading partners provide duty-free, quota-free market access⁵³ for processed transition minerals from least-developed countries, **but this preferential access becomes meaningless if African countries are prevented from implementing industrial policies aiming to integrate higher stages of the value chain.**

The energy transition pushes all regions towards industrial policies that entail various degrees of protectionism. For example, the United States' Inflation Reduction Act provides tax advantages for electric vehicles that are manufactured using transition minerals that

were extracted or processed in the United States or countries with which it has a free trade agreement, or recycled in North America.⁵⁴ The EU has also committed itself to processing 40% of the "critical raw materials" that it consumes from within its borders by 2030. And the UK has also committed to increasing its processing capacity for its list of "critical minerals". Africa's partners shouldn't prevent Africa from using similar measures if they wish to support Africa's aspirations to process more of the transition minerals that it produces. African governments should focus on preferential continental trade, as national protectionism is less conducive to competitiveness in the global market. However, **Africa's development partners should support African countries' efforts to move up the value chain without hindering them through free trade agreements and trade disputes.**⁵⁵

Another way in which partner countries can support African countries to participate more in transition mineral value chains is to **provide financing to support upgrading infrastructure, transferring and developing skills, etc. to help African countries participate in transition mineral value chains more competitively.**

Related to this, in pursuing trade agreements with African countries, where African countries are part of a customs union they should try to sign trade agreements with the customs union as a whole rather than its individual members. In doing so they can avoid undermining political trust in the regional integration process among customs union members.

⁵¹ 'Minerals Security Partnership - United States Department of State', E.D. Wala Chabala, 'Lobito Corridor – A Reality Check', Short Analysis (APRI Africa Policy Research Institute, 2 February 2024).

⁵² Östensson, 'Promoting Downstream Processing'.

⁵³ The EU gives duty-free, quota-free access to their markets for African countries, while the United States currently provides access for several processed transition metals under the Africa Growth and Opportunity Act - 'Preferential Market Access for Goods', United Nations | LDC Portal - International Support Measures for Least Developed Countries, accessed 20 June 2024 ; Zainab Usman and Alexander Csanadi, 'How the AGOA Reauthorization Process Could Help Diversify U.S. Critical Mineral Supplies' (Carnegie Endowment for International Peace, 30 April 2024).

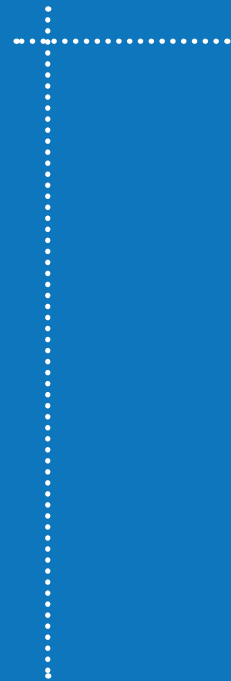
⁵⁴ Zainab Usman and Alexander Csanadi, '[How the AGOA Reauthorization Process Could Help Diversify U.S. Critical Mineral Supplies](#)' (Carnegie Endowment for International Peace, 30 April 2024).

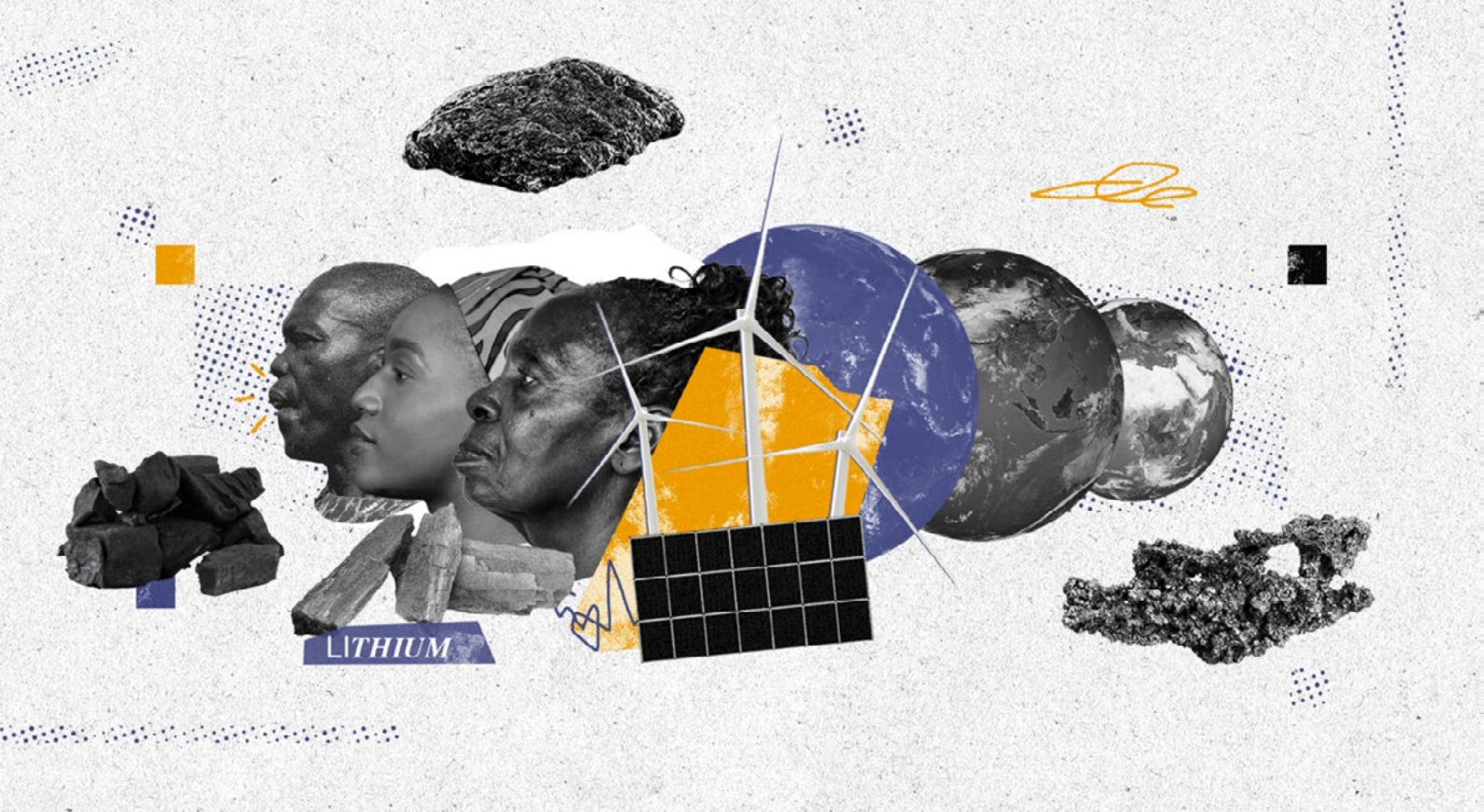
⁵⁵ [The EU's critical minerals crusade](#), SOMO, 2024; [WTO panel rules against Indonesia's export limitations on raw materials](#), European Commission, 2022, [Indonesia defends nickel appeal amid WTO's appellate body crisis](#), Jakarta Globe, 2023.

Section

05

Conclusion and
Recommendations





Africa is an important supplier of transition minerals to the world. Yet the continent is stuck at a relatively low level in transition mineral value chains, where it processes some of its minerals but is largely absent from the manufacturing of many technologies linked to clean energy. **As a result, the continent may be missing out on a key opportunity to support inclusive growth, create jobs and reduce poverty.**

To have the best chance at seizing this opportunity, **African countries will need to apply** the principles of effective industrial policy. This includes being strategic about which parts of the value chain they try to develop and weighing the costs and benefits of different types of government intervention. It is also likely to mean making industrial policies in a transparent, accountable and participatory way. Managing negative side-effects of mining and mineral processing on the environment, society, communities and human rights will be crucial.

Some commentators argue that Africa should use its transition minerals to build entire renewable energy value chains on the continent. Yet as outlined in the [case study](#) in this report, Africa may not (yet) be in a position to do so efficiently. The continent may benefit more from

using its minerals to spur industrial development and raise incomes and living standards by creating jobs and growing the tax base to provide more funds towards public spending. Higher private incomes and greater public resources can then be used to finance improved energy access and/or other development priorities in Africa, at a lower financial cost to Africans than if African governments tried to develop entire renewable energy value chains on the continent.

In this context, our recommendations for Africa to make the most of its transition minerals are as follows:

African countries should:

- ▶ **Develop economic and industrial cooperation amongst themselves, focusing on parts of the value chain where they are most competitive.**

This could be complemented by efforts to ensure that the benefits of such cooperation (e.g., jobs created, tax revenues earned) are fairly shared between cooperating African countries. This approach will enhance their participation in transition mineral value chains and ensure economic benefits for African citizens.

- ▶ **Promote technical cooperation, including transfer of technology and skills relevant to transition mineral value chains** to strengthen regional capabilities and expertise.⁵⁶
- ▶ **Develop strong policies and appropriate regulations to encourage greater participation of national companies** in supplying mining companies. But they should weigh this against other opportunities to promote new businesses. African countries should prioritise the opportunities with the greatest chance of delivering the widest long-term economic benefits.
- ▶ **Take into account broader impacts** of promoting greater participation in transition mineral value chains, such as effects on human rights and climate, and more localised environmental impacts.⁵⁷
- ▶ Ensure that policies to promote **greater participation in energy transition supply chains are developed through dialogue with the private sector and civil society** on what new industries are feasible and desirable, and how to achieve them.
- ▶ Ensure that policies that they adopt to promote value addition and local content in transition minerals are made in a **transparent and accountable way and are implemented**. This will reduce risks of corruption, cronyism and waste of resources, and give a greater chance of delivering positive outcomes.
- ▶ Closely **monitor how policies to promote value addition and local content are working**, and be prepared to abandon those that have failed to focus on reforms that would harness greater strategic opportunities.
- ▶ Not expect transition mineral value chains alone to provide all of the economic growth that they need, and consider pursuing other economic opportunities, taking into account the limits to governments' capacity to promote many initiatives simultaneously.
- ▶ Not expect all efforts to promote a greater share of transition mineral value chains to work as intended. Industrial policymaking is difficult to get right, and it is normal to have some failed efforts to develop new industries (but still worth trying, as the successes should more than make up for the failures).
- ▶ **Guarantee free and protected civic space, allowing stakeholders from across the country to participate freely in debates on politics and policy**. This should include restricting the use of strategic lawsuits against public participation (SLAPPs).
- ▶ Ensure **meaningful consultation and participation for all communities affected by mining**. Indigenous peoples' Free, Prior and Informed Consent - their right to give or withhold consent - must be prioritised and respected, as aligned with the UN Declaration on the Rights of Indigenous Peoples.
- ▶ Ensure the creation of "no-go zones" to protect people and the environment in high risk areas. Only extract minerals in line with the **most rigorous international human rights and environmental standards** through meaningful, transparent and gender-responsive mandatory human rights and environmental due diligence. Guarantee effective, independent monitoring of mitigation and corrective measures, including access to justice and effective remedy for all victims of corporate abuses.
- ▶ Ensure that national environmental regulators are independent from the companies they regulate.

⁵⁶ The Assessing Regional Integration in Africa series of reports (specifically editions VII, VIII and IX) discusses how African countries can balance technology transfer and intellectual in service of development. See David Luke et al., 'Assessing Regional Integration in Africa VII: Innovation, Competitiveness and Regional Integration' (United Nations Economic Commission for Africa, African Union Commission and African Development Bank, 2016); David Luke, Jamie Macleod, and William Davis, 'Assessing Regional Integration in Africa VIII: Bringing the Continental Free Trade Area About' (Addis Ababa, Ethiopia: United Nations Economic Commission for Africa, African Union and African Development Bank, 2017), 145–53; David Luke et al., 'Assessing Regional Integration in Africa IX: Next Steps for the African Continental Free Trade Area' (Addis Ababa, Ethiopia: United Nations Economic Commission for Africa, African Union Commission, African Development Bank and United Nations Conference on Trade and Development, 6 January 2021), 103–31.

⁵⁷ Ryosuke Yokoi, Takuma Watari, and Masaharu Motoshita, 'Future Greenhouse Gas Emissions from Metal Production: Gaps and Opportunities towards Climate Goals', *Energy & Environmental Science* 15, no. 1 (19 January 2022): 146–57.

Development Partners (e.g., countries and institutions that provide aid to or trade with africa) should:

- ▶ Support African countries' efforts to capture more value through transition mineral supply chains, where these are realistic. They can do this through:
 - ▶ **Supporting knowledge - including research and development - and technology transfer** to African firms along the length of transition mineral value chains.
 - ▶ **Not opposing African countries' sensible use of active industrial policies to capture more of the economic value in global transition mineral value chains.**
 - ▶ **Not using trade policies to make it difficult** for African countries to export processed transition mineral products to their markets.
 - ▶ Where they use carbon border adjustment mechanisms, taking into account the pollution involved in transporting minerals to another country to be processed.
 - ▶ **Considering providing financing** to make greater participation in transition mineral value chains more viable in Africa (e.g., through industrial, infrastructure, skills development, etc.).
 - ▶ **Ensuring that their support to value addition initiatives respects the needs of local communities, human rights and the environment.**
 - ▶ **Supporting Africa's efforts to develop regional value chains.** When pursuing trade agreements with African countries that are members of customs unions, they should try to sign them with the customs union as a whole rather than individual members, to avoid undermining the political trust that underpins the regional integration process.
- ▶ Ensure that their efforts to acquire transition minerals (whether processed or otherwise) from Africa do not contribute to negative side-effects (e.g., the suffering of local communities and/or destruction of the environment in mining or mineral processing areas). In addition, they should do their utmost to ensure that workers in transition mineral value chains and affected communities receive a fair share of economic benefits created by them. Development partners can do this by conducting due diligence of the supply chains through which they source transition minerals, and carefully considering the design of international agreements that encourage international trade in transition minerals and/or govern transition mineral value chains. In doing so, they should listen to perspectives from civil society, communities affected by transition mineral value chains, and organisations representing workers and equity-seeking groups, etc.⁵⁸
- ▶ Reform ISDS provisions in existing and future bilateral investment treaties (BITs) so that they do not undermine the efforts of African countries to implement policies that promote value retention, and protect public interests, human rights, and the environment.
- ▶ Pursue policies to limit demand for metallic transition minerals, due to the high levels of emissions from metal supply chains.⁵⁹ This should not imply slowing the transition away from fossil fuels, which cause far more emissions, but rather encouraging public and private consumption choices to take into account the negative impacts of metals on the climate.
- ▶ Contribute to the fight against international tax avoidance, illicit financial flows and corruption, including the mining sector.

⁵⁸ Fern, 'A Partnership of Equals? How to Strengthen the EU's Critical Raw Materials Strategic Partnerships' (Fern, November 2023).

⁵⁹ These include, for example, copper, lead, nickel and zinc. Yokoi, Watari, and Motoshita, 'Future Greenhouse Gas Emissions from Metal Production'.

Civil society should:

- ▶ **Advocate for African governments to foster regional cooperation** among African countries to enhance their participation in transition mineral value chains. This includes sharing resources, expertise, and technology to strengthen regional value chains and economic integration.
- ▶ **Push African governments to develop** policies to capture a greater share of transition mineral value chains, where this would carry economic benefits for the country in question.
- ▶ **Hold governments to account** over how they do this, ensuring that policymaking is well-reasoned, inclusive, participatory and that both policymaking and policy delivery are transparent and accountable.
- ▶ **Push African governments to reinforce protection of human rights**, including Indigenous people's rights, and the environment, and address corruption and integrity risks, including in transition mineral value chains.
- ▶ **Campaign to protect and enhance civic space** so that stakeholders across Africa can freely participate in discussions on politics and policy; this should include campaigning for restrictions on SLAPPs.
- ▶ **Put pressure on development partners to support African countries to experience greater participation in transition mineral value chains**, through knowledge and technology transfer, and through not opposing the sensible use of active industrial policies to promote these activities.

Annex I: Methodology used to estimate economic benefits of adding value to a greater share of Africa's energy transition minerals

We use the following steps to produce these estimates.

- 1. Export potential:** we collect data from the International Trade Centre's Export Potential Map on where African countries have potential to export more processed goods based on energy transition minerals.⁶⁰ These are disaggregated at the product level (6-level according to the Harmonized System classification). For South Africa, we only cover the 40 most important sectors since there are so many opportunities that it was difficult to extract them from the database. It should be noted that these estimates do not necessarily represent opportunities for African countries to add more value to their own transition minerals, but could reflect opportunities to add value to minerals imported from elsewhere.

The Export Potential Map estimates potential to expand exports based on 3 main factors: demand, supply and ease of trade. In particular, for demand, it considers how global demand for different products is forecast to evolve to 2028. For supply, it considers where the producing country is 'underperforming' in certain markets relative to its current global market share. The Map assumes that the country has the potential to increase its market share in each of those markets to match its current global market share. Finally, it considers various indicators of the ease of trading between the producing country and different markets around the world. Decreux et al. (n.d.) provide details of the methodology.⁶¹

It is worth noting that the level of production of minerals could constrain exports of processed goods. This is because, if the country runs out of minerals to which it can add more value and would have to import them from elsewhere to expand its exports of processed goods, which could be too costly for it to do competitively, meaning that it can no longer export the processed goods in question. The Export Potential Map methodology does not take into account the current level of production of minerals, or mineral reserves that are ready for extraction, in determining export potential for products based on minerals, which is a limitation of the methodology.⁶²

Readers should also take into account that the International Trade Centre's data on export potential could include some products that the country does not produce but only re-exports. While ITC has attempted to adjust for this and eliminate such cases (as explained in Decreux et al., n.d.), this may not have been fully successful.⁶³ As a result, we make further adjustments, as follows. Where a country reports re-exports, but does not report exporting the product in question as a 'domestic export' (where 'domestic exports' are given by exports minus re-exports), we consider that it does not in fact export the product and remove it. For the export of refined or smelted but unwrought metals, we check the British Geological Survey's World Mineral Statistics data⁶⁴ on whether the exporting country carries out these processes. If the data indicates that it does not do so as of 2021 (the latest year available at the time of writing), then we remove this opportunity from consideration.

⁶⁰ ITC Trade and Market Intelligence Section, 'Export Potential', [Export Potential](#) Map Spot Export Opportunities for Trade Development, accessed 5 January 2024.

⁶¹ Yvan Decreux et al., '[Export Potential and Diversification Assessments](#)' (International Trade Centre), accessed 13 February 2024.

⁶² Decreux et al., 'Export Potential and Diversification Assessments'.

⁶³ Decreux et al..

⁶⁴ '[World Mineral Statistics Data](#)' (BGS MineralsUK Centre for sustainable mineral development), accessed 11 January 2024.

- 2. Impact of value addition on GDP** – using the data obtained under step 1, for each country – sector pair, we multiply the dollar value of export potential by the corresponding share of African value added in total value added for exports by that sector from that country in 2022, obtained from the UNCTAD-Eora Global Value Chain Database, with several adjustments to this share detailed as follows.⁶⁵

The first adjustment that we make to the data is to exclude value added imported from fossil fuel-producing African countries (for reasons that will become clear below). This gives us the share of African countries in creating these exports, excluding fossil fuels. However, if we use this multiplier without further adjustments, we would be including value already added under existing levels of value addition. To estimate the share of additional value added that results from African producers ascending the value chain, we make the assumption that all value added from the mining and quarrying sector that is exported from the country is exported either in the form of unprocessed mineral products, or in products from the same sectors where the country has the potential to produce more energy transition minerals. Although this assumption may not be entirely correct (as some countries may use African minerals.⁶⁶ in other products that have undergone further processing), we consider that it is likely to be largely correct given that Africa has a marginal share in the later stages of value chains for energy transition minerals (as shown in section 3 of the present document), so most of the value added from the continent's mining sector is indeed likely to be exported by those sectors from which it currently exports.

On this basis, we assume that we can obtain the additional value added from this sector by starting with the total value added from the country's mining and quarrying sector as a share of the country's total exports of value added, less the share in total exports of value added that comes direct from Africa's mining and quarrying sector (i.e., exports of minerals that have undergone no or only minimal processing). We do not subtract value added from the mining and quarrying sector for fossil fuel producing countries, since the 'mining and quarrying' sector also includes the production of fossil fuels. An exception is South Africa, because it reports separate data for its non-coal mining sector that excludes fossil fuels. For those countries, we instead use the average share of the mining and quarrying sector in total exports for African countries that do *not* produce fossil fuels. We also produce different versions of the estimates where we remove some of these adjustments, for the purposes of comparison.

Our model currently assumes 'constant returns to scale', i.e., that as countries expand their processing of energy transition minerals, they will increase their spending on different inputs in direct proportion to the increase in export value. While it is likely that returns to scale could change (e.g., economies of scale could improve productivity as exports increase, or shortages of skilled workers or electricity could have the opposite effect), we maintained the constant returns to scale assumption because we were not able to obtain data on how the production structure was likely to change with increased scale.

We also considered including the effect of workers moving from other jobs into energy transition mineral value chains. However, we concluded that it would be too difficult to include this in the model. This is because there could be a 'cascade effect', where skilled workers would take jobs in energy transition mineral value chains, and other slightly less-skilled workers would be hired to fill

⁶⁵ Bruno Casella et al., 'Improving the Analysis of Global Value Chains: The UNCTAD-Eora Database', TRANSNATIONAL CORPORATIONS 26, no. 3 (2019). We use the Eora dataset because, to our knowledge, it is the most up-to-date dataset on international trade in value added that covers African countries. The OECD Trade in Value Added Dataset, for example, is updated to 2020, while Eora includes estimated data up to 2022.

⁶⁶ This is based on the Eora sectoral classification, which has only 26 sectors for the vast majority of African countries.

the jobs that they vacated, and so on, so that the final effect on the labour market would be a reduction in the level of unemployment, so there would be no loss of GDP as a result of their movement into these new roles. In countries with low levels of unemployment (e.g., with 'frictional unemployment' only), it could be the lowest-paid workers who would stop working in those jobs. However, workers in African countries work informally in low-productivity jobs and it might therefore be difficult to estimate the 'lost production' of these workers.

- 3. Potential job creation** – For the number of jobs created, we multiply the dollar value of exports in step 1 by ratio of export value to number of jobs created in the country in question by its manufacturing exports (excluding those created in extractive industries) from the Labor Content of Exports database. For those countries for which there is no data on job intensity of manufacturing exports, we use the simple average of values for those countries with data. Unfortunately we are forced to ignore the jobs that export opportunities in one African country could create in another, as we lack the data to calculate these.

For calculations of job opportunities created, all indicators of value added are taken from the UNCTAD-Eora Global Value Chain database, while all indicators for production and jobs are taken from the World Bank Labor Content of Exports Database.⁶⁷ As under item 1. above, the estimates of export opportunities are taken from the ITC's Export Potential Map.^{68,69}

⁶⁷ World Bank, '[Labor Content of Export Database](https://wits.worldbank.org/analyticaldata/analyticaldata.aspx)' (https://wits.worldbank.org/analyticaldata/analyticaldata.aspx , 2016).

⁶⁸ UNIDO, '[UNIDO Mining & Utilities Statistics Database at the 2- and 3-Digit Level of ISIC Revision 4](https://stat.unido.org/)' (stat.unido.org, 2023).

⁶⁹ UNIDO, '[INDSTAT 4 2023, ISIC Revision 3](https://stat.unido.org/)' (UNIDO Statistics Data Portal), accessed 26 January 2024.



**Just
Minerals
Africa**



**PUBLISH WHAT
YOU PAY**

Email: info@pwyp.org

 [@PWYPtweets](https://twitter.com/PWYPtweets)

 www.facebook.com/PublishWhatYouPay

www.pwyp.org

Publish What You Pay is a registered charity (Registered Charity Number 1170959)
and a registered company in England and Wales (No. 9533183).